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.

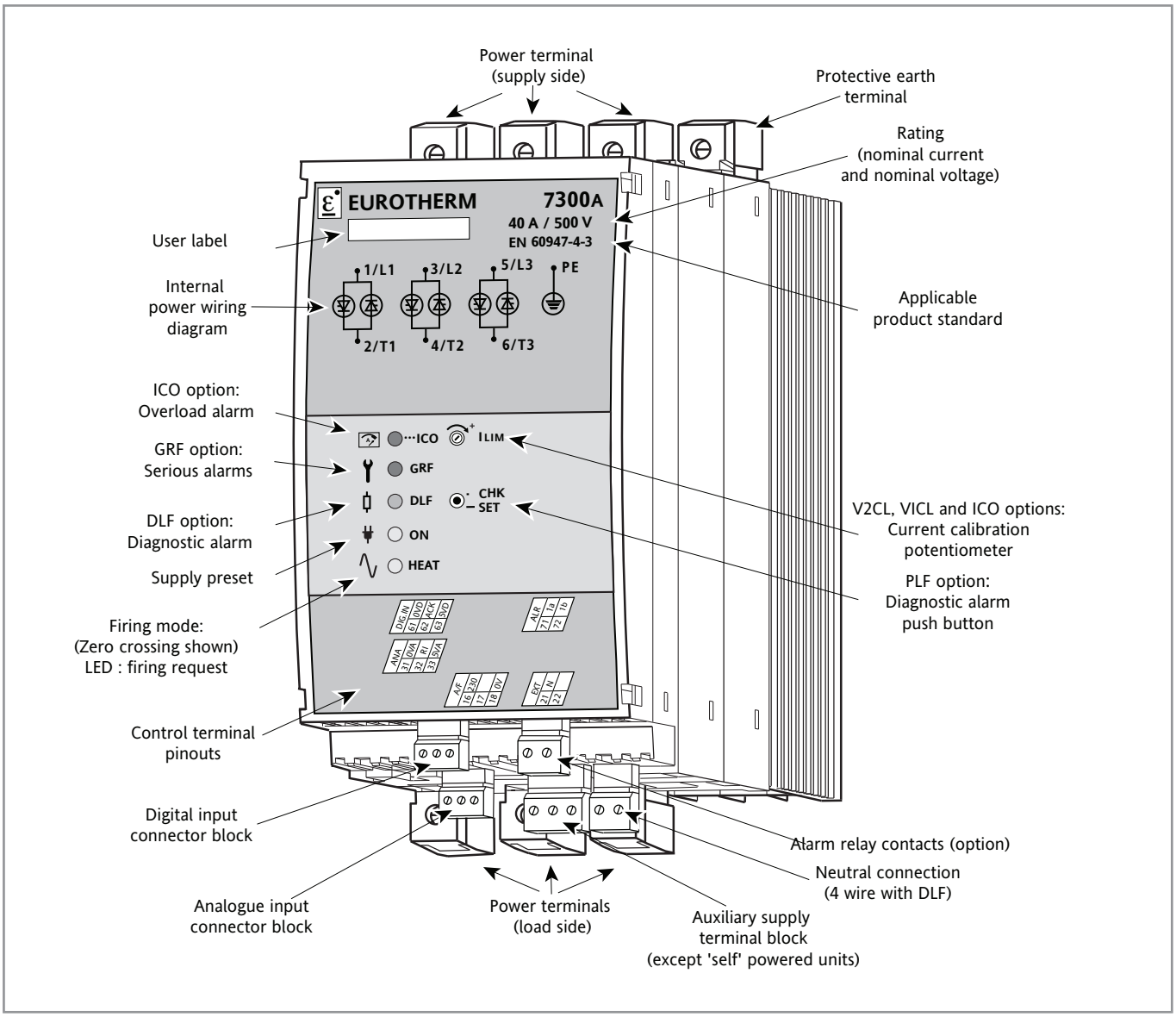
Digital communications

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 No.	Terminal Label	Terminal Purpose	Option
ANA	31 32 33	0VA RI 5VA	0V analogue signal + analogue signal 5V user supply	Basic or Options
A/F	16 17 18	230 115 0V	Auxiliary 230V or 115V supply Neutral or 2nd phase	
DIG.IN	61 62 63	0VD ACK 5VD	0V logic signal ICO acknowledgement 5V user supply	Over-current alarm
ALR	71 72 73 74	1a 1b 1a 1b	Alarm relay contact (NC code) Alarm relay contact (NO code)	Alarms
ADJ.CAL	66 67	0VC HRC	0V calibration Calibration control	V x I control
MSF	75 76	3a 3b	Fuse with micro switch contact	≥125A
EXT	21 22	N	Supply Neutral for 4S Not connected	DLF
COM	91 92	A B	Modbus Communications	COMMS
AUX2	19 20 29	24V 0V5 GND	Comms auxiliary Supply	COMMS

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	16A40A	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)

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 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 (0.25A 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: 6mm²
40 and 63 amp: 16mm²
80 and 100 amp: 35mm²
125 to 160 amp: 120mm²

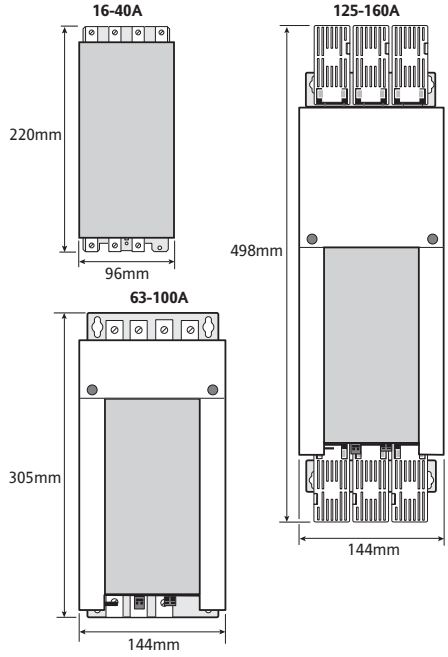
Protection

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



Ordering code

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

14	15	16	17	18	19	20
						NONE

Basic Product

7300A	Three Phase Power Controller

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 Auxiliary Voltage

SELF	None (standard)
115V	115 volt supply
230V	230 volt supply

4 Fan Power Supply

16A-100A	
XXXX	No fan (only for current <125A)
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 Fuse

FUSE	Standard fuses
MSFU	Fuses with fuse blown microswitch
NONE	No fuses (short wave infrared elements) *

** 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 Options

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

Options (If Options 'YES')

11 Control Options

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 (≤100A)
PA Firing only:	
I2	Current control (I^2)
OL	Open Loop

12 Delay on First Firing

XFMR	Transformer primary
XXXX	Other configurations

13 Load Monitoring

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

14 Load Type (for DFL)

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

15 Overload Alarm

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

16 Alarm Relay Contact

With Alarm option:	
NC	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 Compliance Certificate

NONE	No certificate of Conformity
CFMC	Certificate Conformity

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NONE	

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		
125	→	CS176762U160
160	→	CS176762U31

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