Datasheet

COMBIAC0 / ACE0 2µC

DESCRIPTION

COMBIAC0 / ACE0 inverter is suitable for controlling several type of motors (AC induction, BLDC, PMAC and SyncRel) in the range from 2 kW to 5 kW continuous power, adopted in battery-powered trucks for material handling. Additional DC controller is available for applications with DC series-excited pump motor up to 7 kW.

COMBIAC0 / ACE0 is available with a 35-poles Ampseal connector. The high number of I/O accommodates a wide range of vehicle controls and sensors.

COMBIAC0 / ACE0 can easily interface with a wide range of external device via CAN bus.

APPLICATIONS

COMBIAC0 / ACE0 is designed to handle all the electric functions usually present in material-handling machines.

Typical applications are:
Walkie and rider pallet trucks, stackers, low level order pickers, small counterbalance truck, aerial-lift platform boom and scissor lift.

COMBIAC0 / ACE0 may also be suitable for other applications not listed here.

FEATURES

- Nominal voltage from 24 V to 120 V.
- Microcontroller for main functions, 576+ kByte embedded flash memory.
- Microcontroller for safety functions, 320+ kByte embedded flash memory.
- Up to 11 active-high digital inputs.
- Up to 2 active-low digital inputs.
- 2 analog inputs (range 0 V ÷ 10 V) with 10-bit resolution.
- Input for an analog motor thermal sensor.
- Compatible with several types of speed sensors:
    - Incremental encoder (default).
    - Incremental encoder + PWM + index.
    - Sin/cos sensor.
    - Set of three Hall sensors.
    - Resolver (adding an external interface).
- CAN bus interface up to 500 kbit/s.
- 11-bit and 29-bit communication supported.
- Two auxiliary supply outputs (+12V / +5V; max 200 mA for +12V, max 100 mA for +5V).
- 4 PWM voltage-controlled low-side outputs.
- 4 on/off low-side outputs.
- 2 PWM current-controlled low-side outputs with current feedback (up to 1.5 A continuous).
- High-side driver output (only for 24V version).
- Built-in freewheeling diodes.
- Dither injection configurable in 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 (35-pins Ampseal).
- Access to status and diagnostic information.

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MODEL CHART

MODEL	Nominal voltage	2-min rated current [Arms]	S2-60min rated current [Arms]	Max current for DC chopper [A]
ACE0STANDARD	24V	220	110	-
	36/48V	180	90	-
ACE0 POWER	24V	350	160	-
		320		-
	36/48V	320	140	-
		280		-
	72/80V	200	100	-
	120V	100	50	-
COMBIAC0 STANDARD	24V	220	110	270
	36/48V	180	90	220
COMBIAC0 POWER	24V	350	160	400
		320		
	36/48V	320	140	300
		280	140	
	72/80V	200	100	200

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.

REGULATIONS

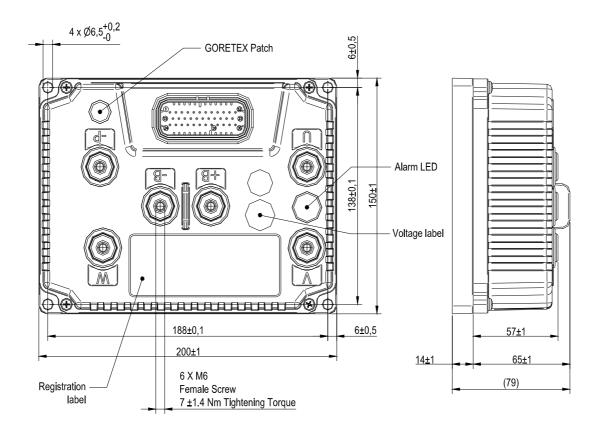|	
UL certificate	UL 583 compliant (AU3503).
Functional safety	Applicable requirements of EN 1175-1:2010, Compliant to upcoming revision of EN1175.
EMC	Applicable requirements of EN 12895.
IP code	IP65.

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TECHNICAL DATA

Nominal voltage	24V	36/48V	72/80V	120V
Supply voltage, min/max	10V / 35V	10V / 65V	10V / 115V	10V / 115V
Microcontrollers	2			
Memory (main µC)	576+ KB Flash, 48KB SRAM, 64KB emulated EEPROM			
Memory (supervisor µC)	320+ KB Flash, 32KB SRAM, 64KB emulated EEPROM			
Connectors	35-pins Ampseal			
CAN bus interfaces	1			
Encoder interfaces	1			
Sin-cos / 3-Hall / resolver interface	1 (on demand)			
Digital inputs	Up to 13			
Analog inputs	2			
Input for motor thermal sensor	1			
PWM current-controlled outputs	2			
PWM voltage-controlled outputs	4			
ON/OFF outputs	4			
High-side driver	Yes	No	No	No
Auxiliary supply output (+12/+5V)	2 (max 200 mA for +12V, max 100 mA for +5V)			

DIMENSIONS

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TYPICAL WIRING DIAGRAM – TRACTION CONFIGURATION

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