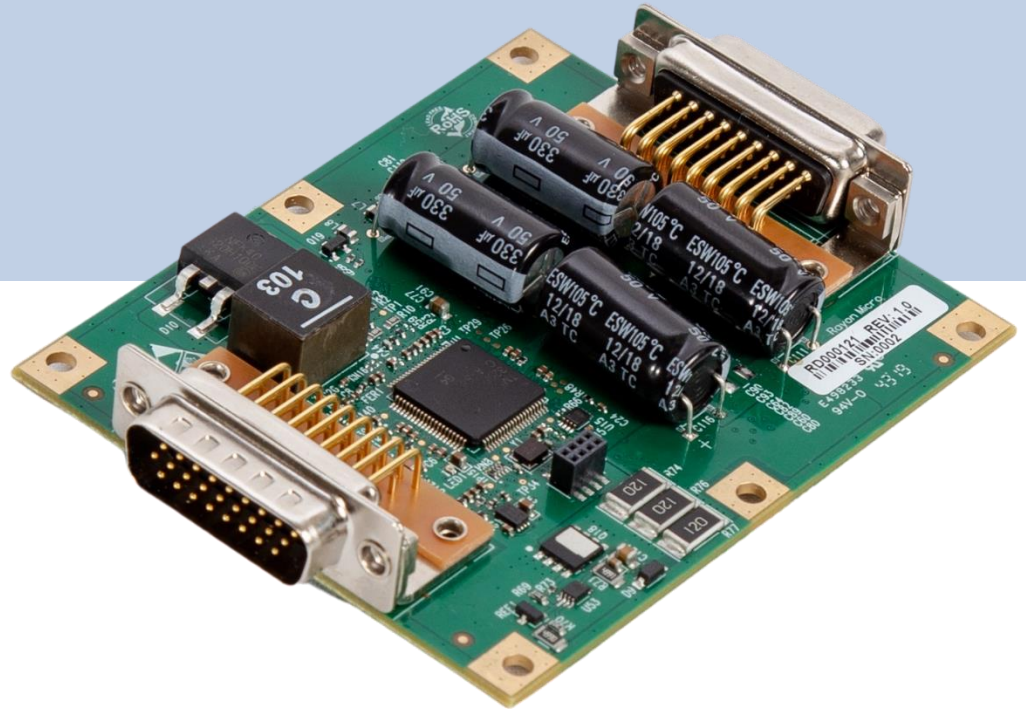
	Document Title:	Single Board Brochure
	Document PN & Revision:	RRBRO000002 REV 1.0
	Project Name	Rayon Single Board
	Catalog number	RD000121, RD000181




RAYON Single Board

Board Level, High power
20A motor controller driver

Brochure



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Drive Features

The Rayon Single Board is a motor controller driver who is capable of powering up to 960 watts motors, And support applications such as position, speed, and torque.

Full digital control enables fast response and high bandwidth of current and position control loops and enables easy implementation in servo applications.

A dedicated GUI provides automatic control loop parameters for fast application setup, load/read parameters, and a high-speed, Realtime graph monitor.

Key features

- Miniature module, high power density
- Powers motors up to 960W.
- 12–48 VDC recommended operating voltage
- 20A RMS continuous current – with appropriate heat sink plate
- Sinusoidal, flux-oriented current IQ ID vector control
- Motor calibration wizard
- Motor feedback: Hall, incremental, SSI, sin/cos absolute/incremental encoder
- PID closed loop modes: position, speed, current, stepper.
- Autotuning and manual tuning for PID
- Dedicated GUI, load/save parameters with real-time signal scope.
- Communication: CAN bus and RS232 (RD000121), RS422(RD000181)
- Firmware upgrade via serial communication
- 4 digital inputs, 2 digital outputs
- Regeneration protection – 10 Joule/10msec
- Additional digital input or analog $\pm 10V$ command
- High current, low Rds(on), 100V power MOSFET transistors
- Protection: over-temperature, over-voltage, over-current, encoder fault, motor stall, Etc.
- Operating temperature $-40^{\circ}C$ to $+85^{\circ}C$, can be extended upon request to $-55^{\circ}C$.

Motors

- Brushed motors
- Brushless motors with Hall – six step commutation
- Brushless motors with Hall and incremental encoder – sinusoidal commutation
- Brushless motors with absolute SSI encoder – sinusoidal commutation

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Current control

- Fully digital, closed loop PI at 20 kHz
- 20kHz PWM
- Sinusoidal commutation with vector control (PID) or trapezoidal commutation with encoder and/or digital Hall sensors
- 20 kHz sample rate, 12-bit current loop resolution
- DC bus power supply compensation
- Autotuning

Speed control

- Closed loop PID at 4 kHz.
- Programmable PID
- Feed forward
- Control filters
- Gain scheduling
- Autotuning

Position control

- Closed loop PID at 2 kHz.
- Programmable notch and low-pass filters
- External position feedback loop

Communication

Two communication options:

- RS232 serial communication with CAN, for fast communication in a multi-axis distributed environment.
- RS422 serial communication

Feedback

- Incremental encoder – up to 1 MHz counts per second (250 kHz channel input), differential or single-ended encoder inputs.
- Digital Hall sensors – up to 12 kHz counts per second (2 kHz channel inputs)
- Absolute analog (sine/cosine) – up to 12 bits.
- Interpolated analog (sine/cosine) encoder – up to 250 kHz (analog signal)
 - Internal interpolation – up to 12 bits

Signals offset calibration.