

7300A

MODEL



True Three Phase Thyristor Units for all Load types

Specification Sheet

- **Current range from 16 to 160 amps at 45°C**
- **Voltage up to 500V**
- **CE, UL, cUL approvals**
- **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**
- **Power control**
- **Current limit option**
- **Alarm options include:**
 - **Thyristor short circuit**
 - **Load open circuit**
 - **Partial load failure**
 - **Thyristor over temperature (B125 amps)**
- **Optional digital communications**

Ratings

The current ratings of the 7300A cover the range from 16 amps up to 160 amps, with units rated at 125 amps and above being fan cooled. The voltage rating extends to a maximum of 500 volts. These units consist of three thyristor controlled channels each rated at the specified current and voltage.

Inputs

The 7300A can accept analogue voltage (0-5V or 0-10V) or current (0-20mA or 4-20mA) inputs.

Firing modes

The 7300A 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, including transformer burst firing. 7300A units use one of the following control modes: RMS load voltage squared (V^2), RMS load current squared (I^2) Load power (P), 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 at least one for up to four parallel loads (DLF alarm).

Over temperature shutdown is provided with fan cooled units (above 125 amps) 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.

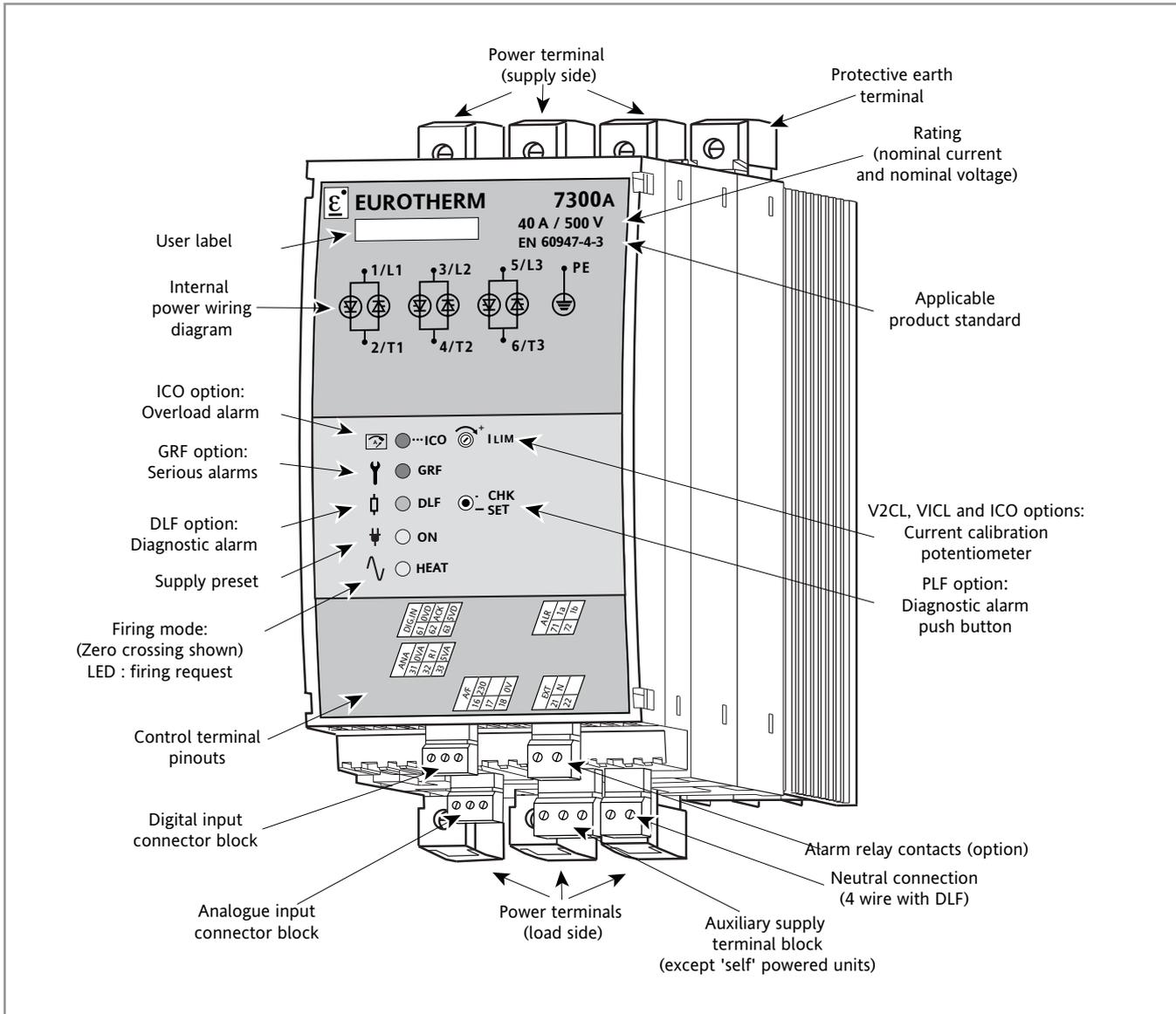
Digital communications

The Modbus communications option allows digital control of the unit, interrogation of the alarms, firing status and on line configuration.

International approvals

CE (EN60947-4-3), UL and cUL (file number 86160)

Example of 7300A layout



Signal connections

Terminal Block	Terminal			Option
	No.	Label	Purpose	
ANA	31	0VA	0V analogue signal	Basic or Options
	32	RI	+analogue signal	
	33	5VA	5V user supply	
A/V	16	230	Auxiliary 230V or	
	17	115	115V supply	
	18	0V	Neutral or 2 nd phase	
DIG.IN	61	0VD	0V logic signal	Over-current 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 (NC 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 micro switch contact	≥125A
	76	3b	Fuse with micro switch contact	
EXT	21	N	Supply Neutral for 4S	DLF
	22		Not connected	
COM	91	A	MODBUS Communications	COMMS
	92	B	MODBUS Communications	
AUX2	19	24V	Comms auxiliary Supply	COMMS
	20	0V5	Supply	
	29	GND	Supply	

Safety specification

PRODUCT STANDARD

The 7300A 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 2/07/93.

SPECIFICATION

Power

Nominal current:	16 A to 160 A at 45°C ambient (see order code)
Nominal voltage:	200 VAC to 500 VAC (see order code)
Frequency	47 to 63 Hz
Auxiliary supply:	Self-powered from supply network, or external (115Vac or 230Vac +10%; -15%).
Consumption:	10VA
Dissipated power	
1.3 W (approx):	per amp per phase. Allow 2 W per amp per phase to include fuse dissipation
Cooling	
Rating ≤100A:	Natural convection
Rating ≥125A:	Fan-cooled

Load

Three-phase industrial load	
Use category:	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

Control

Control type:	Analogue and digital communications option Remote analogue setpoint: 0-5Vdc or 0-10Vdc (100 kΩ =input impedance), 0-20mA or 4-20mA (250Ω input impedance) Potentiometer (10k) for manual setpoint (5Vdc supply available)
Control parameter	
Standard:	Load voltage squared (V^2)
Option:	Apparent power ($V \times I$), Load current squared (I^2), Open loop
Linearity and stability:	Better than ±2% of full scale (balanced supply and load)
Current limit (option)	
Phase angle:	Automatic control transfer from V^2 to I^2 or, from $V \times I$ to I^2 with current recalibration set by potentiometer on front panel
Burst mode 16 cycle base:	Current limited by threshold (quench) set using potentiometer on front panel A monitor signal is available in $V \times I$ for power and current calibration and maintenance
Transient current limit:	Option for transformer primary control in burst firing mode: Safety firing angle ramp at 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 firing by half-cycles
Firing angle variation:	Phase angle

Physical data

Rating (A)	H(mm)	W(mm)	D(mm)		
			Basic	DLF or GRF or Comms	GRF/DLF + Comms
16-40	220	96	164	189	239
63-100	305	144	295	295	372
125-160	498	144	295	295	372

Digital communication

Optional Modbus communication running at 9600 or 19200 baud, allows the units to be controlled and monitored by a supervisory system

Load monitoring (Alarm 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 four identical elements connected in parallel, depending on the load configuration 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 alarm (option)

Overload 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 VICL 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 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

Installation

Mounting:	
Rating from 16 to 63A:	Two symmetric 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 160A:	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 160 amp:	120mm ²

Protection

Thyristor protection:	Varistor and RC snubber
High speed fuses:	
rating ≤100A:	External (optional)
rating ≥125A:	Internal. No fuse for short wave infrared elements if firing at zero crossings or in phase angle firing mode without current limit IP20 without adding additional protection Overvoltage category II
Electrical protection:	

Warranty

2 years

Ordering code

7300A	1	2	3	4	5	6	7	8	9	10	11	12	13
	14	15	16	17	18	19	20	NONE					

1 Current	2 Voltage	4 Fan Supply	5 Load Coupling	7 Firing Mode	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	200V 200 volts 230V 230 volts 277V 277 volts 400V 400 volts 460V 460 volts 480V 480 volts 500V 500 volts 3 Aux. voltage SELF Self-powered 115V 115V external 230V 230V external	16A-100A XXXX No fan 125A-160A 115V 115V fan with 115V or SELF electronics $\geq 125A$ 230V 230V fan with 230V or SELF electronics $\geq 125A$	3S Star without neutral 4S Star with neutral 3D Closed delta 6D Open delta 6 Thyristor Fuse FUSE Standard fuses MSFU Fuses with fuse blown microswitch NONE No fuses (short wave infrared elements) ⁽¹⁾	PA Phase angle C16 base time 16 cycles C64 base time 64 cycles FC1 Single-cycle: 1 base cycle ASC Advanced single-cycle: 1 base cycle non-firing by half cycles in 4S or 6D coupling only	ENG English FRA French GER German 10 Selected Options NONE No options, V ² control and End of code YES Version with Options
8 Input	0mA20 0mA to 20mA 4mA20 4mA to 20mA 0V5 0V to 5V 0V10 0V to 10V				

(1) High speed fuses are not recommended for SWIR loads

Options (If Options 'Yes')

11 Control Options	13 Load Monitoring	15 Overload Alarm	17 Comms Option	19 Certification Option
Any firing: V2 Voltage control (V ²) C16 or PA Firing only V2CL Voltage control (V ²) and Current limit VICL Power control (VxI) and Current limit PA Firing only: I2 Current control (I) OL Open loop	GRF Serious alarms DLF Partial load failure + GRF NONE No alarms	ICO Overload alarm (for DLF option) except codes: SWIR, XFMR, VICL and V2CL XXXX No overload alarm	MOP Digital communications Modbus protocol NONE No comms	NONE No Certificate of Conformity CFMC Certificate of Conformity
12 Delay on First Firing	14 Load type (for DLF)	16 Alarm Relay Contact	18 Comms Option	20
XFMR Transformer primary XXXX Other configurations	For DLF option: SWIR Short wave infrared elements LTCL Low temperature coefficient load XXXX Without DLF option or High temperature coefficient load	NC With alarm option: Contact closed on alarm NO Contact open on alarm XX without alarm option	XXXX No comms option 9K6 9600 Baud 19K2 19200 Baud	NONE

SPARE FUSE AND HOLDER (Triple unit)

Current rating amps	Fuse and holder assembly	Fuse and Holder with Microswitch
16	FU3038/16A/00	MSFU3451/16A
25	FU3038/25A/00	MSFU3451/25A
40	FU3451/40A/00	MSFU3451/40A
63	FU3258/63A/00	MSFU3258/63A
80	FU3258/80A/00	MSFU3258/80A
100	FU3760/100A/00	MSFU3760/100A

SPARE FUSE (3 off per unit)

Current rating amps	Fuse number	Fuse Trip with Indicator
16	CH260034	CS176513U032
25	FU260034	CS176513U032
40	CH330054	CS176513U050
63	CS173087U080	CS176461U080
80	MSFU3087U100	CS176461U100
100	CS173246U160	CS173246U160

INTERNAL FUSE (3 off per unit)

Current rating amps	Fuse Trip with Indicator
125	CS176762U160
160	CS176762U315

Eurotherm: International sales and service

AUSTRALIA Sydney
 T (+61 2) 9838 0099
 E info.au@eurotherm.com

AUSTRIA Vienna
 T (+43 1) 7987601
 E info.at@eurotherm.com

BELGIUM & LUXEMBOURG
 Moha
 T (+32) 85 274080
 E info.be@eurotherm.com

BRAZIL Campinas-SP
 T (+5519) 3707 5333
 E info.br@eurotherm.com

DENMARK Copenhagen
 T (+45 70) 234670
 E info.dk@eurotherm.com

FINLAND Abo
 T (+358) 22506030
 E info.fi@eurotherm.com

FRANCE Lyon
 T (+33 478) 664500
 E info.fr@eurotherm.com

GERMANY Limburg
 T (+49 6431) 2980
 E info.de@eurotherm.com

HONG KONG & CHINA
 T (+85 2) 28733826
 E info.hk@eurotherm.com

Guangzhou Office
 T (+86 20) 8755 5099
 E info.cn@eurotherm.com

Beijing Office
 T (+86 10) 6567 8506
 E info.cn@eurotherm.com

Shanghai Office
 T (+86 21) 6145 1188
 E info.cn@eurotherm.com

INDIA Chennai
 T (+91 44) 24961129
 E info.in@eurotherm.com

IRELAND Dublin
 T (+353 1) 4691800
 E info.ie@eurotherm.com

ITALY Como
 T (+39 31) 975111
 E info.it@eurotherm.com

KOREA Seoul
 T (+82 31) 2738507
 E info.kr@eurotherm.com

NETHERLANDS Alphen a/d Rijn
 T (+31 172) 411752
 E info.nl@eurotherm.com

NORWAY Oslo
 T (+47 67) 592170
 E info.no@eurotherm.com

POLAND Katowice
 T (+48 32) 2185100
 E info.pl@eurotherm.com

SPAIN Madrid
 T (+34 91) 6616001
 E info.es@eurotherm.com

SWEDEN Malmo
 T (+46 40) 384500
 E info.se@eurotherm.com

SWITZERLAND Wollerau
 T (+41 44) 7871040
 E info.ch@eurotherm.com

UNITED KINGDOM Worthing
 T (+44 1903) 268500
 E info.uk@eurotherm.com
www.eurotherm.co.uk

U.S.A. Leesburg VA
 T (+1 703) 443 0000
 E info.us@eurotherm.com
www.eurotherm.com

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