

**LAUDA Universal Relay Units**  
**R 2, R 3**

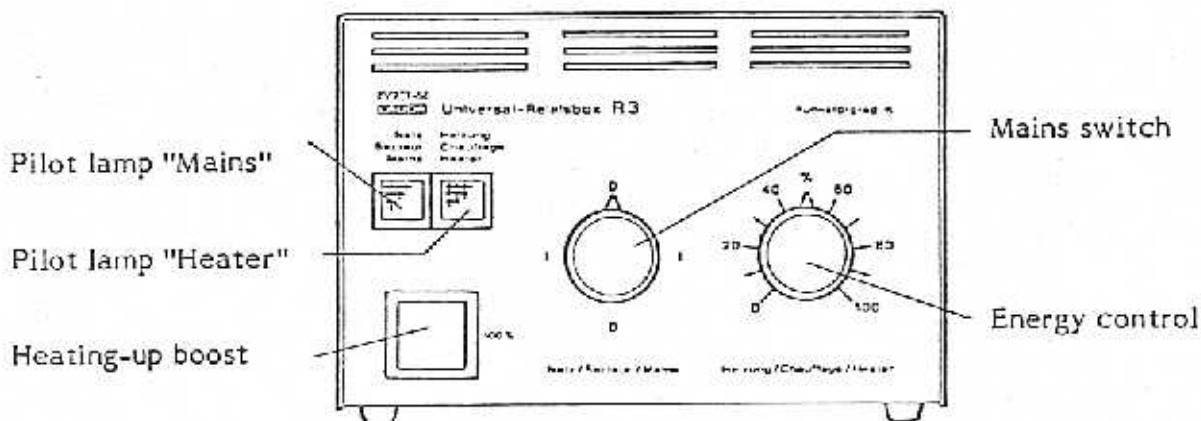
**Operating Instructions**

valid from series  
No. 950  
2/83

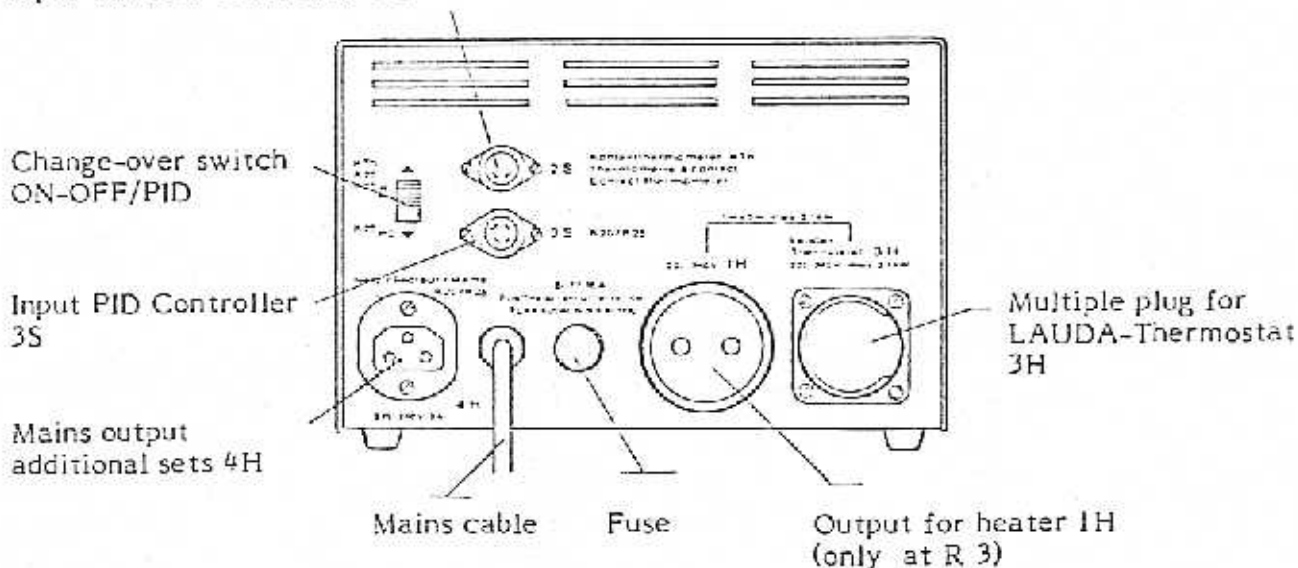
**1. Short description**

**R 2 :** Power control unit with triac switch for LAUDA Ultra-Thermostats of modular construction with a heater power of 2 kW max.

**R 3 :** Power control unit with triac switch for LAUDA Ultra-Thermostats of modular construction with a heater power of 3 kW max. and for general laboratory use with additional power output through socket with earth contact.



**Input ON-OFF controller 2 S**







### 3. Principal construction

Relay units R 2 and R 3 serve for :

1. mains connection of the Ultra-Thermostats
2. the contactless controlling of the heater flow
3. the amplification of the contact thermometer or controller signal
4. the variation of heater power (0...100%)

The heater power is controlled by a zero voltage switch so that only complete half waves are effective. This is necessary to obtain the interference suppression grade K (= small). The variation of the heater power by the energy control is realized by a subdivision of the complete heating period in segments of approx. 1 second (100 half waves = 100%). According to the adjustment of the energy control a part of the 100 half waves is effective (e.g. adjustment 4 = 40 half waves = 40%). This can be observed at the pilot lamp "heater": during the heating period the lamp blinks with a frequency of approx. 1 Hz. The duration of the pulses is proportional to the adjusted heater power.

The units can operate as power control units together with an ON-OFF controller (contact thermometer, R 20) or with a continuous controller (R 25). A slide switch at the rear of the unit serves for changing over. On position ON/OFF (slide switch up) the energy control (0...100%) operates. On position PID (slide switch down) the energy control depends on the output signal of the continuous controller connected in series.

In case of ON-OFF operation the push-button "100%" effects that the unit is changed over to the complete heater power in order to accelerate the heating process. As soon as the set point has been obtained the heater power is automatically reduced to the value set at the energy control.

By means of the installed socket with earth contact the relay unit R 3 can be used for many tempering problems, independent of the thermostat.

#### 4. Starting

Connect the relay unit only to an earthed wall socket. Compare the voltage and the frequency mentioned on the rating label with your net work. Connect ON-OFF controller (contact thermometer, R 20) to socket 2S or continuous controller (R 25) to socket 3S. Connect heater and pump to socket 3H or heater to 1H.

Put in the power supply plug, mains switch on position I. If required, use the heating-up boost.

#### 5. Maintenance

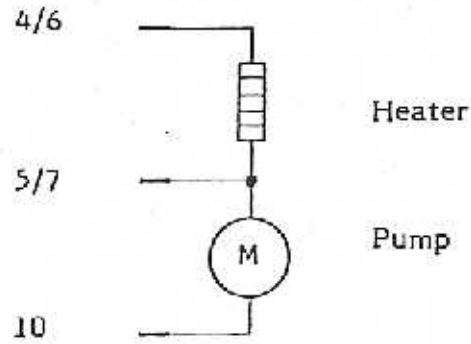
As the relay units operate fully electronically there are no parts subject to wear.

Allocation scheme

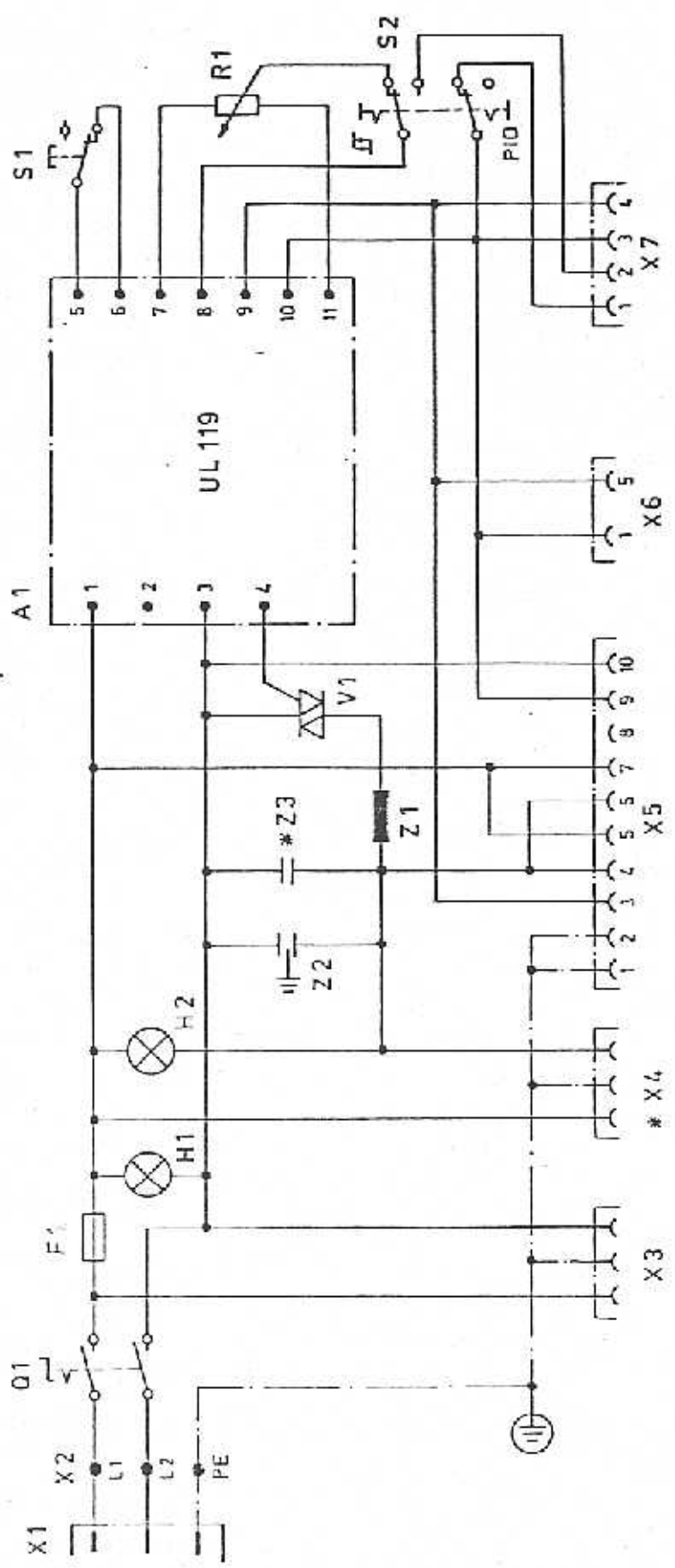
- 2 S: ON-OFF input  
Contact 1 (+); 5 (-)
- 3 S: Continuous input: contact 2 (+); 4 (-)
- 1 H: Socket with earthed contact for heater
- 3 H: Multiple plug for LAUDA Thermostat

Contact 1/2

Protective wire



- 4 H: Mains voltage for additional sets (controller)



- A 1 Leiterplatte / Printed circuit board / Circuit imprimé UL 119
- F 1 Sicherung / Fuse / Fusible FF 12,5A - R 2 (FF16 A - R 3)
- H 1 Kontrolllampe Netz / Pilot lamp Mains / Lampe témoin Secteur
- H 2 Kontrolllampe Heizung / Pilot lamp Heater / Lampe témoin Chauffage
- Q 1 Netzschalter / Main switch / Interrupteur général
- R 1 Energieerregler / Energy control / Régulateur d'énergie 10 kΩ
- S 1 Aufheitzaste / Heating-up boost / Touche Chauffage
- S 2 Umschalter Zweipunkt - PID-Regler / Change-over switch ON-OFF - PID Controller / Commutateur régulateur à 2 paliers PID
- V 1 Triac / Triac / Triac
- X 1 Netzgang / Input Mains / Entrée Secteur
- X 2 Klemme / Terminal / Borne
- X 3 Netzausgang Zusatzgeräte / Output mains for additional sets / Sortie secteur appareils complémentaires
- X 4 Ausgang für Heizkörper / Output for heater / Sortie pour corps de chauffe
- X 5 Steckverbindung für Lauda-Thermostat / Plug connection for Lauda Thermostat / Prise de courant pour thermostat Lauda
- X 6 Eingang Zweipunktregler / Input ON-OFF action controller / Entrée régulateur à 2 paliers
- X 7 Eingang PID-Regler / Input PID-controller / Entrée régulateur PID
- Z 1 Entstördrossel / Suppressor choke / Self antiparasite
- Z 2 Entstörkondensator / Anti-interference capacitor / Condensateur antiparasite 0,2µF + 2x2500pF
- Z 3 Entstörkondensator / Anti-interference capacitor / Condensateur antiparasite 1µF
- nur bei R 3 / only for R 3 / seulement pour R 3

Zustand / Anmerkung	Datum / Date	Von / By	Größe / Size	Ers. / Rev.	MESSGERÄTE-WERK LAUDA Dr. R Wobser KG	Schaltplan Circuit diagram Schéma de connexions	R 2, R 3	Blatt / Page	B1
	5.10.91	FF					220V/50Hz	ab / from / à partir	Blatt / Page
								Serie 950	B1