

**LEISTER**®

**ALLIED**  
POWER TOOLS

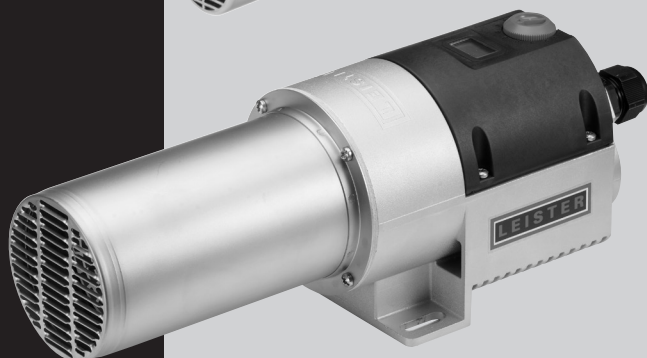
# LHS Air Heaters

LHS 15

LHS 21

LHS 41

LHS 61





## Operating Instructions



Please read operating instructions carefully before use and keep for future reference.

### Air heaters

**LHS 15; LHS 21 S; LHS 21 L; LHS 41 S; LHS 41 L; LHS 61 S; LHS 61 L  
CLASSIC, PREMIUM or SYSTEM**

#### Application

The Leister LHS air heaters are suitable for building into machines, installations or appliances and are designed for continuous operation.

- **Drying and heating processes** of various types
- **Shrinking and welding** packaging films and moulded parts
- **Heating** conveyor ovens or heat tunnels
- **Activating and loosening** solvent free adhesives and melt adhesives
- **Sterilizing** packaging materials such as bottles, corks and containers
- **Separating and fusing** synthetic fibres and fabrics
- **Soldering processes** on thin metal parts
- **Speeding up** mixing processes and **dissolving** foams which can arise during mixing and filling operations
- **Welding** thermoplastic materials
- Removing plastic mould flash
- Putting a **shine** on plastic surfaces



#### Warning



Danger of death when opening the device, as live parts and connections are exposed. The device must be fully disconnected from the mains before opening it.



Danger of fire and explosion if air heaters are installed and used incorrectly, especially in the vicinity of flammable materials and explosive gases.



Danger – can cause burns! Do not touch the heating element tube and nozzle while they are hot. Allow the device to cool. Do not direct hot-air jet towards people or animals.



#### Caution



The nominal voltage indicated on the device must correspond to the mains voltage. IEC/EN 61000-3-11;  $Z_{\max} = 0.065\Omega + j 0.040\Omega$ . If necessary, consult electricity supply utility.



Devices of protection class I must be earthed with a protective earth conductor.



The device must not be left unattended when in use.  
Heat can reach combustible materials which are out of sight. The device may only be used by trained personnel or under their supervision. Children may not use the device under any circumstances.



Keep away from wet and damp areas.

## Disposal



Electrical equipment, accessories and packaging should be recycled in an environmentally friendly way.  
**For EU countries only:** Do not dispose of electrical equipment with household refuse!

# Technical data

Type LHS		15	21 S	21 L	41 S	41 L	61 S	61 L	61 S
Voltage	V~	120–230	120–230	230	120–230	230–400	3 × 230–3 × 480	3 × 230–3 × 480	400–480
Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Power consumption kW		0.55–0.77	1.0–2.0	3.3	2.0–3.6	2.0–5.5	4.0–9.0	5.0–16.0	8.0–8.5
Min. air volume	l/min.	60	120	240	240	240–500	360	500	800
Max. air pressure	Pa	1 × 10 <sup>5</sup>	1 × 10 <sup>5</sup>	1 × 10 <sup>5</sup>	1 × 10 <sup>5</sup>	1 × 10 <sup>5</sup>	1 × 10 <sup>5</sup>	1 × 10 <sup>5</sup>	1 × 10 <sup>5</sup>
Max. temperature	°C	650	650	650	650	650	650	650	650
Max. ambient temperature	°C	65	65	65	65	65	65	65	65
Min. inlet air temperature	°C	0	0	0	0	0	0	0	0
Max. inlet air temperature	°C	65	65	65	65	65	65	65	65
Emission level	L <sub>pA</sub> (dB)	<70	<70	<70	<70	<70	<70	<70	<70
Weight	kg	0.4	0.5	0.6	0.8	0.9	3.2	3.7	3.2
Conformity mark		CE	CE	CE	CE	CE	CE	CE	CE
Safety standard		Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ
Protection class I							Ⓢ	Ⓢ	Ⓢ
Protection class II		Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ			

Technical data and specifications are subject to change without prior notice

	CLASSIC	PREMIUM	SYSTEM
Detection of heating element and device overheating with alarm output	•		
Heat output steplessly adjustable with potentiometer		•	•
Integrated power electronics		•	•
Protection of heating element and device overheating with alarm output		•	•
Integrated temperature controller			•
Interface for temperature or power set point			•
Integrated temperature probe			•
Display showing setpoint and actual values (°C or °F)			•

## Technical data for interfaces

<b>CLASSIC, PREMIUM, SYSTEM</b>  <b>Relay output</b>	Max. voltages	AC 250 V, DC 30 V
	Max. currents	AC 3 A, DC 3 A
	Max. contact resistance	100 m Ohm at DC 6 V / 1 A
	Type of contact	SPST - NO
	Insulation IEC/EN 60065	AC 2000 V (50 - 60 Hz) 1 min

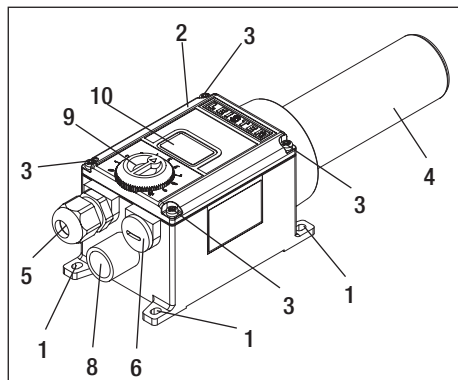
<b>SYSTEM</b>  <b>Signal inputs</b> with reverse polarity protection and zero offset          <b>Supply</b> with reverse polarity protection without separation of the signal inputs	Insulation IEC/EN 60747-5-2	AC 1414 V <sub>Peak</sub>
	Voltage input $U_c$ in relation to GND iso	DC 0 - 10 V (Ripple < 0.05 V at 5 °C resolution) (Ripple < 0.1 V at 1 % resolution)
	Max. input voltage	DC 12 V
	Nominal input resistance	280 kOhm
	Current input $I_c$ (2 - conductor technology)	DC 4...20 mA (Ripple < 0.1 mA at 5 °C resolution) (Ripple < 0.15 mA at 1 % resolution)
	Max. input current	DC 22 mA
	Nominal input resistance	160 Ohm
	Operating voltage $U_s$ in relation to GND iso	DC 15...24 V
	Max. operating voltage	DC 25 V
	Power consumption	12 mA at DC 24 V

## Configuration of internal dip switch (only SYSTEM)

<b>Open Loop or Closed Loop</b>	Power setting function	Setting level OFF...100 %; 1% steps
	Temperature control function	Setpoint value specification 50 °C...650 °C, 5 °C steps
<b>Setpoint setting Potentiometer or interface</b>	Internal potentiometer	Setpoint value OFF...100 % or 50 °C ...650 °C
	Interface	Setpoint value OFF...100 % or 50 °C ...650 °C

## Device description

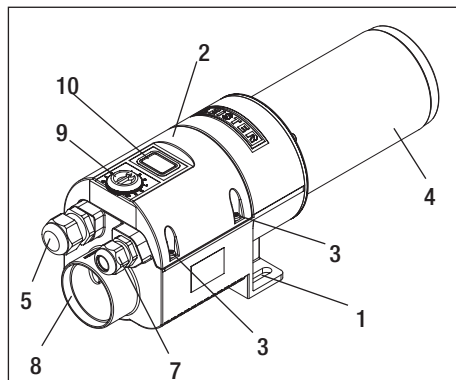
LHS 15, LHS 21 S, LHS 21 L, LHS 41 S, LHS 41 L:  
CLASSIC, PREMIUM, SYSTEM



CLASSIC, PREMIUM, SYSTEM

- 1 Mounting straps
- 2 Connection housing cover
- 3 Screws for connection housing
- 4 Heating element tube
- 5 Cable gland for mains connection (mounted ex works)
- 6 Locking screw (enclosed in the connection housing)
- 7 Cable gland for interface
- 8 Air inlet

LHS 61L, LHS 61 S:  
CLASSIC, PREMIUM, SYSTEM




PREMIUM, SYSTEM

- 9 Potentiometer for temperature setting

SYSTEM

- 10 Display for showing the setpoint and actual values (°C or °F)

## Preparation

- Remove LHS air heater from the packaging.
- Remove the **connection housing cover (2)** by loosening the **screws (3)**.
- Remove warning slip,  read carefully and keep at hand for consultation.
- Remove **locking screw (6)**.
- If no interface is connected, the **cable gland (7)** must be removed and the **locking screw (6)** mounted.

## Installation

- The installation must ensure that
  - only cold air is supplied.
  - no excess (heat) residue builds up.
  - the device is not subject to jets of hot air from another device.
- Protect the device from mechanical vibrations and shocks.
- Fasten the device on the **mounting straps (1)**.
- For installation dimensions, see pages 3, 4, 5, 6 (Size)

## Air supply

- In order to protect the device and heating element, the specified minimum air volume must never be fallen below and the maximum temperature (hottest point measured 3 mm in front of the heating element tube) must never be exceeded (see technical data). If the minimum air volume is fallen below, the heat output must be interrupted immediately.
- Observe direction of air flow.
- Leister blowers must be used as an air supply (observe direction of rotation and compression preheating).
- When operating with compressed air, the maximum air pressure must not be exceeded (see technical data).
- If the air contains dust, use a Leister stainless steel filter on the blower air intake. In the case of particularly hazardous dusts (e.g. metal, electrically conductive or damp dusts), special filters must be used to avoid short-circuits in the device.



**Attention: always operate device with air supply !**

## Connection

- The LHS air heater must be connected by qualified personnel.
- A suitable device for full disconnection from the mains must be provided in the mains connection!
- It must be ensured that the connection lines do not come into contact with the heating element tube and are not exposed to the hot air jet.
- The device must be connected in accordance with the connection diagram and the terminal arrangement on pages 7, 8, 9, 10, 11, 12 (Wiring Diagram) and page 13 (Interface) of the operating instructions:
  - Carry out wiring in the **connection housing (2)**.
- **ATTENTION:** check dip switch settings of the LHS SYSTEM air heater (see chapter Operation).
- Mount **connection housing cover (2)** with the **screws (3)**.
- Connect LHS air heater to the electrical mains.
- Mount corresponding nozzle, if required.
- It must be ensured that the hot air can flow out freely, as otherwise the device can be damaged by the excess heat building up (risk of fire!).
- Attention: comply with minimum air volume as per technical data.
- Switch on mains.
- Allow device to cool down after heating mode.

## Operation

### LHS CLASSIC

- For operation with permanent maximum heat output (must be adapted to the air volume supply)
- For operation with external power control (for example with semiconductor relay, SSR).
- **Note:**
  - Different wiring requirements for working with SSR or without. See wiring diagramm page 7, 9 and page 10.
  - The device must be disconnected from the mains via a suitable external circuit if the overheating detection is activated.

### LHS PREMIUM

- Infinitely adjustable heat output via red potentiometer on the device.
- The device is fitted with an integrated heating element and device protection).  
(see chapter Function of heating element - device protection).

# Operation

## LHS SYSTEM









- Optionally different operating modes which are set with an integrated dip switch
  - Steplessly adjustable heat output via red potentiometer on the device 

1	2
3	4
5	6
7	8
  - Steplessly adjustable heat output via interface 

3	4
5	6
7	8
  - Steplessly adjustable temperature via red potentiometer on the device 

5	6
7	8
  - Steplessly adjustable temperature via interface 

7	8
---	---
  - Integrated temperature display in °C or °F
- The device is fitted with an integral heating element and device protection (see chapter Function of heating element - device protection).
- Settings for selecting the various operating modes:

Switch 1: °C or °F Switch 2: Potentiometer or interface Switch 3: Open Loop or Closed Loop	Open Loop (power set point)	Closed Loop (temperature set point)	Display
Potentiometer mode	<b>1</b> ON  1 2 3	<b>5</b> ON  1 2 3	°C
	<b>2</b> ON  1 2 3	<b>6</b> ON  1 2 3	°F
Interface mode	<b>3</b> ON  1 2 3	<b>7</b> ON  1 2 3	°C
	<b>4</b> ON  1 2 3	<b>8</b> ON  1 2 3	°F

### Open Loop mode

Display shows power setpoint in % and actual temperature



Actual temp  
Setpoint %

### Closed Loop mode

Display shows setpoint temperature and actual temperature



Actual temp  
Setpoint

## Function of heating element – device protection

- If the heating element or device overheats (too hot inlet air or excess heat residue), the power supply to the heating element will be interrupted and the working contact of the alarm relay opened. After the heating element or device protection is activated, it will be necessary to reset the air heater for reasons of safety!
- IMPORTANT:** measures to take when the heating element or device protection is activated
  - Disconnect device from the mains for 10 seconds
  - Check air supply
  - Check air volume
  - Check air flow
  - Reconnect device to the mains



## Error

Display	Description	Fault correction
Err 01	Device temperature too high	Check environment temperature Check air intake temperature
Err 02	Heating element temperature too high	Check air supply volume
Err 03	Temperature probe	Check probe connection
Err 04 Err 05 Err 06 Err 07	Contact your Leister Service Centres	

## Training

Leister Technologies AG and its authorised service points provide free courses in the area of applications.

## 3D drawings

3D drawings of the LHS air heaters line are available from your service point or at [www.leister.com](http://www.leister.com)

## Accessories

- Only Leister accessories may be used.
- Leister offers a wide range of accessories, e.g.
  - Temperature controls
  - Nozzles
  - Blowers
- Accessories at [www.leister.com](http://www.leister.com)

## Service and repairs

- Repairs should only be carried out by authorised **Leister Service Centres**. They guarantee a correct and reliable repair service within reasonable period, using original spare parts in accordance with the circuit diagrams and spare parts lists.

## Warranty

- For this tool, the guarantee or warranty rights granted by the relevant distributor/seller shall apply. In case of guarantee or warranty claims any manufacturing or workmanship defects will either be repaired or replaced by the distributor at its discretion. Warranty or guarantee rights have to be verified by an invoice or a delivery document. Heating elements shall be excluded from warranty or guarantee.
- Additional guarantee or warranty claims shall be excluded, subject to mandatory provisions of law.
- Warranty or guarantee shall not apply to defects caused by normal wear and tear, overload or improper handling.
- Warranty or guarantee claims will be rejected for tools that have been altered or changed by the purchaser.



© Copyright by Leister

Your authorised Service Centre is:



**Allied Power Tools**

12/ 76 Rushdale St, Knoxfield VIC 3180 Australia

T: + 61 3 9764 2911

E: [sales@alliedpowertools.com.au](mailto:sales@alliedpowertools.com.au)

W: [www.alliedpowertools.com.au](http://www.alliedpowertools.com.au)