



Rayion-DCHP

High performance DC motor controller driver

- Locked anti phase PWM control, preserve full linearity around zero
- Digital SSI. Incremental encoder feedback
- PID closed loop modes: Position, speed, current
- Esafe – Eeprom file system management
- 350A continuous current. (10 sec 750A over drive). @ 27Volts
- Communication: CAN BUS ,Ethernet, RS422-485 and RS232
- Analog and / or digital commands
- Unique ripple reduced operation mode
- Firmware upgrade via RS232
- MMI – Load/Read parameters and high speed live graph monitor
- Protections: Temperature, Voltage, CPU, encoders, D-S saturation, motor stuck and more
- Comprehensive Error messages
- 4 digital inputs. 2 digital outputs
- Rigid switch construction, high current 5X190A 100V power MOSFETs
- Hardware short motor winding protection
- 2 encoders input with automatically switchover
- Operating temperature -40°C to 71°C. (extended -55°C 85°C) / MIL STD
- OEM version available



- Military heavy systems, tanks and armored vehicles
- Automotive, DIY EV conversion kits EV's
- Industry - Fork lifts, off road vehicles and golf carts
- Avionics - Aircraft actuators and electric UAV power train
- Industrial - heavy motors for industrial machines

Rayion-DCHP specifications

Function	Parameter	Remarks
CPU and Memory		
CORE Motors Controllers	STM32F407ZGT7 TI- TMS320F-28069	32 bits Processor
Flash	ARM 512 Kbytes	Motor DSP 256Kbytes
RAM	100 Kbytes	Motor DSP 96Kbytes
CORE Speed	170Mhz	Motor DSP 90Mhz
Motor Interface		
DC Half Bridge Drivers	20 100V@100A	Locked Anti-Phase Control
Bridge Drivers	IRS21834S	1.4A turn on 1.8A turn off
Motor Current	350A Continues	Need suitable heat sink
Output hall devices power	5VDC	@200mA
Encoder Interface-A	SSI or SPI	SDI SDO SCLK
Encoder Interface-B	Digital RS422	CLK A CLK B Index
Motor Current Sense measurement	2 Channels	0-3V 12bits resolution
Adjustable Motor Current limiter	2 Channels	One Over load Point
General Purpose Interface		
Digital Input / Output	4 Inputs 2 Output Channels	
Analog input (analog command)	1 Channel	±10V / ±5V /0-10V
Communication Interface		
CAN BUS	Single CANopen	CAN 2.0B 1Mbit/Sec
UART	1 Channels	RS232 or RS422 comm.
Ethernet	1 Channel 10/100	LAN
Power Supply		
Operating Voltage	16-32V	16-64V optional
Control Voltage	12V to 48V	
Quiescent Current	200mA @24V	Cores @ 90Mhz
Environment		
Operating Temperature	-40°C +71°C	Optional -55°C to +85°C
Storage Temperature	-65°C - +150°C	
I/O Connection		
Power Input and Phase output	Press fit and BUSBAR	
Communication	25 PIN Dtype Female	+25 PIN Dtype Female
MIL-STD Compliance	MIL-STD 1275D - 461F	
Dimension	500X275X90 mm	

Motor phases and power input connector

PIN	Signal Name	Description
1	+Vin	Power Input -

PIN	Signal Name	Description
1	Motor +	Motor CW

PIN	Signal Name	Description
	-Vin	Chassis (-)

PIN	Signal Name	Description
2	Motor -	Motor CCW

J2 D3899924WD35PN Command connector					
PIN	Signal Name	Description	PIN	Signal Name	Description
1	NC	Spare	2	Ai_P	Analog Command Positive signal
3	Ai_N	Analog Command negative signal	4	Ready	Activate driver internal circuitry
5	Enable	Enable driver	6	Motor Current	Default: Current output ($\pm 10V$)
7	NC	Spare	8	Analog Status	Default: Current output ($\pm 10V$)
9	Driver On	Driver is operating	10	Power status	Digital Signal power supply OK Output (5V)
11	Over temperature	Digital Signal Over Voltage Output (5V)	12	Voltage status	Digital Signal Over Voltage Output (5V)
13	Over Current	Digital Signal Over Voltage Output (5V) Analog Ground	14	NC	Spare
15	GROUND	Signals ground	16	GROUND	Signals ground
17	Command copy	Default: $\pm 10V$	18-37	NC	Spare

J3 D3899924WD35PN ATP connector					
PIN	Signal Name	Description	PIN	Signal Name	Description
1	TXD +	ETH 1 TXD +	2	TXD Return	ETH 1 TXD Reference
3	TXD -	ETH 1 TXD -	4	NC	Spare
5	RXD +	ETH 1 RXD +	6	RXD Return	ETH 1 RXD Reference
7	RXD -	ETH 1 RXD -	8	NC	Spare
9	CAN L	CAN BUS Low signal	10	CAN H	CAN BUS High signal
11	120 OHM	CAN BUS termination (Connect to pin9)	12	GROUND	Signal Ground
13	TXD	RS232 data output. From Driver to Host	14	RXD	RS232 data output. From Driver to Host
15	GROUND	Signals ground	16	GROUND	Signals ground
17	Green Ledn	Default: $\pm 10V$	18	Green Ledn	Pilot Light GREEN
19	Red Ledn	Pilot Light RED	20	Anode Led	Pilot Light Common Anode
21	REF 1_5V Test	Reference signal for Analog_signals	22	GROUND	Signals ground



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