

SAFETY



Danger to life when opening the air heater, as live components and connections are exposed. The device must be **fully** disconnected from the mains before opening. Electric work shall only be operated by qualified personal (according to TRBS 1203).



Risk of fire and explosion if air heaters are installed and used incorrectly, particularly near flammable materials and explosive gases. **Not suitable for hazardous locations!** The minimal air flow must not be undercut.



Risk of burns! Do not touch heating element pipes and nozzles used when hot. Let the device cool down. Do not point the hot air jet at persons or animals.



The mains voltage specified on the device's type plate must correspond to the mains voltage. Air heaters with a fix connection must be connected to a separator (e.g. mains switch).

Special connecting conditions $Z_{\max} = 0.039\Omega + j 0.025\Omega$ for short time rating (30 min.) according to IEC/EN 61000-3-11; $Z_{\max} = 0.026\Omega + j 0.016\Omega$ for continuous operation Consult your local electricity board if necessary.



Device in protection class I should be earthed using a protective conductor



Device in protection class II



The device must be supervised when in operation. The heat can reach flammable materials that are out of view.



Protect the device from damp and wet!

WARRANTY AND LIABILITY

Warranty and liability apply from the date of purchase (documented by the invoice/delivery note) according to the currently valid general terms of business of [BAK AG](#).

[BAK](#) refuses any warranty for devices that are not in their original condition.

No liability can be assumed by [BAK](#) for incorrect installation and/or use as well as natural wear and tear of the device (e.g. heating elements).

[BAK](#) – devices may never be converted and/or modified.

[BAK](#) reserves the right to deny any responsibility if this is ignored.

Note:

This operating manual must be available to the installing and operating personnel at all times. Please read this operating manual carefully before installing and commissioning the device.

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CONVENTIONAL APPLICATION

Air heaters are modular units which create process heat in industrial environments.

Their installation and the working process shall only occur after observance of every safety arrangement for the provided place of installation and application. The accordance with the effective edition of the equipment and operations safety (GPSG) and the machine standards (MRL) must be guaranteed.

The air production, which is necessary for the application, shall be produced by an appropriate [BAK](#) blower.

INSTALLATION

1.0. INSTALLATION / Connection (only be conducted by a qualified person)
(thermal security class 1 according to EN 60519-1, paragraph 13.8)

1.1. When installing the tool, ensure that:

- the electric connection directs above a separator, which corresponds to the capacity (full disconnection with 3mm contact clearance, near to the device and easily gettable);
- the electrical protection is aligned to the nominal current.
- no (warm air) back pressure develops;
- the device is not positioned within the hot air jet of a different device.

1.2. Protect the device from vibration and shock! Use absorbability at mechanical motion.

2.0. AIR SUPPLY

2.1. To protect the device and heating element the minimum air volume must flow. Never exceed the max. temperature. (Measured at the hottest point 3mm from the air outlet)
The heater must be switched off, if the inlet air falls below the minimum. This function should be included into the safety circuit of the equipment.

2.2. The max. temperature of the inlet air for the air heater may not exceed 50°C / 122 °F.

2.3. Pay attention at the direction of air flow!

Air heater Type XS and PN10:	Air heater Type S, M, L and XL:
2.4. When using compressed air, a pressure reduction valve and an oil and water separation unit must be in the supply.	2.4. Use BAK blowers for air supply (pay attention at the direction of rotation and the electrical connection).
2.5. The air flow can be adjusted by means of an air flow regulator.	2.5. For use in a dusty environment clean the filter of the blows regularly. When a critical dust problem exists (e.g. metal, electrically charged or damp dust) special filters must be used to avoid short circuiting in the tool.

3.0. OPERATION

3.1. Make sure that the hot air can flow freely. Warmth backflow can occur damage on the device (risk of fire!).

3.2. CAUTION: Pay attention to the minimum air volumes according to the technical data.

3.3. Allow the blower to cool the unit after using.

CAUTION: The device may NEVER be operated without air supply!!!

STANDARD DESIGN

The air heaters Type S, M, L, XL und PN10 are equipped with control electronics and temperature adjustment with a built-in potentiometer as well as integrated heating element and device protection.

SPECIAL DESIGNS

Series PN10, S, M, L and XL:

- External Control by PWM signal
- External potentiometer
- Internal PID control with internal TC

Series S, M, L and XL:

- Internal TC

Series S and M:

- Up to a maximum for recirculation 75° C inlet air temperature (only devices WITHOUT electronics).

Series Land XL:

- Up to a maximum for recirculation 150 C inlet air temperature (only devices WITHOUT electronics).

Special voltages and performances.

Other special designs on request.

INFORMATION AND ADVICE

The **BAK** Group and their authorized Service Centres offer free advice and assistance for application technology.

Our experts will be pleased to help you with your problems.

ACCESSORIES

Get the best results by using **BAK** - accessories and spare parts.

Further information can be found in our brochures.

SERVICE AND REPAIRS

Repairs should only be carried out by authorized **BAK** Service Centres. These guarantee a professional and reliable 24-hour repair service with original spare parts.

A heating element can be changed by qualified personnel.

DISPATCH

Please return the device for repairs to your nearest **BAK** Service Centre packaged suitable for transport.

!!! This must be sent carriage-free !!!

In the case of doubt a consultation with **BAK is necessary.**

DISPOSAL





Power tools, accessories and packaging should be sorted for environmentally friendly recycling.



Take a power tool never in the trash!

Only EU countries: The European Directive 2002/96/EC on waste electrical and electronic equipment and its incorporation into national law must not collected separately serviceable power tools and environmentally friendly recycling are supplied.



TECHNICAL DATA
Type XS:

Technical data	Air heater	XS20-450TC	XS20-800TC	XS20-1000TC	XS20-1500TC	XS20-2000TC
Voltage	VAC	230	120 230	120 230	120 230	120 230
Frequency	Hz	50/60				
Power	kW	0,45	0,8	1,0	1,5	2,0
Electricity	A	1,7	6,7 3,5	8,4 4,4	12,5 6,5	16,7 8,8
Max. temperature	°C / °F	650 / 1202				
Min. air volume	l/min	30	60	75	100	150
Max. pressure	bar	6,0				
Thermocouple	type	,K'				
Weight	kg	0,4			0,5	
Air inlets Ø	mm	Push-In plug nipple 6mm				
Blow off opening Ø	mm	M16 inside thread, SW 17				
Dimensions (length x Ø)	mm	289 x 30			346 x 30	
Conformity symbol						
Protection class I						



Type PN10:

Technical data	Air heater	PN10 - S	PN10 - M	PN10 - XL
Voltage	VAC	230	230	400 (2 Ph) 400 - 440
Frequency	Hz	50/60		
Power	kW	3,3	3,7	4,5 11,8 – 14,3
Electricity	A	14,4	16,1	11,2 17,1 – 18,7
Max. temperature	°C / °F	600 / 1112		
Min. air volume	l/min	420	360	490 950
Max. pressure	bar	10,0		
Weight Ø	kg	4,7	16,5 24,0	
Air inlets Ø (female)	inch	½"	1" 2"	
Blow off opening (female)	inch	½"	1" 2"	
Dimensions (L x W x H)	mm	360x160	442,5 x 285	575 x 340
Conformity symbol				
Protection class I				

Type S:



Technical data	Air heater	Type S21	Type S32	Type S36
Voltage	VAC	120	230	120 230
Frequency	Hz	50/60		
Power	kW	0,55	0,8 1,0 1,55	2,0 2,2 2,3 3,3
Electricity	A	4,6	3,5 4,4 6,7	8,7 18,3 10,0 14,4
Max. temperature	°C / °F	650 / 1202		
Min. air volume	l/min	150	210 230	430 280 420
Weight	kg	0,3	0,4 0,47	
Air inlets Ø	mm	19 16 22		
Blow off opening Ø	mm	13	16 32 36 / 43	
Heating pipe Ø	mm	21	32 36 / 43	
Dimensions (L x W x H)	mm	188 x 69,5 x 58	228 x 69,5 x 58	238 x 69,5 x 58
Conformity symbol				
Protection class II				

Type M:



Technical data	Air heater	Type M50	Type M50L
Voltage	VAC	230	400 (2Ph) 440 (2Ph) 400 – 440 (2Ph)
Frequency	Hz	50/60	
Power	kW	2,2	3,7 4,5 4,1 4,6 - 5,6 6,1 – 7,4
Electricity	A	9,6	16,2 11,2 9,2 11,5–12,7 15,3–16,8
Max. temperature	°C / °F	650 / 1202	
Min. air volume	l/min	260	360 490 530 600 830
Weight	kg	0,8 0,9	
Air inlets Ø	mm	38	
Blow off opening Ø	mm	30	
Heating pipe Ø	mm	50 / 65	
Dimensions (L x W x H)	mm	239 x 85 x 90	278 x 85 x 90
Conformity symbol			
Protection class II			

TECHNICAL DATA

Type L:

Technical data	Air heater	Type L62				
Voltage	VAC	400 – 440 (2Ph)			400 – 440 (480*)	
Frequency	Hz	50/60				
Power	kW	5,8-7,0	8,6-10,5	9,1-11,0	4,4-5,3(6,3*)	7,6-9,2 (11,0*)
Electricity	A	14,5-15,9	21,6-23,9	22,7-25,0	6,3-7,0 (7,6*)	11,0-12,0 (13,2*)
Max. temperature	°C / °F	700 / 1292				
Min. air volume	l/min	520	600	750	450	710
Weight	kg	2,9				
Air inlets Ø	mm	38				
Blow off opening Ø	mm	55				
Heating pipe Ø	mm	62 / 74				
Dimensions (L x W x H)	mm	355 x 123 x 124				
Conformity symbol						
Protection class I						

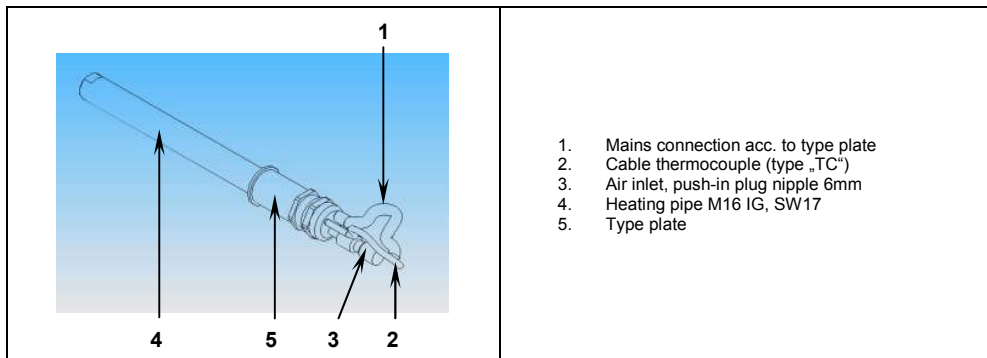
Type XL:

Technical data	Air heater	Type XL92			
Voltage	VAC	400 – 440 (480*)			
Frequency	Hz	50/60			
Power	kW	5,9-7,1 (8,5*)	7,6-9,2 (10,9*)	11,8-14,3 (17,1*)	17,4-21,0 (25,0*)
Electricity	A	8,5-9,4 (10,2*)	10,9-12,0 (13,2*)	17,1-18,7 (20,5*)	25,1-27,6 (30,1*)
Max. temperature	°C / °F	650 / 1202			
Min. air volume	l/min	560	680	950	1480
Weight	kg	3,3			
Air inlets Ø	mm	60			
Blow off opening Ø	mm	84			
Heating pipe Ø	mm	92 / 102			
Dimensions (L x W x H)	mm	330 x 123 x 124			
Conformity symbol					
Protection class I					


!!! Please ask for special heating elements (power, voltage) !!!

DEVICE DESCRIPTION

Type XS:

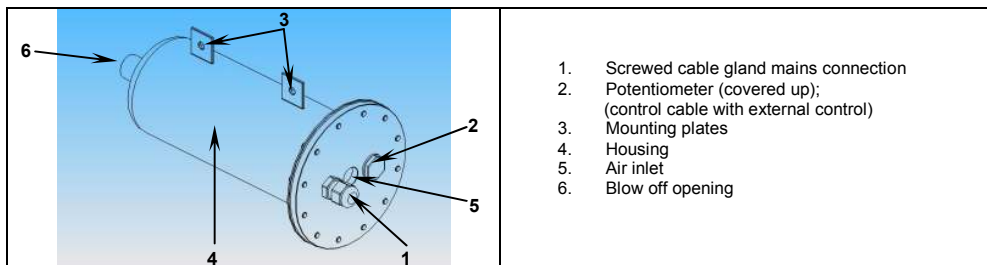


Connection diagram

Black	→	L1
Blue	→	N
Yellow/Green	→	 Protective conductor
Green (+)	→	Thermocouple type "K"
White	→	Thermocouple type "K"

DEVICE DESCRIPTION

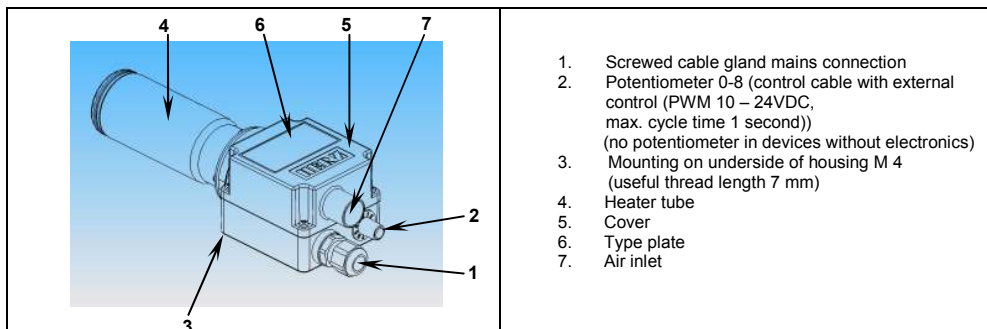
Type PN10:



Connection diagram

<p>Type PN10-S and PN10-M 230 VAC: L1 → brown N → blue</p> <p>⊕ Protective conductor → yellow/green</p>	<p>Type PN10-M 400 VAC (2Ph): L1 → brown N → blue</p> <p>⊕ Protective conductor → yellow/green</p>	<p>Type PN10-XL 400 VAC: L1 → black L2 → brown L3 → blue</p> <p>⊕ Protective conductor → yellow/green</p>
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Type S:



Connection diagram

	<p>Standard with Poti</p> <p>N, L1 = Mains connection acc. to type plate (11mm of insulation from wire ends)</p>		<p>Type without electronics</p> <p>N, L1 = Mains connection acc. to type plate (11mm of insulation from wire ends)</p>
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DEVICE DESCRIPTION

Type M:

	<ol style="list-style-type: none"> 1. Screwed cable gland mains connection 2. Potentiometer 0-8 (control cable with external control (PWM 10 – 24VDC, max. cycle time 1 second)) (no potentiometer in devices without electronics) 3. Mounting on underside of housing M 4 (useful thread length 7 mm) 4. Heater tube 5. Cover 6. Type plate 7. Air inlet Ø38mm
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Connection diagram

	<p>Standard with Poti</p> <p>N, L1 = Mains connection acc. to type plate</p> <p>(11mm of insulation from wire ends)</p>		<p>Type without electronics</p> <p>N, L1 or L1, L2 or L1, L2, L3 = Mains connection acc. to type plate</p> <p>(11mm of insulation from wire ends)</p>
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Type L and XL:

	<ol style="list-style-type: none"> 1. Screwed cable gland mains connection 2. Screwed cable gland control cable with external control 3. Potentiometer 0-9 (no potentiometer in devices without electronics and external control) 4. Mounting on underside of housing M 8 (useful thread length 16 mm) 5. Heater tube 6. Cover 7. Type plate 8. Air inlet
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Connection diagram

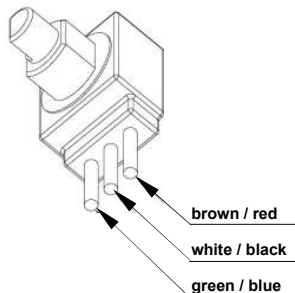
	<ol style="list-style-type: none"> 1. L1, N or L1, L2 or L1, L2, L3 Mains connection acc. to type plate 2. Ⓧ Protective conductor 3. 1 – 3 potential free change-over contact (48VAC, 1A) - 2 → 1 = break contact - 2 → 3 = normally open contact 4. +/- External temperature control via controller or PLC (PWM 12 – 24VDC, max. cycle time 1 second) <p>NOTE: In the construction 400VAC – 2Ph the clamps L1, L2 and PE (protective conductor) will be connected exclusive. The clamp L3 is blocked by a wire jumper. Devices without electronics, Clamps +/- and 1/2/3 not available!!!</p>
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WIRING DIAGRAM FÜR SPECIAL DESIGNS

Control cable for external control series S/M:
- digital signal (PWM) 10-24VDC

+ = brown
- = white

Control cable for external potentiometer (except Type XS):



Compensation line with internal thermocouple type 'K':

+ = green
- = white

Note for type L/XL:

After activating the tool protection trips, the air heater switches the power stack off. The build-in relays delivers a dry change-over contact at the clamps 1-3 (see connection diagram). A restart of the power stack is only possible after a reset (disconnection of the tool from the mains power).

Measures when activating the heating element or tool protection trips:

Disconnect the device from the mains power, after 3 seconds the device restarts automatically. Check air supply (air pressure, flow and filter), reconnect the device to the mains power.

Your service centre:

www.bak-ag.com

Illustrations and sketches may differ from the original device. Subject to changes without prior notice.