

# SINGLE PHASE 12kW and 18kW RANGE TWO PHASE 20kW and 30kW DUAL MODE POWER CONTROLLER

## DMPR1 SERIES

X10746

### INTRODUCTION

The complete enclosed single phase Dual Mode Power Regulator (DMPR) thyristor assembly provides control of inductive/resistive loads of up to 30kW at 415V. The user selectable control modes, via the internal switches are either phase angle, burst firing or a combination of the two i.e. start up in phase angle and then continue in burst firing. The controllers also come with frequency tracking allowing the unit to be installed in many applications where the supply is unstable. There are a number of signal control options to meet most industrial requirements.

All are housed in a bespoke enclosure and have easy access to internal signal & power terminals for simple installation. With Integral semiconductor fuses and heatsink the controller offers a solution for many application requiring single or dual mode control.

### APPLICATIONS

Suitable for furnaces, ovens, dryers, air curtains, hot plates and many other heating and ventilation applications. Also suitable for inductive loads such as transformers



DMR230-E-18kW  
SHOWN

### Features

- Phase Angle/Burst Fire Control or Combination of both
- Frequency Tracking 4-400Hz
- Integral High Speed Fuses
- Adjustable ramp control 1 to 30 seconds.

### SPECIFICATIONS

<b>Power/(current ratings):</b>	12kW (52A): 18kW (78A) @ a typical supply of 240V RMS 20kW (48A): 30kW (72A) @ a typical supply of 400V RMS	
<b>Input voltage:</b>	230V RMS +/- 10% 415V RMS +/- 10% Phase to Phase (115V AC Option Available on request)	
<b>Frequency:</b>	4 to 400Hz active tracking	
<b>Control input signal:</b>	0 to 5Vdc up to a maximum of 24Vdc or Manual - 5K Potentiometer – 0-20mA/4-20mA	
<b>Alarms relay circuit rating:</b>	125V ac @ 2A	
<b>Status indicator:</b>	(Tracking control signal) LED indicator changes intensity	
<b>Over temperature:</b>	Trip in temperature @ 90°C, +/- 1°C (LED indicator 'flashes' continuous fast pulsing) Fixed Level of 55°C brings on Fan (When Fitted) Level of 85°C brings on alarm relay. Level of 90°C shuts down power.	
<b>Zero Settings:</b>	Sets the minimum output level, zero's the output with signal of up to 2 volts	
<b>Span Setting:</b>	Sets the maximum output with input signals of up to 24 volts DC	
<b>Soft Start:</b>	0-30 seconds initiated at power up. Also initiated when enable is used	
<b>Current Limit:</b>	Built in and user resettable	
<b>Switch Options:</b>	To disable current limit and to enable current mode etc	
<b>Cable terminations:</b>	Phase power (unit dependent)	35mm <sup>2</sup> rising clamp terminal blocks
	Earth (unit dependent)	35mm <sup>2</sup> rising clamp terminal blocks
	Remote supply Auxiliary alarm (relay)	1.5mm <sup>2</sup> rising clamp terminal block
	Control signal -	1.5mm <sup>2</sup> rising clamp terminal block
<b>Terminal torque settings:</b>	4Nm (35mm <sup>2</sup> )	
<b>Fusing</b>	230V 80LET (12kW), 100LET (18kW) / 415V 80ET (20kW) 100ET (30kW) Semiconductor type, lug fuses	
<b>Working temperature:</b>	60°C (maximum operational)	
<b>Dimensions:</b>	205mm (L) x 155mm (W) x 120mm (H)	
<b>Fixing centres:</b>	4 x 5mm ø holes on centres 140mm (W) x 140mm (L)	
<b>Product Weight</b>	12kW (2.8kg): 18kW (3.5kg) 20kW (2.8kg): 30kW (3.5kg)	

RoHS Compliant  
Directive  
2002/95/EC

**Note: SAFETY WARNING –** Isolate supply before removing cover; Metal parts, in particular the heatsink, may get very hot when the unit is fully operational; DO NOT COVER enclosure ventilation slots.

### FUNCTIONS

#### **Alarm relay**

The alarm circuit has voltage free relay contacts and are rated up to 2A @ 125V ac (RMS) load.

The internal supply to the relay is obtained from the transformer via two 20mm 1A fuses. These are connected to the Live and Neutral supply and therefore the relay and LED can only energise when there is an over-temperature condition as long as the supply is present.

#### **Over temperature protection**

When the heat sink temperature rises above 40°C (detected by the heat sink sensor) the cooling fan is switched on, if fitted. Should the heat sink temperature reach 90°C the power to the load will be disconnected and will not return until the temperature drops to 85°C during this period the alarm relay is enabled.

#### **Temperature sensor loss**

LED status changes to ON/OFF (fast pulsing) if the sensor fails.

#### **Control Options**

- Phase Angle.
- Burst Fire
- Combination of Phase Angle and Burst Fire

## INSTALLATION

### Cooling requirements

This robust stack assembly has an operational temperature of 60°C when naturally cooled and has a built in 90°C over temperature trip on the heatsink as a safety feature. The unit should be mounted vertically, with heatsink fins top to bottom, and with sufficient surrounding air space to maximise natural convection cooling. If the unit is mounted in an enclosure or cabinet, adequate ventilation and/or forced air-cooling should be fitted.

### LOAD CONSIDERATIONS

It is always best to detail the type of load when ordering. For industrial reliability, based on long experience, the DMPR range has considerable current overload capacity on the power devices used. The rated currents are maximum continuous RMS values for use within the temperature guidelines as shown in the table below.

Unusual heating loads such as Molybdenum, Platinum or Tungsten, have a typical 10 to 1, hot to cold, resistance ratio and therefore, when cold, draw larger currents than normal. Transformer and other inductive loads have surge starting currents and require the correct type of phase angle firing circuit. These and similar types of surge loads should be advised so that appropriate slow start or larger rated units can be correctly supplied to the specific needs.

### Connections

This unit has simple clamp type connectors for all auxiliary-wiring requirements.

### Fusing

It is recommended that fast acting semiconductor type fuses (as supplied) be used for protection. See SRA Data sheet X10255 for further information. Other external supplies should be fused accordingly.

### CE Marking

This family carries a "CE" marking, In burst fire mode the controllers do not normally require a remote filter. For more information contact our sales desk. A Declaration of Conformity available on request.

## RECOMMENDATIONS

These supporting documents, which may be appropriate for your application, are available on request,

CODE	IDENTITY	DESCRIPTION
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, Earth requirements and fusing recommendations.
X10322	APC	AC Power Control – Three phase application circuits
X10617		Wiring connection details are attached to the inside of the lid.

**NOTE:-** It is recommended that installation and maintenance of this equipment should be carried out by suitably qualified/trained personnel with reference to the current edition of the I.E.E. wiring regulations (BS7671 The regulations contain important requirements regarding the safety of electrical equipment. For International Standards refer to I.E.C/ Directive IEC 950.

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## ORDERING

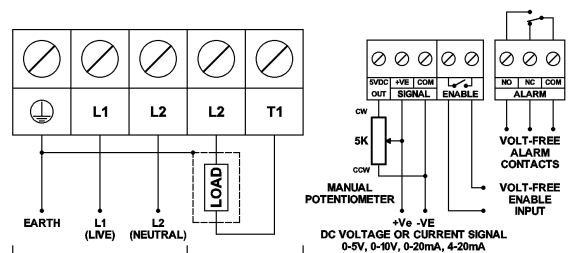
### Product Reference      Description Ratings (RMS)

DMPR1-E-12kW	230V, 12kW 52A
DMPR1-E-18kW	230V, 18kW 78A
DMPR1-E-20kW	400V, 20kW 48A
DMPR1-E-30kW	400V, 30kW, 72A

## OPTIONAL EXTRAS

A403011  
5K 1W potentiometer with 0.5m long lead for manual control option

## CONNECTIONS Example shown with Heater Bank



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