

# Liquid Alarm Sensors for Conductive Media Series LA<sup>®</sup>

## LA1S, LA25S

## Flow Chambers

## LS, LS25

## With Electronic Controllers

## LA1.1, LA1.4

Instruction Manual

Version 1.01.03



**Dear customer,**

Thank you for buying our product. In this instruction manual you will find all necessary information about this M&C product. The information in the instruction manual is fast and easy to find, so you can start using your M&C product right after you have read the manual.

If you have any question regarding the product or the application, please don't hesitate to contact M&C or your M&C authorized distributor. You will find all the addresses in the appendix of this manual. For additional information about our products and our company, please go to M&C's website [www.mc-techgroup.com](http://www.mc-techgroup.com). There you will find the data sheets and manuals of our products in German and English.

This Operating Manual does not claim completeness and may be subject to technical modifications.

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Version: 1.01.03

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## 1 GENERAL INFORMATION

The product described in this manual has been built and tested in our production facility.

All M&C products are packed to be shipped safely. To ensure the safe operation and to maintain the safe condition, all instructions and regulations stated in this manual need to be followed. This manual includes all information regarding proper transportation, storage, installation, operation and maintenance of this product by qualified personnel.

Follow all instructions and warnings closely.

Read this manual carefully before commissioning and operating the device. If you have any questions regarding the product or the application, please don't hesitate to contact M&C or your M&C authorized distributor.

## 2 DECLARATION OF CONFORMITY



The product described in this operating manual complies with the following EU directives:

### EMC-Instruction

The requirements of the EU directive 2014/30/EU "Electromagnetic compatibility" are met.

### Low Voltage Directive

The requirement of the EU directive 2014/35/EU "Low Voltage Directive" are met.

The compliance with this EU directive has been examined according to DIN EN 61010.

### RoHS Directive

The requirements of the RoHS2 ('Restriction of Hazardous Substances 2') directive 2011/65/EU and its annexes are met.

### Declaration of conformity

The EU Declaration of conformity can be downloaded from the **M&C** homepage or directly requested from **M&C**.

### 3 SAFETY INSTRUCTIONS

**Follow these safety directions and instructions regarding installation, commissioning and operation of this equipment:**

Read this manual before commissioning and operating the product. Make sure to follow all safety instructions.

Installation and commissioning of electrical devices must be carried out only by qualified skilled personnel in compliance with the current regulations.

The installation and commissioning of the device must conform to the requirements of VDE 0100 (IEC 364) 'Regulations on the Installation of Power Circuits with Nominal Voltages below 1000 V' and must be in compliance with all relevant regulations and standards.

Check the details on the type plate to ensure that the equipment is connected to the correct mains voltage.

Protection against damages caused by high voltages:

Disconnect the power supply before opening the device for access. Make sure that all external power supplies are disconnected.

The device is only to be used within the permitted range of temperatures and pressures.

Operate the device only in the permitted temperature and pressure ranges. For details please refer to the technical data sheet or manual.

Install the device only in protected areas, sheltered from sun, rain and moisture. The product should not be exposed to the elements.

The electronic controllers LA1.1 and LA1.4 as well as the liquid sensors LA1S and LA25S in combination with these electronic controllers are not allowed to be used in hazardous areas.

Installation, maintenance, inspections and any repairs of the devices must be carried out only by qualified skilled personnel in compliance with the current regulations.

### 4 WARRANTY

In case of a device failure, please contact immediately M&C or your M&C authorized distributor. We have a warranty period of 12 months from the delivery date. The warranty covers only appropriately used products and does not cover the consumable parts. Please find the complete warranty conditions in our terms and conditions.

The warranty includes a free-of-charge repair in our production facility or the free replacement of the device. If you return a device to M&C, please be sure that it is properly packaged and shipped with protective packaging. The repaired or replaced device will be shipped free of delivery charges to the point of use.

## 5 USED TERMS AND SIGNAL INDICATIONS



**DANGER!**

This means that death, severe physical injuries and/or important material damages **will occur** in case the respective safety measures are not fulfilled.



**WARNING!**

This means that death, severe physical injuries and/or important material damages **may occur** in case the respective safety measures are not fulfilled.



**CAUTION!**

This means that minor physical injuries **may occur** in case the respective safety measures are not fulfilled.

**CAUTION!**

Without the warning triangle means that a material damage may occur in case the respective safety measures are not met.

**ATTENTION!**

This means that an unintentional situation or an unintentional status may occur in case the respective note is not respected.



**NOTE!**

These are important information about the product or parts of the operating manual which require user's attention.

**Qualified personnel**

'Qualified personnel' are experts who are familiar with the installation, mounting, commissioning and operation of these types of products.



High voltages!

Protect yourself and others against damages which might be caused by high voltages.



Corrosive!

These substances destroy living tissue and equipment upon contact. Do not breathe vapors; avoid contact with skin and eyes.



Wear protective gloves!

Working with chemicals, sharpe objects or extremely high temperatures requires wearing protective gloves.



**Wear safety glasses!**  
Protect your eyes while working with chemicals or sharpe objects.  
Wear safety glasses to avoid getting something in your eyes.



**Wear protective clothes!**  
Working with chemicals, sharpe objects or extremly high temperatures requires wearing protective clothes.

## 6 INTRODUCTION

The M&C liquid alarm units series **LA**<sup>®</sup> are designed for stationary continuous operation and when installed properly guarantee a long service life and a minimum of maintenance work.

## 7 APPLICATION

Liquid alarm sensors **LA1S** and **LA25S** are used in gas sample conditioning systems for monitoring gas cooling and condensate drain-off devices in order to provide protection for downstream analysis instruments. This straightforward monitoring device reliably signals the condensate ingress in the event of cooling or condensate drain-off equipment being defective and thus avoids expensive down times as well as high repair costs for analysis instruments.

The electronic controllers **LA1.1** and **LA1.4** are used for feeding and signal processing of the liquid alarm sensors **LA1S** and **LA25S**.

In the event of alarm, the power for the sample gas pump or a solenoid valve is to be switched off in the gas sample conditioning system.

## 8 TECHNICAL DATA

Sensor Series LA <sup>®</sup>	LA1S	LA25S
Part No.	03E1001	03E1111
Connection cable	4 m [≈ 13.1 ft] length, diameter: ø 4.2 mm, 2-core, each additional meter: Part No. <b>03E9001</b> , total max. 100 meters [≈ 328 ft]	4 m [≈ 13.1 ft] length, diameter: ø 2 mm, 2-core, each additional meter: Part No. 03E9000, total max. 100 meters [≈ 328 ft]
Pressure	2 bar g max. mounted inside universal filter, 0 to 4 bar g inside LS flow chamber	0 to 25 bar g (up to 100 bar g on request*) mounted inside FSS...-D universal filter and in LS25 flow chamber
Operating temperature	+80 °C *** [176 °F]	
Installation connection	ø 12 mm for GL 25 nut and GL 25-12 mm sealing ring	1/4" NPT a
Material of sample contacting parts ***	Glass, platinum	SS316Ti, PVDF
Type of mounting	Clamping attachment	Screw on
Mounting position	Vertical	
Electrical conductivity	> 50 µS/cm	
Weight	50 g [≈ 0.11 lb]	140 g [≈ 0.31 lb]

\* other pressure ranges on request

\*\* other dimensions on request

\*\*\* other materials or temperatures on request



Flow Chamber Series LS	LS	LS25
Part No.	03E3100	03E1120
Pressure	0 to 4 bar g	0 to 25 bar g (up to 100 bar g on request*)
Flow rate	0 to 1000 l/h	
Operating temperature	+80 °C *** [176 °F]	
Gas connections	G 1/4" i	ø 8 mm **
Stagnant space	Approx. 3 ml	
Material of sample contacting parts ***	PVDF, FKM	SS316Ti
Type of mounting	Wall-mounting	Tube line
Mounting position	Vertical	
Weight	60 g [≈ 0.13 lb]	100 g [≈ 0.22 lb]

\* other pressure ranges on request

\*\* other dimensions on request

\*\*\* other materials or temperatures on request

Electronic Controller Series LA® Type	LA1.1	LA1.4
Part No. 230 V 50/60 Hz 115 V 50/60 Hz 24 V DC 24 V AC	03E2001* 03E2001* 03E2001*d 03E2001*b	03E2006 03E2006a 03E2006d 03E2006d
Mounting	Wall mount housing, rail mount housing EN 50022	
Sensor inlets	1	
Power consumption	2 VA	1 VA
Alarm-relay (2x MC/NC/NO) contact rating	250 V DC/AC DC=50 W, AC=500 VA, 3 A	250 V DC/AC DC=45 W, AC=500 VA, 2 A
Cable inlet	1 x terminal range 3 – 6.5 mm 2 x terminal range 5 – 10 mm	
Electrical connection	Terminals max. 2.5 mm <sup>2</sup>	
Adjustment of switching point	Via potentiometer inside the housing (open housing first)	Via potentiometer located at the front of the housing
Distance between sensor and electronic LA1..	Max. 100 m [328 ft]	
Line break control system	Yes	
Alarm reset**	Yes	
Protection type	IP65 EN 60529	IP20 EN 60529
Housing material	Polycarbonate	Polyamide PA 6.6 combustibility class VO (UL94)
Ambient temperature	-25 to +60 °C [-13 to 140 °F]	
Dimensions (W x H x D)	80 x 55 x 160 mm [approx. 3.1" x 2.2" x 6.3"]	22.8 x 100 x 111 mm [approx. 0.9" x 3.9" x 4.4"]
Weight	0.31 kg [approx. 0.7 lb]	0.23 kg [approx. 0.5 lb]

Reversible distribution voltage 230 V 50 Hz/115 V 60 Hz, factory adjusted to 230 V 50 Hz.

\*\* Factory deactivated

## 9 DESCRIPTION

The **M&C** liquid sensors **LA..S** works on the principle of electrical conductivity from 20  $\mu\text{S}/\text{cm}$  conductance. In order to avoid electrolytic effects on the sensor surface, the sensors are powered with alternating current.



### NOTE!

**For the M&C liquid sensors LA...S, only the newly developed controller electronics from model year 04/2006 described in this instruction manual can be used.**

The **M&C LA...S** liquid sensors are constructed in such a way that any droplets of liquid in the sample gas are attracted under gravity to the sensor surface and even the smallest liquid droplets trigger a reliable and fast alarm.

The **LA1S** sensor is designed for operating pressures up to 4 bar and **LA25S** for up to 25 bar. The sensors housing protection corresponds to type IP65 EN 60529.

The **LA1S** sensor with its  $\varnothing$  12 mm glass body can be mounted inside a GL connection of a **F...-D** universal filter or in the **LS** flow chamber. The **LA25S** sensor has got a 1/4" special male connector for mounting inside the **FSS...-D** universal filter or for mounting inside a 8 mm tube using a special union tee connector **LS25**.

With the universal filters and the flow chamber, the gas inlet and gas outlet can be rotated 180 degrees during installation.

The corresponding **M&C** controller electronics are available in 2 mounting variants for wall mounting **LA1.1** and rail mounting **LA1.4**.

A line break control system is integrated for safe operation. One LED each is provided for operation and fault indication, as well as two potential-free changeover contacts in "Safety First" circuit for safe alarm signalling. The electronic controller **LA1...** contain an alarm hold function and an alarm reset which can be activated or deactivated on request. They are not activated on delivery.

By using one of the contacts, a pump or a solenoid valve in the gas conditioning system can be switched directly and the second contact can be used as a status alarm.

The switching point of the electronic controller **LA1...** is adjustable via a potentiometer. A standard adjustment to a conductivity of 100 $\mu\text{S}/\text{cm}$  is set at the factory.

**ATTENTION!** Use the special electronic controller ER142 Exi (without line break control) (Part No. 03E2009(a)) only for the intrinsically safe supply of the sensor **LA1** or **LA25** of the old series located in the EX area.  
When used with the new sensors **LA1S** and **LA25S**, there is no explosion protection.

## 10 RECEIPT OF GOODS AND STORAGE

The liquid alarm series **LA**<sup>®</sup> are normally delivered in 2 packing units:

1. Universal filter **F...-D** or flow chamber **LS** and liquid sensor **LA ...S**
2. Electronic controller **LA1...**

Carefully remove the components and any special accessories from the transport packaging immediately upon arrival and check the scope of delivery according to the delivery note;

Check the goods for possible transport damage and, if necessary, inform your transport insurer immediately of any possible damage.



**NOTE!**

**The liquid alarm components should be stored in a protected frost-free area!**

## 11 INSTALLATION INSTRUCTIONS AND DIMENSIONS

The liquid alarm sensor **LA...S** is used for detecting liquids and is to be installed behind the gas dehydration devices, e.g. behind a gas cooler, but always on the deepest point of the installation. This is provided by the universal filters **F...-...-D** and the flow chambers **LS** or **LS25**.

The filters **F...-...-D** and the flow chambers **LS** are designed for wall mounting and are mounted by using 2 fastening screws.

The operating position is exclusively vertical, only then an immediate alarm is guaranteed in case of liquid ingress.

The outdoor installation of the valves can only be carried out without special protective measures, when the ambient temperature in winter does not fall below the dew point temperature of the sample gas.

The gas inlet and outlet of the filter can be positioned right or left by moving the blue mounting bracket. There is also a vertical inlet connection with a dummy plug. The flow chamber has the gas inlet vertically and the gas outlet horizontally right or left, depending on the type of mounting.



**NOTE!**

**During mounting, the gas inlet and gas outlet of the universal filter and the flow chamber can be rotated 180 degrees.**

The flow direction is marked with arrows.

The standard gas connections of the universal filters **F...-...-D** and the flow chamber **LS** are G 1/4" i.

Depending on the application, the gas connections can be made with soft tubing, e.g. PVC, Novoprene, FPM or with rigid plastic or metal tubes, e.g. PTFE or stainless steel.

You will find the corresponding connection fittings in our product range.

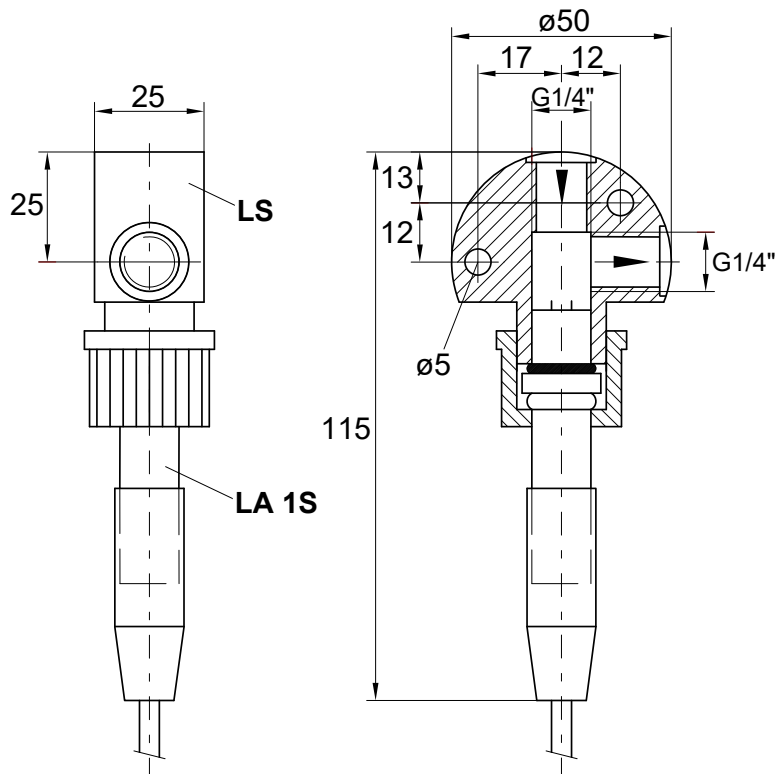


Figure 1 Flow chamber LS with liquid sensor LA1S

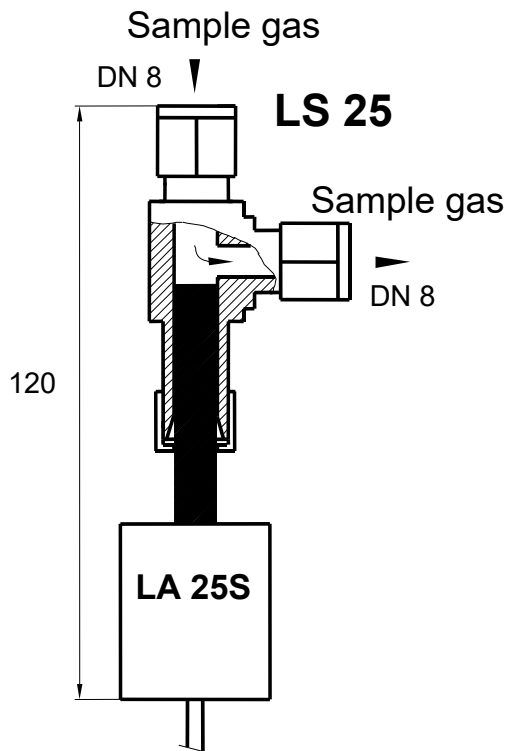


Figure 2 Flow chamber LS 25 with liquid sensor LA25S

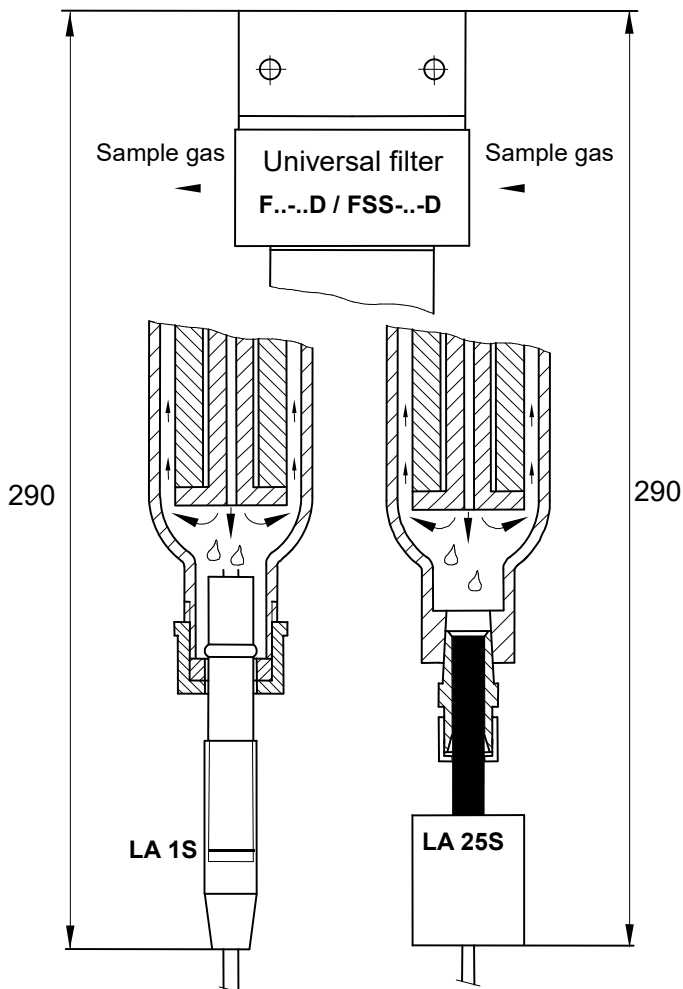


Figure 3 Liquid sensor LA1S with filter F...-D and LA25S with Filter FSS...-D

## 12 MOUNTING

### 12.1 FACTORY PRE-ASSEMBLY OF COMPLETE MONITORING UNITS

If a complete monitoring unit consisting of a liquid sensor, universal filter or flow chamber and electronic controller is ordered as a complete unit, the sensor is mounted as far as possible in the corresponding mounting hardware at the factory.

For transportation, the sensor **LA1S** of the universal filters **F...-D** is pre-assembled. The **LA1S** sensor needs only to be hand-tightened with the GL25 union nut in the lower GL connection of the filter by turning it to the right.



**NOTE!**

**Please check before assembling that the clamping ring GL25-12 of PTFE/silicone is not defect and is placed on the sensor, the white PTFE surface pointing to the viewer (medium side). Only then, the necessary leak-proofing is guaranteed.**

The sensor **LA25S** needs to be screwed with the pre-assembled 1/4" NPT fitting into the thread of the stainless steel filter body by using a Teflon tape.

If sensors are supplied with a flow chamber, they are pre-assembled.

## 12.2 MOUNTING THE SENSOR LA1S INTO THE UNIVERSAL FILTER

If individual components are assembled by the customer, the sensor is mounted as follows:

- Remove the GL25 union nut incl. the inner GL25-12 clamping ring from the filter.
- Pull the red cable anti-kink protection of the LA1S sensor backwards, in the direction of the connecting cable from the sensor body using slight swivel movements.
- Push the GL25 union nut with its internal thread towards the sensor tip (platinum electrodes) on the sensor body towards the rear in the direction of the red cable anti-kink protection.
- Push the GL25-12 clamping ring with the white PTFE surface towards the sensor tip (medium side) over the bulge on the sensor body.



**NOTE!** The PTFE/Silicone clamping ring GL25-12 must not be defective. Only then, the necessary tightness is guaranteed.

- Push the red union nut with clamping ring against the bulge on the sensor body.
- Slide the red cable anti-kink protection back onto the sensor body using slight swivel movements.
- Screw the GL25 union nut with sensor onto the GL connection thread of the filter.

## 12.3 MOUNTING OF THE SENSOR LA1S INTO THE FLOW CHAMBER LS

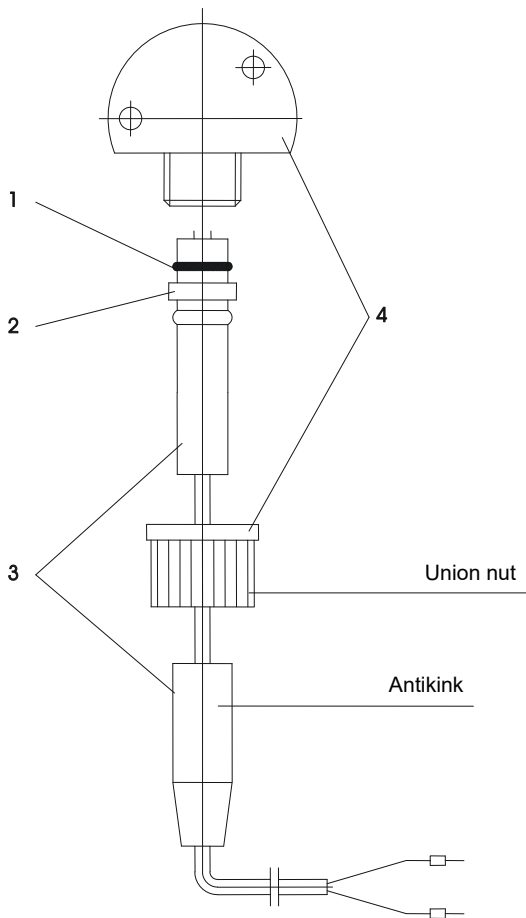
If individual components are assembled by the customer, the sensor is mounted as follows:

- Remove the union nut including the inner O-ring and the pressure ring from the chamber body.
- Pull the red cable anti-kink protection from the sensor body over the connecting cable using slight swivel movements.
- Push the union nut with its internal thread towards the sensor tip (platinum electrodes) over the connection cable onto the sensor body.
- Push the PVDF pressure ring and then the black FPM O-ring on the electrode side up to the bulge on the sensor body.



**NOTE!** The O-ring must not be damaged. Only then the necessary tightness is ensured.

- Push the union nut on the sensor body up to the bulge.
- Insert the sensor connection cable again through the red cable anti-kink protection and push it approx. 15 mm [0.59"] onto the sensor body by means of slight swivel movements.
- Mount the sensor with union nut into the lower connection of the flow chamber.



Pos.	Part No.	Description
1	90E1000	FPM O-ring 14
2	90E1010	PVDF – pressing ring 16
3	03E1001	Liquid sensor <b>LA1S</b> with 4 m connection cable
4	03E3100	Flow chamber <b>LS</b> with union nut

**Figure 4** Mounting of the sensor LA1S into flow chamber LS

## 12.4 MOUNTING THE SENSOR LA25S ONTO THE UNIVERSAL FILTER

If individual components are assembled by the customer, the sensor is mounted as follows:

- Screw the attached mounting fitting with a Teflon tape into the filter body.
- Put the sensor with pre-assembled union nut and the pre-assembled pressing and cutting ring into the fitting and tighten the union nut hand-tight. Then tighten the union nut with a flat key exactly 1 ¼ rotations. The nut is then correctly fitted.



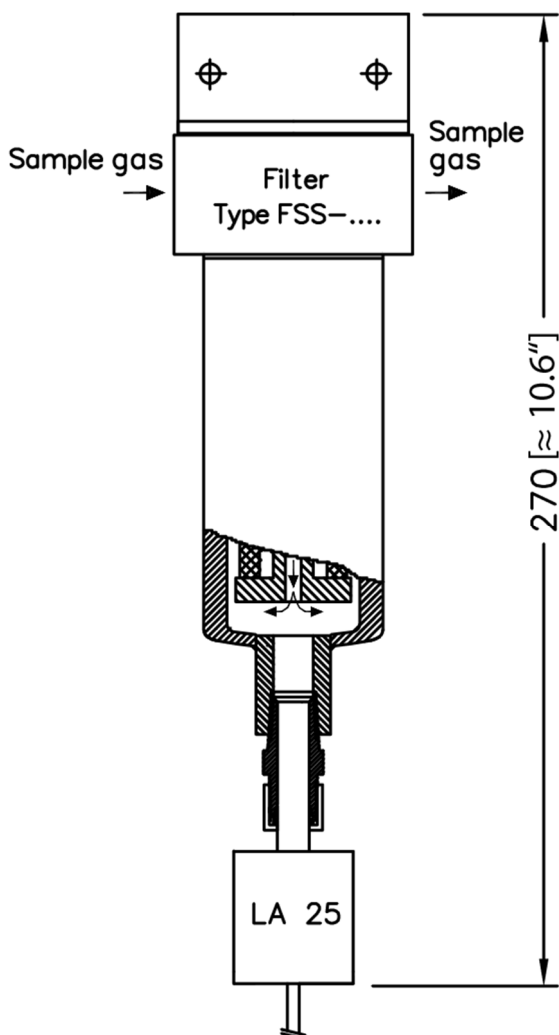


Figure 5 Mounting the LA25S onto the universal filter

## 12.5 MOUNTING THE SENSOR LA25S INTO THE FLOW CHAMBER LS25

If individual components are assembled by the customer, the sensor is mounted as follows:

- Insert the sensor with the pre-assembled union nut and the pre-assembled pressure and cutting ring into the screw fitting and tighten the union nut. First tighten the nut hand-tight, then tighten the nut exactly 1 1/4 turn with a flat spanner. The nut is then correctly fitted.

## 13 SUPPLY CONNECTIONS

### 13.1 ELECTRICAL CONNECTIONS



**WARNING!**

**Incorrect supply voltage may destroy the equipment. Please take care of the correct voltage as indicated on the type plate!**

**The supply voltage may vary from the indication on the type plate by max.  $\pm 10\%$ .**



**NOTE!**

**When setting high-power electrical units with nominal voltages of up to 1000V, attention must be paid to the requirement of IEC 364 (DIN VDE 0100) as well as the associated standards and stipulations!**

The electronic controller **LA1.1** are equipped with a mains selector switch S3 for 230/115 V. At works, this selector switch is adjusted to 230 V. Check the desired voltage before starting and, if necessary, change the selector switch by using a screw driver.

The electronic controller **LA1.4** in 24 V version are suitable for both, constant voltage and alternating voltage.

The sensor cable should not be too short at the mounting fitting, so that the sensor can be easily disassembled during inspection or cleaning.



**NOTE!**

**Only the sensor types LA1S and LA25S provide a line break control.**



**NOTE!**

**The connection cable of the LA1S or LA25S sensor is a standard 2-wire cable and can be extended up to 100 m via standard terminals if required.**

**The connection cable of the old sensors LA1, LA25 and LA1-H is a special HF cable which must not be extended and connected to standard terminals, otherwise the cable shielding will be interrupted.**

### 13.1.1 ELECTRONIC CONTROLLER LA1.1

The following steps must be carried out for electrical connection (see Figure 4):

- Loosen the 4 lid screws and remove the lid.
- Lead the connection cables through the respective clamp fitting.
- The electrical connection of the sensor **LA1S** or **LA25S** is made according the colors on the terminals 5 = brown and 6 = white.  
Old sensors of type **LA1**, **LA25** and **LA1-H** are to be connected to terminals 5 = brown and 8 = white. In this case, a bridge must be installed between terminals 6 and 7.



**NOTE!**

**If the older sensor LA1, LA25 or LA1-H is connected the same way as the new sensor LA1S, the function of the electronic is inverted: no liquid = alarm, liquid = OK.**



**NOTE!**

**If a new sensor LA1S is connected the same way as the old sensor LA1, LA25 or LA1-H no line break control is existing.**

- The voltage supply is connected to terminals 1 = L, 2 = N and 3 = PE.
- The alarms are connected to terminals 12, 22 = alarm.
- The center contact is connected to terminals 11, 21.
- The relay contact 14, 24 = OK is energized in the good state.

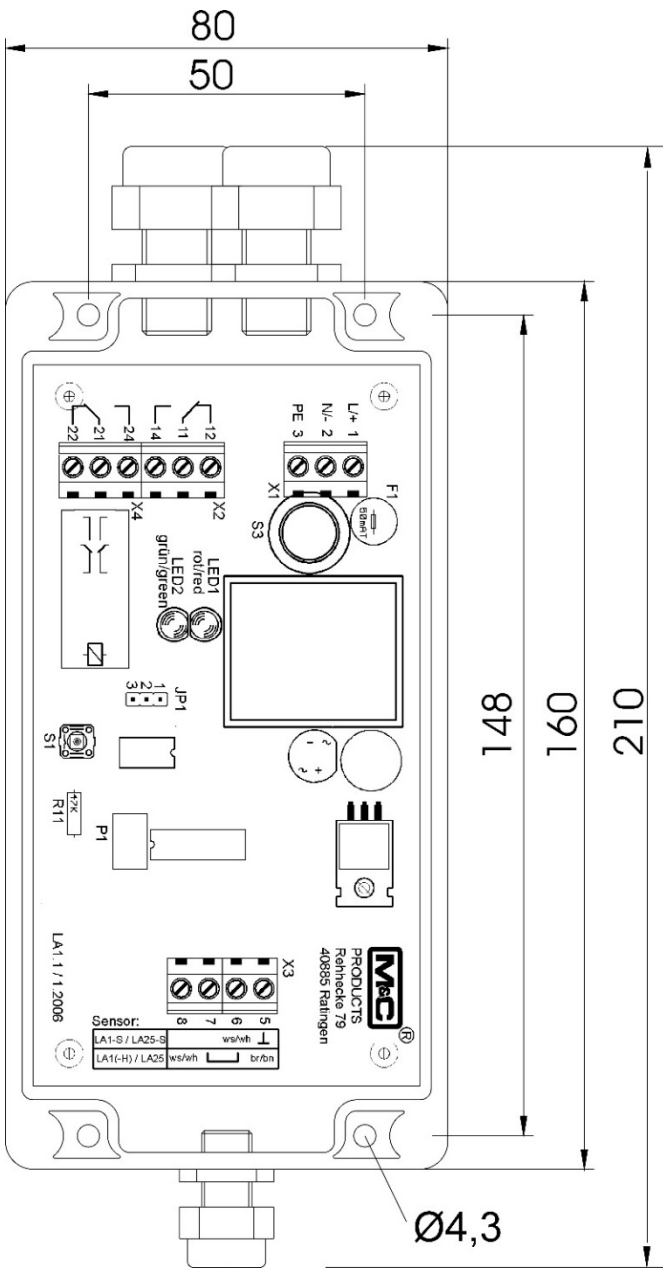


Figure 6 Electrical connection and dimensions LA1.1

### 13.1.2 ELECTRONIC CONTROLLER LA1.4

For the electrical connection, the following steps have to be carried out (see also Figure 5):

- The electrical connection of the sensor **LA1S** or **LA25S** is to be made on terminals 5 = brown and 6 = white.  
Old sensors of type **LA1**, **LA25** and **LA1-H** are to be connected to terminals 5 = brown and 8 = white. In this case, you must install a bridge between terminals 6 and 7.
- The voltage supply is connected to the terminals 1 = L, 2 = N and 4 = PE.
- The alarms are connected to terminals 12, 22 = alarm.
- The center contact is connected to terminals 11, 21.
- The relay contact 14, 24 = OK is energized in the good state.

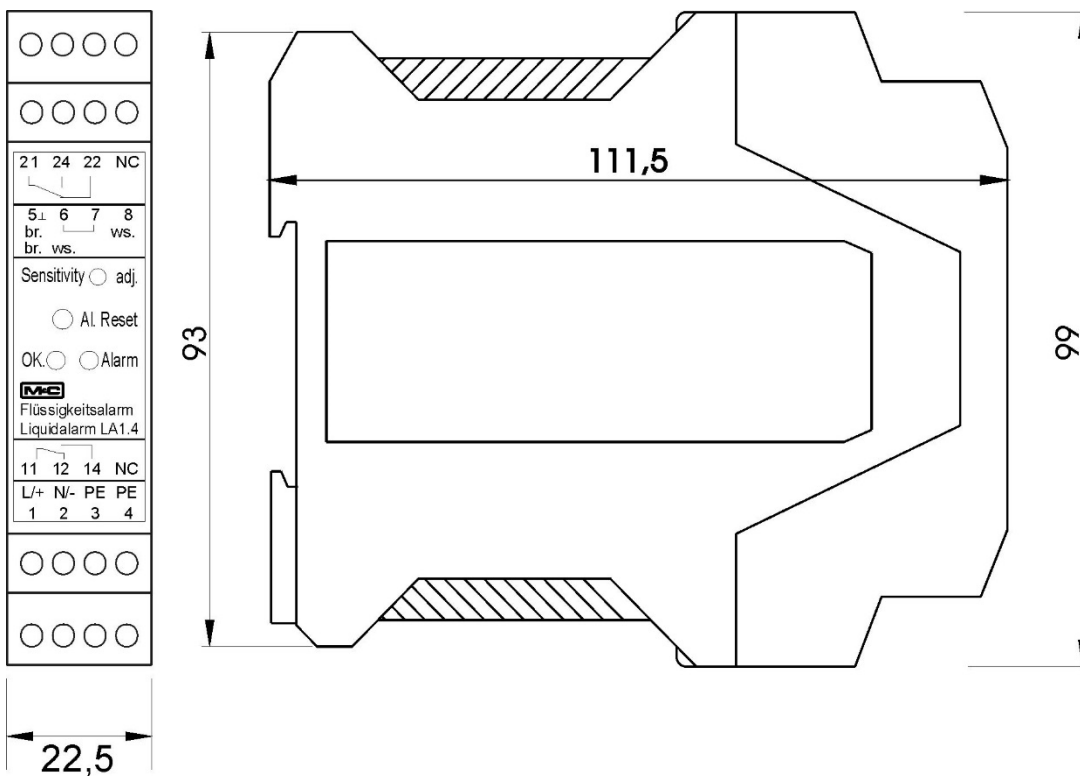


Figure 7 Electrical connection and dimensions LA1.4

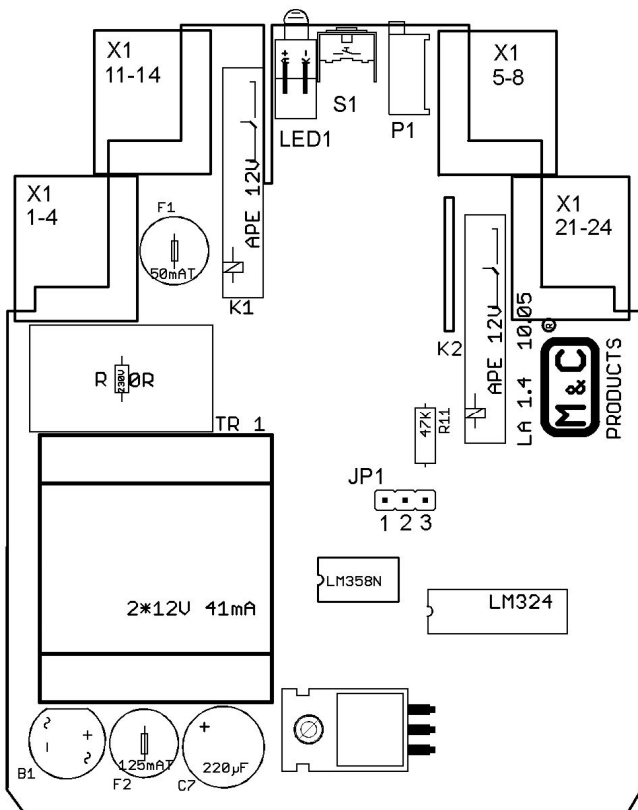


Figure 8 LA1.4 assembly diagram

## 13.2 PNEUMATIC CONNECTIONS

When using the universal filters **F...-...-D** and the flow chamber **LS**, two screw connections with thread G 1/4" a and corresponding hose or tube connection must be used for the connection of sample gas lines. The fittings must be screwed into the universal filter or the flow chamber with PTFE tape. The **LS25** flow chamber already has screw connections for 8 mm tubes.

For mounting the tube or hose lines:

- Remove the union nuts as well as the pressure and cutting rings from the screw connection.
- Slide the union nut, then the pressure ring, then the cutting ring onto the tube or hose.
- Insert the hose or tube into the fitting and tighten the union nut hand-tight.
- Tighten the stainless steel nuts hand-tight, then tighten them with a flat spanner exactly 1 1/4 turn. The stainless steel nuts are then correctly mounted.

## 14 COMMISSIONING

### 14.1 COMMISSIONING WITH A DRY SENSOR

Switch on the mains voltage, the green LED of the electronic controller **LA1.1** or **LA1.4** lights up.

**The liquid alarm control is ready to work!**

In case the read alarm LED lights up, there is liquid on the sensor or there is a line break or you must do an adjustment of the sensitivity (see chapter 14.3).



**NOTE!**

**If the sensor is dry, the green LED indicates that the instrument is in operating condition, the green LED is off when the red LED lights up and signalizes a liquid alarm.**

### 14.2 FUNCTION TEST

The response sensitivity of the **LA1S** and **LA25S** sensors should be checked during initial commissioning and then twice a year as follows:

- Disassemble sensor **LA1S** or **LA25S**.
- Short-circuit the sensor electrodes with a damp finger.
- The electronic controller **LA1.1** or **LA1.4** indicates an alarm, i.e. the red LED lights up.
- After the function test, dry the electrodes with a cloth.
- Mount the sensor back into the mounting assembly.

For the **LA1S** and **LA25S** sensors, a cable break can be simulated by disconnecting a connection wire from the electronic controller. Here, too, the electronic controller **LA1.1** or **LA1.4** must immediately indicate an alarm, i.e. the LED must light up red.



**NOTE!**

**If the alarm does not respond during the functional test, check the sensor, electronic controller and connections.**



**NOTE!**

**The LA1S sensor can only detect condensate with a conductivity of > 50  $\mu$ S/cm.**

**It is therefore advisable to check the function of the sensor with the condensate that may be accumulated. To do this, remove the sensor and carry out the function test described above with the corresponding condensate.**

**WARNING!****Aggressive condensate possible.****Chemical burns due to aggressive media possible!****Wear protective glasses and protective clothes when dismantling, repairing or cleaning the sensor!**

### 14.3 ADJUSTMENT OF SENSITIVITY

A standard adjustment of the electronic controllers **LA1.1** and **LA1.4** for a conductivity of 100  $\mu\text{S}/\text{cm}$  is carried out at the factory. In this case, the length of the sensor connection cable is irrelevant.

If a continuous alarm is present after commissioning and the red LED lights up continuously, although the sensor is dry or if there is no alarm message despite a wet sensor, sensitivity adjustment of the sensor is necessary.

Adjustment range at the electronic controllers: 50  $\mu\text{S}/\text{cm}$  to 1  $\text{mS}/\text{cm}$ .

The following steps must be carried out for the sensitivity adjustment:

- Remove the 4 cover screws of the electronic controller **LA1.1** and then remove the cover.
- Disassemble the sensor and clean and dry the electrodes.
- **In case of permanent alarm with a dry and clean sensor:**
  - Turn the potentiometer “P1” on the **LA1.1** or the “Sensitivity adj.” screw on the **LA1.4** anticlockwise (to lower sensitivity) until the alarm is out.
  - Then short-circuit the sensor electrodes with a damp finger. The electronic controller **LA1...** must then immediately display the alarm, i.e. the red LED lights up.
- **In case the alarm does not respond, when the sensor electrodes are short-circuited with a damp finger:**
  - Turn the potentiometer “P1” (**LA1.1**) or the “Sensitivity adj.” screw (**LA1.4**) clockwise (to higher sensitivity) until the alarm lights up, i.e. the red LED lights up.
- For the **LA1.1** electronic controller, screw on the 4 cover screws again.
- Wipe the electrodes dry with a cloth and reassemble the sensor.

**NOTE!**

**For condensate with low conductivity, do not short-circuit the sensor with a damp finger. Instead, clean the sensor with distilled water first and then moisten the sensor with the appropriate condensate.**



## 14.4 ADJUSTMENT OF ALARM HOLDING FUNCTION

A self-retaining of the alarm is optionally configurable. In the event of an alarm, a manual reset must then be carried out.

The following steps must be carried out to set up the alarm hold function:

- For the **LA1.1** electronic controller, remove the 4 cover screws and then the cover.
- For the rail mounting version **LA1.4**, loosen the locking mechanism at the top and bottom behind the terminals using a screwdriver. Then pull the printed circuit board together with the housing front out of the rear housing part.
- Jumper at JP1 from position 2-3 (no alarm memory function) to position 1-2 (see Figure 4 or Figure 6).
- For the **LA1.1** electronic controller, screw on the cover again.
- For the **LA1.4** electronic controller, push the printed circuit board back into the housing.

To reset the electronic controller **LA1.1** manually, remove the 4 cover screws, remove the cover and then press button “S1” (see Figure 4).

To reset the electronic controller **LA1.4** manually, press the button “Al. Reset” at the housing front.

## 15 CLOSING DOWN

No special measures need to be taken for decommissioning.

## 16 MAINTENANCE AND REPAIR



### NOTE!

**Before any maintenance and repair work, the installation-specific and process-specific safety measures must be observed!**

The LA<sup>®</sup> series liquid control units operate maintenance-free over a long period of time.

It is possible that the electrodes of the **LA1S** or **LA 25S** sensors are soiled with deposits. Use a cloth for cleaning, if necessary with solvent or cleaning agent. The sensor needs to be disassembled for cleaning.

### ATTENTION!

**In the event of a liquid ingress, the entire conditioning system, including the mounting assembly with sensor, must be dried and cleaned.**



**WARNING!**



**Aggressive condensate possible.**

**Chemical burns due to aggressive media possible!**

**Wear safety glasses and respective protective clothes when dismantling, repairing or cleaning the sensor!**

In case of a defect of the electronic, please send the instrument for repair to **M&C TechGroup**.

## 17 SPARE PARTS LIST

The requirement of wear, tear and spare parts depend on specific operating conditions. The quantities we recommend are based on experience and are not binding.

<b>Liquid alarm sensor unit LA...</b>						
<b>(V) Consumables, (E) Recommended spare parts, (T) Spare parts</b>						
			Recommended quantity for operation during a period of xxx years			
			V/E/T	1	2	3
<b>Sensor LA1S/LS:</b>						
90E1000	FPM O-Ring (14)		E	2	4	8
90E1010	PVDF-Ring (16)		E	2	4	8
<b>Sensor LA1S/F...-D:</b>						
90F0025	PTFE Sealing ring GL25-12ø		E	2	4	8
91F0020	Union nut GL25 (read)		E	1	2	3
<b>Sensor LA1S, LA25S:</b>						
03E1001	Liquid sensor <b>LA1S</b> with 4 m connection cable		T	1	1	1
03E1111	Liquid sensor <b>LA25S</b> with 4 m connection cable		T	1	1	1
03E9001	Connection cable <b>LA...</b> , per meter		T	-	-	-

## 18 APPENDIX

Flow diagram **LA1.1**, 115/230 V 50/60 Hz

Flow diagram **LA1.1**, 24 V AC/DC

Flow diagram **LA1.4**, 115/230 V 50/60 Hz

Flow diagram **LA1.4**, 24 V AC/DC



For additional product documentation please look into our home page:  
[www.mc-techgroup.com](http://www.mc-techgroup.com)

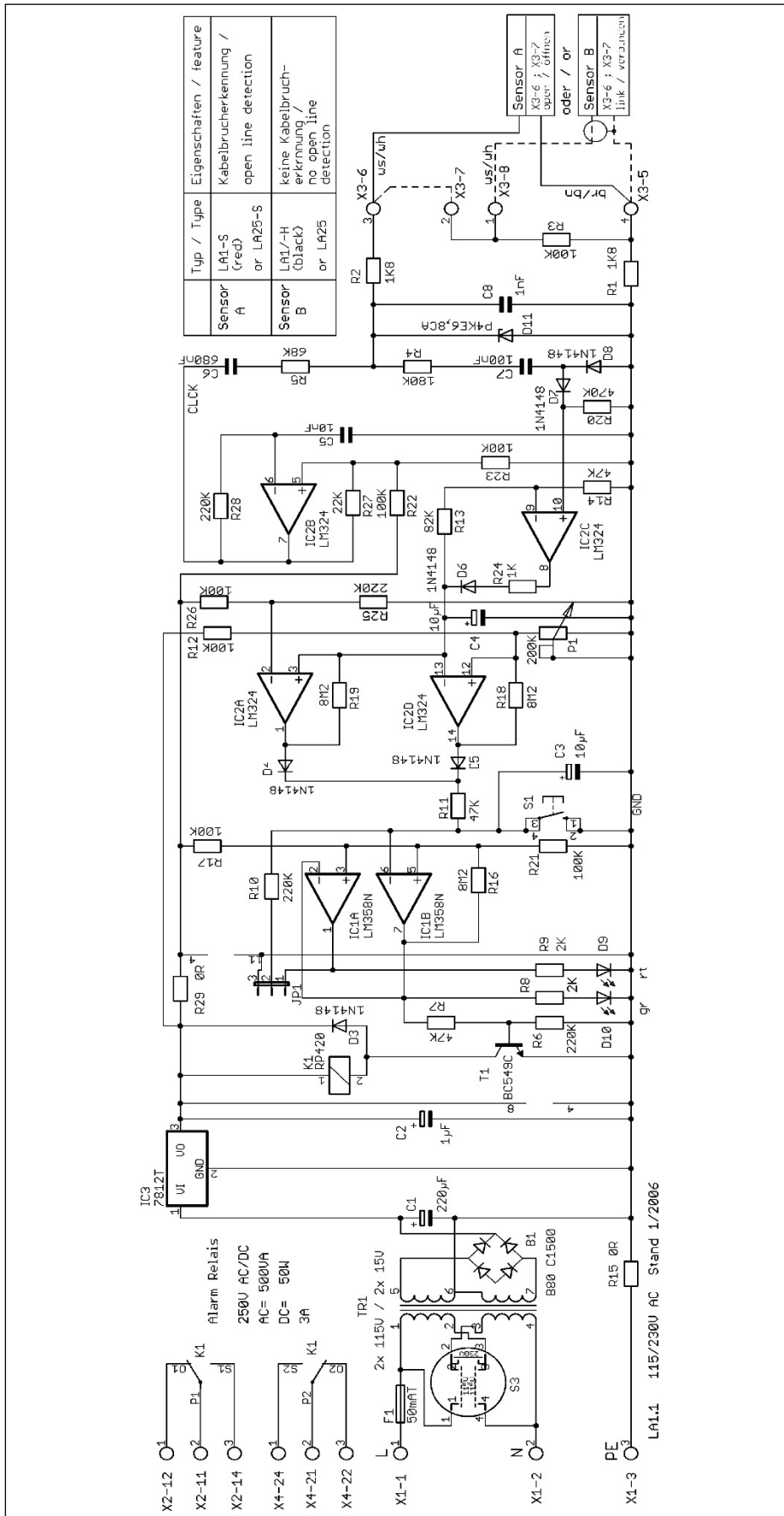


Figure 9 Flow diagram LA1.1, 115/230 V 50/60 Hz

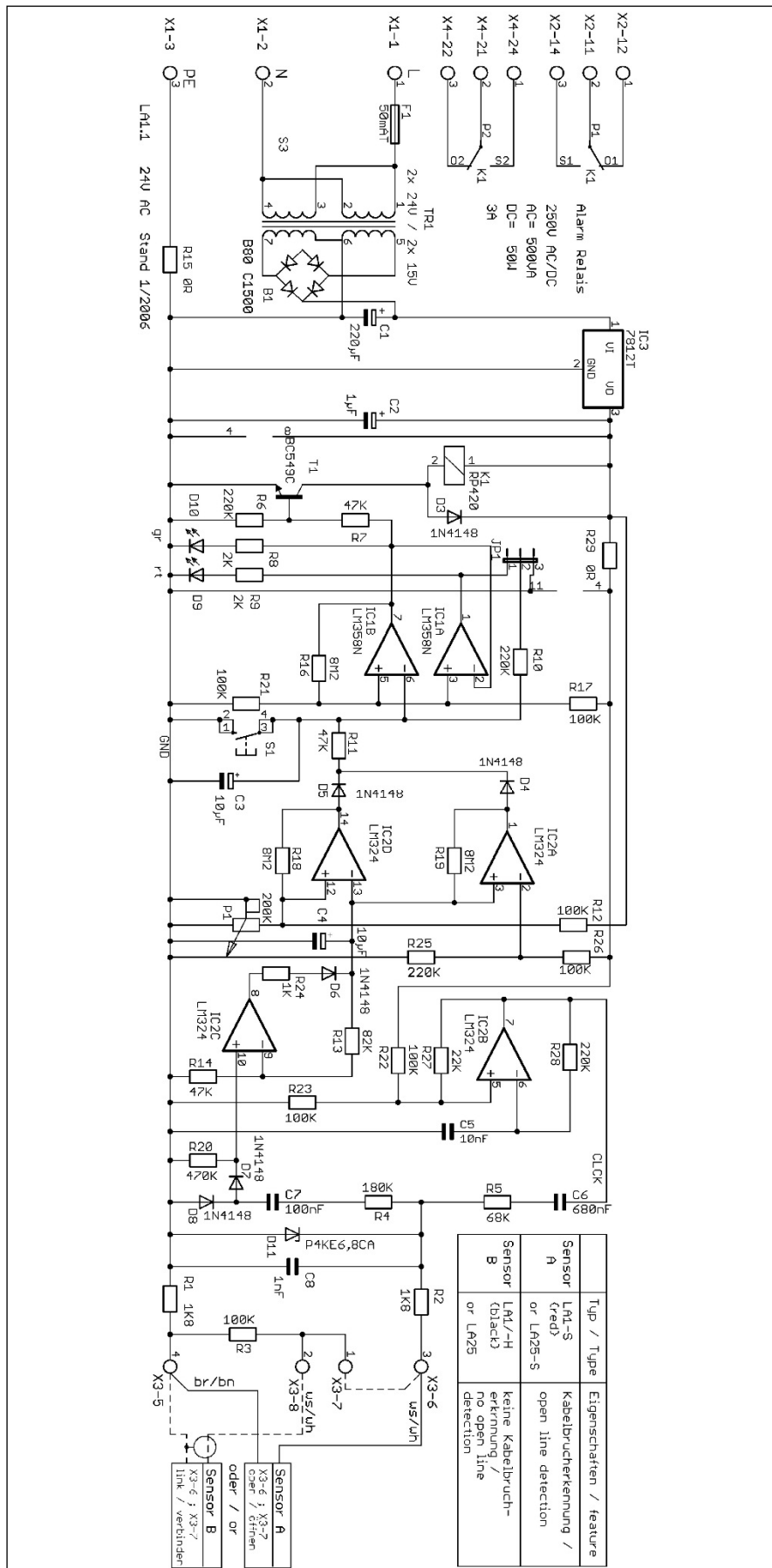


Figure 10 Flow diagram LA1.1, 24V AC/DC

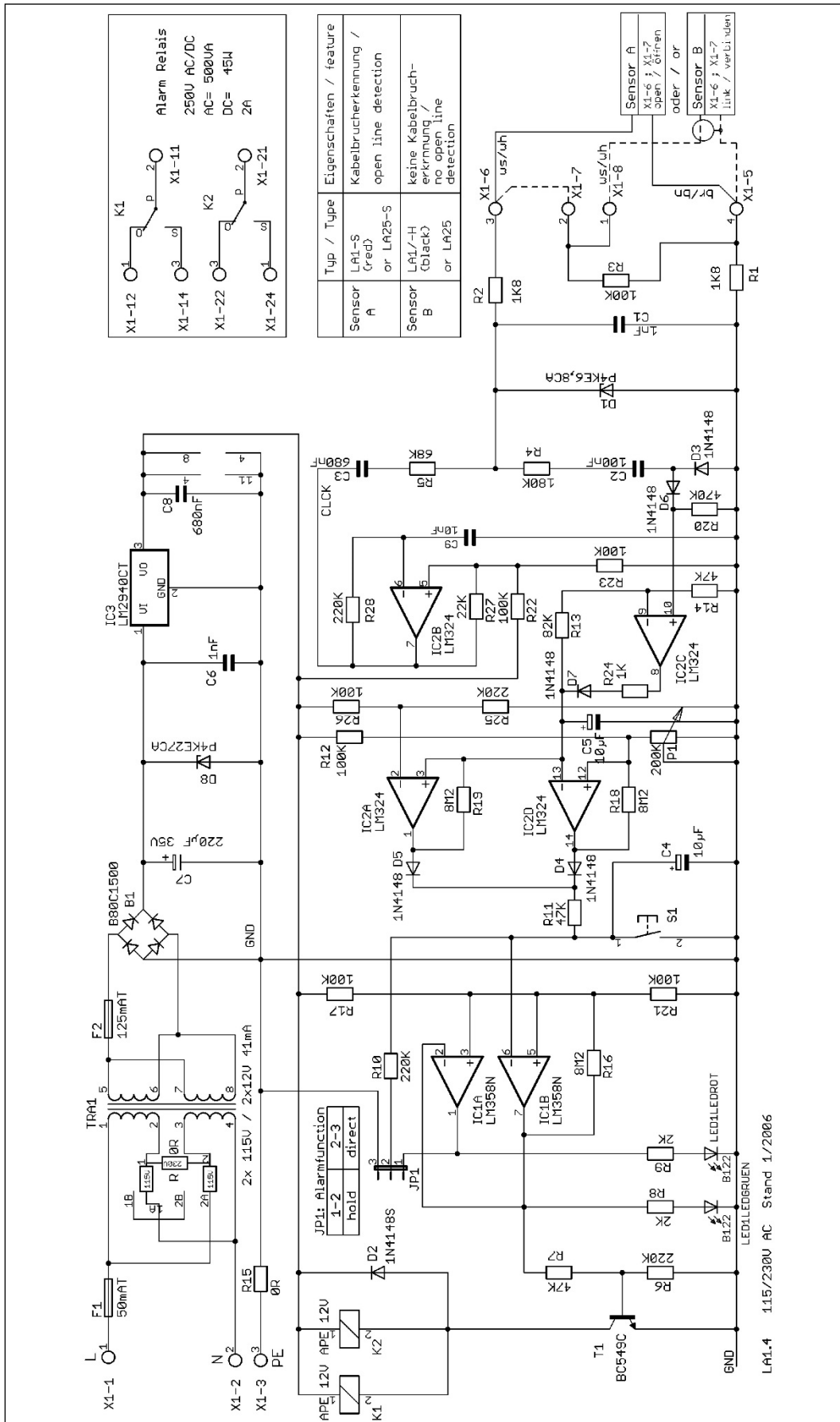


Figure 11 Flow diagram LA1.4, 115/230V 50/60Hz

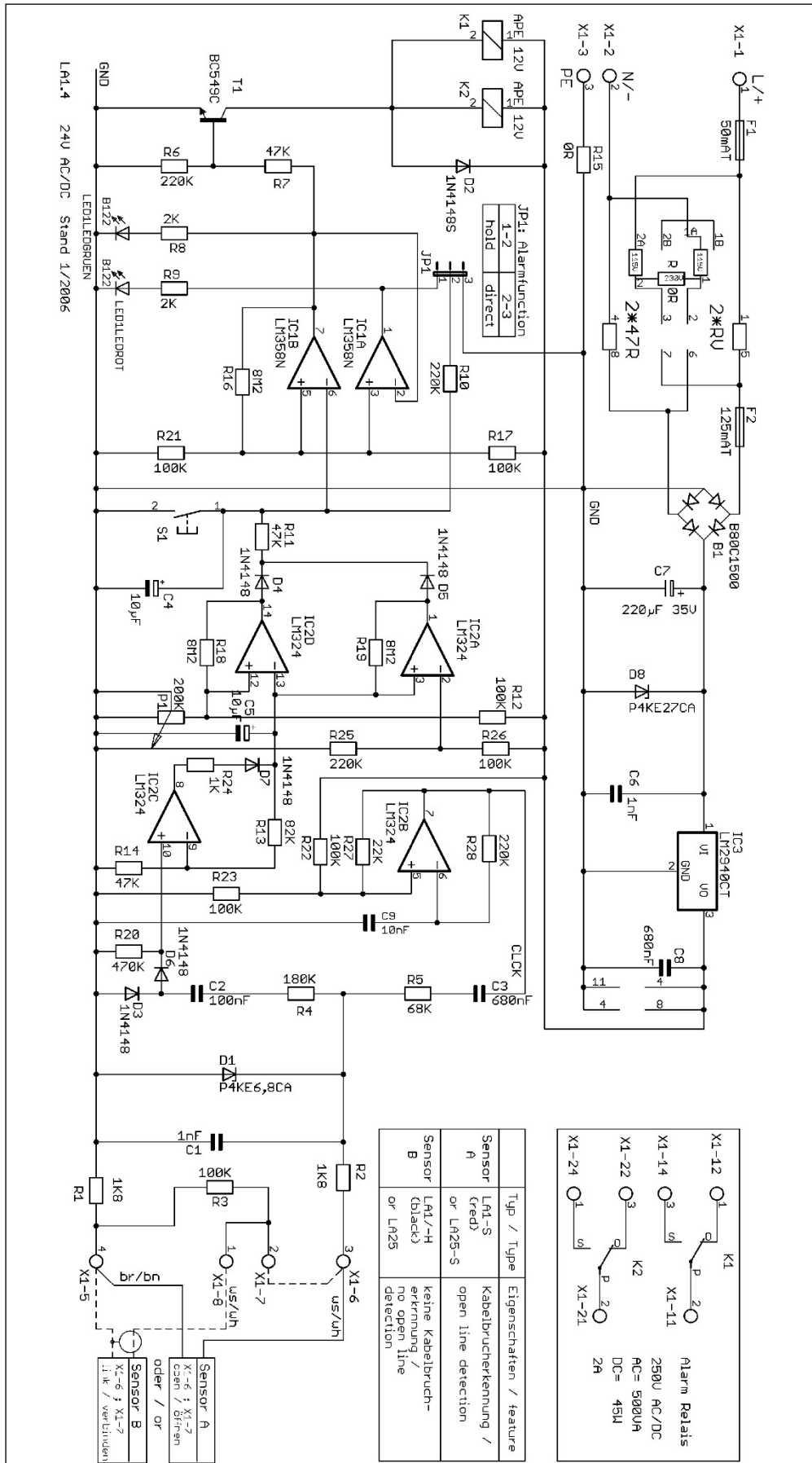


Figure 12 Flow diagram LA1.4, 24V AC/DC