Servo amplifier

mcDSA-F30-Lp

Article number: 1513976

Certification: cULus E475093 CE UKCA *1

Picture similar

Technical data

Supply voltages	
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

Output current	
Max. output current	60 A
Continuous output current (certified UL)*5 @Up ≤ 24V @Up ≤ 60V	17.5 A 13.4 A
Continuous output current (certified CE)*6 @Up ≤ 24V @Up ≤ 60V	19 A 15 A
Continuous output current (not certified)*7 @Up ≤ 24V @Up ≤ 48V	20 A 17 A

PWM	
PWM frequency	32 kHz
Commutation type	Field Oriented Control

Mechanical	
Size LxWxH	70 x 50 x 19 mm
Weight	50 g

Environment	
Protection class	IP00
Installation requirements *8	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. freqency (per channel)	500 kHz
Input voltage	0..5 V
Signal type	differential, open collector, single ended

Hall sensors	
Signals	H1,H2,H3
Max. freqency (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 Ue
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 >= 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 >= 70V

*5 connector cable with max. possible cable cross-section, PWM freqency 32 kHz (SVPWM), ambient temperature 50 °C, I/O's and 5V output active, RMS current: 17.5 A → 12.5 Aeff, 13.4 A → 9.5 Aeff

*6 connector cable with max. possible cable cross-section, PWM freqency 32 kHz (SVPWM), ambient temperature 40 °C, I/O's and 5V output active, RMS current: 19 A → 13.4 Aeff, 15 A → 10.6 Aeff

*7 connector cable with max. possible cable cross-section, PWM freqency 32 kHz (SVPWM), ambient temperature 40 °C, I/O's and 5V output free, RMS current: 20 A → 14.1 Aeff, 17 A → 12.0 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))
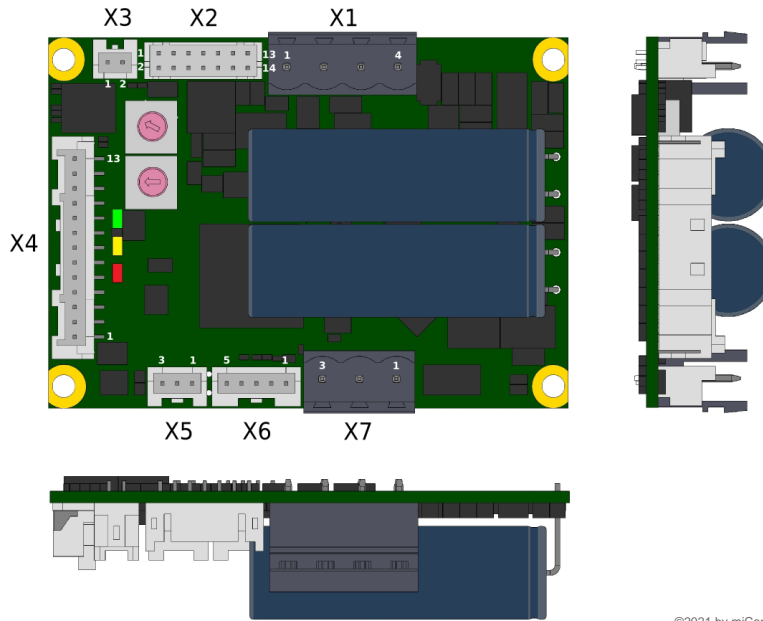
Additional technical data are available in mcManual.

Web: www.miControl.de e-mail: info@miControl.de Tel.:+49 (3379) 312 59-0 Fax:+49 (3379) 312 59-19

Scheme

©2021 by miControl

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	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

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. Sensors: hall
5	GND	Ground for sensor supply. Notice: don't connect with system GND
X7	**Motor**	
1	Ma	Motor phase A
2	Mb	Motor phase B
3	Mc	Motor phase C

Diagrams

miControl®   mcDSA-F30-LP Rev.A1

ambient temperature	40°C
power supply voltage Up	24V
PWM frequency	32kHz
PWM mode	asymmetric
inductance per motor phase	150µH
continuous current	20A

miControl®   mcDSA-F30-LP Rev.A1

ambient temperature	40°C
power supply voltage Up	60V
PWM frequency	32kHz
PWM mode	asymmetric
inductance per motor phase	150µH
continuous current	17A

Diagrams

miControl®   mcDSA-F30-LP Rev.A1

Legend:
- On Time (not certified)
- On Time not certified (toff=60s)
- On Time not certified (toff=30s)
- On Time not certified (toff=5s)
- Continuous current (not certified)
- On Time CE (toff=60s)
- On Time CE (toff=30s)
- On Time CE (toff=5s)
- Continuous current (CE)

ambient temperature	55°C
power supply voltage Up	24V
PWM frequency	32kHz
PWM mode	asymmetric
inductance per motor phase	150µH
continuous current	17A

miControl®   mcDSA-F30-LP Rev.A1

Legend:
- On Time (not certified)
- On Time not certified (toff=60s)
- On Time not certified (toff=30s)
- On Time not certified (toff=5s)
- Continuous current (not certified)
- On Time CE (toff=60s)
- On Time CE (toff=30s)
- On Time CE (toff=5s)
- Continuous current (CE)

ambient temperature	55°C
power supply voltage Up	60V
PWM frequency	32kHz
PWM mode	asymmetric
inductance per motor phase	150µH
continuous current	14A

Diagrams

miControl®   mcDSA-F30-LP Rev.A1

ambient temperature	70°C
power supply voltage Up	24V
PWM frequency	32kHz
PWM mode	asymmetric
inductance per motor phase	150µH
continuous current	12A

miControl®   mcDSA-F30-LP Rev.A1

ambient temperature	70°C
power supply voltage Up	60V
PWM frequency	32kHz
PWM mode	asymmetric
inductance per motor phase	150µH
continuous current	8A