ZAPI® S.p.A.

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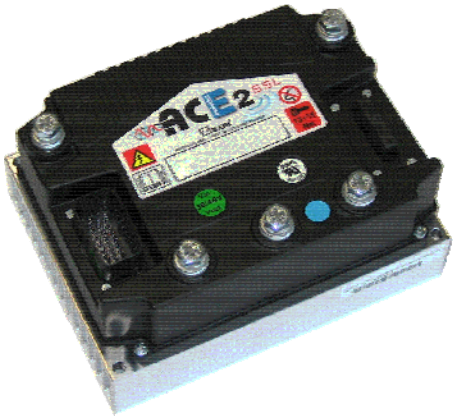
Datasheet

ACE2 2µC



DESCRIPTION

ACE2 2µC is a controller designed to control AC induction, BLDC and PMAC motors, in the range from 5 kW to 12 kW continuous power, used in a wide range of battery-powered vehicles.

Two power-rating variants are available:
- **ACE2**: base power ratings.
- **ACE2 PW**: increased power ratings.

APPLICATIONS

ACE2 2µC is designed to handle all the electric functions usually present in material-handling machines.

Typical applications are:
Counterbalanced trucks with load up to 2 tons, reach trucks, order pickers, tractors, aerial-access equipment (telescopic booms and scissor lifters).
Also, ACE2 2µC may be suitable for other applications such as electric or hybrid vehicles in E-mobility market.

FEATURES

- Nominal voltage from 24 V to 96 V.
- Two microcontrollers for main and safety functions, 320+ kByte embedded flash memory.
- 3 digital inputs.
- 4 analog inputs with 10-bit resolution.
- Input for analog motor thermal sensor.
- Compatible with several types of speed sensors:
  - Incremental encoder (default).
  - Sin/cos sensor.
  - Set of three Hall sensors.
  - Resolver (adding an external interface).
- CAN bus interface up to 500 kbit/s or 1 Mbit/s (on request).
- 11-bit and 29-bit communication supported.
- 2 auxiliary supply outputs (+12V / +5V; max 100 mA for +12V, max 100 mA for +5V).
- 2 PWM voltage-controlled low-side outputs for line contactor and electromechanical brake.
- 1 auxiliary PWM voltage-controlled low-side output.
- Built-in freewheeling diodes.
- Dither injection with configurable amplitude and frequency.
- Protection from overload, short circuit, open load and ESD.
- Ambient temperature
  - Operating: -40 °C ÷ +40 °C.
  - Storage: -40 °C ÷ +85 °C.
- Sealed connector (23-pins Ampseal).
- Access to status and diagnostic information.

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MODEL CHART

Model	Nominal voltage	Voltage range	2-min current rating [Arms]	S2 60-min current rating [Arms]
ACE2	24V	10 V ÷ 35 V	450	225
			400	200
	36/48V	10 V ÷ 65 V	400	200
			350	170
	72/80V	30 V ÷ 115 V	250	125
	96V	30 V ÷ 130 V	215	105
ACE2 PW	24V	10 V ÷ 35 V	550	270
			500	250
	36/48V	10 V ÷ 65 V	500	250
			450	225
	72/80V	30 V ÷ 115 V	350	175
	96V	30 V ÷ 130 V	300	150

Current ratings are based on an initial heat sink temperature of 40 °C and a maximum heat sink temperature of 85 °C. No additional external heat sink is used for the 2-minute rating test.

Inverter can continuously deliver the rated RMS current only if it is adequately cooled. When it is equipped with its own finned heat sink, a proper dissipation is obtained by applying a 100 m^3/h airflow. In case the inverter is provided with the base plate, it is customer's duty to design an adequate cooling system that can dissipate the heat produced by the inverter, keeping its temperature below 85 °C.

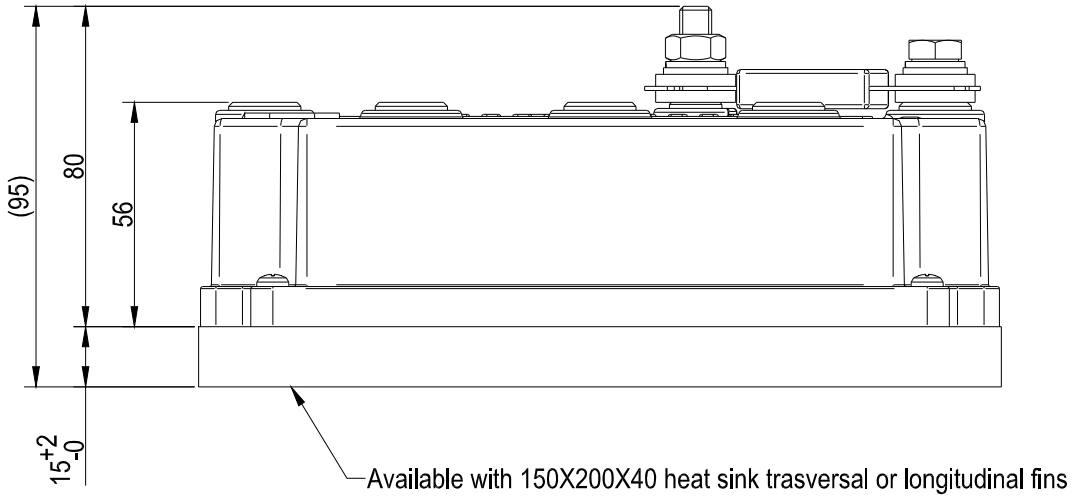
TECHNICAL DATA

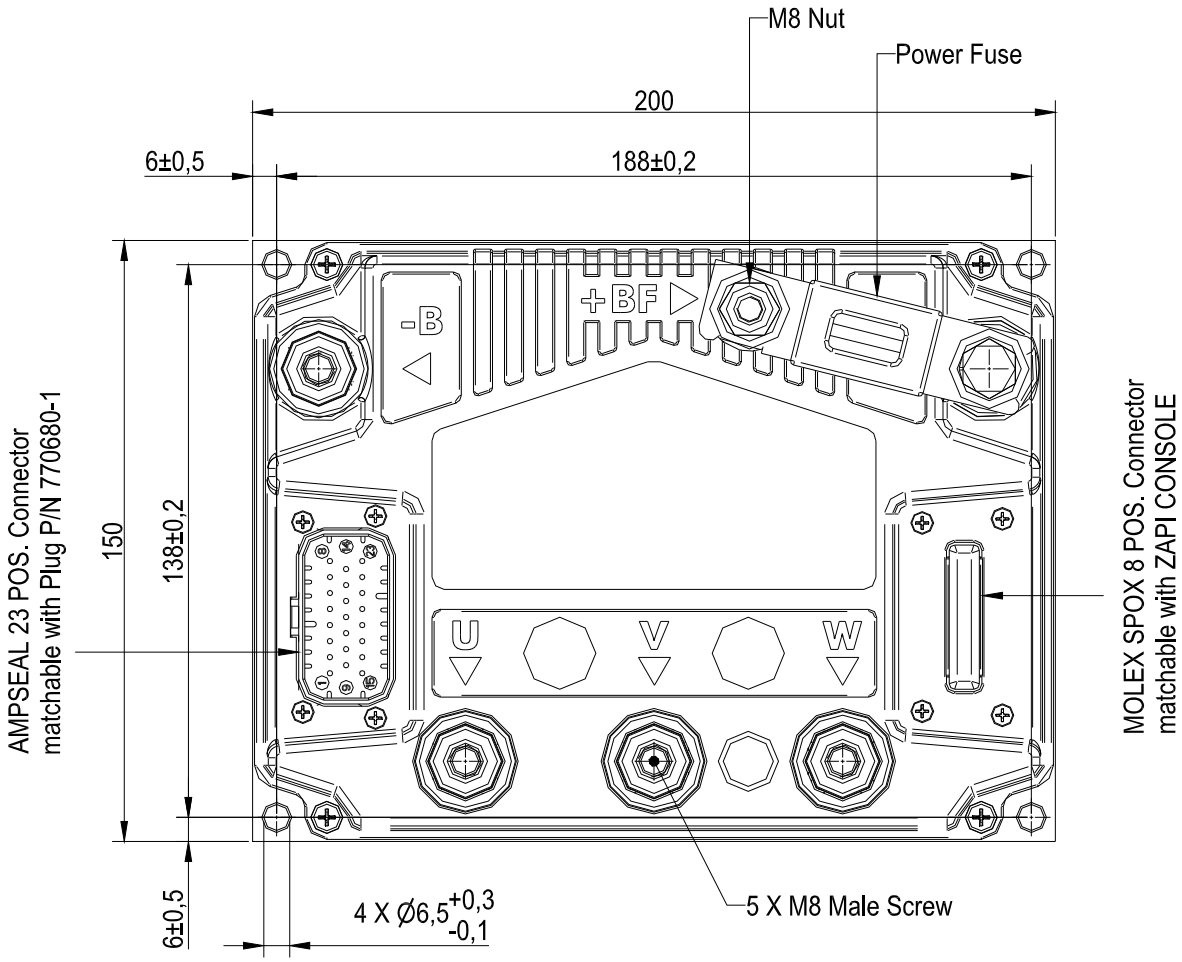
Connector	23-pins Ampseal
Microcontrollers	2
Memory	2 x (320+ kB Flash, 32 kB SRAM, 64 kB emulated EEPROM)
Digital inputs	3
Analog inputs	4
PWM voltage-controlled outputs	3
Input for motor thermal sensor	1
+12V / +5V auxiliary supply output	1 (max 100 mA)
+5V auxiliary supply output	1 (max 100 mA)
CAN bus interface	2 (one for each microcontroller)
Encoder interface	1

REGULATIONS

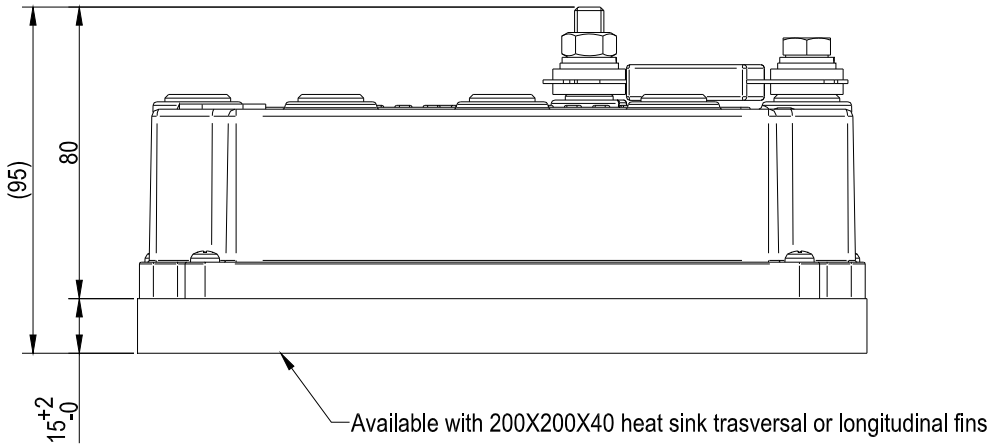
UL certificate	UL 583 compliant (AU3503).
Functional safety	Applicable requirements of EN 1175-1:2010, Compliant to upcoming revision of EN1175.
EMC	Applicable requirements of EN 12895.
IP code	IP65.

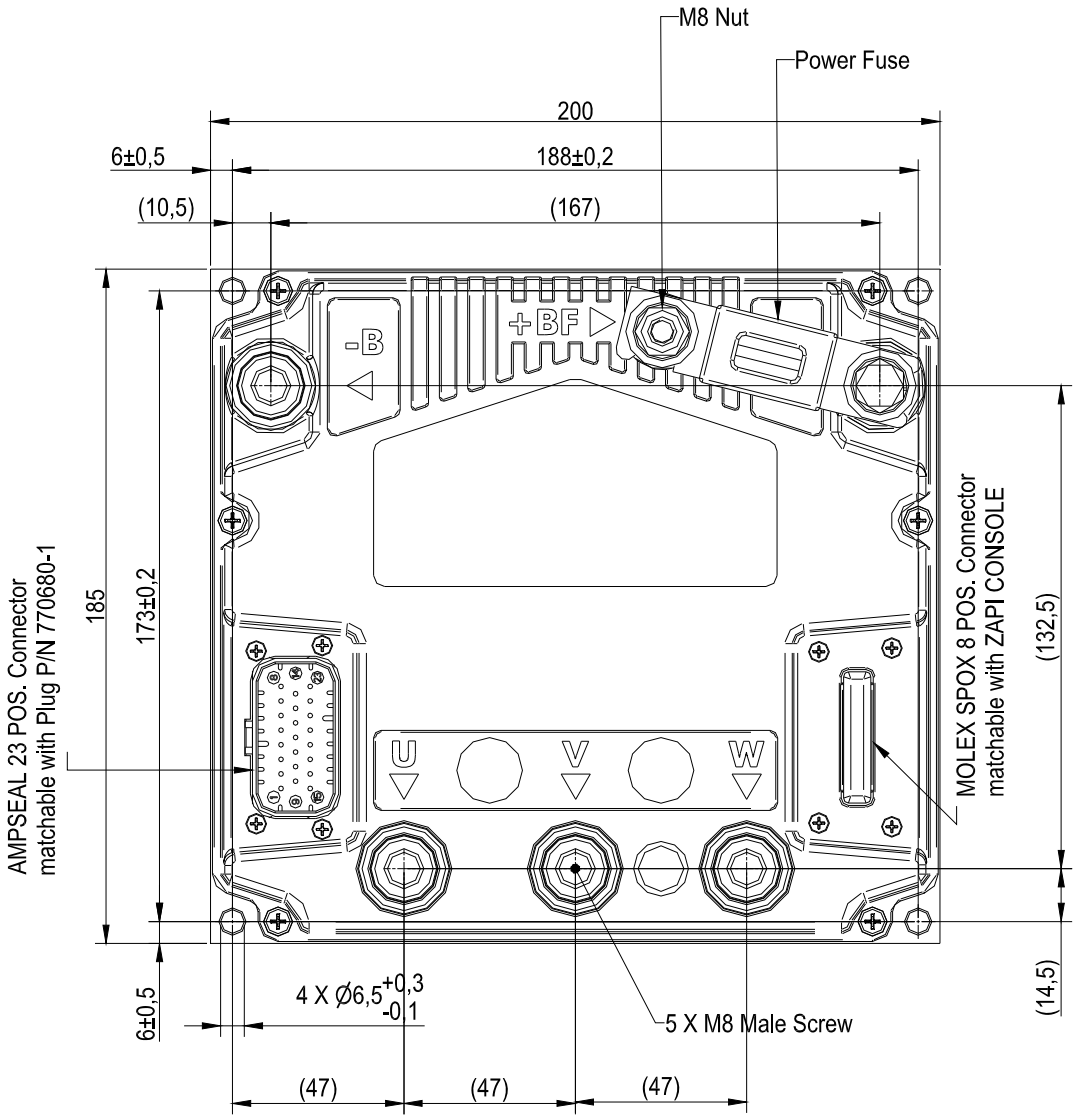
DIMENSIONS – ACE2





DIMENSIONS – ACE2 PW





TYPICAL WIRING DIAGRAM