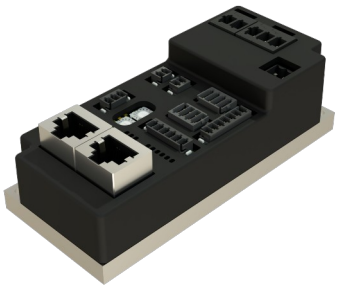
Servo amplifier

mcDS-h5-60cxx-E-ST



Picture similar

1. Technical data

Power stage						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
U_p Ma, Mb, Mc	U_p	Power supply voltage	10	-	60	V
	I_{out_MAX}	Max. output current	-	-	60	A
	U_{out}	Output voltage	-	-	97	% U_p
	F_{PWM}	PWM frequency	-	40	-	kHz
	η_p	Efficiency	-	typ. 98	-	%
• I_{out_CONT} applies to max. 40°C ambient temperatur.						

Electronic supply						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
U_e	U_e	Electronic supply voltage	10	24	30	V
	$U_{e\_WO\_DOUT}$	Electronic supply voltage for devices without DOUT's	10	24	60	V
	I_e	Electronic supply current @ Ue=24V	-	typ. 70	-	mA
• I_e applies to unconnected DOUT's and unconnected HALL/Encoder.						

Inc.-Encoder and Hall						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
INC-A, INC-B, INC-INX, H1, H2, H3	$U_{INC\_HALL\_LOW}$	Input voltage: low-state	0	-	1.2	V
	$U_{INC\_HALL\_HIGH}$	Input voltage: high-state	3.5	-	5.0	V
	R_{INC_HALL}	Input resistance	-	1	-	kΩ
	F_{INC}	Input frequency inc. encoder	-	-	500	kHz
	F_{HALL}	Input frequency hall sensors	-	-	10	kHz
	VDD_{INC}	5V Output supply voltage for inc. encoder	4.9	5.1	5.3	V
	VDD_{HALL}	5V Output supply voltage for hall sensors	4.9	5.1	5.3	V
	I_{VDD_INC} I_{VDD_HALL}	Summarized output supply current for inc. encoder and hall sensors	-	-	190	mA
• Internal 1 kΩ Pull-U_p-Resistors to VDD_{INC} on Encoder inputs. • Internal 1 kΩ Pull-U_p-Resistors to VDD_{HALL} on Hall inputs. • Reference potential is VSS_{INC} and VSS_{HALL}.						

Digital inputs						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
DIN0, DIN1, DIN2, DIN3	U_{DIN_LOW}	Input voltage: low-state	0	-	5	V
	U_{DIN_HIGH}	Input voltage: high-state	9	-	30	V
	R_{DIN}	Input resistance	-	24.1	-	kΩ
• Reference potential is GND.						

Digital outputs						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
DOUT0-BR, DOUT1	U_{DOUT_HIGH}	Output voltage: high-state	0	-	U_e	
	I_{DOUT_HIGH}	Output current: high-state	-	-	700	mA
• Reference potential is GND. • DOUT0-BR has a free-wheeling diode to GND • DOUT0-BR load: resistive, inductive • DOUT1 load: resistive • The outputs switch to U_e.						

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Analog inputs						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
MT, AIN	U_{MT}	Input voltage	0	-	2.047	V
	U_{AIN}	Input voltage	0	-	10.24	V
	R_{MT}	Input resistance	-	1.5	-	kΩ
	R_{AIN}	Input resistance	-	15	-	kΩ

- MT: Temp. sensor KTY84-130, PT1000.
- MT, AIN Tolerance = 3%
- Reference potential for MT is VSS_{MT}.
- Reference potential for AIN is VSS.

Magnetchip-Encoder		
Name	**Description**	**Value**
MCHIP-ENC	Resolution	15 Bit
	Magnet	neodymium alloy (N35) Ø 6 mm x 2.5 mm
	Air gap between magnet and sensor	typ. 1 mm
	Radial positioning accuracy	0.5 mm

- A typical magnet is a cylinder made of a neodymium alloy (N35) with a diameter of 6 mm and a height of 2.5 mm, inserted into an aluminum shaft. The typical air gap between the magnet and the sensor is between 1 mm and 2 mm. To ensure good measurement linearity, the sensor must be positioned with a radial accuracy of typically 0.5 mm.

CAN Interface		
Name	**Description**	**Value**
CAN-Hi, CAN-Lo	Protocol	CANopen DS301
	Device profile	DS402 and miControl
	CAN specification	2.0.B
	Max. baudrate	1 Mbit/s
	Galvanically isolated	no

EtherCAT® Interface		
Name	**Description**	**Value**
ETCAT1, ETCAT2	Protocol	CoE
	Type	EtherCAT Slave
	Max. baudrate	100 Mbit/s
	Physical layer	100 Base-Tx EtherCAT
	Number of ports	2

Mechanical		
Name	**Description**	**Value**
MECH	Dimensions LxBxH	104,8 x 45,7 x 32,6 mm
	Weight	138 g

Environment		
Name	**Description**	**Value**
ENV	Protection class	IP20
	Ambient temperature - operating	-40 .. 105 °C
	Ambient temperature - storage	-40 .. 70 °C
	Pollution degree	1
	Humidity	5 .. 90 % (non-condensing)

Additional technical data are available in mcManual.

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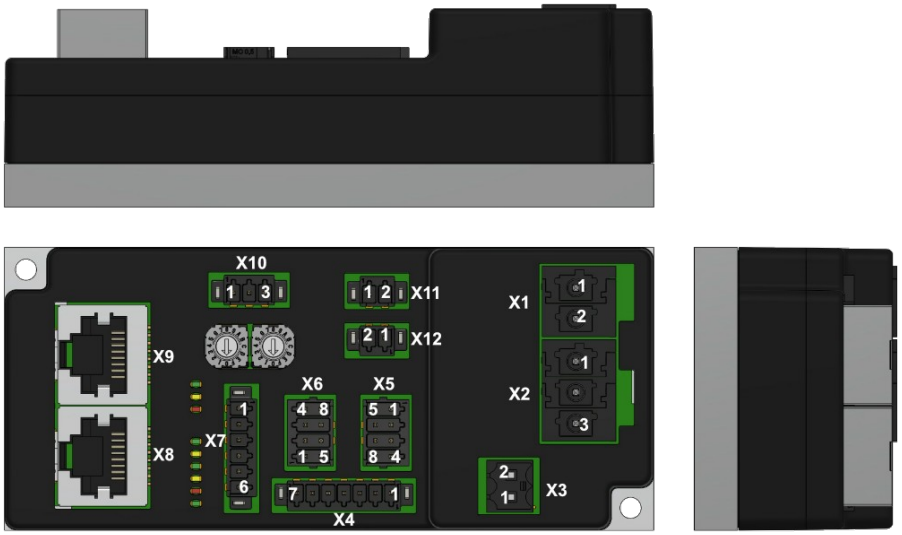
1. Scheme



2. Terminal assignment

X1	Supply	
1	U_p	Power supply voltage
2	GND	Ground

X2	Motor	
1	Ma	Motor phase A
2	Mb	Motor phase B
3	Mc	Motor phase C

X3	Supply	
1	U_e	Electronic supply voltage
2	res.	Reserved

X4	I/O's	
1	AIN	Analog input
2	res.	Reserved
3	DIN0	Digital input 0
4	DIN1	Digital input 1
5	DIN2	Digital input 2
6	DIN3	Digital input 3
7	res.	Reserved

X5	Hall	
1	H1	Hall input 1
2	H2	Hall input 2
3	H3	Hall input 3
4	VDD_{HALL}	5V output voltage for Hall supply
5	/H1	Hall input 1 inverted
6	/H2	Hall input 2 inverted
7	/H3	Hall input 3 inverted
8	VSS_{HALL}	Ground for Hall supply

X6	Encoder	
1	INC-A	Inc. encoder, A channel
2	INC-B	Inc. encoder, B channel
3	INC-INX	Inc. encoder, index channel
4	VDD_{INC}	5V output voltage for incremental sensor supply
5	INC-/A	Inc. encoder, A channel inverted
6	INC-/B	Inc. encoder, B channel inverted
7	INC-/INX	Inc. encoder, index channel inverted
8	VSS_{INC}	Ground for incremental sensor supply

X7	Encoder	
1	ABS-DATA	DATA - absolut encoder (protocol: SSI, BiSS-C)
2	ABS-/DATA	DATA - absolut encoder inverted (protocol: SSI, BiSS-C)
3	ABS-CLK	CLK
4	ABS-/CLK	/CLK inverted
5	VDD_{ABS}	5V output voltage for absolute encoder supply
6	VSS_{ABS}	Ground for absolute encoder supply

X8	EtherCAT - In port	
-	In	In

X9	EtherCAT - Out port	
-	Out	Out

X10	I/O's	
1	DOUT0-BR	Digital output 0 / parking brake
2	DOUT1	Digital output 1
3	res.	Reserved

X11	CAN	
1	CAN-Hi	CAN interface for external connections
2	CAN-Lo	CAN interface for external connections

X12	CAN	
1	CAN-Hi	CAN interface for external connections
2	CAN-Lo	CAN interface for external connections

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