

7100A

MODEL



Single Phase Thyristor Units for all Load types Specification Sheet

Ideal for :

- Glass lehrs
- Metal furnaces
- Ceramic furnaces
- Semi-conductor manufacture
- Induction heating
- Transformer coupled loads
- Time/temperature dependant

Features :

- **Current range: from 16 to 250 amps at 45°C**
- **Voltage up to 500V**
- **Inputs**
current:
0-20mA or 4-20mA
voltage:
0-5V or 0-10V
- **Firing modes:**
Phase angle
Fast cycle
Single cycle
Advanced single cycle
Transformer burst firing
- **Suitable for virtually all types of load**
- **Current limit**
- **Alarm options include:**
Thyristor short circuit
Load open circuit
Partial load failure
Thyristor overtemperature (250A unit)
- **Power control**

Ratings

The current ratings of the 7100A cover the range from 16 amps up to 250 amps, with only the 250A unit being fan cooled. The voltage rating can go up to a maximum of 500 volts.

Inputs

The 7100A can accept analogue voltage (0-5V or 0-10V) or current (0-20mA or 4-20mA) inputs.

Firing Modes

The 7100A is available with a selection of firing modes to suit most applications.

It is suitable for controlling resistive loads with high or low temperature coefficient, short wave infrared (SWIR) or inductive loads.

Control mode

7100A units use one of the following control parameters:
RMS load voltage squared V^2
RMS load current squared I^2
Load power P (up to 100 amps)
Open loop OL

Limits and alarms

Optional current limit which can work in all firing modes prevents excessive currents from flowing in the load circuit. Optional alarms can warn of thyristor short circuit or load open circuit (GRF alarm). Additionally partial load failure with automatic set up can detect the loss of one out of six parallel loads (DLF alarm). Overtemperature shutdown is provided with 250A fan cooled units with optional alarm.

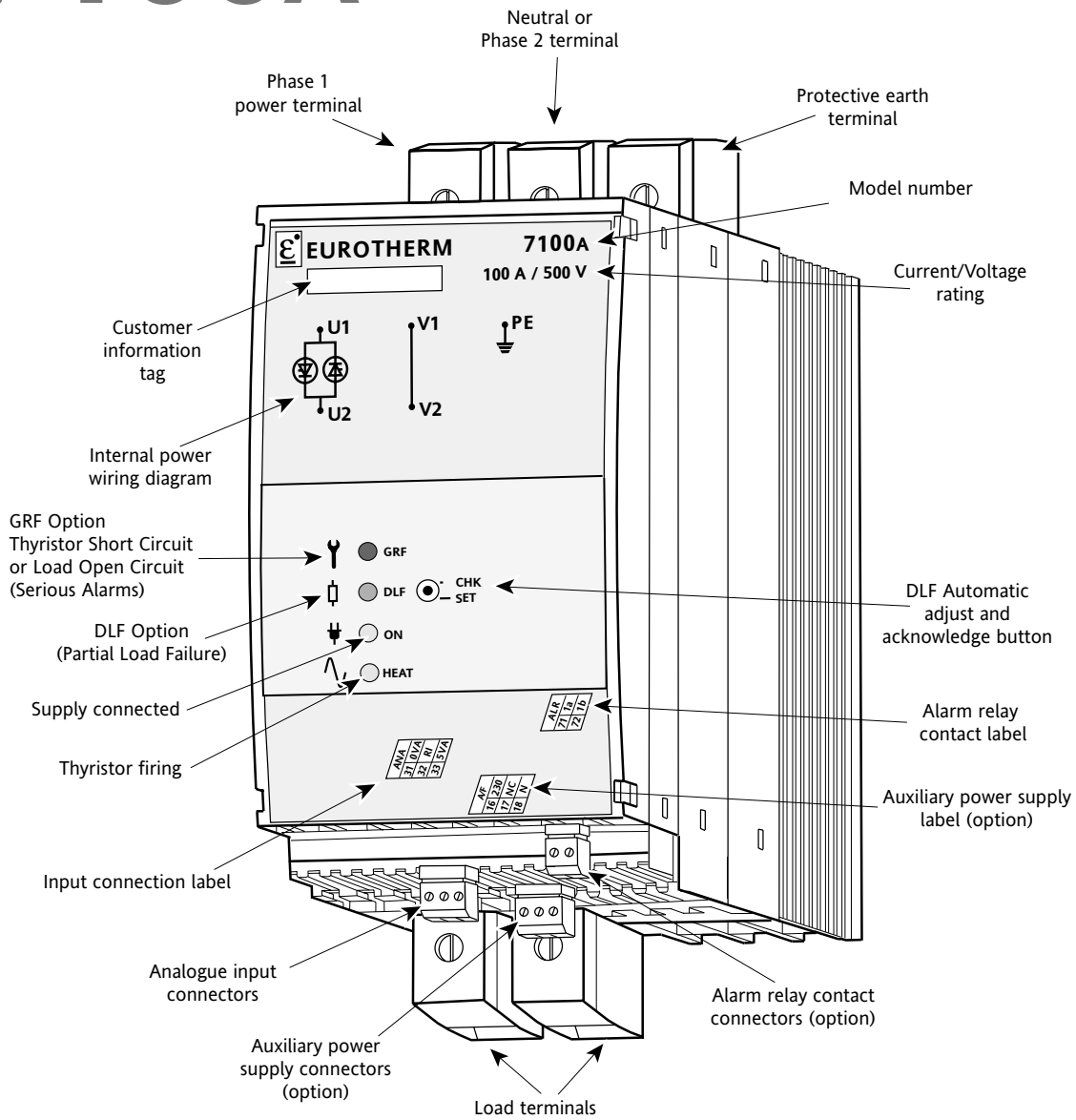
Fusing

High speed fuses are recommended for most applications except SWIR. The fuses are external for units up to and including 100 amps and internal above 100 amps. Fuses are available either with or without microswitch indication.

International approvals

CE (EN60947-4-3); UL and cUL available up to 100A

7100A



Example of 7100A layout

Signal connections

Terminal Block	Terminal		Purpose	Option
	No.	Label		
ANA	31	0VA	0V analogue signal	Basic or Options
	32	RI	+analogue signal	
	33	5VA	5V user supply	
A/F	16	230	Auxiliary 230V or	
	17	115	115V supply	
	18	0V	Neutral or 2 nd phase	
DIG.IN	61	0VD	0V logic signal	Overload alarm
	62	ACK	ICO acknowledgement	
	63	5VD	5V user supply	
ALR	71	1a	Alarm relay contact (NC code)	Alarms
	72	1b	Alarm relay contact (NO code)	
	73	1a	Alarm relay contact (NO code)	
	74	1b	Alarm relay contact (NO code)	
ADJ.CAL	66	0VC	0V calibration	V x I control
	67	HRC	Calibration control	
MSF	75	3a	Fuse with microswitch connect	≥125A
	76	3b	Fuse with microswitch connect	
EXT	21	L2	Neutral or 2nd phase	Alarms
	22	N/A	in case of alarm option	

Safety specification

PRODUCT STANDARD The 7100A products comply with the terms of product standard EN 60947-4-3. Contactors and motor-starters - AC semiconductor controllers and contactors for non-motor loads.

CE LABELLING

Complies with essential requirements of the European Low Voltage Directive 73/23 EEC dated 19 February 1973, modified by 93/68/EEC dated 22 July 1993 and the Electromagnetic Compatibility Directive 89/336/EEC dated 3 May 1989 modified by 92/31/EEC dated 28 April 1992 and 93/68/EEC dated 22/07/93.

TECHNICAL SPECIFICATION

Additional information and documentation available on www.eurotherm.co.uk

POWER

Nominal Current	16 A to 250 A at 45°C ambient (see order code)
Nominal Voltage	100 VAC to 500 VAC (see order code)
Frequency	47 to 63 Hz
Auxiliary supply	Self-powered from supply network or external (115 Vac or 230 Vac +10%; 15%) depending on order code. Consumption: 10 VA
Dissipated power	1.3 W (approx): per amp. Allow 2W per amp to include fuse dissipation
Cooling	Rating ≤200 A: Natural convection. Rating 250A: Fan-cooled

LOAD

Use category	Single-phase industrial load: · AC-51 Resistive load with low temperature coefficient · AC-55b Short wave infrared elements for units ≤100A · AC-56a Transformer primary and Resistive load with high temperature coefficient
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CONTROL

Control type	Analogue · Remote analogue setpoint: 0-5 Vdc or 0-10Vdc (100 kΩ input), 0-20 mA or 4-20 mA (250Ω input) · Potentiometer for manual setpoint (5 Vdc supply available)
Control parameter	· Standard: Load voltage squared (V ²) · Option: Apparent power (V x I, up to 100 amps), Load current squared (I ²), Open loop
Linearity and stability	Better than ±2% of full scale
Current limit (option)	· Phase angle: Automatic control transfer from V ² to I ² or, from V x I to I ² with current recalibration set by potentiometer on front panel. · Burst mode 16 cycle base: Current limited by threshold set using potentiometer on front panel. A monitor signal is available in V x I for power and current calibration and maintenance
Transient current limit	Option for transformer primary control in burst firing mode: · Safety firing angle ramp on first firing · First firing delay adjustable using potentiometer on front panel

FIRING MODE

Firing at zero crossings	· 'Burst mode' base time: 16 or 64 cycles · 'Single-cycle': base time 1 cycle · Advanced single-cycle: base firing time 1 cycle; non conduction by half-cycles.
Firing angle variation	· 'Phase angle'

LOAD MONITORING (OPTIONS)

Serious alarms (GRF)	Total load failure and thyristor short circuit detection. Signalled by red 'GRF' LED and alarm relay contact
Diagnostic alarm (DLF)	Partial load failure detection. Signalled by orange 'DLF' LED and alarm relay contact Sensitivity: Detects the failure of at least one heating element for up to six LTCL or four SWIR identical elements connected in parallel The DLF option includes serious alarm monitoring (GRF)
Overtemperature alarm	For fan cooled units operation stops if the temperature is exceeded. Signalled by red GRF LED and alarm relay (with GRF option)

OVERLOAD ALARMS (OPTION)

Over-current alarm	Operation stopped if current threshold exceeded.
(ICO Chop Off option)	Only available with zero crossing firing and DLF option (except for short wave infrared elements, transformers and codes V1CL and V2CL). Alarm threshold adjustable from 20 to 100% using potentiometer on front panel. Signalled by red 'ICO' LED and alarm relay contact.

ALARM RELAY

Available with alarm options. The relay contact (0.25 A 230 Vac; 32 Vdc) is either open or closed on alarm depending on the product code.

ENVIRONMENT

Temperature	Use 0°C to 45°C at max. altitude of 2000m. Storage -10°C to 70°C
Pollution	Degree 2 acceptable (defined by IEC 664)
Humidity	RH 5% to 95% Non condensing, non streaming

INSTALLATION

Mounting.	Rating from 16 to 63A: Two symetric DIN rail EN50022 or bulkhead mounting (4 x M4 screws) Rating from 80 to 100A: Bulkhead mounting (4 x M4 screws) Rating from 125 to 200A: Bulkhead mounting (4 x M6 screws) Allow a minimum of 10mm between units. Units must be mounted with fins running vertically
Max. cable size.	16 and 25 amp: 6mm ² . 40 and 63 amp: 16mm ² . 80 and 100 amp: 35mm ² . 125 to 250 amp: 120mm ²

PROTECTION

Thyristor protection at zero crossings	Varistor and RC snubber. High speed fuse: Rating ≤100A; external, >100A; internal. No fuse for short wave infrared (SWIR) elements if firing or in phase angle firing mode without current limit.
Electrical protection	IP20 without additional protection. Overvoltage category II

WARRANTY

2 years

PHYSICAL DATA

Rating (A)	Height (mm)	Width (mm)		Depth (mm)		
		Lite (*)	Full (**)	Lite		Full
				Base (1)	Option (2)	
16 to 40	156	52,5	70	193	218	237
63	156	70	70	212	237	237
80 to 100	226	96	96	215	243	243
125 to 250	423	144	N/A	372	372	N/A

(*) Lite;

(1) Basic product, without alarm option or control (except V2 and OL)

(2) Product with code: I2 / V2CL or GRF / DLF

(**) Full; Product with code: V1CL, ICO or V2CL / I2 + GRF / DLF

ORDERING CODE

7100A	1	2	3	4	5	6	7 XXXX	8	9	10
11	12	13	14	15	16	17 XXXX	18 XXXX	19	20 NONE	

1 Current	2 Voltage	3 Aux. voltage ⁽¹⁾	5 Fuse	7	9 Manual Language
16A 16 amps 25A 25 amps 40A 40 amps 63A 63 amps 80A 80 amps 100A 100 amps 125A 125 amps 160A 160 amps 200A 200 amps 250A 250 amps	100V 100 volts 115V 115 volts 120V 120 volts 127V 127 volts 200V 200 volts 208V 208 volts 220V 230 volts 230V 230 volts 240V 240 volts 277V 277 volts 400V 400 volts 460V 460 volts 480V 480 volts 500V 500 volts	SELF None (standard) 115V 115 volt supply 230V 230 volt supply	FUSE Fuse without microswitch MSFU Fuse with microswitch NONE No fuse	XXXX	ENG English FRA French GER German
4 Fan Supply	6 Firing Mode	8 Input	10 Options		
16A-200A XXXX No fan 250A 115V 115V fan and 115V or self Aux supply 480V 480V fan and 115V or self Aux supply 230V	PA Phase angle FC1 Single cycle ASC Advanced Single cycle C16 Burst 16 cycles C64 Burst 64 cycles	0V5 0-5VDC 0V10 0-10VDC 0mA20 0-20mA 4mA20 4-20mA	NONE No options standard V ² control End of code (specify further code) YES		

Note
(1) Auxiliary supply only required for voltages not shown in field 2.

Options (If Options 'Yes')			
11 Control Options	12 Delay on First Firing	14 Load Type (for DFL)	16 Alarm Relay Contact
Any firing: V2 Voltage control(V ²) V2CL Current Limit and voltage control VICL Power control (VxI) and current limit (≤100A) PA Firing only: I2 Current control (I ²) OL Open Loop	XFMR Transformer primary XXXX Other configurations	With DLF option: SWIR Short wave infrared elements LTCL Low temperature coefficient load XXXX Without DLF option or High temperature coefficient load	With Alarm option: NC Contact closed on alarm NO Contact open on alarm XX Without alarm option
13 Load Monitoring	15 Overload Alarm	17	18
GRF Serious alarms: thyristor short-circuit, total load failure DLF Partial load failure + GRF NONE No alarms	ICO Overload alarm (≤100A) XXXX No overload alarm	XXXX	XXXX
		19 Compliance Certificate	20
		NONE No certificate CFMC With certificate	NONE

SPARE FUSE AND HOLDER

Current rating amps	Fuse and holder assembly	Fuse and Holder with Microswitch
16	FU1038/16A/00	MSFU1451/16A
25	FU1038/25A/00	MSFU1451/25A
40	FU1451/40A/00	MSFU1451/40A
63	FU2258/63A/00	MSFU2258/63A
80	FU2258/80A/00	MSFU2258/80A
100	FU2760/100A/00	MSFU2760/100A

SPARE FUSE

Current rating amps	Fuse number	Fuse Trip with Indicator
16	CH260024	CS176513U020
25	CH260034	CS176513U032
40	CH330054	CS176513U050
63	CS173087U080	CS176461U080
80	CS173087U100	CS176461U100
100	CS173246U125	CS173246U125

INTERNAL FUSE

Current rating amps	Fuse Trip with Indicator
125	CS173246U160
160	CS173246U250
200	CS173246U315
250	CS176762U315

EUROTHERM INTERNATIONAL SALES AND SERVICE

AUSTRALIA Sydney
Eurotherm Pty. Ltd.
Telephone (+61 2) 9838 0099
E-mail info@eurotherm.com.au

AUSTRIA Vienna
Eurotherm GmbH
Telephone (+43 1) 7987601
E-mail eurotherm@eurotherm.at

BELGIUM & LUXEMBURG Huy
Eurotherm S.A./N.V.
Telephone (+32) 85 274080
E-mail sales@eurotherm-belgium.be

BRAZIL Campinas-SP
Eurotherm Ltda.
Telephone (+5519) 3707 5333
E-mail eurothermltda@eurothermltda.com.br

DENMARK Copenhagen
Eurotherm Danmark A/S
Telephone (+45 70) 234670
E-mail info@eurotherm.se

FINLAND Abo
Eurotherm Finland
Telephone (+358) 22506030

FRANCE Lyon
Eurotherm Automation SA
Telephone (+33 478) 664500
E-mail ea@automation.eurotherm.co.uk

GERMANY Limburg
Eurotherm Deutschland GmbH
Telephone (+49 6431) 2980
E-mail info@regler.eurotherm.co.uk

HONG KONG & CHINA
Eurotherm Limited Aberdeen
Telephone (+85 2) 28733826
E-mail eurotherm@eurotherm.com.hk

INDIA Chennai
Eurotherm India Limited
Telephone (+9144) 24961196
E-mail sales@eurothermdel.com

IRELAND Dublin
Eurotherm Ireland Limited
Telephone (+353 1) 469180
E-mail info@eurotherm.ie

ITALY Como
Eurotherm S.r.l.
Telephone (+39 31) 975111
Fax (+39 31) 977512
E-mail info@eurotherm.it

KOREA Seoul
Eurotherm Korea Limited
Telephone (+82 31) 2738507
E-mail help@eurotherm.co.kr

NETHERLANDS Alphen a/d Ryn
Eurotherm B.V.
Telephone (+31 172) 411752
E-mail sales@eurotherm.nl

NORWAY Oslo
Eurotherm A/S
Telephone Oslo (+47 67) 592170
E-mail info@eurotherm.se

SPAIN Madrid
Eurotherm España SA
Telephone (+34 91) 6616001
E-mail ventas@iberica.eurotherm.co.uk

SWEDEN Malmo
Eurotherm AB
Telephone (+46 40) 384500
E-mail info@eurotherm.se

SWITZERLAND Freienbach
Eurotherm Produkte (Schweiz) AG
Telephone (+41 55) 4154400
E-mail epsag@eurotherm.ch

UNITED KINGDOM Worthing
Eurotherm Limited
Telephone (+44 1903) 268500
E-mail info@eurotherm.co.uk
Web www.eurotherm.co.uk

U.S.A Leesburg VA
Eurotherm Inc.
Telephone (+1 703) 443 0000
E-mail info@eurotherm.com
Web www.eurotherm.com

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