

## 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 <sup>1</sup> (10.9 Arms/15.4 Apeak <sup>1</sup> 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

<sup>1</sup> Fundamental of the PAM block current

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

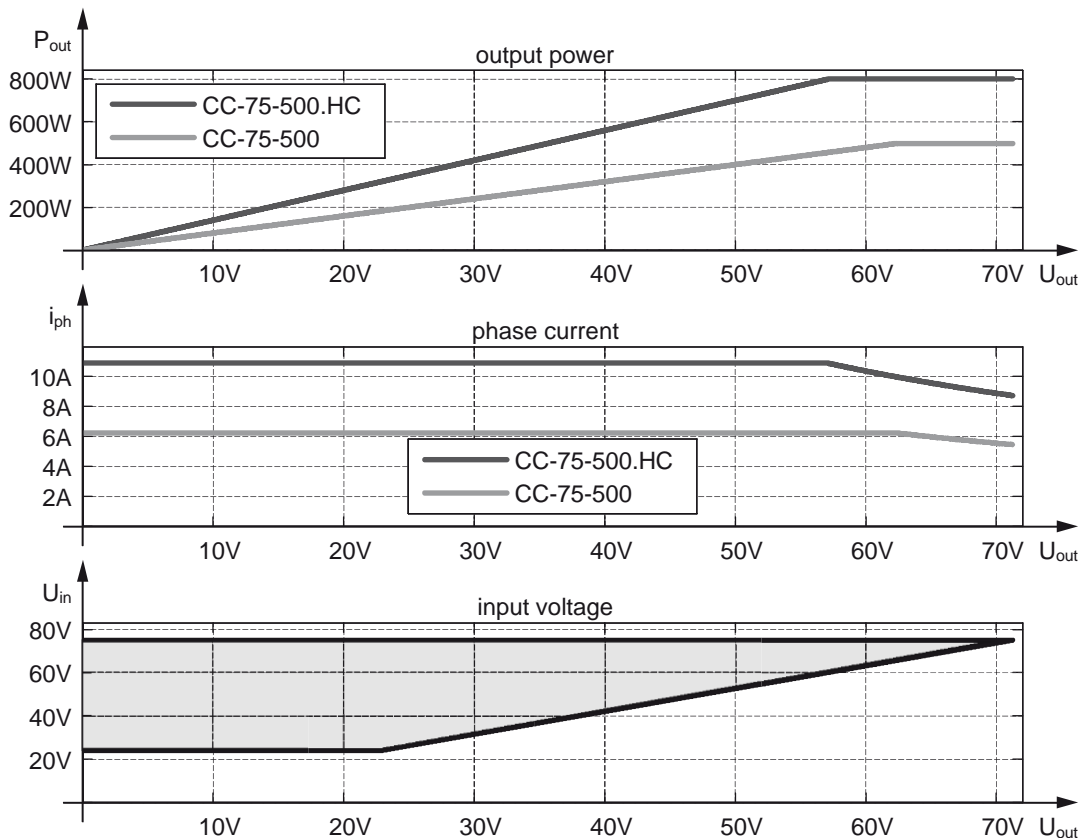


Figure 1: Output power, phase currents and input voltage range of the converters CC-75-500 and CC-75-500.HC.

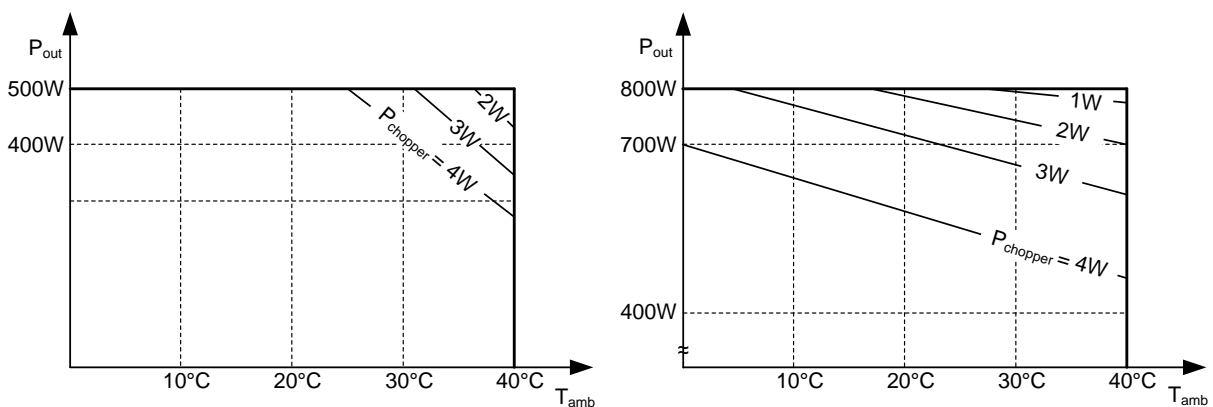


Figure 2: Safe operating areas (SOA) of the converter CC-75-500 (left) and CC-75-500.HC (right) versus ambient temperature ( $T_{amb}$ ) and the allowed average power losses in the braking chopper ( $P_{chopper}$ ).

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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 <i>E01</i>
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

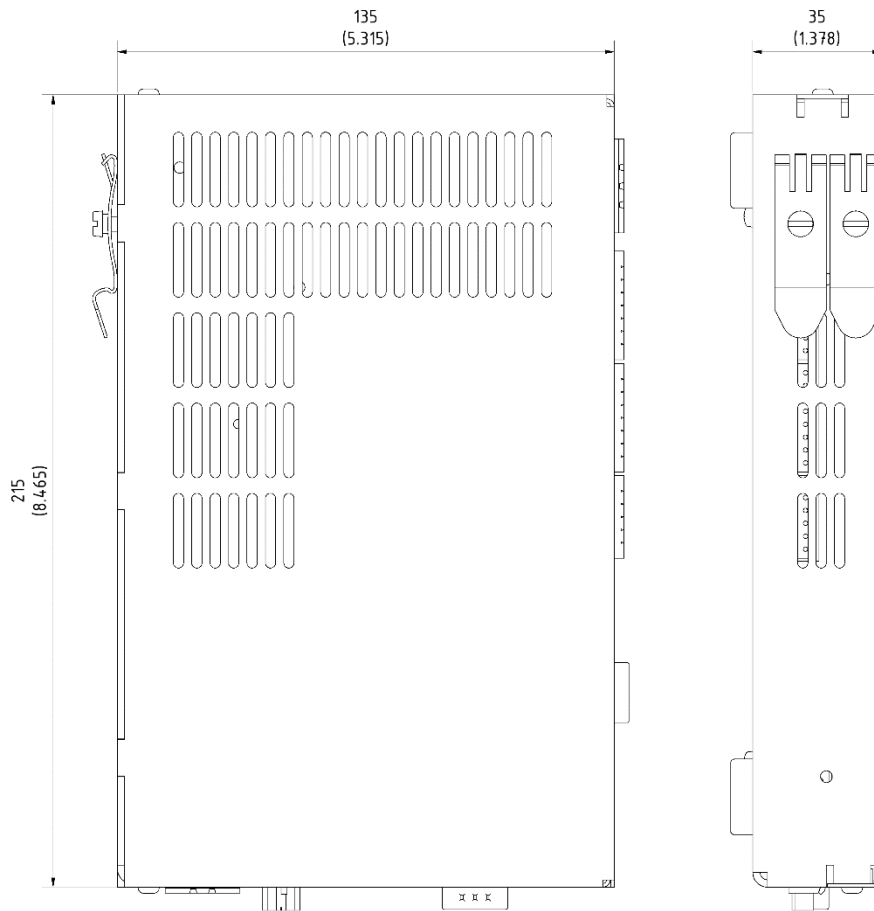
The stated values are valid for number of pole pairs  $p=1$ . For higher number of pole pairs the speed constants and minimum speeds are divided by the number of pole pairs  $p$ .

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

PTC/NTC Tx	
T1 (standard)	Measurement range 6 – 150 $\Omega$ , e.g. PT100
T2	Measurement range 0.26 – 86 k $\Omega$ , 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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