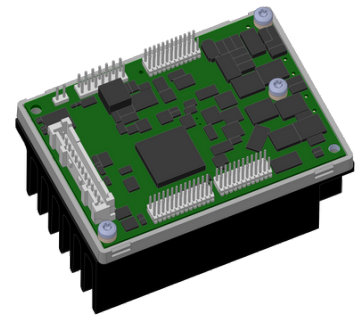


Servo amplifier

mcDSA-F30-Modul-HC

Article number: 1514245

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) ^{*5} | |
| @ $U_p \leq 24V$ | 26 A |
| @ $U_p \leq 60V$ | 26 A |
| Continuous output current (certified CE) ^{*6} | |
| @ $U_p \leq 24V$ | 30 A |
| @ $U_p \leq 60V$ | 28 A |
| Continuous output current (not certified) ^{*7} | |
| @ $U_p \leq 24V$ | 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 ** | 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 |
| Incremental encoder | |
| Type | incremental |
| Signals | A,/A,B,/B,Inx,/Inx |
| Max. frequency (per channel) | 500 kHz |
| Input voltage | 0..5 V |
| Signal type | differential, open collector, single ended |
| 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

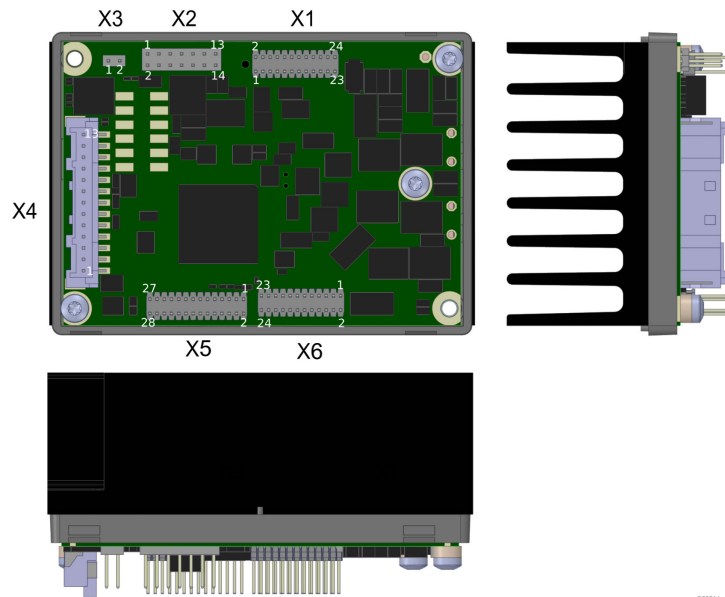
*7 connector cable with max. possible cable cross-section, PWM frequency 32 kHz (SVPWM), ambient temperature 40 °C, I/O's and 5V output free, RMS current: 31 A → 21.9 Aeff, 28 A → 19.8 Aeff

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



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 | res. | Reserved |
| 6 | GND | Ground for sensor supply Notice: don't connect with system GND |
| 7 | A | Inc. encoder, A channel |
| 8 | /A | Inc. encoder, A channel inverted |
| 9 | B | Inc. encoder, B channel |
| 10 | /B | Inc. encoder, B channel inverted |
| 11 | Inx | Inc. encoder, index channel |
| 12 | /Inx | Inc. encoder, index channel inverted |
| 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 |

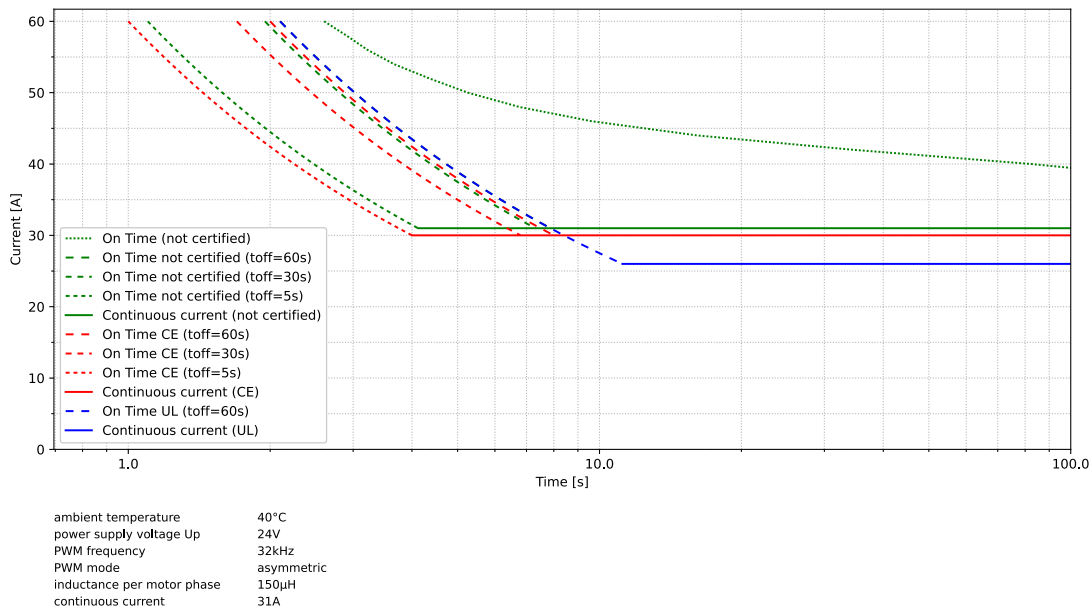
Terminal assignment

| 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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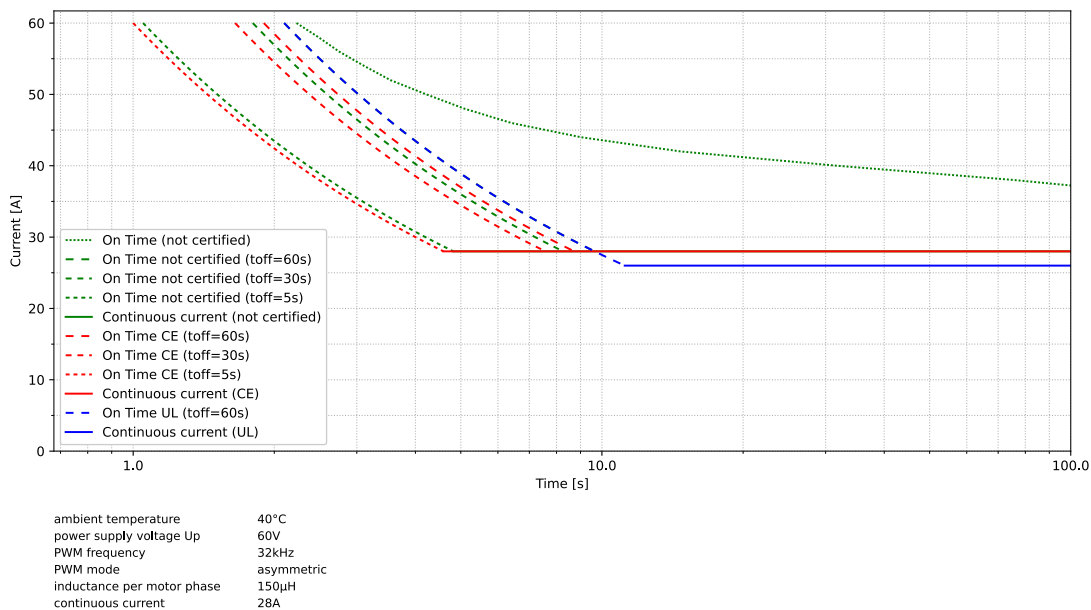
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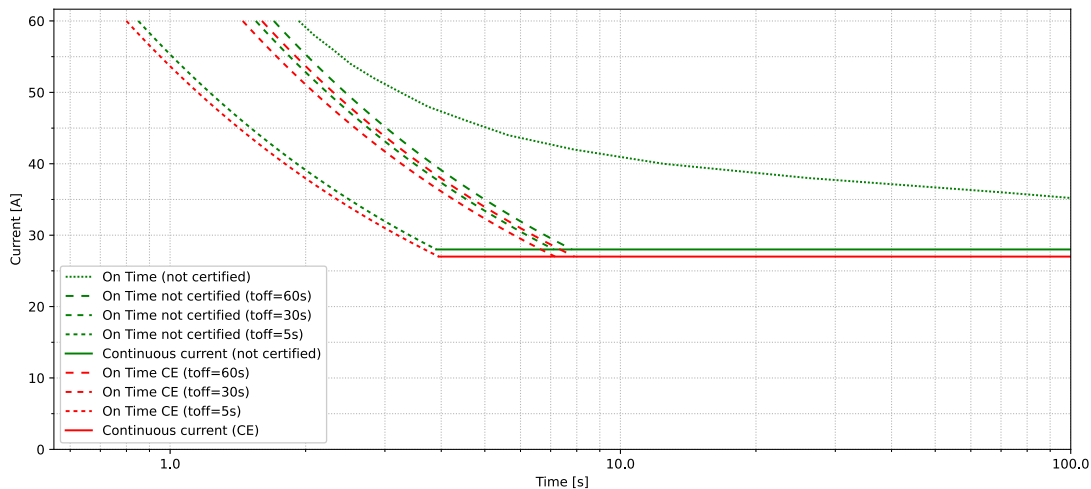
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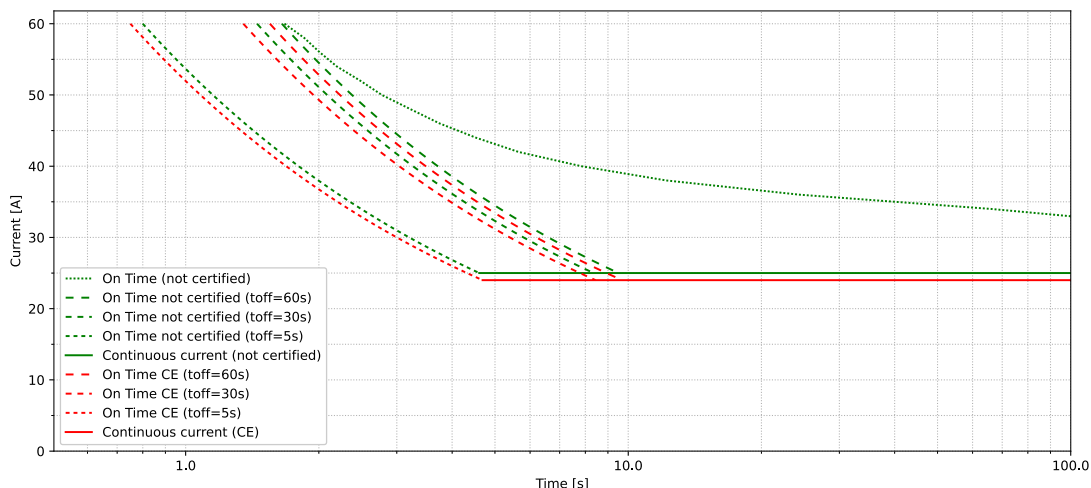


ambient temperature 55°C
 power supply voltage Up 24V
 PWM frequency 32kHz
 PWM mode asymmetric
 inductance per motor phase 150µH
 continuous current 28A

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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

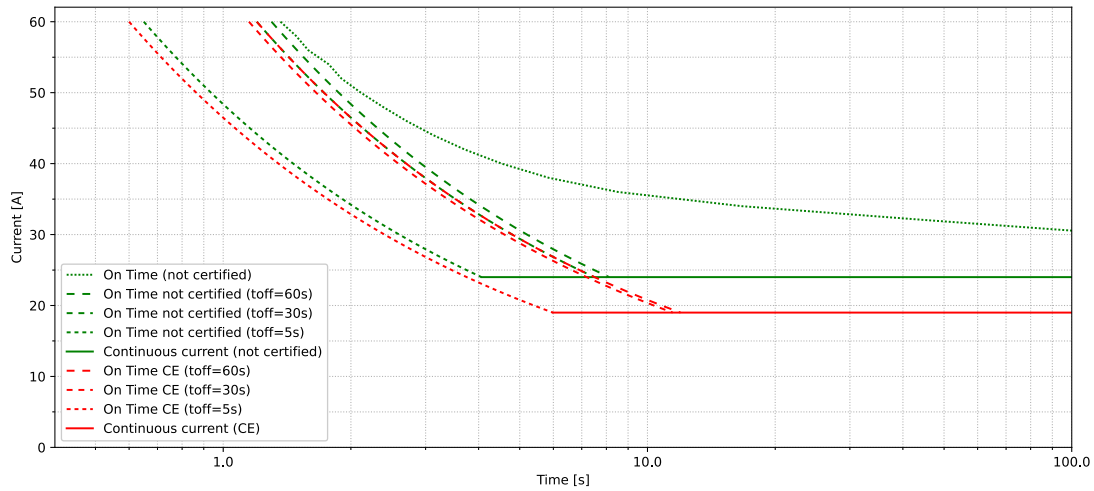
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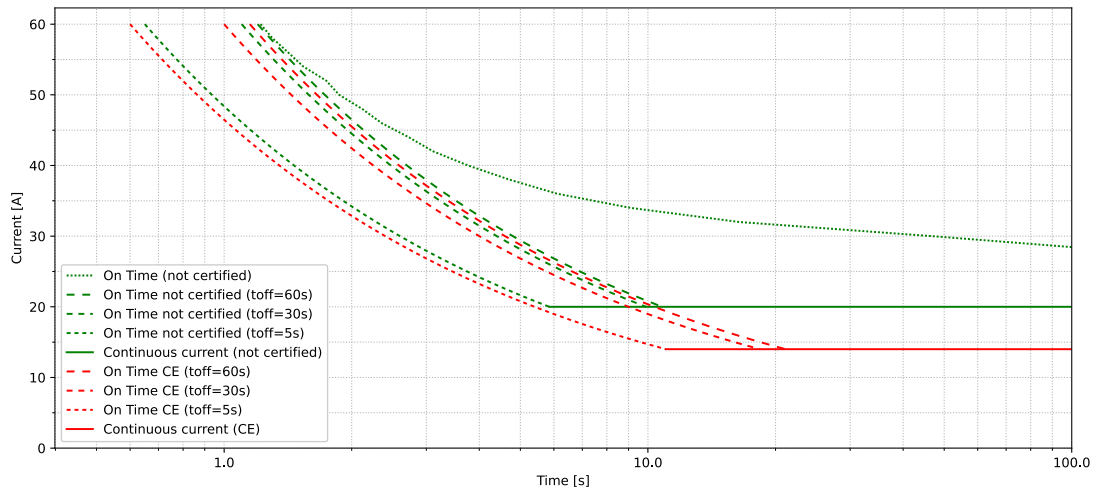


ambient temperature 70°C
 power supply voltage Up 24V
 PWM frequency 32kHz
 PWM mode asymmetric
 inductance per motor phase 150µH
 continuous current 24A

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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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