

# Servo amplifier

## mcDSA-E27XC-EtherCAT

Article number: 1513203

 Certification: 
  
E475093


Picture similar

### Technical data

| Absolute maximum rating (destruction limits)                               |                             |
|--|-----------------------------|
| Power supply voltage Up<br>no polarity reversal protection                 | 80 V                        |
| Continuous Electronic supply voltage Ue<br>no polarity reversal protection | 33 V                        |
| Short term peak voltage < 1s Ue<br>no polarity reversal protection         | 37 V                        |
| Power  |                             |
| Electronic supply voltage Ue   | 9..30 V                     |
| Electronic current consumption@ Ue=24V*2                                   | typ. 100 mA                 |
| Power supply voltage Up  | 9..60 V                     |
| Max. output current  | 160 A                       |
| Continuous output current (certified UL/CE)*3<br>@Up=24V                   | 54 A                        |
| @Up=60V  | 49 A                        |
| Continuous output current (not certified)*4<br>@Up=24V                     | 65 A                        |
| with Heatsink (Art.No. 1511832)  | 70 A                        |
| Continuous output current (not certified)*4<br>@Up=48V                     | 55 A                        |
| with Heatsink (Art.No. 1511832)  | 65 A                        |
| PWM  |                             |
| Output voltage   | 100% Up                     |
| PWM frequency  | 25, 32*5, 50 kHz            |
| Mechanical   |                             |
| Size LxWxH   | 111 x 100 x 55.4 mm         |
| Weight   | 630 g                       |
| Environment  |                             |
| Protection class   | IP20                        |
| Ambient temperature (operation) (certified UL/CE)                          | -25..40 °C                  |
| Ambient temperature (operation) (not certified)                            | -25..70 °C                  |
| Ambient temperature (storage)  | -25..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  | yes                         |
| EtherCAT   |                             |
| Type   | EtherCAT Slave              |
| Physical layer   | 100 Base-Tx EtherCAT        |
| Bus controller   | ET1100                      |
| Max. baudrate  | 100 Mbit/s                  |
| Number of ports  | 2xRJ45 (In,Out)             |
| Protocol   | CoE (CANopen over EtherCAT) |

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

\*2 power amplifier switched off, 5V output (sensor supply) is free, STO active

\*3 connector cable with max. possible cable cross-section, PWM frequency 32 kHz (asymmetrical), ambient temperature 40 °C, I/O's and 5V output active, RMS current: 54 A → 44 Aeff, 49 A → 40 Aeff

\*4 connector cable with max. possible cable cross-section, PWM frequency 32 kHz (asymmetrical), ambient temperature 40 °C, I/O's and 5V output free, RMS current: 55 A → 45 Aeff, 65 A → 53 Aeff, 70 A → 57 Aeff

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

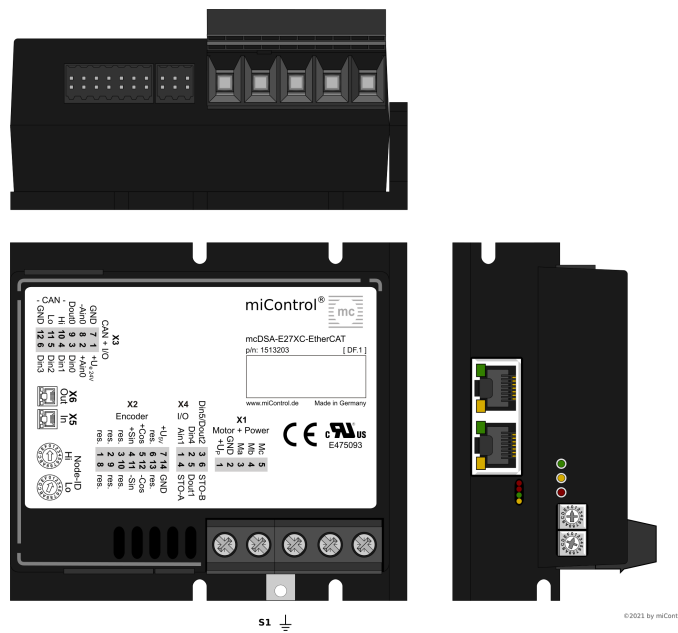
\*5 default value

\*6 Input voltage must not exceed Electronic supply voltage Ue

Additional technical data are available in mcManual.

| Functional safety                           |                                   |
|---|-----------------------------------|
| Safety function<br>refer safety manual      | Safe Torque Off (STO)             |
| Safety Integrity Level (SIL)                | up to SIL 3                       |
| Performance Level (PL)                      | up to PL e                        |
| Sensor supply (Encoder)                     |                                   |
| Output voltage                              | 5 V                               |
| Max. output current                         | 0.2 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 |
| Digital inputs                              |                                   |
| Number - digital inputs                     | 6 (Din0..5)                       |
| Low voltage                                 | 0..5 V                            |
| High voltage                                | 8..30 V                           |
| Notice                                      | Din5 parallel with Dout2*6        |
| STO channels (STO-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  | resistive, inductive              |
| Output voltage                              | Electronic supply voltage Ue      |
| Signal type                                 | positive switching                |
| Notice                                      | Dout2 parallel with Din5          |
| Analog inputs                               |                                   |
| Number                                      | 2 (Ain0..1)                       |
| Signal type - Ain0                          | +/- 10 V, 12 Bit, differential    |
| Signal type - Ain1                          | +/- 10 V, 12 Bit, single ended    |

Scheme



Terminal assignment

| X1 Motor         |         |   |
|------------------|---------|---|
| 1                | +Up     | Power supply voltage  |
| 2                | GND     | Ground for power supply voltage                                   |
| 3                | Ma      | Motor phase A   |
| 4                | Mb      | Motor phase B   |
| 5                | Mc      | Motor phase C   |
| X2 Encoder       |         |   |
| 1                | res.    | Reserved  |
| 2                | res.    | Reserved  |
| 3                | res.    | Reserved  |
| 4                | +Sin    | Encoder, plus sine signal   |
| 5                | +Cos    | Encoder, plus cosine signal                                       |
| 6                | res.    | Reserved  |
| 7                | +U5V    | 5V output voltage for sensor supply<br>Sensors: encoder           |
| 8                | res.    | Reserved  |
| 9                | res.    | Reserved  |
| 10               | res.    | Reserved  |
| 11               | -Sin    | Encoder, minus sine signal  |
| 12               | -Cos    | Encoder, minus cosine signal                                      |
| 13               | res.    | Reserved  |
| 14               | GND     | Ground for sensor supply<br>Notice: don't connect with system GND |
| X3 I/O's and CAN |         |   |
| 1                | +Ue24V  | Electronic supply voltage   |
| 2                | +Ain0   | Analog input 0, plus  |
| 3                | Din0    | Digital input 0   |
| 4                | Din1    | Digital input 1   |
| 5                | Din2    | Digital input 2   |
| 6                | Din3    | Digital input 3   |
| 7                | GND     | Ground for electronic supply voltage                              |
| 8                | -Ain0   | Analog input 0, minus   |
| 9                | Dout0   | Digital output 0  |
| 10               | CAN Hi  | CAN High  |
| 11               | CAN Lo  | CAN Low   |
| 12               | CAN GND | CAN Ground  |

| X4 I/O's               |            |                                    |
|------------------------|------------|------------------------------------|
| 1                      | Ain1       | Analog input 1                     |
| 2                      | Din4       | Digital input 4                    |
| 3                      | Din5/Dout2 | Digital input 5 / Digital output 2 |
| 4                      | STO-A      | STO channel A                      |
| 5                      | Dout1      | Digital output 1                   |
| 6                      | STO-B      | STO channel B                      |
| S1 Screw (M4)          |            |                                    |
| -                      | FE         | Functional earth                   |
| X5 EtherCAT - In port  |            |                                    |
| -                      | In         | In                                 |
| X6 EtherCAT - Out port |            |                                    |
| -                      | Out        | Out                                |