

S-DIAS Drive Module DC 104



- with 1 motor output stage 10 A
- 1 brake chopper
- 1 universal encoder feedback
- 2 enable inputs for STO
- 1 holding brake
- 1 motor temperature sensor input

The S-DIAS Drive Module DC 104 is used to control a synchronous servo motor/DC motor with +48 V supply voltage and a phase current of up to 10 A. There is also a brake chopper output for connecting an external brake resistor. Various digital encoders can be used for position feedback (Sanyo Denki, BiSS-C P2P, Tamagawa, EnDAT2.2, SSI, incremental encoder with additional Hall sensor interface for commutation search).

Motor Driver Specifications

Type	Servo motor output stage	DC motor output stage
Operating modes	Current regulation Speed regulation via universal encoder interface Position regulation via universal encoder interface	PWM control, Current regulation Speed regulation via IxR compensation Speed regulation via incremental encoder Position regulation via incremental encoder
Operating voltage	+18-55 V	
Regulator frequency	16 kHz	
PWM frequency	16 kHz	
Maximum PWM duty cycle	95 % (limited by hardware)	
Maximum continuous current	10 A	
Maximum peak current (10 s)	20 A	
Output current over the environmental temperature	maximum 10 A continuous current at 45 °C maximum 7.5 A continuous current at 50 °C maximum 5 A continuous current at 55 °C	
DC-link capacitance	5 µF	
Motor current measurement	0-20 A	

Voltage measurement	0-65 V
Safety functions	Short circuit cut-off, Temperature cut-off, I ² t monitor, Overvoltage and under voltage monitoring, Motor temperature monitoring via resistance sensor in the motor

Brake Chopper Specifications

Type	Brake chopper for external power resistor
Output	GND switching
Maximum current	10 A
Lowest possible resistance	6 Ω
Short-circuit protection	yes
Regen resistor switching threshold on/off	60 V/55 V

Enable Inputs Specifications

Number	2
Input voltage	+24 V
Input voltage range	+18-30 V
Signal level	low: < 5 V high: > 15 V
Switching threshold	typically +11 V
Input current	3 mA at +24 V
Input delay	typically 0.5 ms
Output test signal control	maximum 1.5 ms

Universal Encoder Feedback Specifications

Number	1		
Encoder system	Sanyo Denki	BiSS-C (Point to Point)	Tamagawa
Signals	RS422 (A=ES+, /A=ES-) RS422 level (120 Ω termination, integrated in module)	RS422 (A=MA+, /A=MA-, B=SL+, /B=SL-) RS422 level (120 Ω termination, integrated in module)	RS422 (A=Data+, /A=Data-) RS422 level (120 Ω termination, integrated in module)
Input frequency	-	-	-
Counter frequency	-	-	-
Signal analysis	-	-	-
Data transfer speed	2.5 MHz	2.5 MHz	2.5 MHz
Encoder resolution	29-bit	maximum 64-bits	ID 0x11: 33-bit ID 0x17: 39-bit
Coding	-	-	-
Encoder power supply	+5 V/0.2 A short-circuit proof		

Number	1			
Encoder system	EnDAT2.2	SSI	Incremental encoder with additional Hall sensor interface for commutation search	
Signals	RS422 (A=Data+, /A=Data-, B=Clk+, /B=Clk-) RS422 level (120 Ω termination, integrated in module)	RS422 (A=Data+, /A=Data-, B=Clk+, /B=Clk-) RS422 level (120 Ω termination, integrated in module)	TTL (A, B, R) TTL level (1200 Ω pull-up, integrated in module)	RS422 (A, /A, B, /B, R, /R)S422 level RS422 level (120 Ω termination, integrated in module)
Hall sensors for commutation search	-	-	TTL (Ha, Hb, Hc) TTL level (1200 Ω pull-up, integrated in the module)	
Input frequency	-	-	maximum 125 kHz	maximum 250 kHz
Counter frequency	-	-	maximum 500 kHz	maximum 1 MHz
Signal analysis	-	-	4x	
Data transfer speed	2 MHz	2.5 MHz	-	-
Encoder resolution	maximum 48 bits	30-bit	maximum 16 bits	
Coding	-	binary	-	-
Encoder power supply	+5 V/0.2 A short-circuit proof			

Holding Brake Specifications

Number	1
Output voltage	+24 V DC
Maximum continuous current	1.8 A
Short-circuit protection	yes
Maximum switch-off energy (inductive load)	0.65 J

Motor Temperature Sensor Input Specifications

Number	1	
Resistance measurement range	100-2,500 Ω	
Measurement value	100-2,500	
Input resistance	> 10 kΩ	
Typical input current	< 0.33 mA	
Input filter hardware	typically 10 Hz	Low-pass 1 st order

Electrical Requirements

Supply voltage +24 V	+18-30 V DC, Class 2	
Current consumption of the +24 V supply	maximum 1.9 A (load-dependent holding brake + universal encoder supply)	
Supply voltage motor	+18-55 V DC	
Current consumption of motor supply	load-dependent (motor)	
Voltage supply from S-DIAS bus	+24 V DC	
Current consumption on the S-DIAS bus (+24 V supply)	typically 35 mA	maximum 45 mA

Article Number and Miscellaneous

Article number	20-014-104	
Dimensions	25 x 104.2 x 72 mm (W x H x D)	
Standard	designed according to UL	
Approvals	CE	
Mission time	20 years	

Environmental Conditions

Storage temperature	-20 ... +85 °C	
Environmental temperature	0 ... +55 °C	
Humidity	0-95 %, non-condensing	
Installation altitude above sea level	0-2000 m without derating > 2000 m with derating of the maximum environmental temperature by 0.5 °C per 100 m	
Operating conditions	pollution degree 2	
Noise emission	≤ 70 dB	
EMC resistance	EN 61000-6-2 (industrial area) EN 61000-6-7 (industrial area) (noise immunity industry-functional Safety) (increased requirements in accordance with EN IEC 62061) additionally tested according to EN 61800-5-2	
EMC noise generation	EN 61000-6-4 (industrial area)	
Vibration resistance	EN 60068-2-6	3.5 mm from 5-8.4 Hz 1 g from 8.4-150 Hz
Shock resistance	EN 60068-2-27	15 g (147,15 m/s ²)
Protection type	EN 60529/NEMA 250	IP20/Type1