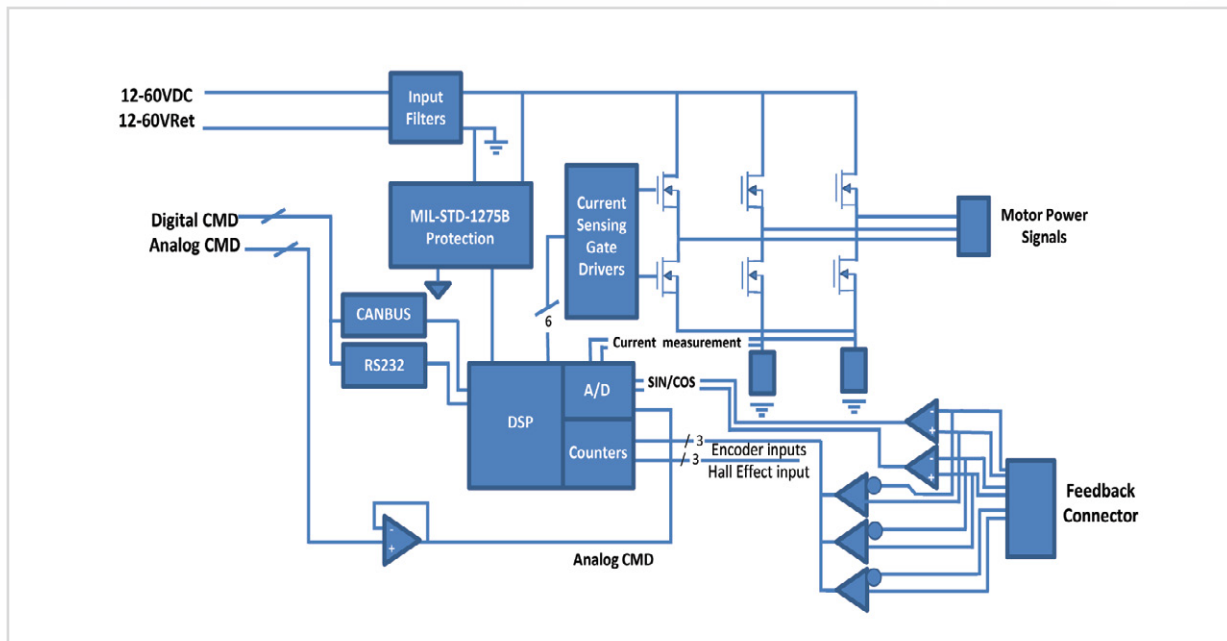


Rayon-MP

High performance motor controller driver
Advanced motion controller



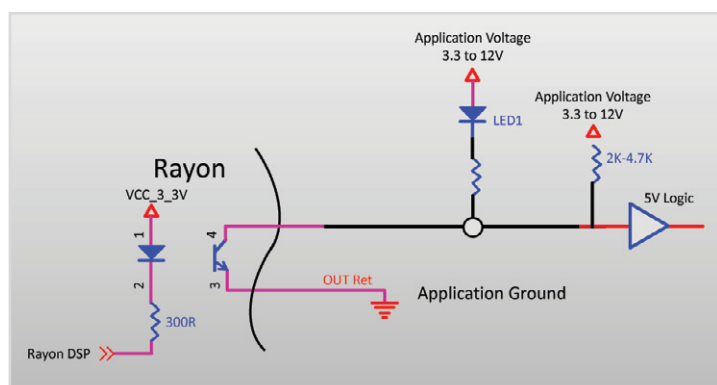
- Sinusoidal, flux oriented control and trapezoid drive
- Hall, Digital SSI. Incremental encoder feedback
- PID closed loop modes: Position, speed, current and stepper
- Esafe – Eeprom file system management
- 25A continues current. (10 sec 50A over drive)
- Communication: CAN BUS (1Mbit- CANopen) RS422-485 and RS232
- Analog and / or digital commands
- Master Slave Mode
- Firmware upgrade via RS232
- MMI – Load/Read parameters and high speed live graph monitor
- Protections: Temperature, voltage, CPU, encoders, hall, motor stuck and more
- Encoder to Hall on the fly switch-over
- Comprehensive Error messages
- 4 digital optically isolated input, 2 digital optically isolated outputs
- Reliable: rigid construction high current 180A 100V Power MOSFETs
- Hardware short motor winding protection
- 2 encoders input with automatically switchover
- Operating temperature -40°C to 71°C. (extended to -55°C 85°C by demand)
- OEM version available



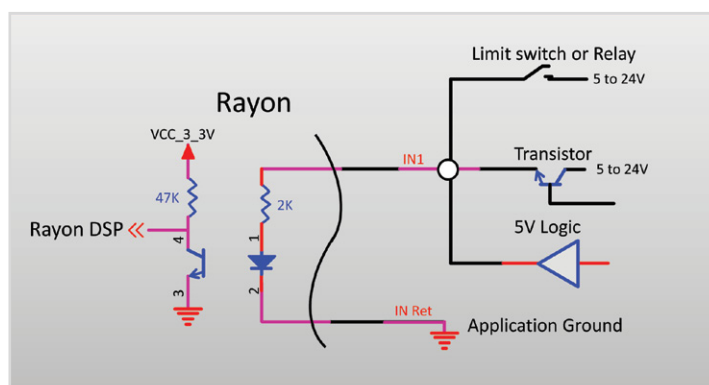
Rayon-MP Simplified Diagram



Rayon-MP



How to activate a digital output



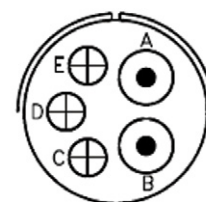
How to activate a digital input

Rayion-MP specifications:

Function	Parameter	Remarks
CPU and Memory		
CORE	TI- TMS320F-28069	32 bits Processor
Flash	256 Kbytes	
RAM	100 Kbytes	
CORE Speed	170Mhz	
Motor Interface		
BLDC 3 phases Bridge Drivers	6 100V@180A	FOC
Bridge Drivers	IRS21834S	1.4A turn on 1.8A turn off
Motor Current	30A Continues	Need suitable heat sink
Hall angle inputs	60°	Open collector/Drain
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	Optically isolated
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.
Power Supply		
Operating Voltage	12-75V	
Control Voltage	12V to 48V	
Quiescent Current	125mA @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	ITS4107R20-14S Bayonet	2X46A 3X23A @80°c
Power Input and Phase output–OEM	NorComp 6815W5103L001	5W5 Pin straight 40A
Communication	Harting 09563517512	Dtype-HD 44PIN
MIL-STD Compliance	MIL-STD 1275D –461F	In future
Dimension	200X85X53 mm	

Controller and motor phases power input and phase outputs connector

Committal ITS4107R20-14S mate with Committal TBD		
PIN	Function	Remarks
A	+V Motor	Motor Power 12-75VDC
B	V Motor Return	Motor Power return 0V
C	Phase A	BLDC Motor Phase A or DC Motor +
D	Phase B	BLDC Motor Phase B or DC Motor -
E	Phase C	BLDC Motor Phase C



Arrangement 20-14
Contact Size 2/8, 3/12

Signals Input and Digital I/O Connector

Harting 09563517512 44PIN Dtype High density connector					
PIN	Signal Name	Description	PIN	Signal Name	Description
1	Con Vin+	Control Voltage 12-48V+	23	NC	Do Not Use
2	Ground	0V -Digital Ground Encoder supply	24	TX_422+	Asynchronous RS422 Communication TX+
3	CLK_B	Incremental Encoder Clock B	25	RX_422-	Asynchronous RS422 Communication RX4
4	IDXn	Incremental Encoder Index NOT	26	DM	USB2 FS DM (Future Use)
5	CAN H	CANBUS H Signal	27	Ground	0V Digital Ground
6	Ain -	±10V input Analog command negative side	28	Digital IN 1	Optically-isolated 5V to 24V active high
7	Ground	0V Digital Ground Encoder supply	29	Con_I3O2	Do not use
8	HALL 3	Open collector Hall 3 Sensor input	30	Motor Temperature	Connect thermistor between this pin and GND
9	SPI_CLK_422-	SSI/SPI encoder SCLK NOT signal	31	VCC_5V	5VDC @ 200mA Hall sensors 5V supply
10	RX_422+	Asynchronous RS422 Communication RX+	32	CLK_A NOT	Incremental Encoder Clock A NOT
11	DP	USB2 FS DP (Future Use)	33	IDX	Incremental Encoder Index
12	PWM_DIR_IO	Dual driver direction Control Master PWM out. Slave PWM in.	34	RS232_TX	RS232 TX Data out from Rayon
13	Digital IN 1	Optically-isolated 5V to 24V active high	35	Ain -	±10V input Analog command positive side
14	Digital OUT1	Optically-isolated 5mA drive. Active low, open collector	36	VCC_5V	5VDC @ 200mA Encoder 5V supply
15	BOOT	Remote firmware boot loader – Short to Ground for RS232 Boot Mode.	37	HALL 2	Open collector Hall 2 Sensor input
16	Ground	0V Digital Ground	38	SPI_CLK_422+	SSI/SPI encoder SCLK signal
17	CLK_A	Incremental Encoder Clock A	39	TX_422-	Asynchronous RS422 Communication TX
18	CLK_B NOT	Incremental Encoder Clock B NOT	40	VBUS	USB2 FS VBUS (Future Use)
19	RX232 RX	RS232 Data to Rayon-Data in	41	PWM_IO	Dual driver Control Data Master PWM out. Slave PWM in.
20	CAN L	CANBUS L Signal	42	IN Ret	Digital IN OUT isolated reference ground
21	IDX2	Preserve for 2 incremental encoders Index	43	Break	Digital input isolated break Command
22	HALL 1	Open collector Hall 1 Sensor input	44	NC	Do not use



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