

# X10223 – STOM1

## Microprocessor Based 25A AC Power Controller

### Issue 6



## 1 Introduction

The STOM1 is a microprocessor based power controller, with a built in power device that is capable of controlling up to 25A at voltages up to 440V ac. The STOM1 has two types of power control, phase-angle and burst-firing, either can be selected separately. The module can also be used for soft starting in phase-angle mode and it will automatically switch to Burst Fire mode when the control signal has reached a preset level. The control will remain in the burst-fire state even if the input signal drops below the preset level. The STOM1 also has a ramp up from cold, which can be set from 0 to 30 seconds. The controller will operate from a 0 to 5V dc or 4 to 20mA signal. These signal inputs are fully isolated and can be controlled from a temperature controller or PC etc. The STOM1 provides the equipment designer with flexibility in a wide range of applications.

## 2 Applications

Suitable for most resistive loads including ovens, moulders, and dryers with current ratings up to 25A when fitted onto a suitable heatsink (1.3°C/W). Ideal for unusual heating loads which have very low resistance when cold.

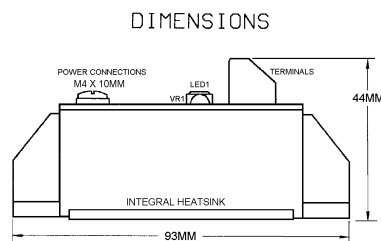
## 3 Features

- Energy saving
- Soft-start facility
- Phase-angle or burst-firing
- Simple wiring
- Standard 80mm fixing
- Solid-state reliability
- Isolated inputs
- Rugged and compact
- Integrated power device

## 4 Installation

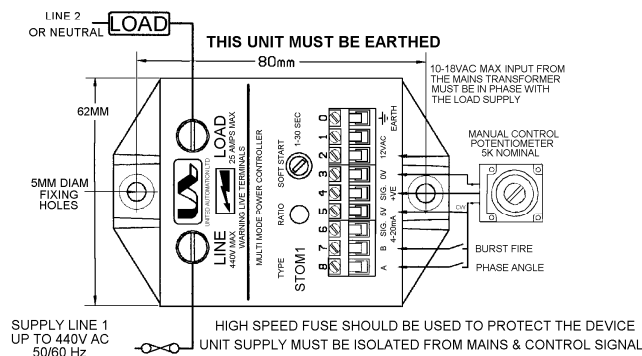
### NOTE

THE STOM1 AC POWER CONTROLLER SHOULD BE MOUNTED ON A CLEAN OR UNPAINTED METAL THERMALLY CONDUCTIVE SURFACE. USING HEAT SINK COMPOUND THINLY APPLIED BETWEEN THE CONTROLLER AND THE MOUNTING PLATE.



IN ORDER TO COMPLY WITH THE CURRENT EMC DIRECTIVE WHEN USING IN PHASE ANGLE MODE A LINE FILTER MUST BE USED.

### WIRING AND CONNECTIONS



- CONTROL OPTIONS
- DC INPUT
- VOLTAGE CONTROL
- TERMINALS 3,4 AND 5
- 3 = 0V
- 4 = 0 TO 5V
- 5 = 5V OUTPUT
- 5K INPUT
- CURRENT CONTROL
- TERMINALS 3 AND 6
- 3 = 0V
- 6 = 4-20mA
- 240R INPUT
- MODE A PHASE ANGLE
- TERMINAL A AND 5
- A = 5V
- 5 = 5V
- MODE B BURST FIRE
- TERMINALS B AND 5
- B = 5V
- 5 = 5V
- MODE A AND B START IN
- PHASE ANGLE SWITCHING TO
- BURST FIRE
- TERMINAL A,B AND 5
- A = 5V
- B = 5V
- 5 = 5V
- PHASE REFERENCE AND
- SUPPLY TERMINALS 1 AND 2
- 10V TO 18V AC AT 75 mA



**WARNING**  
SWITCH OFF SUPPLY BEFORE COMMENCING ANY SERVICING WORK

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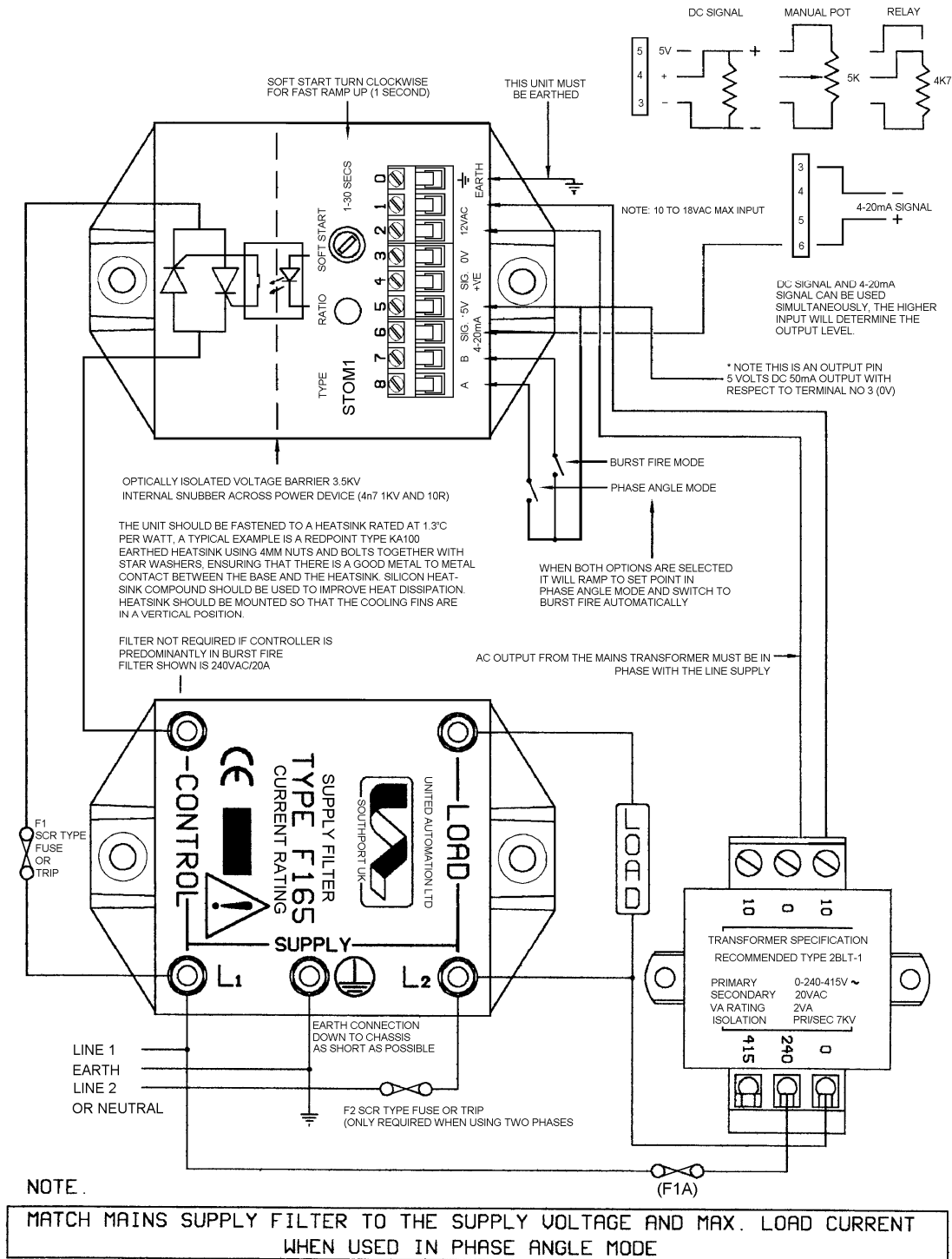
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Installation continued



Installation continued

**STOM1 COOLING REQUIREMENTS**  
**HEATSINK CALCULATIONS**

THIS APPLICATION NOTE PROVIDES ADDITIONAL INFORMATION AND SIMPLE CALCULATIONS TO ALLOW YOU TO DETERMINE A MAXIMUM PERMISSIBLE HEATSINK THERMAL RESISTANCE FOR A GIVEN SET OF OPERATING CONDITIONS. WHEN THE CONTROLLER IS ON THE TEMPERATURE, (T<sub>J</sub> MAX), AT THE SEMICONDUCTOR JUNCTION WILL OBVIOUSLY BE HOTTER THAN THE ATTACHED HEATSINK THIS IS DUE TO RESISTANCE TO HEAT TRANSFER WHICH IS CALLED THERMAL RESISTANCE, AND IT IS MEASURED IN DEGREES CELCIUS PER WATT

PARAMETERS –

230V AC SUPPLY AT 25A AND A MAXIMUM AMBIENT AIR TEMPERATURE OF 50°C

1 FROM THE GRAPH BELOW FIND THE MAXIMUM POWER DISSIPATION FOR 25A  
**25A = 31 WATTS**

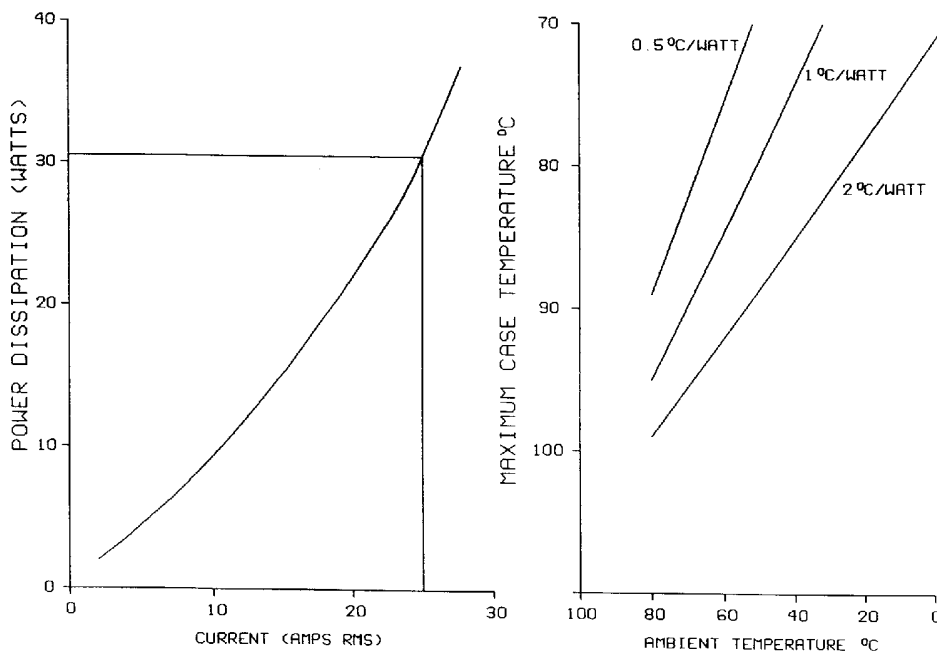
2 CALCULATE THE TEMPERATURE DIFFERENCE BETWEEN T<sub>J</sub> AND THE HEATSINK  
**31 WATTS X 1.1°C/W = 34.1°C**

3 T<sub>J</sub> MUST NOT RISE ABOVE 125°C  
**125 - 34.1 = 90.9°C**

4 THE MAXIMUM AMBIENT TEMPERATURE IS 50°C  
**90.9 - 50 = 40.9°C**

5 DIVIDING THIS TEMPERATURE BY THE WATTAGE (1) GIVES  
**40.9 ÷ 31 = 1.32°C/W**

THEREFORE ANY HEATSINK OF 1.32°C/W OR LESS WILL BE SATISFACTORY.



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## 5 Specifications

<b>L<sup>2</sup>t for fusing 10ms</b>	250 As	<b>Min. line voltage</b>	5V ac
<b>Max. transient over volts</b>	1.2kV ac	<b>Max. line voltage</b>	440V ac
<b>Max. electrical isolation</b>	3.5kV	<b>Control signals</b>	0-5V dc & 4-20mA
<b>Power consumption</b>	1.2W	<b>Operating frequency</b>	50 to 60 Hz +/- 5%
<b>Max load current @ 65°C</b>	25A	<b>Supply voltage</b>	10-18V ac
<b>Min load current @ 65°C</b>	0.05A	<b>Peak one cycle surge</b>	250A
<b>Man. Control potentiometer</b>	5k	<b>Operating temp</b>	0 to 65°C
<b>Power terminals</b>	M4 x 10mm	<b>Storage temp</b>	0 to 85°C

## 6 Fusing

It is recommended to use semiconductor fast acting type fuses or circuit breakers (Semiconductor-MCB) for unit/device protection. On initial 'switch on' some loads may need an increased Factor of Safety (F of S) for unit and/or device protection. See the SRA datasheet for further information.

## 7 CE Marking

This product family carries a "CE marking". These phase angle controllers need a suitable remote filter. For information see recommendation section and contact our sales desk. See the Declaration of Conformity.

## 8 Recommendations

Other documents available on request, which may be appropriate for your application:-

Code	Identity	Description
X10229	RFI	Filter recommendations: Addressing the EMC Directive
X10213	ITA	Interaction: Uses for phase angle and for burst fire control
X10255	SRA	Safety Requirements: Addressing the Low Voltage Directive (LVD) including, Thermal Data/Cooling, Live Parts Warning, Earthing Requirements and Fusing Recommendations
X10378	ILR	Inductive loads remedy sheet for use with Phase angle controllers
P01.1	COS	UAL Conditions of Sale

**NOTE:** It is recommended that installation and maintenance of this equipment should be done with reference to the current edition of the I.E.T. (formally I.E.E.) regulations (BS7671) by suitably qualified/trained personnel. The regulations contain important requirements regarding installation and safety of electrical equipment. Specific installers should refer to local and national regulations.

## 9 Order Code

Part Number	State part number: STOM1
Optional extras	potentiometer, supply transformer, heatsink compound, filter



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