CC-75-500

Converter for driving permanent-magnet synchronous motors (PMSM) and brushless DC motors (BLDC).

- Sensorless speed control from 0 rpm to 1 Million rpm
- Maximum output power of 500 W (800 W resp.)
- No output filter required
- User definable setup for different motor parameters
- Customer-definable input and output connections
- Torque or speed control
- Internal or external braking chopper
- Highest possible efficiency
- Mountable on a DIN-rail
- Parallel connection of several converters to one DC-Bus possible
- User-friendly PC control software (CelerotonPilot)

Specifications converter	
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
Optional communication interfaces	RS232, RS485, CAN
Communication interface upon request	Ethernet
PC control software	CelerotonPilot
Weight	1 kg
Dimensions	215 x 135 x 35 mm
Operating temperature	0 – 40 °C

[1] Fundamental of the PAM block current

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 – 20 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.

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 breaking chopper ($P_{chopper}$) are limited by the output power and the ambient temperature. The respective relation is depicted in Figure 2.

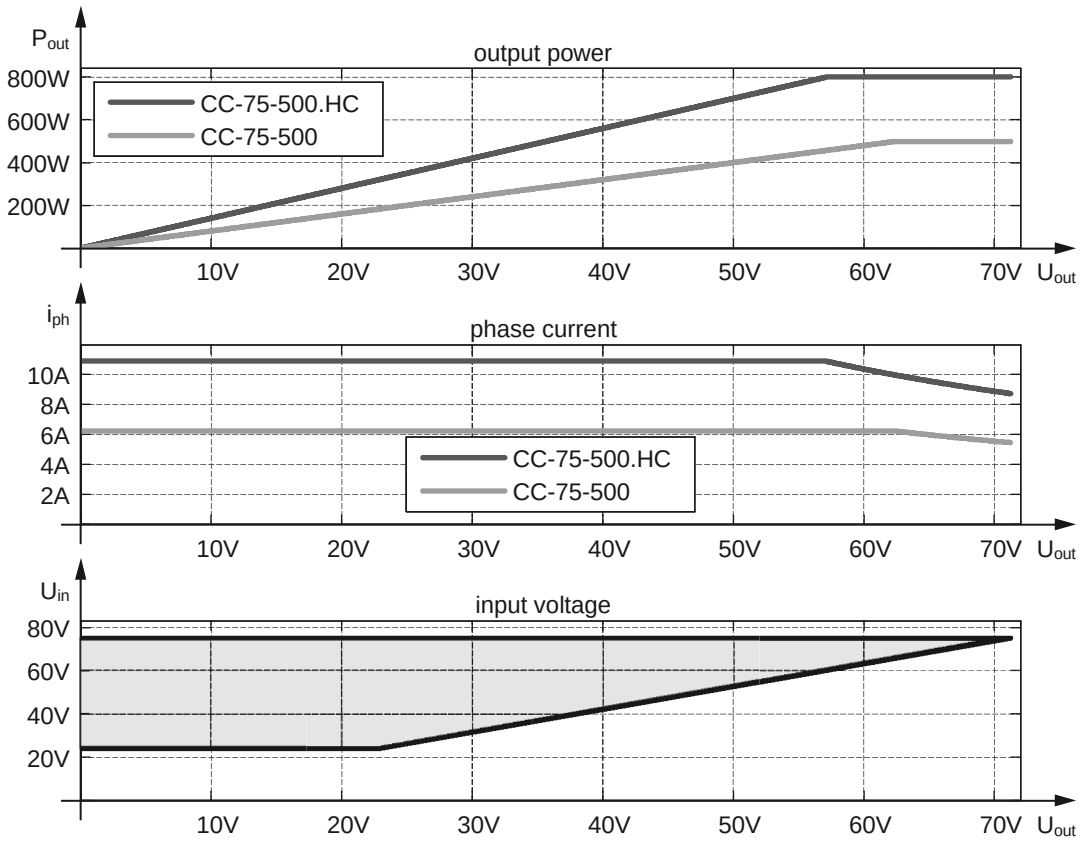


Figure 1: Output power, phase currents and input voltage range of the converters CC-75-500 and CC-75-500.HC.

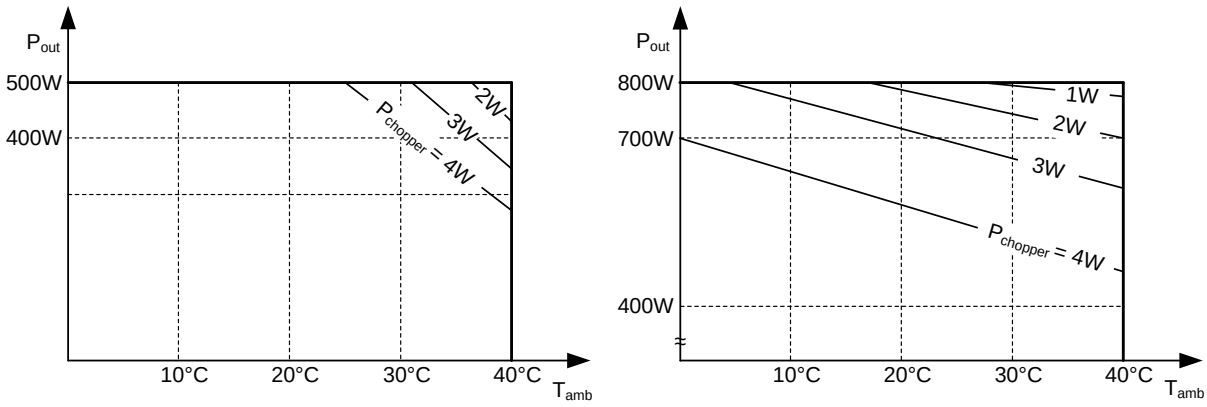


Figure 2: Safe operating areas (SOA) of the converter CC-75-500 (left) and CC-75-500.HC (right) versus ambient temperature (T_{amb}) and the allowed average power losses in the breaking chopper ($P_{chopper}$).

Order codes: CC-75-500.HC.Exx.SLx.CO1.Tx

High current HC	
HC	Version with 800 W output power

Extension Board Exx (Configuration of the connectors X2, X3, X4)	
E01 (standard)	Standard – see page 2 Standard configuration *E01*

Sensorless SLx	
SL1 (standard)	Speed constants between 550 and 18,250 rpm/V Sensorless speed control from 7,000 rpm
SL2	Speed constants between 400 and 7,900 rpm/V Sensorless speed control from 5,000 rpm

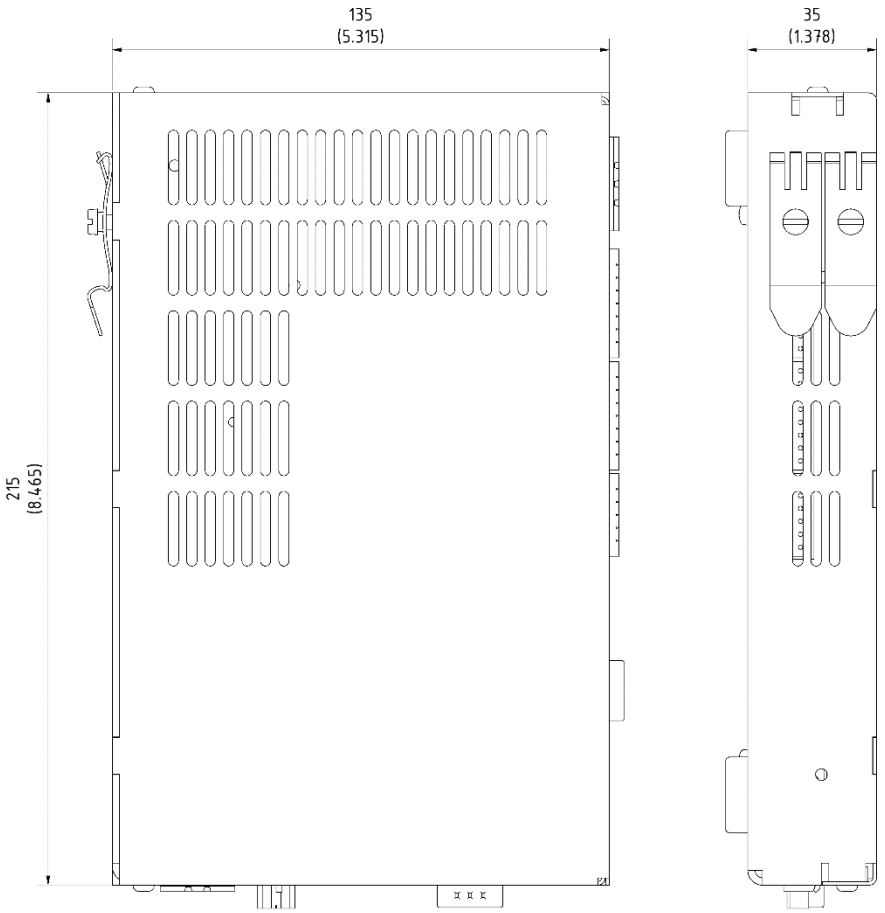
The stated values are valid for number of pole pairs p=1. For higher number of pole pairs the speed constants and minimum speeds are divided by the number of pole pairs p.

Communication interfaces CO1	USB	CAN	RS232/RS485
CO1 (standard)	x	x	x

PTC/NTC Tx	
T1 (standard)	Measurement range 6 – 150 Ω, e.g. PT100
T2	Measurement range 0.26 – 86 kΩ, e.g. KTY84, NTC10k

Ordering information	Article number
CC-75-500.E01.SL1.CO1.T1	4030015
CC-75-500.E01.SL1.CO1.T2	4030016
CC-75-500.E01.SL2.CO1.T1	4030027
CC-75-500.E01.SL2.CO1.T2	4030028
CC-75-500.HC.E01.SL1.CO1.T1	4030039
CC-75-500.HC.E01.SL1.CO1.T2	4030040
CC-75-500.HC.E01.SL2.CO1.T1	4030051
CC-75-500.HC.E01.SL2.CO1.T2	4030052
Connector set CC-75-500	4080030

Drawing in mm [inch]



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