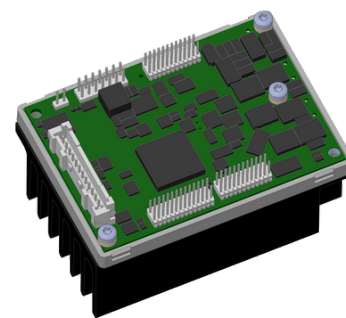


# Servo amplifier

## mcDSA-F32-Modul-HC

Article number: 1514246

Certification:



Picture similar

### Technical data

Supply voltages	
Electronic supply voltage $U_e^{*2}$	18..30 V
Electronic current consumption @ $U_e=24V^{*3}$	typ. 65 mA
Power supply voltage $U_p^{*4}$	9..60 V
Output current	
Max. output current	60 A
Continuous output current (certified UL) <sup>*5</sup>	
@ $U_p \leq 24V$	26 A
@ $U_p \leq 60V$	26 A
Continuous output current (certified CE) <sup>*6</sup>	
@ $U_p \leq 24V$	30 A
@ $U_p \leq 60V$	28 A
Continuous output current (not certified) <sup>*7</sup>	
@ $U_p \leq 24V$	31 A
@ $U_p \leq 48V$	28 A
PWM	
PWM frequency	32 kHz
Commutation type	Field Oriented Control
Mechanical	
Size LxWxH	74 x 53 x 40 mm
Weight	168 g
Environment	
Protection class	IP00
Installation requirements <sup>**</sup>	IP54
Ambient temperature (operation) (certified UL)	-40..50 °C
Ambient temperature (operation) (certified CE/not certified)	-40..70 °C
Ambient temperature (storage)	-40..85 °C
Rel. humidity (non-condensing)	5..90 %
CAN bus	
Protocol	DS301
Device profile	DS402
Max. baudrate	1 Mbit/s
CAN specification	2.0B
Galvanically isolated	no
RS485	
Type	2-Wire EIA-485
Signals	DATA,/DATA,CLK,/CLK
Functional safety	
Safety function refer safety manual	Safe Torque Off (STO)
Safety Integrity Level (SIL)	up to SIL 3
Performance Level (PL)	up to PL e

Sensor supply (Hall)	
Output voltage	5 V
Max. output current	0.05 A
Sensor supply (Encoder/SSI)	
Output voltage	5 V
Max. output current	0.2 A
Sensor supply (Hiperface)	
Output voltage	10 V
Max. output current	0.25 A
Encoder	
Type	sin / cos
Signals	+Sin,-Sin,+Cos,-Cos
Resolution	13 bit per sine period
Input voltage	1 V peak-peak, differential
Signal type	sine/cosine, analog, differential
Hall sensors	
Signals	H1,H2,H3
Max. frequency (per channel)	10 kHz
Input voltage	0.5 V
Signal type	open collector, single ended
Digital inputs	
Number - digital inputs	6 (Din0..5)
Low voltage	0.5 V
High voltage	8..30 V
STO channels (ST0-A..B)	
Low voltage	0.5 V
High voltage	8..30 V
Digital outputs	
Number	3 (Dout0..2)
Continuous output current (certified UL/CE)	1 A
Continuous output current (not certified)	1.5 A
Load Dout0..1	resistive, low inductive
Load Dout2	resistive, inductive
Output voltage	Electronic supply voltage $U_e$
Signal type	positive switching
Analog inputs	
Number	2 (Ain0..1)
Signal type - Ain	0..10 V, 12 Bit, single ended

\*1 The certified performance data must be observed (see UL Instruction Note and Safety Manual (CE))

\*2 No reverse polarity protection, the destruction limit is at overvoltage of  $\geq 33V$  or short-term peak voltage of  $37V < 1s$

\*3 power amplifier switched off, 5V output (sensor supply) is free, STO active

\*4 No reverse polarity protection, the destruction limit is at overvoltage of  $\geq 70V$

\*5 connector cable with max. possible cable cross-section, PWM frequency 32 kHz (SVPWM), ambient temperature 50 °C, I/O's and 5V output active, RMS current: 26 A → 18.5 Aeff

\*6 connector cable with max. possible cable cross-section, PWM frequency 32 kHz (SVPWM), ambient temperature 40 °C, I/O's and 5V output active, RMS current: 30 A → 21.2 Aeff, 28 A → 19.8 Aeff

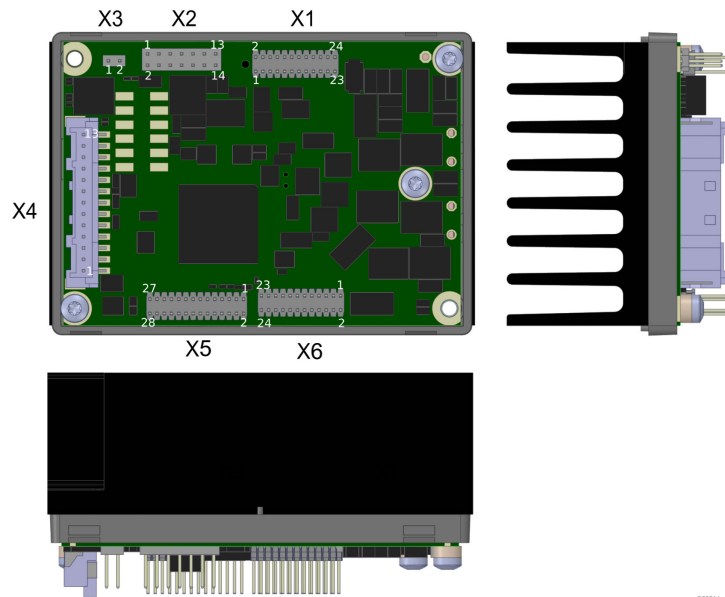
\*7 connector cable with max. possible cable cross-section, PWM frequency 32 kHz (SVPWM), ambient temperature 40 °C, I/O's and 5V output free, RMS current: 31 A → 21.9 Aeff, 28 A → 19.8 Aeff

no guarantee, since value is determined empirical, please consider the application notes to determine the continuous current

\*8 or equivalent protection class (see Safety Manual (CE))

Additional technical data are available in mcManual.

## Scheme



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## Terminal assignment

X1	Supply	
1	GND	Ground for electronic supply voltage
2	GND	Ground for electronic supply voltage
3	GND	Ground for electronic supply voltage
4	GND	Ground for electronic supply voltage
5	+Ue24V	Electronic supply voltage
6	+Ue24V	Electronic supply voltage
7	+Ue24V	Electronic supply voltage
8	+Ue24V	Electronic supply voltage
9	GND	Ground for power supply voltage
10	GND	Ground for power supply voltage
11	GND	Ground for power supply voltage
12	GND	Ground for power supply voltage
13	GND	Ground for power supply voltage
14	GND	Ground for power supply voltage
15	GND	Ground for power supply voltage
16	GND	Ground for power supply voltage
17	+Up	Power supply voltage
18	+Up	Power supply voltage
19	+Up	Power supply voltage
20	+Up	Power supply voltage
21	+Up	Power supply voltage
22	+Up	Power supply voltage
23	+Up	Power supply voltage
24	+Up	Power supply voltage

X2	Encoder	
1	CLK	SSI clk
2	/CLK	/SSI clk
3	DATA	SSI data
4	/DATA	/SSI data
5	+10V	10V output voltage for sensor supply Sensors: Hiperface
6	GND	Ground for sensor supply Notice: don't connect with system GND
7	+SIN	Encoder, plus sine signal
8	-SIN	Encoder, minus sine signal
9	+COS	Encoder, plus cosine signal
10	-COS	Encoder, minus cosine signal
11	res.	Reserved
12	res.	Reserved
13	+5V	5V output voltage for sensor supply Sensors: encoder, SSI
14	GND	Ground for sensor supply Notice: don't connect with system GND
X3	PT1000	
1	PT_A	PT_A
2	PT_B	PT_B
X4	I/O's	
1	STO-B	STO channel B
2	Din0	Digital input 0
3	Din1	Digital input 1
4	Din2	Digital input 2
5	Din3	Digital input 3
6	Din4	Digital input 4
7	Din5	Digital input 5
8	STO-A	STO channel A
9	Ain0	Analog input 0
10	Ain1	Analog input 1
11	Dout0	Digital output 0
12	Dout1	Digital output 1
13	Dout2	Digital output 2

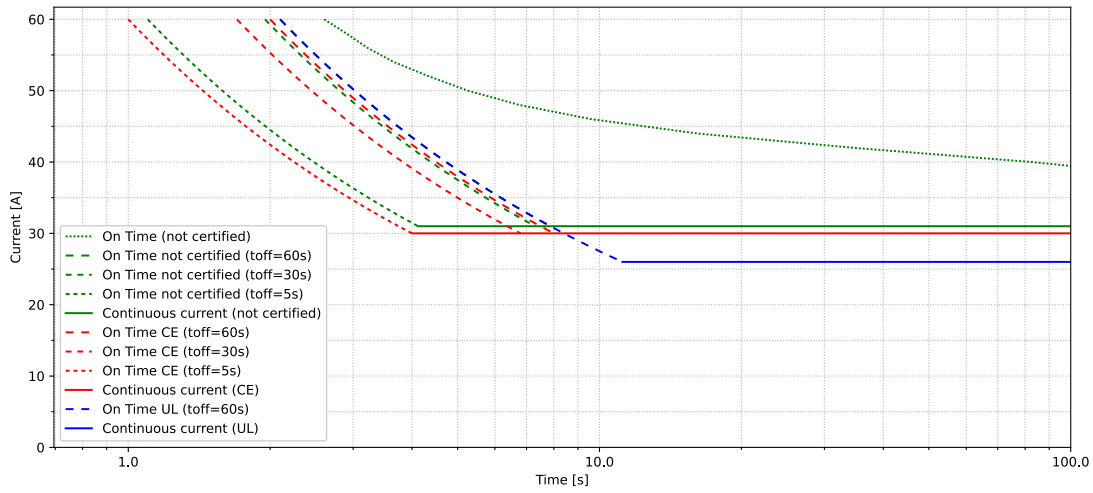
## Terminal assignment

X5	Hall, inc. encoder, I/O's and CAN	
1	/SpiSS	mcSPI Slave Select
2	Erw2	mcSPI expansion signal 2
3	H1	Hall sensor 1
4	Erw1	mcSPI expansion signal 1
5	H2	Hall sensor 2
6	SpiCLK	mcSPI Clock
7	H3	Hall sensor 3
8	SPIMOSI	mcSPI Master Out
9	+U5V	5V output voltage for sensor supply Sensors: hall
10	Erw3	mcSPI expansion signal 3
11	GND	Ground for sensor supply Notice: don't connect with system GND
12	Erw4	mcSPI expansion signal 4
13	SpiMISO	mcSPI Master In
14	Erw5	mcSPI expansion signal 5
15	/Id3	Node-ID Bit 3 inverted
16	/Id5	Node-ID Bit 5 inverted
17	/Id2	Node-ID Bit 2 inverted
18	/Id4	Node-ID Bit 4 inverted
19	/Id7	Node-ID Bit 7 inverted
20	/Id1	Node-ID Bit 1 inverted
21	/Id6	Node-ID Bit 6 inverted
22	/Id0	Node-ID Bit 0 inverted
23	CAN Hi	CAN High
24	PWR LED	Power LED
25	CAN Lo	CAN Low
26	ERROR LED	Error LED
27	CAN GND	CAN Ground
28	START LED	Start LED
X6	Motor	
1	Ma	Motor phase A
2	Ma	Motor phase A
3	Ma	Motor phase A
4	Ma	Motor phase A
5	Ma	Motor phase A
6	Ma	Motor phase A
7	Ma	Motor phase A
8	Ma	Motor phase A
9	Mb	Motor phase B
10	Mb	Motor phase B
11	Mb	Motor phase B
12	Mb	Motor phase B
13	Mb	Motor phase B
14	Mb	Motor phase B
15	Mb	Motor phase B
16	Mb	Motor phase B
17	Mc	Motor phase C
18	Mc	Motor phase C
19	Mc	Motor phase C
20	Mc	Motor phase C
21	Mc	Motor phase C
22	Mc	Motor phase C
23	Mc	Motor phase C
24	Mc	Motor phase C

Diagrams

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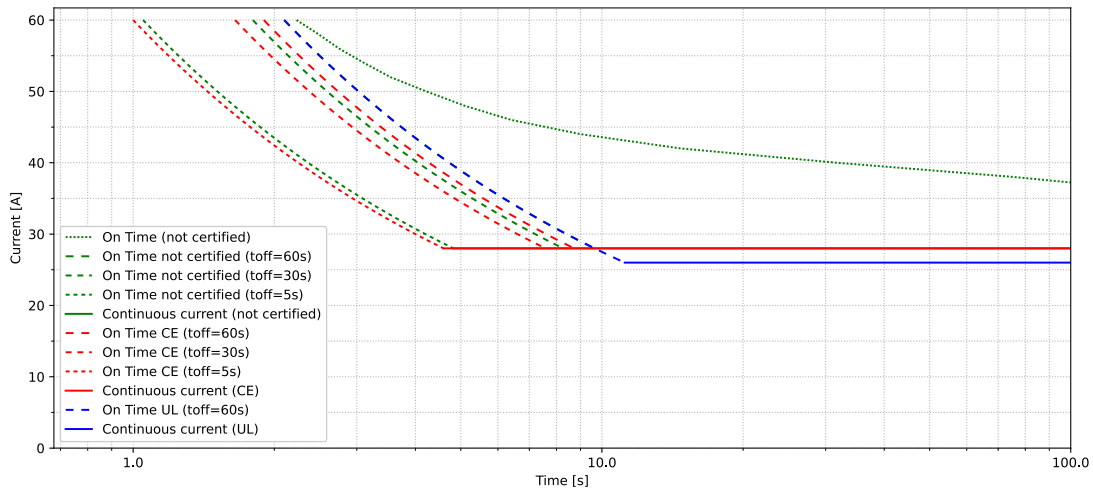


ambient temperature 40°C  
 power supply voltage Up 24V  
 PWM frequency 32kHz  
 PWM mode asymmetric  
 inductance per motor phase 150µH  
 continuous current 31A

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ambient temperature 40°C  
 power supply voltage Up 60V  
 PWM frequency 32kHz  
 PWM mode asymmetric  
 inductance per motor phase 150µH  
 continuous current 28A

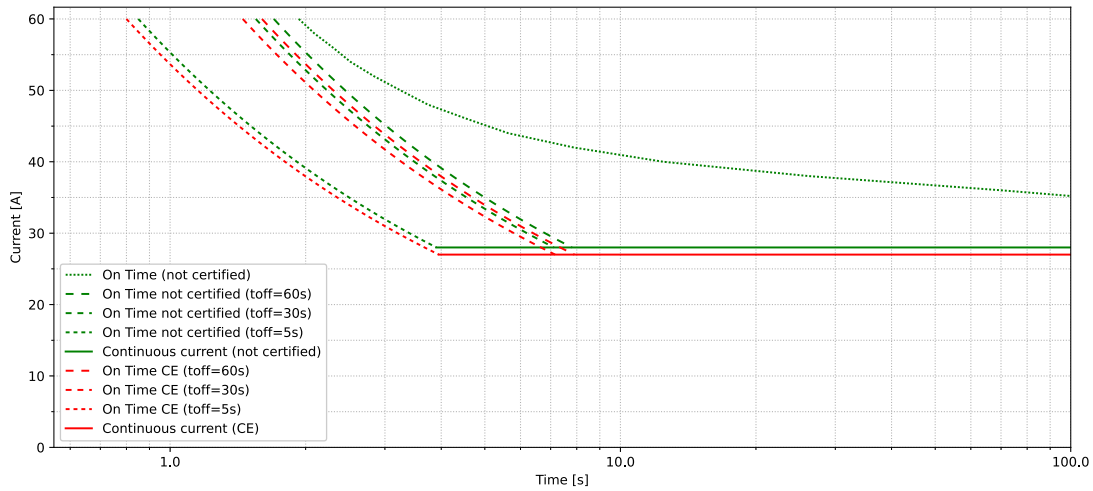
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Diagrams

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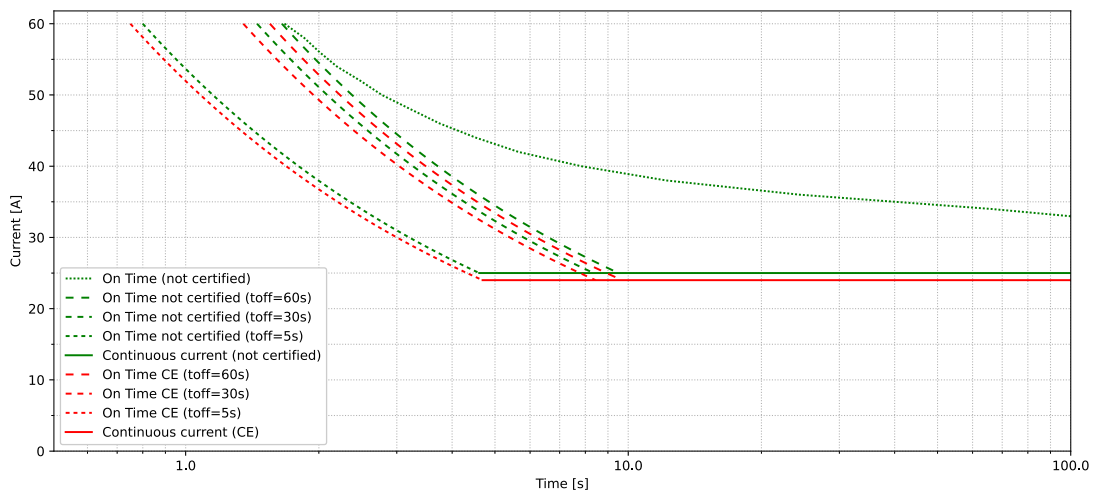


ambient temperature 55°C  
 power supply voltage Up 24V  
 PWM frequency 32kHz  
 PWM mode asymmetric  
 inductance per motor phase 150µH  
 continuous current 28A

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ambient temperature 55°C  
 power supply voltage Up 60V  
 PWM frequency 32kHz  
 PWM mode asymmetric  
 inductance per motor phase 150µH  
 continuous current 25A

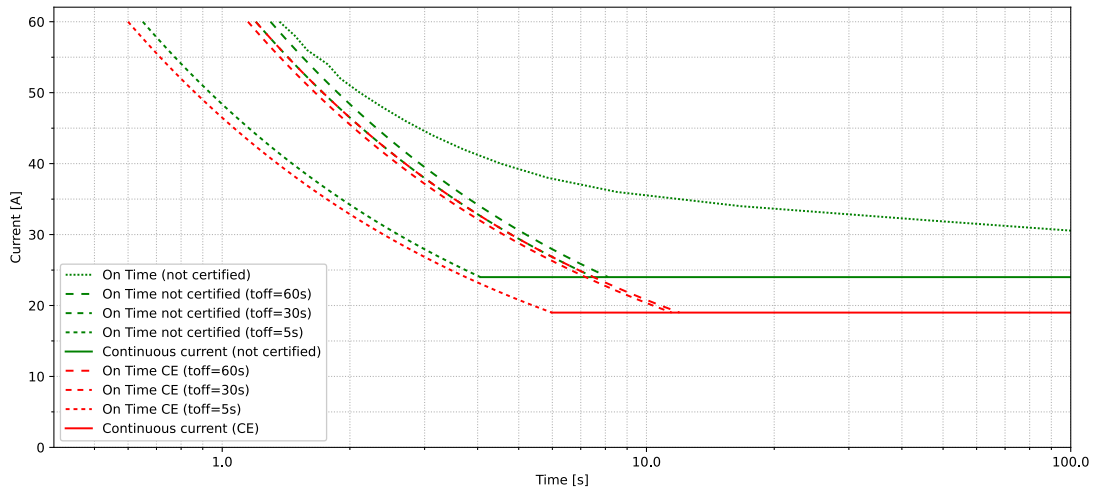
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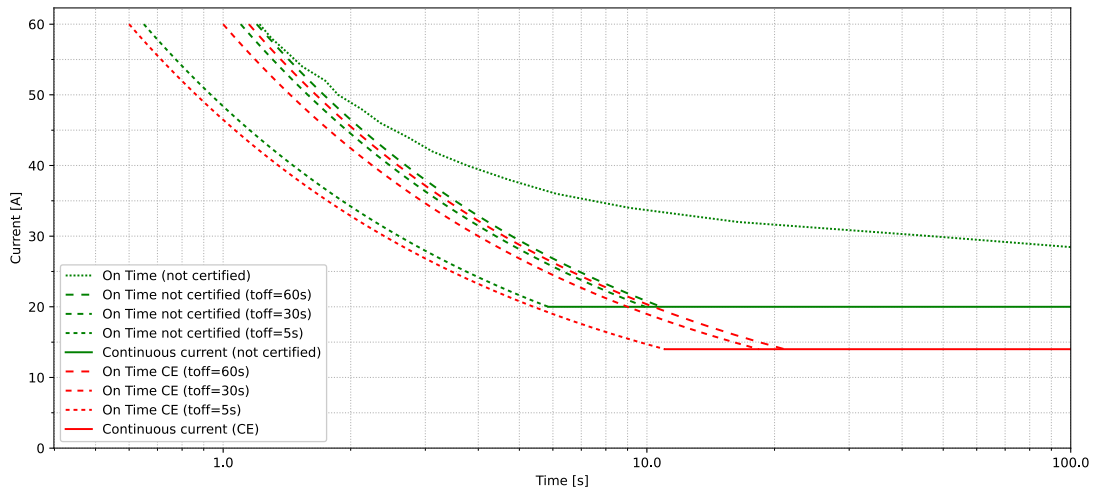


ambient temperature 70°C  
 power supply voltage Up 24V  
 PWM frequency 32kHz  
 PWM mode asymmetric  
 inductance per motor phase 150µH  
 continuous current 24A

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ambient temperature 70°C  
 power supply voltage Up 60V  
 PWM frequency 32kHz  
 PWM mode asymmetric  
 inductance per motor phase 150µH  
 continuous current 20A

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