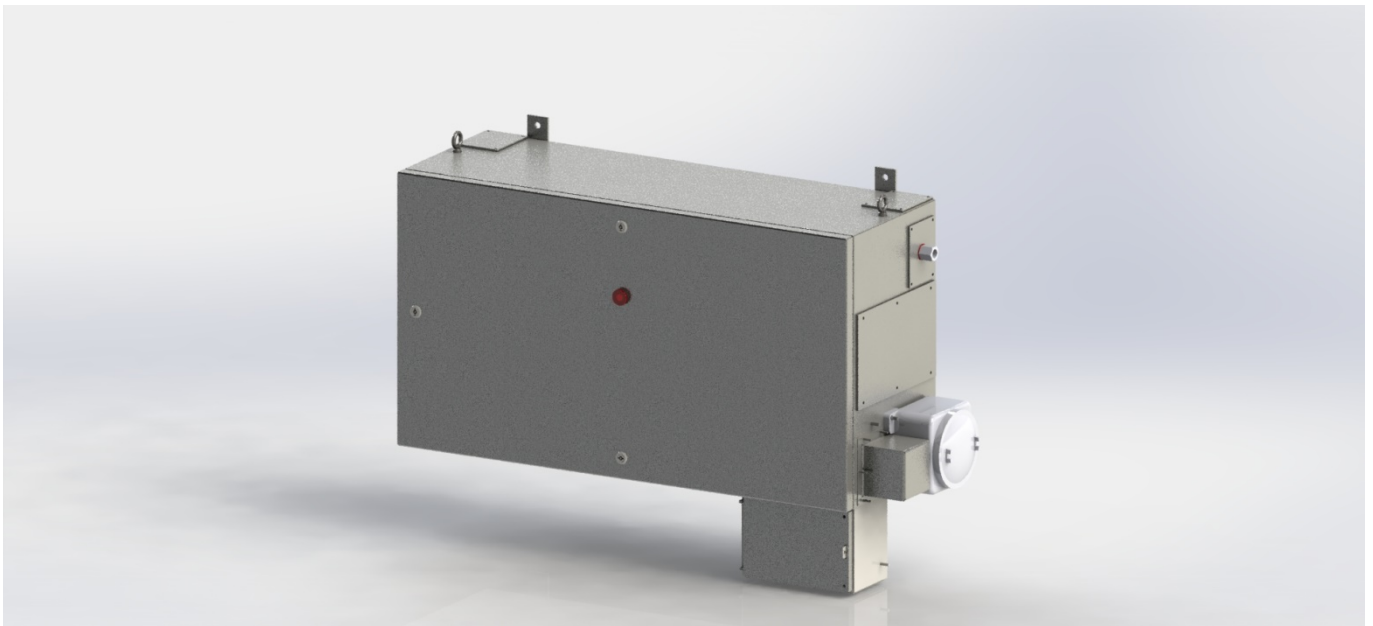


# 2.1kW Air Heater

## ML 566



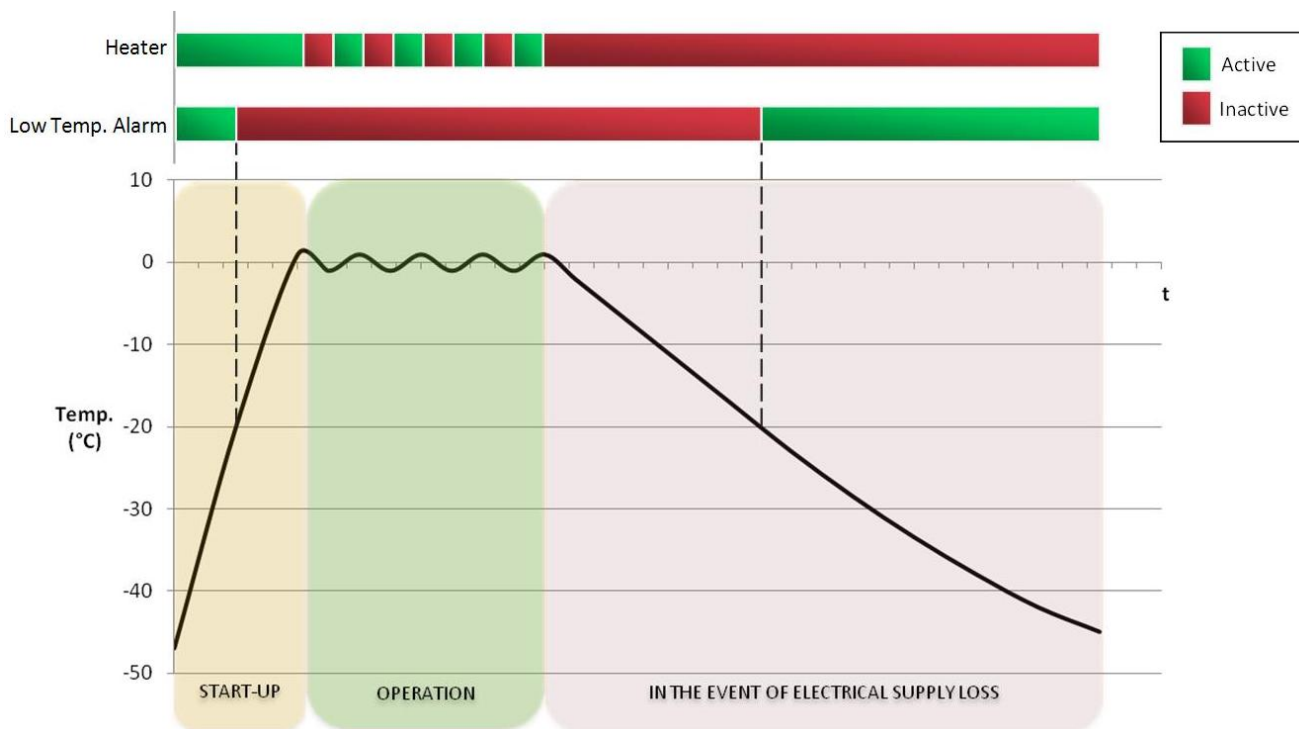
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## Section 1. Product Overview

The ATEX Zone 1 2.1kW heater is designed to elevate and maintain the temperature of purge system air within a specified temperature range. Air is passed through a tube that is heated using self-limiting trace heating cable. Switching of power to the air heater is controlled by a capillary tube thermostat. A second thermostat produces an alarm signal when the output air temperature drops below a pre-determined value.

### System Operation Diagram

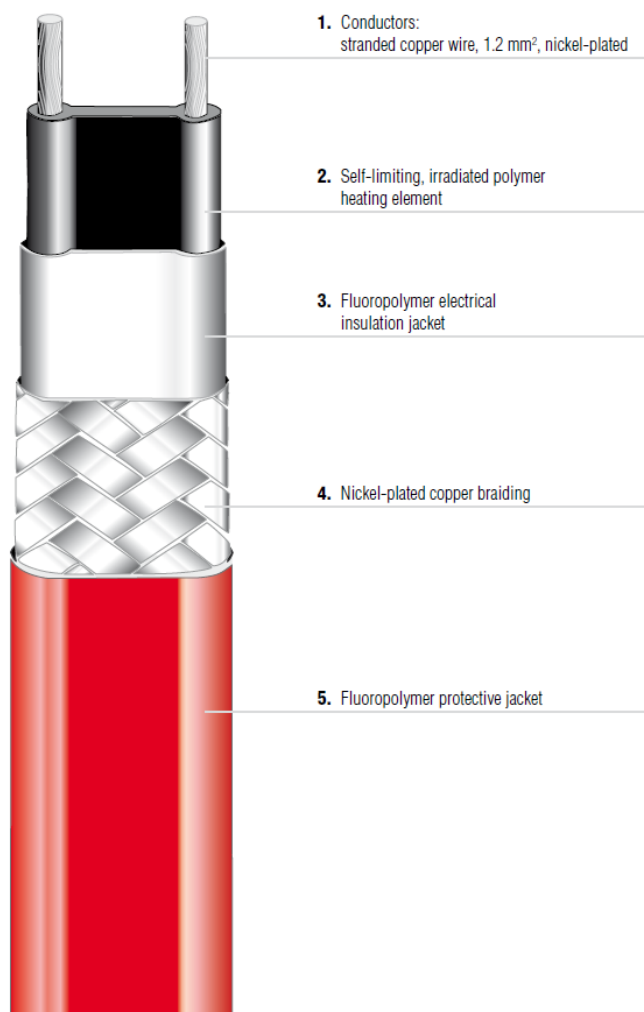


## Section 2. Technical Specification

Explosion Protection				
System: Zone 1, IIC, T3	Self-limiting Parallel Heating Cable: II 2G Ex e IIC T3 Gb II 2D Ex tb IIIC T195°C Db	BSTWII Thermostat: II 2G Ex de IIC T6	Cable gland: Ex II 2GD Ex e II Ex tD A21 IP 68	Ex d Terminal Enclosure: Ex d IIC T5
Technical Data				
Enclosure Size	1100 x 375 x 700 mm			
Weight	approx. 100 kg			
Electrical Data				
Supply Voltage	210V to 230V single phase supply			
Power Consumption	2.1kW maximum			
Cable Glands	M25 Ex d supply entry			
Temperature Range				
Input Air	>= -47°C			
Ambient Temp	-50°C to +50°C			
Operating Limits				
Pressure	4 - 7 bar			
Flowrate	Size 3: 500 – 4000 NI/min			

### Self-limiting Parallel Heating Cable HSB 60

(Source: <http://www.bartec.co.uk/>)



#### Description

A temperature-dependant resistive element between two parallel copper conductors regulates and limits the power output of the heating tape. This output regulation is carried out automatically along the entire length of the heating tape according to the prevailing ambient temperature. If the ambient temperature rises, the power output of the tape is reduced. This self-limiting property prevents overheating even when the tapes are crossed.

Thanks to the parallel design the heating tape can be cut to any required length. This feature considerably simplifies project planning and installation. The heating tape is cut and terminated directly on the construction site according to the circumstances.

The heating system must be designed to ensure that the maximum operating temperature of +120 °C will not be exceeded when it is energized.

When switched off, the heating tape can be exposed to a temperature of 200 °C for a short time, not more than 1,000 hours cumulated.

Explosion Protection	
Ex protection type	II 2G Ex e IIC T3 Gb II 2D Ex tb IIIC T195°C Db
Certification	SIRA 13ATEX 3312 U IECEX SIR 13.0122 U
Technical Data	
Nominal Voltage	AC 230 V

## BSTWII Capillary Tube Thermostat

(Source: <http://www.bartec.co.uk/>)



### Description

BSTW II 25-A Ex temperature monitors are two-state controllers in Ex e-certified polyester enclosures. BSTW II can monitor the ambient temperature but also the different surface temperatures.

### Function

Any change in temperature at the sensor bulb causes a change in the volume of fluid in the measuring system, which in turn results in a movement of the diaphragm membrane. This membrane is connected to a mechanical device that activates a microswitch. If the temperature at the sensor bulb exceeds the set value, terminals 1 and 2 are opened.

Explosion Protection	
Ex protection type	II 2G Ex de IIC T6
Certification	EPS 11 ATEX 1356X
Technical Data	
Protection class	IP 65/EN 60529
Storage Temperature	-55°C to +50°C
Min. Ambient Temperature	-55°C
Min. Sensor Temperature	-45°C (Safety cut-out)
Enclosure Sizes	260mm x 160mm x 90mm
Electrical Data	
Switching Capacity	25 A
Rated Voltage	Max AC 400V 50/60 Hz

Contacts	2 change-over contacts
Terminals	6 x 6 mm <sup>2</sup> + 3 PE
Cable Glands	2 x M20
<b>Temperature Ranges</b>	
Temperature Setting Range	-20 °C to +50 °C
Switching Accuracy	-0 K +5 K
Switching Hysteresis	Approx 7% of the scale range

## Cold-Applied Technology with brass cable gland explosion protected

(Source: <http://www.bartec.co.uk/>)

<b>Explosion Protection</b>	
Ex Protection Type	System: II 2G Ex e IIC T2, Gb II 2D Ex tb IIIC T200°C, Db  Cable gland: Ex II 2GD Ex e II Ex tD A21 IP 68
Certification	System: Sira 14 ATEX 3051 X IECEX SIR 14.0023X TC RU C-DE.ГБ06.B.00230  Cable Gland: Sira 01 ATEX 1270 X IECEX SIR 05.0020 X
Ambient Temperature Range	-55°C to +180°C

## Ex d Terminal Enclosure



Ex d terminal enclosures are certified for use in Hazardous Locations, where the Hazardous Location is non-mining (i.e. above ground) and where the hazard is caused by flammable gases, vapours or combustible dusts.

The enclosure can be located in Zone 1, 2 for gas and / or Zone 21, 22 for dust, or Class I, Division 1, 2 for gas and / or Class II, Division 1, 2 for dust Hazardous Locations. The joint between the lid and the enclosure forms a threaded flamepath.

The following materials are used in the construction of Ex d enclosures. If substances that will adversely affect any of these materials are present in the surrounding environment, please consult EXPO for further guidance.

Materials of external construction:

- Stainless Steel
- Brass
- Aluminium ( Ex d / Xp enclosure contains <1% magnesium)

<b>Ex d Terminal Enclosure Type GUB* Data</b>	
Certification	CESI 01 ATEX 035
Ex protection type	II 2G Ex d IIC T5 -50°C to +55°C
Rated Voltage	Max 400 Vac 50/60 Hz

### **HAWKE Ex e Terminal Enclosure Type PL6\***

Increased Safety terminal enclosure certified for use in Hazardous Areas.

<b>Terminal Enclosure Type PL6* Data</b>	
Certification	BASEEFA 06 ATEX 0117 X
Ex protection type	II 2G Ex e IIC Gb T5 -50°C to +60°C
Rated Voltage	Max Dissipated Wattage 8.5 W WDU2.5 – 550V – 17A WDU4 – 630V – 22A

### **STAHL Pilot Lamp (Control Device System) Type 8040/1198X**

Ex e lightweight enclosure made of glass fibre reinforced polyester (GRP), containing Ex d e certified LED indicating lamp.

<b>Pilot Lamp (Control Device System) Type 8040/1198X Data</b>	
Certification	PTB 01 ATEX 1105
Ex protection type	II 2G Ex db eb IIC T4 Gb -60°C to +60°C
Enclosure Size	93 mm x 80 mm x 72 mm
Technical Data	Rated voltage: up to 240 V Power input for pilot lamp max 1.5 W

## Section 3. Installation

### Installation

- Mount the purge system as shown on the Hook-Up drawing.
- Always ensure all piping is clean and free of dirt & debris prior to connection to the purge system or enclosure.

The system shall be installed in accordance with relevant standards, such as IEC / EN 60079-14, and any local codes of practice that are in force.

### Air Supply

Prior to connecting the air supply to the purge system, flush the supply pipe work with air to remove any debris that may have been introduced into the pipe work during installation. At least 10 seconds for every meter length of supply pipe.

### Serial Number

The serial number for the unit can be found at the top left corner of the front panel.

### Power Supplies and their Isolation

Single phase, 210V to 230V supply to the Air Heater is provided by the customer to the Ex d Terminal enclosure via M25 Ex d glanded entry. The supply connection is to be protected by a 13A Type C characteristic circuit breaker, with a means of isolation.

### Provision of Alarm Signal

When the output temperature falls below a pre-determined set point an alarm signal is removed, i.e. absence of the signal indicates a Low Temperature Alarm condition. There are volt free (dry) contacts available within the Ex d Terminal Box for remote usage.



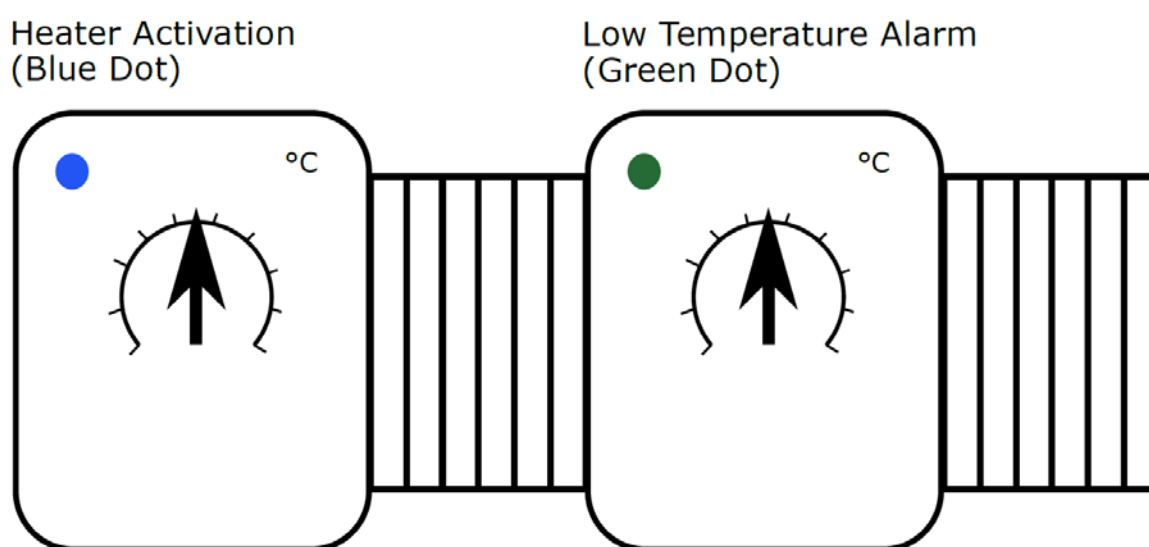
## Section 4. Commissioning

### Initial Commissioning

- Check that the system has been installed in accordance with Expo Instructions.
- Disconnect the pipe from the inlet to the Air Heater and blow clean air through it for at least 10 seconds per meter of length to remove any debris, oil and condensation.

### Setting Thermostats

The system activation and low temperature alarm thermostats can be set to user requirements. To access the thermostats remove the thermostat access panel as shown in drawing AGM-GM00-464. The switching temperature is set by turning the indicator with a small flat head screwdriver. The System activation thermostat is indicated by a blue dot. The low temperature alarm thermostat is indicated by a green dot.



### Commissioning

Proceed as follows:

- Connect the air inlet pipe to the Air Heater.
- Disconnect the pipe from the air outlet and pass air through the Air Heater for 60 seconds.
- Reconnect the outlet pipe and check all air connections are fitted correctly with no obstructions.
- Energise the power supply to the air heater.

### Normal Operation

Once commissioned the Air Heater will energise automatically when required, there is no manual override switch provided with the system.

## Section 5. Drawings and Diagrams

Title	Drawing Number	Number of Sheets
2.1 KW Air Heater General Assy	AGM-GM00-464	2
2.1 KW Air Heater Terminal Diagram	SD8302	1
Connection Diagram for AGM-GM00-464	SD8322	2

## Section 6. Approval Documents

Equipment	Approval Authority	Certificate Number
HTSB Heating System	Sira	14 ATEX 3051 X
	IECEX	SIR 14.0023X
HTSB self-limiting parallel heating cable	Sira	13ATEX3312U
	IECEX	SIR 13.0122U
Cable Glands	Sira	01 ATEX 1270X & 09 ATEX 1221 X
	IECEX	SIR 07.0096X
	TC	TC RU C-DE.ГБ06.B.00230
BSTWII Capillary Tube Thermostat	EPS	11 ATEX 1356 X
	TC	TC RU C-DE.GB06.B.00399
Ex e Terminal Enclosure	Baseefa	06 ATEX0117X
	IECEX	BAS06.0028X
Ex d Terminal Enclosure	CESI	01 ATEX 035
	IECEX	CES 16.0000
	TC	TC RU C-IT.AA 87.B.00 211