

CC-75-500



Summary

- Converter for driving permanent-magnet synchronous motors (PMSM) and brushless DC motors (BLDC)
- Sensorless speed control from 0 rpm up to 1 Million rpm
- Maximum output power of 500 W (800W resp.)
- No output filter required
- User definable setup for different motor parameters
- Custom-definable input- and output-connections
- Torque- or speed-control
- Highest possible efficiency
- Integrated braking chopper
- Mountable on a DIN-rail
- Parallel connection of several converters to one DC-bus possible
- User-friendly PC control software (CelerotonPilot)

Specifications

Input voltage U_{in} (DC)	24 – 75 V
Maximum output power	500 W (800 W with HC-option)
Output voltage (peak value phase-phase)	0 – 0.95 U_{in}
Maximum phase current (PAM-operation)	6.2 Arms / 8.8 Apeak ¹ (10.9 Arms / 15.4 Apeak ¹ with HC-option)
Maximum frequency/ speed (PAM-operation)	16.6 kHz/ 1,000,000 rpm
Operating range	4-Quadrant
Communication interface	USB
Communication interfaces (optional)	RS232, RS485, CAN, Ethernet
PC control software	CelerotonPilot
Weight	1 kg
Dimensions	215 x 135 x 35 mm
Operating temperature	0 – 40 °C

¹Fundamental of the PAM-block current

Variable user interface (X2, X3, X4)

Standard configuration E01

Connector X2 – Motor Interface (8 pins)	
1 x GND	
3 x digital hall sensor inputs	(open collector), pull up to 5 V
1 x power supply	5 V, 100 mA
1 x temperature measurement input	PTC or NTC, resistance range according to option Tx
1 x temperature measurement input	Thermocouple type K
1 x analog GND	

Connector X3 – Digital Interface (8 pins)	
1 x GND	
1 x digital GND	Digital GND for digital inputs
2 x digital inputs	0 – 24 V, galvanically isolated (software adjustable thresholds 0.8 – 23 V)
1 x COM	Common rail for digital outputs
2 x digital outputs	0 – 24 V (relay, normally open contacts)
1 x auxiliary power supply	12 – 24 V (adjustable), 200 mA (max.) e.g. for digital inputs/outputs

Connector X4 – Analog Interface (6 pins)	
1 x analog GND	
2 x analog inputs	0 – 10 V
2 x analog outputs	0 – 10 V
1 x power supply	10 V, 100 mA

Connectors X2, X3 and X4 can be customized according to user specifications.

Options

CC-75-500.HC.Exx.SLx.COx.Tx

High current HC

- HC: Version with 800 W output power

Extension Board Exx (Configuration of the connectors X2, X3, X4)

- E01: Standard – see above

Sensorless SLx

- SL0:
 - o Sensorless speed control from zero speed
- **SL1 (Standard):**
 - o Speed constants between 550 and 18,250 rpm/V
 - o Sensorless speed control from 7,000 rpm
- SL2:
 - o Speed constants between 400 and 7,900 rpm/V
 - o Sensorless speed control from 5,000 rpm

The stated values are valid for number of pole pairs $p=1$. For higher number of pole pairs the speed constants and minimum speeds are divided by the number of pole pairs p .

Communication interfaces COx

	USB	CAN	RS232/RS485	Ethernet
CO1 (Standard)	x	x	x	
CO2	x	x	x	x

PTC/NTC Tx

- **T1 (Standard):** Measurement range 6-150 Ω , e.g. PT100
- T2: Measurement range 0.26-86 k Ω , e.g. KTY84, NTC10k

Accessories

- Connector set CC-75-500

Operating range

The operating range of the converter is dependent on the output voltage (U_{out}) (peak value phase-phase) in Figure 1. The output power (P_{out}) increases with the output voltage as the phase current (i_{ph}) is constant until the power limit is reached. Above that point i_{ph} decreases with increasing output voltage. The input voltage (U_{in}) (grey area) must be higher than the maximum required output voltage.

The maximum output power (P_{out}) of the converter CC-75-500 depends on the ambient temperature (T_{amb}). The average power losses in the braking chopper ($P_{chopper}$) are limited by the output power and the ambient temperature. The respective relation is depicted in Figure 2.

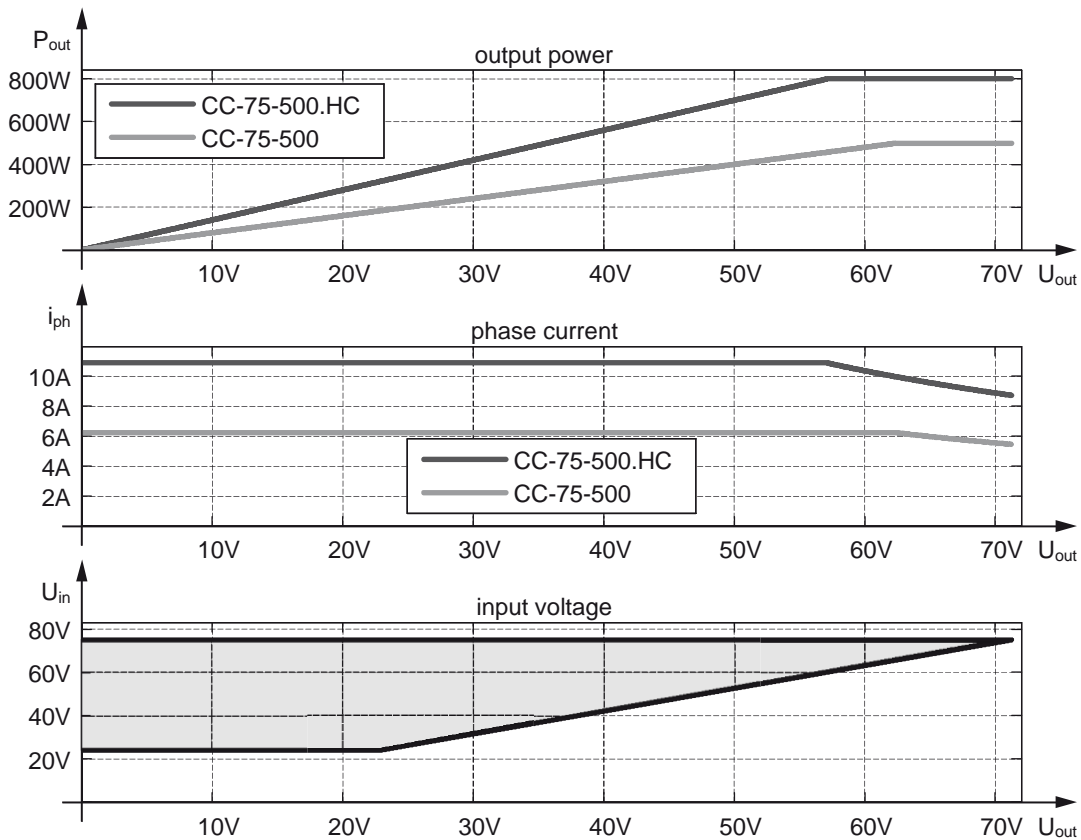


Figure 1: Output power, phase currents and input voltage range of the converters CC-75-500 and CC-75-500.HC.

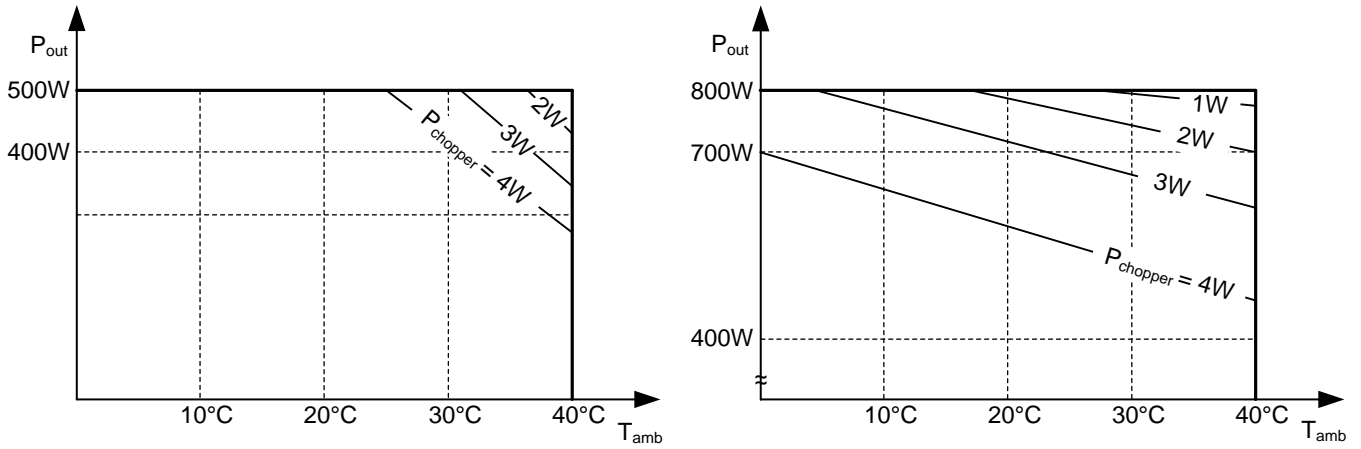
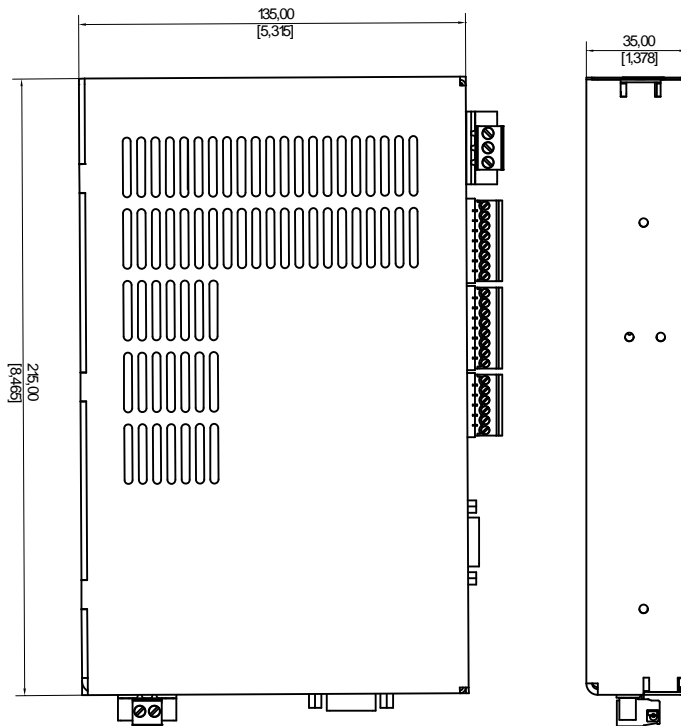


Figure 2: Safe operating areas (SOA) of the converter CC-75-500 (left) and CC-75-500.HC (right) versus ambient temperature (T_{amb}) and the allowed average power losses in the braking chopper ($P_{chopper}$).

Dimensions in mm [inch]



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