

7300A

MODELS



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 (125 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 (125A and above) 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.

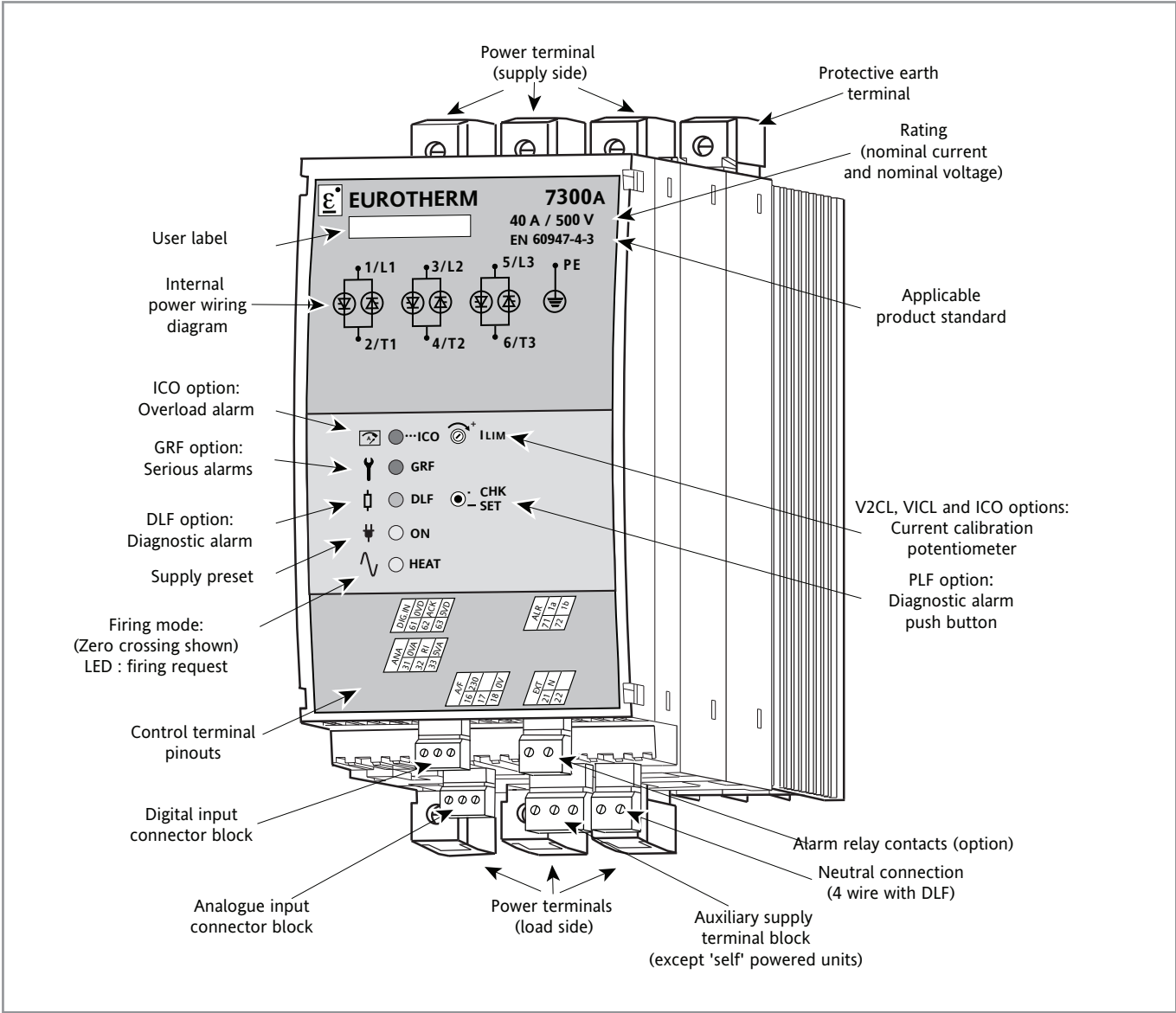
Digital communications

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/F	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 45	DLF
	22		Not connected	
COM	91	A	Modbus Communications	COMMS
	92	B	Modbus Communications	
AUX2	19	24V	Comms auxiliary Supply	COMMS
	20	0V5	Comms auxiliary Supply	
	29	GND	Comms auxiliary 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:	16A to 160A at 45°C ambient (see order code)
Nominal voltage:	200V ac to 500V ac (see order code)
Frequency:	47 to 63Hz
Auxiliary supply:	Self-powered from supply network, or external (115V ac or 230V ac +10%; -15%)
Consumption:	10VA
Dissipated power	1.3 W (approx): per amp per phase. Allow 2W 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: 0-5V dc or 0-10V dc (100kΩ = input impedance), 0-20mA or 4-20mA (250Ω input impedance) Potentiometer (10kΩ) for manual setpoint (5V dc supply available, 2mA max.)
Control parameter	Standard: Load voltage squared (V ²) Option: Apparent power (V x 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 x 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 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 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	16A-40A	63-100A	125-160A
Height	220mm	96mm	498mm
Width	96mm	144mm	144mm
Depth	Basic 214mm	372mm	372mm
	DLF or GRF or Comms 239mm	372mm	372mm
	GRF/DLF +Comms 264mm	372mm	372mm

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)
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Overload alarm (option)

Overload alarm:	Operation stopped if current threshold exceeded
(ICO Chop off option):	Only available with zero crossing firing and DLF option (not compatible with 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 (0.25A 230V ac; 32V dc) is either open or closed on alarm depending on the code

Environment

Temperature	Use: 0°C to 45°C at max. altitude of 1000m Storage: -10°C to 70°C
Pollution:	Degree 2 acceptable (defined by IEC60 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

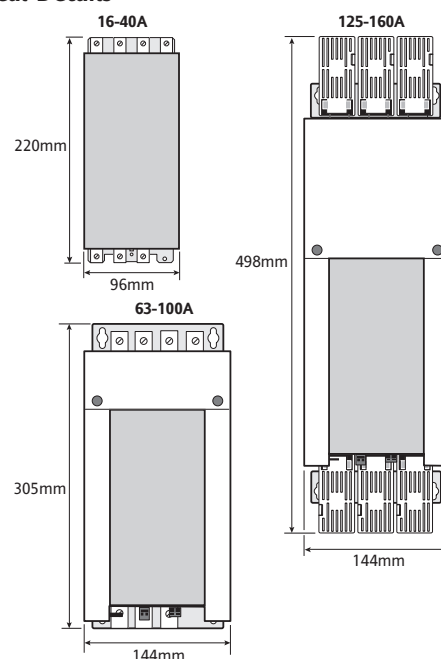
Protection

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
Electrical protection:	IP20 without adding additional protection Overvoltage category II

Warranty

2 years

Mechanical Details



7300A	1	2	3	4	5	6	7	8	9	10	11	12	13

14	15	16	17	18	19	20
						NONE

Options (If Options 'YES')

11 Control Options	14 Load Type (for DFL)
Any firing:	With DFL option:

5 Load Coupling	
3S	Star without neutral
4S	Star with neutral
3D	Closed delta
6D	Open delta

10 Options	
NONE	No options, standard V ² control and End of code
YES	(specify further code)

13 Load Monitoring	
GRF	Serious alarms: thyristor short-circuit, total load failure
DLF	Partial load failure + GRF
NONE	No alarms

18 Comms Option	
XXXX	No comms option
9K6	9600 Baud
19K2	19200 Baud

20
NONE

Current rating amps	Fuse number	Fuse Trip with Indicator
16	CH260034	CS176513U032
25	CH260034	CS176513U032
40	CH330054	CS176513U050
63	CS173087U080	CS176461U080
80	CS173087U100	CS176461U100
100	CS173246U160	CS173246U160
Internal fuse		
125	→	CS176762U160
160	→	CS176762U31

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