

# Servo amplifier

## mcDSA-F32-HC

Article number: 1514170

 Certification:   \*1


Picture similar

### Technical data

|                                                 |                        |
|-------------------------------------------------|------------------------|
| <b>Supply voltages</b>                          |                        |
| Electronic supply voltage Ue*2                  | 18..30 V               |
| Electronic current consumption @ Ue=24V*3       | typ. 65 mA             |
| Power supply voltage Up*4                       | 9..60 V                |
| <b>Output current</b>                           |                        |
| Max. output current                             | 60 A                   |
| Continuous output current (certified UL)*5      |                        |
| @Up ≤ 24V                                       | 26 A                   |
| @Up ≤ 60V                                       | 26 A                   |
| Continuous output current (certified CE)*6      |                        |
| @Up ≤ 24V                                       | 33.5 A                 |
| @Up ≤ 60V                                       | 32 A                   |
| Continuous output current (not certified)*7     |                        |
| @Up ≤ 24V                                       | 33.5 A                 |
| @Up ≤ 48V                                       | 33 A                   |
| <b>PWM</b>                                      |                        |
| PWM frequency                                   | 32 kHz                 |
| Commutation type                                | Field Oriented Control |
| <b>Mechanical</b>                               |                        |
| Size LxWxH                                      | 87 x 74 x 29 mm        |
| Weight                                          | 155 g                  |
| <b>Environment</b>                              |                        |
| Protection class                                | IP20                   |
| Installation requirements **                    | IP54                   |
| Ambient temperature (operation) (certified UL)  | -40..50 °C             |
| Ambient temperature (operation) (certified CE)  | -40..55 °C             |
| Ambient temperature (operation) (not certified) | -40..70 °C             |
| Ambient temperature (storage)                   | -40..85 °C             |
| Rel. humidity (non-condensing)                  | 5..90 %                |
| <b>CAN bus</b>                                  |                        |
| Protocol                                        | DS301                  |
| Device profile                                  | DS402                  |
| Max. baudrate                                   | 1 Mbit/s               |
| CAN specification                               | 2.0B                   |
| Galvanically isolated                           | no                     |
| <b>RS485</b>                                    |                        |
| Type                                            | 2-Wire EIA-485         |
| Signals                                         | DATA,/DATA,CLK,/CLK    |

|                                             |                                   |
|---------------------------------------------|-----------------------------------|
| <b>Functional safety</b>                    |                                   |
| Safety function refer safety manual         | Safe Torque Off (STO)             |
| Safety Integrity Level (SIL)                | up to SIL 3                       |
| Performance Level (PL)                      | up to PL e                        |
| <b>Sensor supply (Hall)</b>                 |                                   |
| Output voltage                              | 5 V                               |
| Max. output current                         | 0.05 A                            |
| <b>Sensor supply (Encoder/SSI)</b>          |                                   |
| Output voltage                              | 5 V                               |
| Max. output current                         | 0.2 A                             |
| <b>Sensor supply (Hiperface)</b>            |                                   |
| Output voltage                              | 10 V                              |
| Max. output current                         | 0.25 A                            |
| <b>Encoder</b>                              |                                   |
| 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 |
| <b>Hall sensors</b>                         |                                   |
| Signals                                     | H1,H2,H3                          |
| Max. frequency (per channel)                | 10 kHz                            |
| Input voltage                               | 0..5 V                            |
| Signal type                                 | open collector, single ended      |
| <b>Digital inputs</b>                       |                                   |
| Number - digital inputs                     | 6 (Din0..5)                       |
| Low voltage                                 | 0..5 V                            |
| High voltage                                | 8..30 V                           |
| <b>STO channels (ST0-A..B)</b>              |                                   |
| Low voltage                                 | 0..5 V                            |
| High voltage                                | 8..30 V                           |
| <b>Digital outputs</b>                      |                                   |
| 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 Ue      |
| Signal type                                 | positive switching                |
| <b>Analog inputs</b>                        |                                   |
| 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: 33.5 A → 23.7 Aeff, 32 A → 22.6 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: 33.5 A → 23.7 Aeff, 33 A → 23.3 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.



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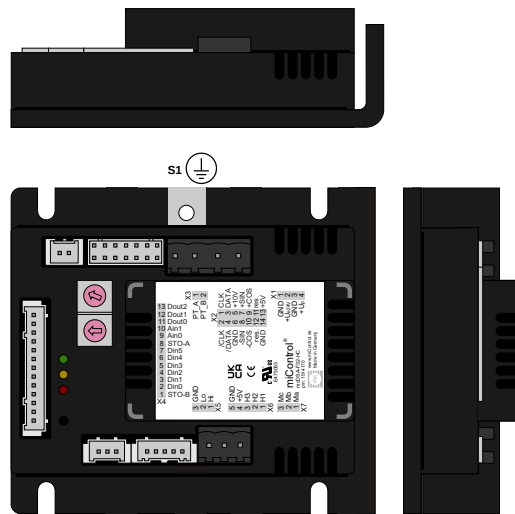
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## Scheme



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## Terminal assignment

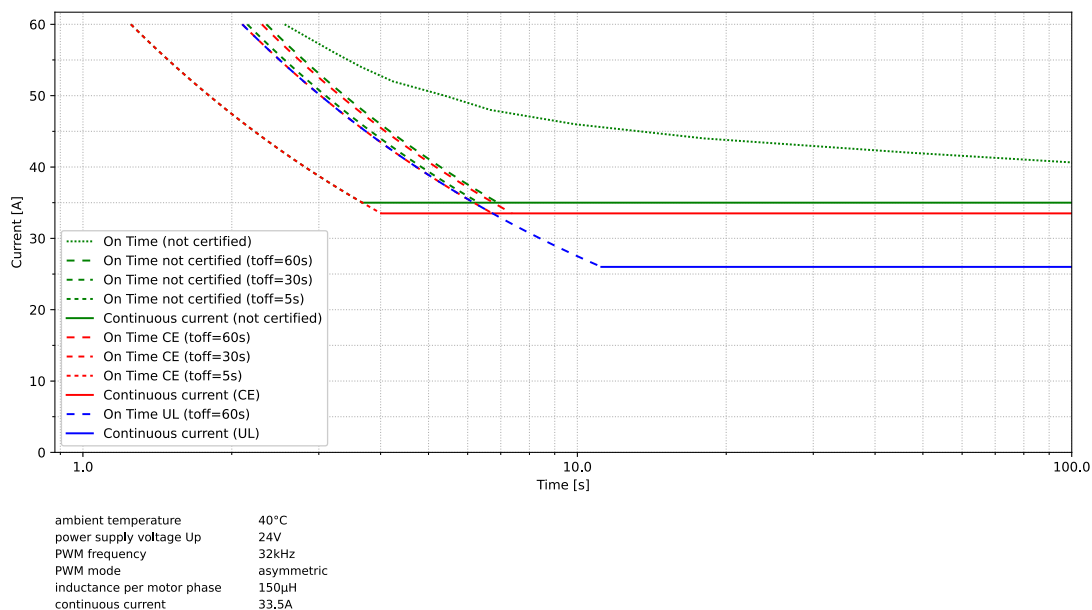
| X1 Supply  |        |                                                                   |
|------------|--------|-------------------------------------------------------------------|
| 1          | GND    | Ground for electronic supply voltage                              |
| 2          | +Ue24V | Electronic supply voltage                                         |
| 3          | GND    | Ground for power supply voltage                                   |
| 4          | +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<br>Sensors: Hiperface        |
| 6          | GND    | Ground for sensor supply<br>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<br>Sensors: encoder, SSI      |
| 14         | GND    | Ground for sensor supply<br>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                                                  |

| X5 CAN bus      |         |                                                                   |
|-----------------|---------|-------------------------------------------------------------------|
| 1               | CAN Hi  | CAN High                                                          |
| 2               | CAN Lo  | CAN Low                                                           |
| 3               | CAN GND | CAN Ground                                                        |
| X6 Hall encoder |         |                                                                   |
| 1               | H1      | Hall sensor 1                                                     |
| 2               | H2      | Hall sensor 2                                                     |
| 3               | H3      | Hall sensor 3                                                     |
| 4               | +U5V    | 5V output voltage for sensor supply<br>Sensors: hall              |
| 5               | GND     | Ground for sensor supply<br>Notice: don't connect with system GND |
| X7 Motor        |         |                                                                   |
| 1               | Ma      | Motor phase A                                                     |
| 2               | Mb      | Motor phase B                                                     |
| 3               | Mc      | Motor phase C                                                     |
| S1 Screw (M3)   |         |                                                                   |
| -               | FE      | Functional earth                                                  |

## Diagrams

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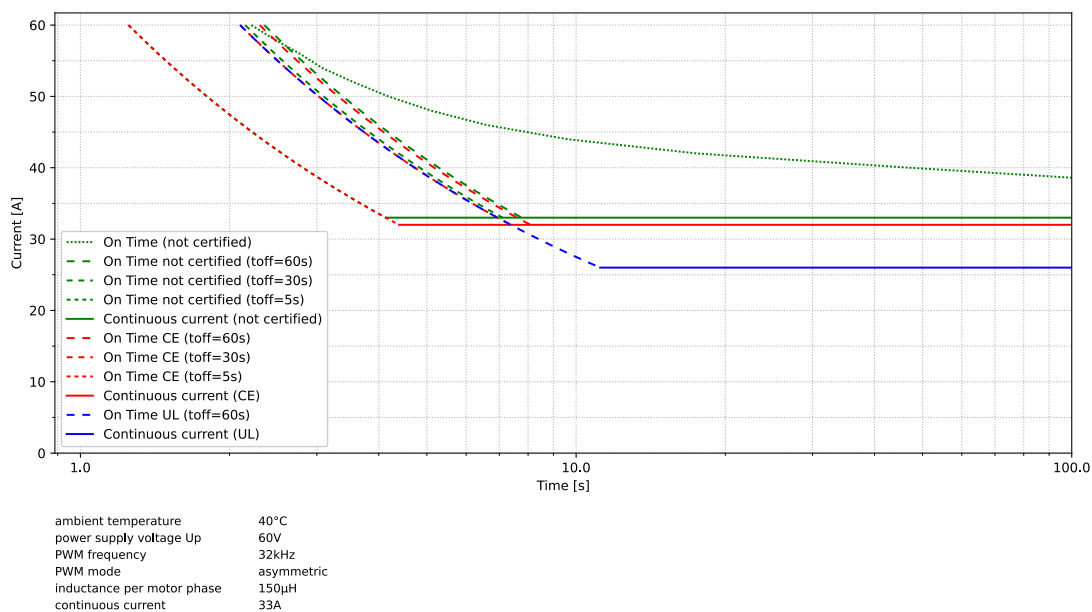
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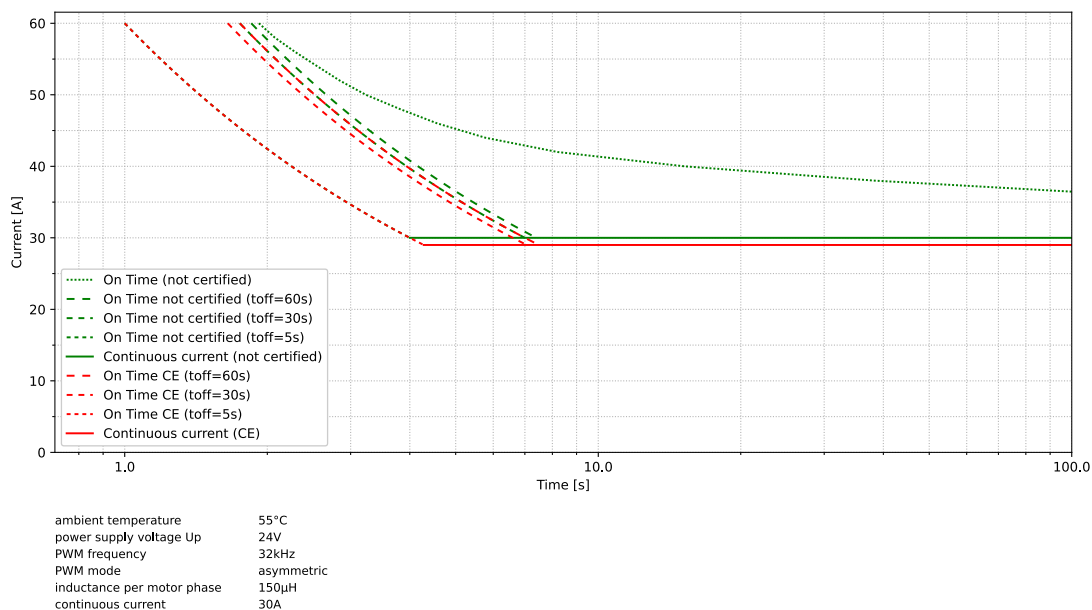
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## Diagrams

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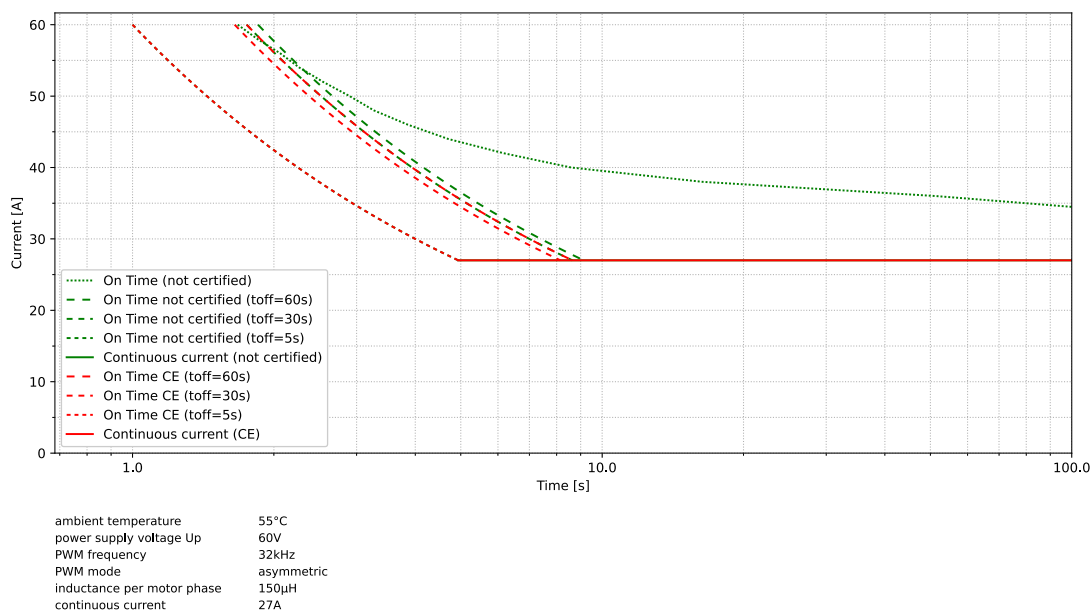
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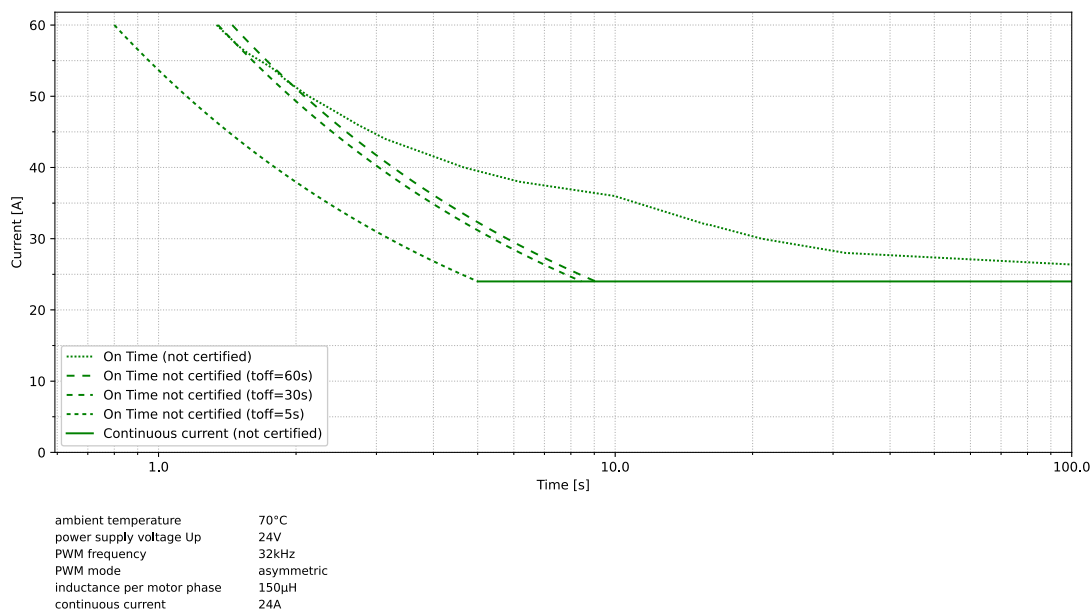
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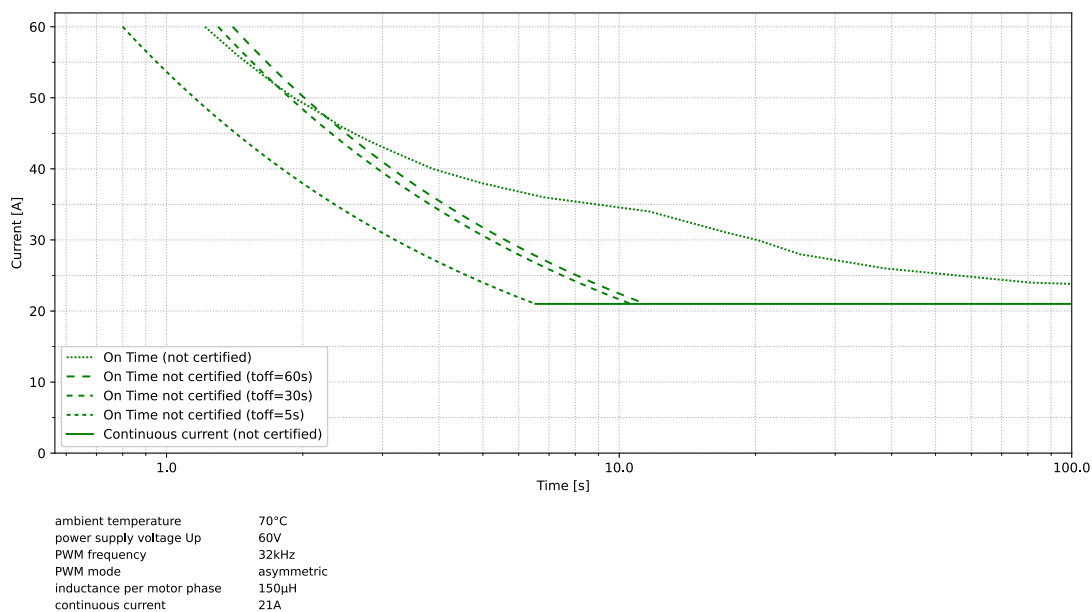
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