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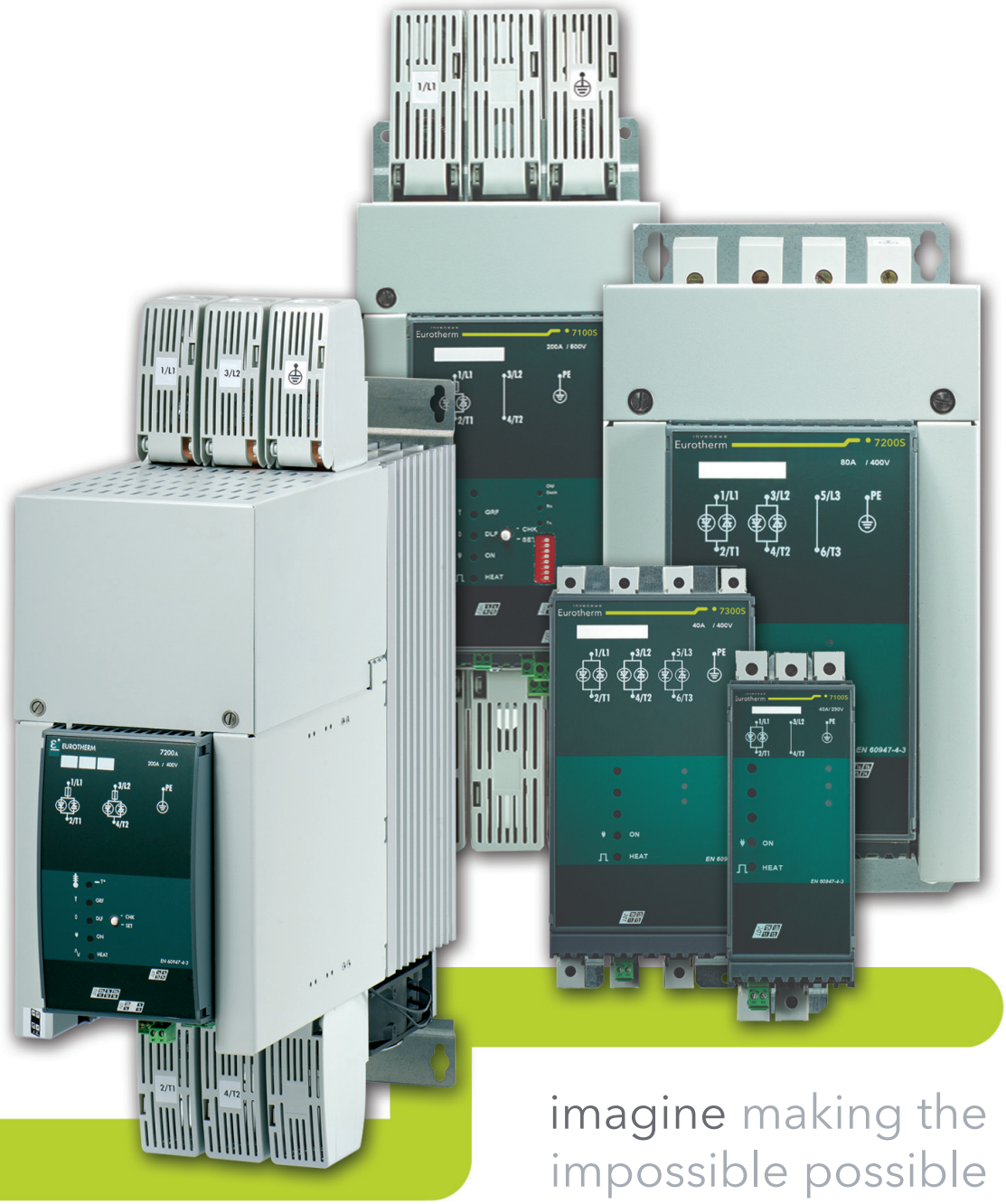
7000

Series power units



imagine making the impossible possible

An innovative series...

Our formidable range of power products cover all types of load and voltage but **imagine** having the power to save energy. With many features like high performance alarm strategy and advanced diagnostic load fault detection, Eurotherm is the only choice for your power control applications. Add to this, an absolute commitment to technological innovation, constant reinvestment in research and development, and a team of dedicated experts who understand your problems and processes; we can and do **imagine** making the impossible possible for our customers.

The 7000 Series incorporate industrial power switches and power controllers to suit virtually all types of loads:

- **From simple to sophisticated**
- **Single-phase or three-phase loads**
- **Extensive range of current ratings**
- **Compatible with all industrial voltage supplies**
- **Simple and quick to install, commission and maintain**
- **Reliable and easy to use**

A Choice for all Load Configurations

7100 for single-phase loads
7200 for 2 leg control of three-phase loads
7300 for true three-phase loads

Three Levels of Functionality

To meet your specific needs, the 7000 Series is designed with three levels of functionality:

Load Controller 7000L
Power switches for economical, high performance control of simple resistive loads

Smart Controller 7000S
Intelligent power switches for total safety in control of resistive or short wave infrared (SWIR) loads

Advanced Controller 7000A
Sophisticated power controllers which may be adapted to drive virtually all load types and can be easily integrated into complete control architectures

Load Controller ... Single-phase power switches

The 7000L power switches are used with single-phase low temperature coefficient resistive loads.
The range of current ratings extends from 16A to 100A and voltages up to 500V.

Simple and direct implementation
These units provide effective replacements for electromechanical power relays:
- *fast switching*
- *no wear*
- *quiet operation*

Compliance with EMC directive relating to electrical and electromagnetic interference is standard on the 7000L

Simple and reliable
- *self-powered units*
- *no commissioning required*
- *resistive loads*

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power to save energy

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...for all power control applications

Smart Controller ... Intelligent power switches

The 7000S intelligent power switches are used with single-phase and three-phase loads as well as low temperature coefficient, resistive or short wave infrared loads. The range of current ratings extends from 16A to 250A and voltages up to 500V.

Quick and reliable diagnostics to maintain productivity levels

On the fascia, information about:

- *the condition of the load*
- *the state of the thyristor including overheating*
- *the presence of the power supply*

Easy commissioning and adjusting

- *self-powered units*
- *over-temperature security for fan cooled units*

Fault detection clearly indicated for a better efficiency

Front fascia LEDs show the unit status in real time:

- *diagnostic load fault detection*
- *short circuit thyristor fault detection*
- *load failure detection*
- *over-temperature alarm (fan cooled units)*
- *digital communications*

Advanced Controller ... Power controllers

The 7000A power controllers are used with single-phase and three-phase loads of virtually all types.
The range of current ratings extends from 16A to 250A and voltages up to 500V.

An adaptable power unit

- *choice of input*
- *choice of control mode*
- *choice of firing mode*
- *alarms adaptable to the load*
- *over-temperature shutdown of fan cooled units (>100 amps)*

All types of electrical loads

- *high temperature coefficient*
- *resistive load*
- *variable resistance over time*
- *transformer primaries*
- *inductive loads*

Clear alarm information

- *short circuit thyristor detection*
- *load failure detection*
- *over-temperature alarm (fan cooled units)*

Advanced diagnosis for a real time monitoring

- *diagnostic load fault detection*
- *high performance alarm strategy*
- *supply faults*
- *thyristor and load faults*
- *signalling of faults*
- *front panel LEDs*
- *alarm contacts*
- *digital communications (7300A)*

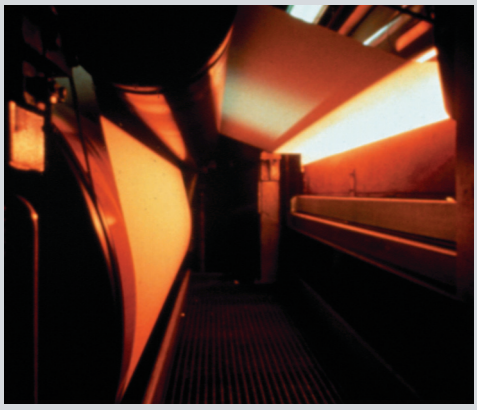
Real-world applications

Covering all types of load and voltage the 7000 series can be used in many applications utilising features such as high performance alarm strategy and advanced diagnostics load fault detection to solve problems and ultimately save you money.

Short wave infrared

The power components are designed to drive short wave infrared (SWIR) sources as well as low temperature coefficient resistive loads.

An additional option 'Diagnostic load Fail' allows you to immediately know the status of the load.

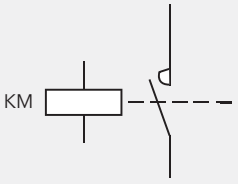


Applications:
Plastic
Paper drying
Car paint drying

Replacement of electromechanical contactors

These units provide effective replacements for electromechanical power relays, they offer you many benefits:

- No noise
- No wear
- Fast switching
- Quiet operation
- Simple and reliable
- Self-powered units
- No commissioning required
- Better control
- Increase of the heater element life



Plant monitoring

The 7000S and 7000A series offer:

- High performance alarm strategy including:
  - Supply faults
  - Thyristor faults (thyristors in short circuit)
  - Load faults (partial or total load failure)
  - Over-temperature
- Signalling of faults:
  - Front panel LEDs
  - Alarm contact

Benenfits:
Scrap reduction and process optimization

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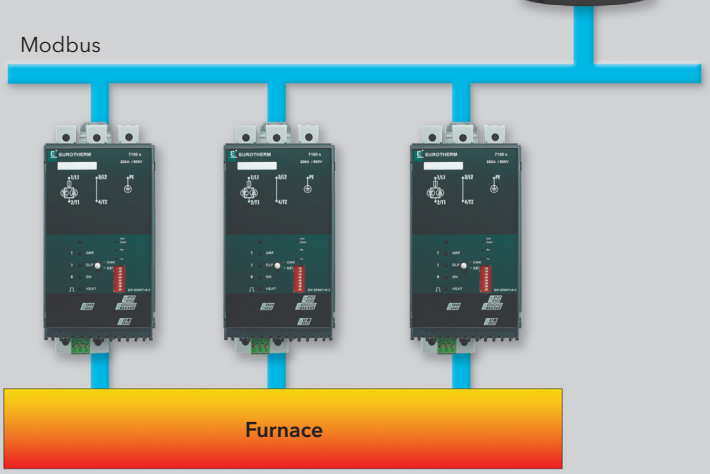
Multizone heating

Digital communications offer a significant Return on Investment

- Saving time in configuration:
  - iTools configurator can clone the configuration of a unit and download it into another unit
- Reduced wiring
- Centralised driving of the power units
- Monitoring of the plant
- Integration into complete control architecture

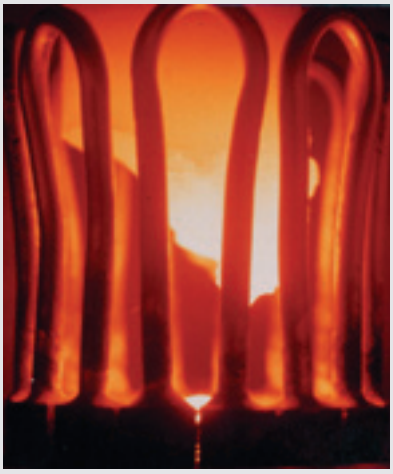


High power application

The 7000S and 7000A series offer a wide range of current ratings, from 16A up to 250A in single-phase, up to 200A in two phase and up to 160A in three phase control.

Load types for 7000S range: resistive and short wave infrared.

Load types for 7000A range: resistive, short wave infrared and inductive loads.



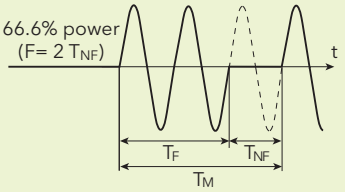
Complex loads

With many firing and control modes (U2, I2, UxI), the 7000A series suits virtually all load types and applications:

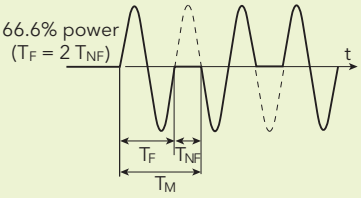
- Burst firing for resistive loads with low temperature coefficient
- Single cycle (e.g. short wave infrared)
- Phase angle (e.g. inductive loads, high temperature coefficient loads)

Our expert team will provide you with advice in relation to the choice of firing modes.

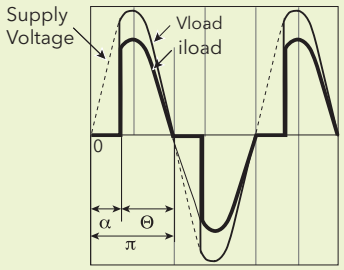
Standard single- cycle (T_F or T_{NF} = 1 cycle)



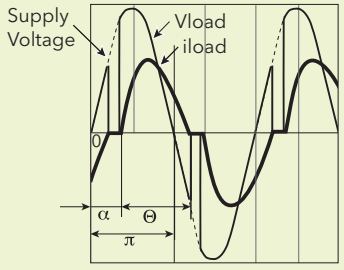
Advanced single cycle (T_{NF} or 0.5 cycles: T_M reduced)

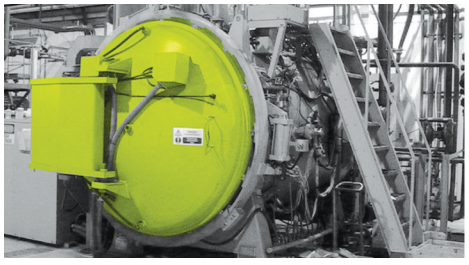


Phase angle for resistive load



Phase angle for inductive load





Selection guide and technical specifications

7000 Series Power Units	7100L 	7100S 	7200S 
Current	16A to 100A	16A to 250A	16A to 200A
Voltage	48V to 500V	100V to 500V	200V to 500V
Frequency	47-63Hz	47-63Hz	47-63Hz
Operating temperature	45°C	45°C	45°C
Fan cooled	–	250A unit	from 125A
Electronic supply	Self Supply	Self Supply	Self Supply
Load Configuration			
Single-phase	Yes	Yes	–
3-phase load in delta or star w/o neutral	–	–	Yes
3-phase load star with neutral	–	–	–
3-phase load in open delta	–	–	–
Load Type			
Resistive with low temperature coefficient	Yes	Yes	Yes
Short wave infrared	–	Yes, 100A max.	–
Resistive with high temperature coefficient	–	–	–
Inductive loads/Transformer primary	–	–	–
Input Type			
Logic	DC(5-32V), AC(100-230V)	DC(5-32V), AC(100-230V	DC(5-32V), AC(100-230V))
Analogue	–	4-20mA	4-20mA
Local potentiometer	–	–	–
Digital input (with communication)	–	Yes (logic input excluded)	Yes (logic input excluded)
Firing modes			
Zero crossing	Yes	Yes	Yes
Burst firing	–	Yes	Yes
Single cycle	–	With communication	–
Advanced single cycle	–	With communication	–
Burst with first firing delay	–	–	–
Phase angle	–	–	–
Control and Current Limitation Options			
Open loop – PA only	–	–	–
Voltage feedback (V2)	–	With communication	With communication
Current feedback (I2) - PA only	–	–	–
Current limit (Transfer V2<->I2) - PA only	–	–	–
Power feedback (VxI)	–	–	–
Alarm Options			
Total load failure & thyristor short circuit	–	Yes	Yes
Partial load failure	–	Yes	Yes
Over-temperature (as standard)	–	≥250A	≥125A
Overload	–	–	–
Alarm output	–	Relay	Relay
Communications			
Protocols	–	Modbus RTU	Modbus RTU
Mechanic			
Mounting	DIN Rail / Bulkhead	DIN Rail (Up to 100A) / Bulkhead	DIN Rail (Up to 63A) / Bulkhead
Fuse	External	External ≤100A Internal ≥125A	External ≤100A Internal ≥125A
Direct channel wiring (Phase or Neutral)	–	Internal up to 100A	Internal up to 100A
Standards			
CE	Yes	Yes	Yes
EN60947-4-3 Compliance	Yes	Yes	Yes
UL / cUL	Yes, 63A max. and pending	Yes, 63A max. and pending	Pending
IP Protection	IP20	IP20	IP20

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7300S 	7100A 	7200A 	7300A 
16A to 160A	16A to 250A	16A to 200A	16A to 160A
200V to 500V	100V to 500V	200V to 500V	200V to 500V
47-63Hz	47-63Hz	47-63Hz	47-63Hz
45°C	45°C	45°C	45°C
from 125A	250A unit	from 125A	from 125A
Self Supply	Self or External supply (115V or 230V)	Self or External supply (115V or 230V)	Self or External supply (115V or 230V)
–	Yes	–	–
Yes	–	Yes	Yes
Yes	–	–	Yes
Yes	–	–	Yes
Yes	Yes	Yes	Yes
Yes, ≤100A	Yes	Yes, ≤100A	Yes
–	Yes	–	Yes
–	Yes	–	Yes
DC(5-32V), AC(100-230V)			
4-20mA	0-5V, 0-10V, 0-20mA, 4-20mA	0-5V, 0-10V, 0-20mA, 4-20mA	0-5V, 0-10V, 0-20mA, 4-20mA
–	Yes (0-5V input)	Yes (0-5V input)	Yes (0-5V input)
Yes (logic input excluded)	–	–	–
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
With communication	Yes	Yes	Yes
With communication	Yes	–	Yes
–	Yes	–	Yes
–	Yes	–	Yes
–	Yes	–	Yes
With communication	Yes	Yes	Yes
–	Yes	–	Yes
–	Yes	–	Yes
–	Yes, 100A max.	–	Yes
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
≥125A	≥250A	≥125A	≥125A
–	Yes, 100A max	–	Yes
Relay	Relay	Relay	Relay
Modbus RTU	–	–	Modbus RTU
DIN Rail (Up to 40A) / Bulkhead	DIN Rail (Up to100A) / Bulkhead	DIN Rail (Up to 63A) / Bulkhead	DIN Rail (Up to 40A) / Bulkhead
External ≤100A Internal ≥125A	External ≤100A Internal ≥125A	External ≤100A Internal ≥125A	External ≤100A Internal ≥125A
N/A	Internal up to 100A	Internal up to 100A	N/A
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
Yes	Yes, 100A max. and pending	Pending	Yes
IP20	IP20	IP20	IP20

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