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.

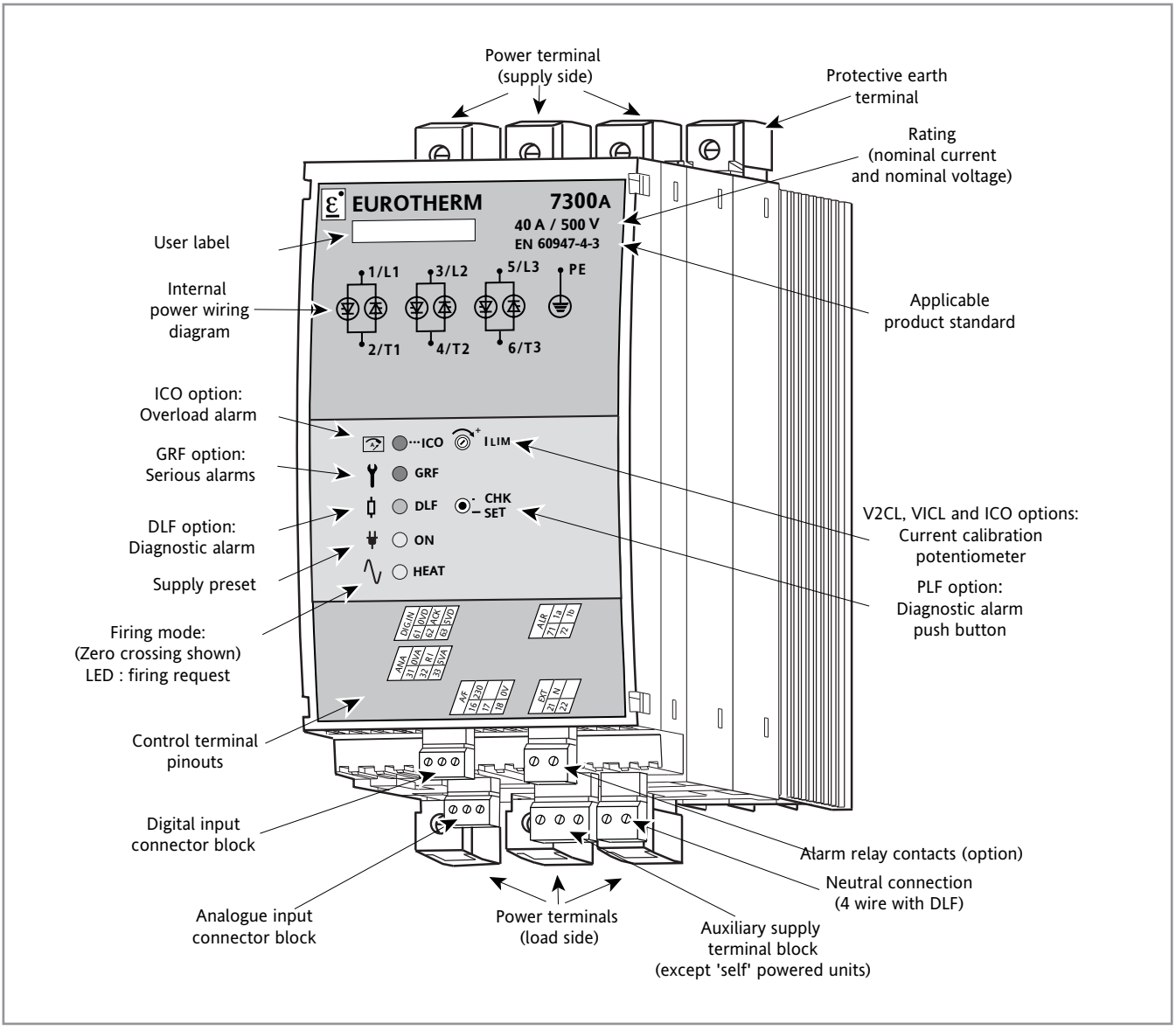
Digital communications

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 No.	Label	Purpose	Option
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 2nd 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	Alarms
	72	1b	contact (NC code)	
	73	1a	Alarm relay	
	74	1b	contact (NO code)	
ADJ.CAL	66	0VC	0V calibration	V x I control
	67	HRC	Calibration control	
MSF	75	3a	Fuse with micro	≥125A
	76	3b	switch contact	
EXT	21	N	Supply Neutral for 4S	DLF
	22		Not connected	
COM	91	A	MODBUS	COMMS
	92	B	Communications	
AUX2	19	24V	Comms auxiliary	COMMS
	20	0V5	Supply	
	29	GND		

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 Compatability 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 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 (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 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 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

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

16A	16 amps
25A	25 amps
40A	40 amps
63A	63 amps
80A	80 amps
100A	100 amps
125A	125 amps
160A	160 amps

2 Voltage

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

4 Fan Supply

16A-100A	
XXXX	No fan
125A-160A	
115V	115V fan with 115V or SELF electronics ≥125A
230V	230V fan with 230V or SELF electronics ≥125A

5 Load Coupling

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)

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

7 Firing Mode

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

8 Input

0mA20	0mA to 20mA
4mA20	4mA to 20mA
0V5	0V to 5V
0V10	0V to 10V

9 Manual Language

ENG	English
FRA	French
GER	German

10 Selected Options

NONE	No options, V² control and End of code
YES	Version with Options

Options (If Options 'Yes')

11 Control Options

Any firing:	
V2	Voltage control(V²)
C16 or PA Firing only	
V2CL	Voltage control (V²) and Current limit
VICL	Power control (VxI) and Current limit
PA Firing only:	
I2	Current control (I²)
OL	Open loop

12 Delay on First Firing

XFMR	Transformer primary
XXXX	Other configurations

13 Load Monitoring

GRF	Serious alarms
DLF	Partial load failure + GRF
NONE	No alarms

14 Load type (for DLF)

For DLF option:	
SWIR	Short wave infrared elements
LTCL	Low temperature coefficient load
XXXX	Without DLF option or High temperature coefficient load

15 Overload Alarm

ICO	Overload alarm (for DLF option) except codes: SWIR, XFMR, VICL and V2CL
XXXX	No overload alarm

16 Alarm Relay Contact

NC	With alarm option: Contact closed on alarm
NO	Contact open on alarm
XX	without alarm option

17 Comms Option

MOP	Digital communications Modbus protocol
NONE	No comms

18 Comms Option

XXXX	No comms option
9K6	9600 Baud
19K2	19200 Baud

19 Certification Option

NONE	No Certificate of Conformity
CFMC	Certificate of 'Conformity

20

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	**CH260034**	**CS176513U032**
40	**CH330054**	**CS176513U050**
63	**CS173087U080**	**CS176461U080**
80	**CS173087U100**	**CS176461U100**
100	**CS173246U160**	**CS173246U160**

INTERNAL FUSE (3 off per unit)

Current rating amps	Fuse Trip with Indicator
125	**CS176762U160**
160	**CS176762U315**

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