

# Rayon Critical Power

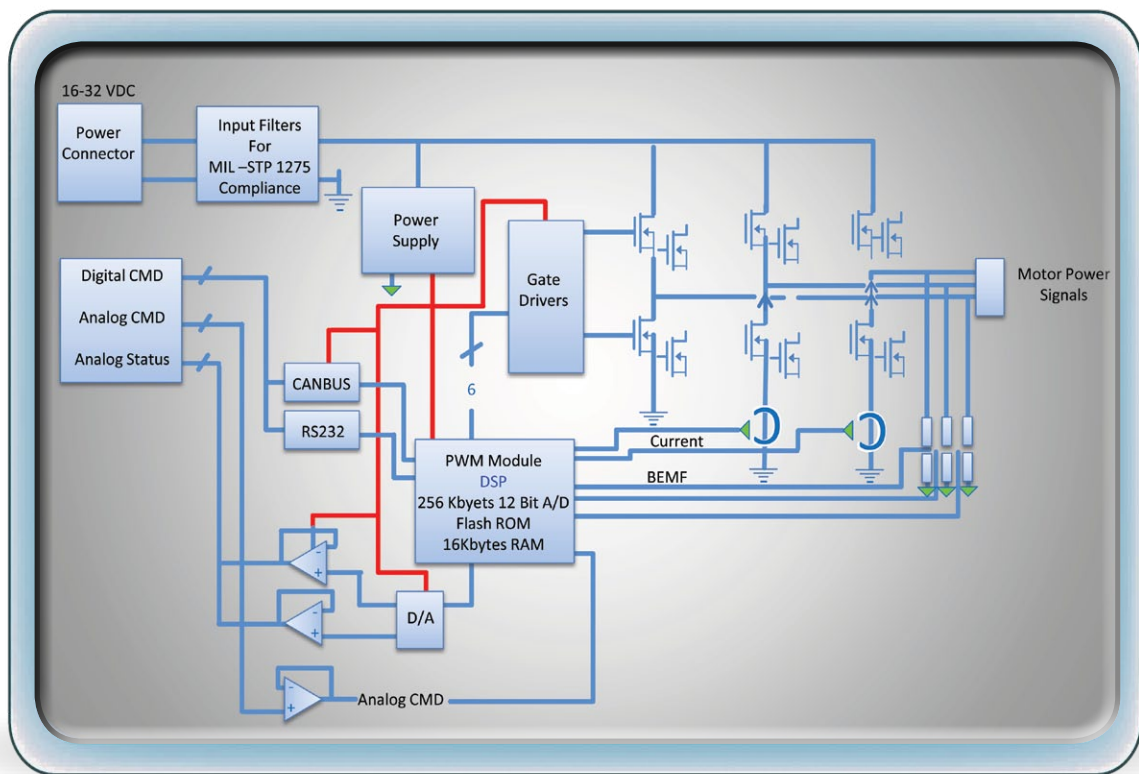
## Heavy duty motor fan driver



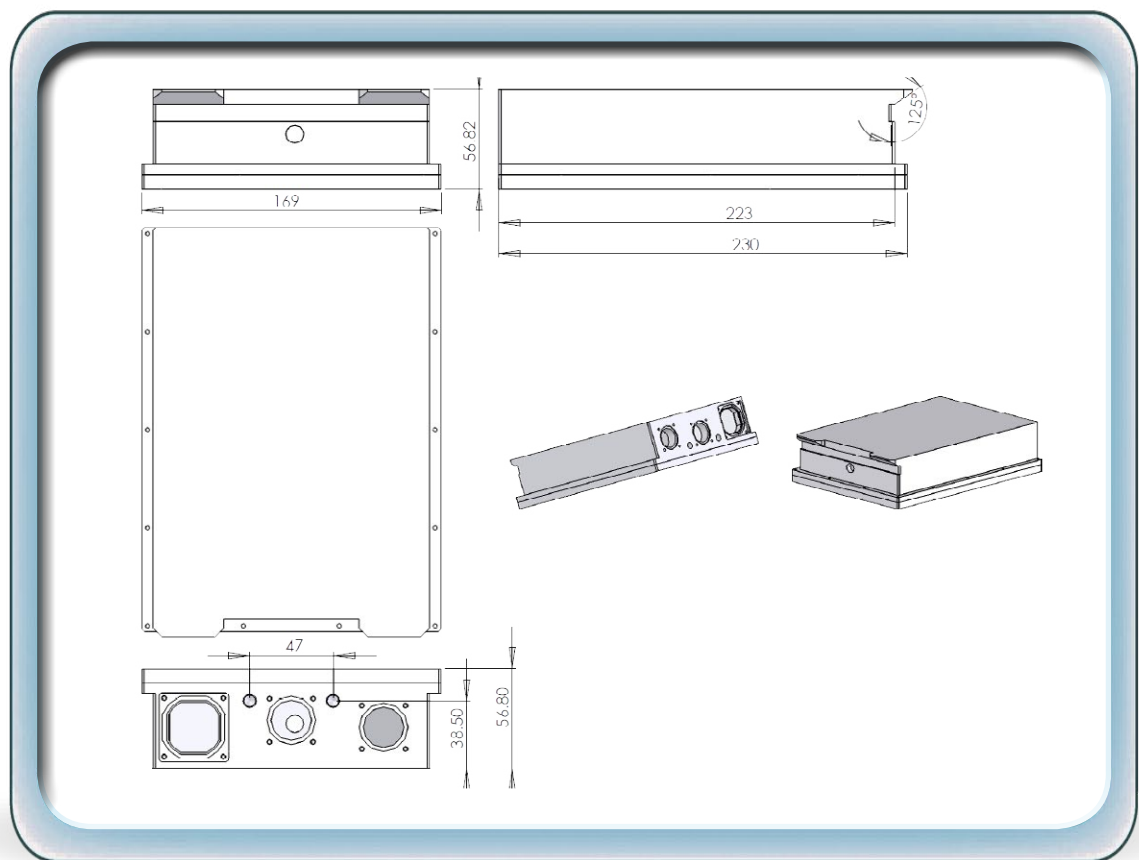
- 35A Heavy duty BLDC motor controller driver
- 6 Phases driver drive
- BEMF rotor position feedback
- PID closed loop modes: Speed and current
- Analog command input (12bits resolution)
- Analog status output Speed and current (12bits resolution)
- 35A continues current (10 sec. 100A over drive)
- Communication: CAN BUS (1Mbit- CANopen ) and RS232
- Firmware upgrade via RS232
- External temperature measurement (For motor over heat prevention)
- Protections: Temperature, voltage, CPU, motor stuck ... more
- Comprehensive Error messages
- 2 digital optically isolated input
- Reliability: high current 180A, 100V Power MOSFETs, per phase
- High efficient thermal solution
- Housed in stainless still housing IP68
- Comply with MIL- STD 1275, 704A, 761E, 810F
- Optimized for heavy vehicle 27V battery applications

### Typical Applications:

- Heavy military vehicles fan
- Shelters DC backup fans
- General purpose Pump and fan applications



## Connection Diagram



## Mechanical Dimensions

## Specifications:

| Function                                  | Parameter          | Remarks                       |
|-------------------------------------------|--------------------|-------------------------------|
| <b>CPU and Memory</b>                     |                    |                               |
| CORE                                      | TI- TMS320-F2812   | 32bits DSP                    |
| Flash                                     | 256 Kbytes         |                               |
| RAM                                       | 36 Kbytes          |                               |
| CORE Speed                                | 150Mhz             |                               |
| <b>Motor Interface</b>                    |                    |                               |
| BLDC 3 phases Bridge Drivers              | 1 Channel          | Top drive PWM                 |
| Motor Current                             | 35A                |                               |
| Driving method                            | Trapezoid drive    |                               |
| Feedback                                  | Back EMF           | 12bits resolution             |
| Motor Current Sense                       | Hall effect device | 12bits resolution             |
| General Purpose Interface                 |                    |                               |
| Digital Input/output                      | 4 Channels         | Optically isolated (Optional) |
| Analog inputs 12bits Resolution           | 1 Channels         | 0-5V 0-10 V (Optional)        |
| Analog output 12bits Resolution           | 2 Channels         | 0-5V 0-10 V (Optional)        |
| <b>Communication Interface</b>            |                    | PWM + Low pass                |
| CAN BUS                                   | Single or Dual     | CAN 2.0B                      |
| UART                                      | 2 Channels         | RS232 or RS422 comm.          |
| <b>SPI</b>                                | Master/Slave       | UP TO 10Mhz. SCLK.            |
| <b>Power Supply/Operating temperature</b> |                    |                               |
| Nominal Voltage                           | 27V                |                               |
| <b>Operating Voltage</b>                  | 14V to 60VDC       |                               |
| Quiescent Current                         | 150mA              | Core @ 150Mhz.                |
| Operating Temperature                     | -40℃ - +85℃        |                               |
| Storage Temperature                       | -65℃ - +150℃       |                               |
| <b>Standards</b>                          |                    |                               |
| <b>MIL-STD 461E</b>                       | RFI/EMI            |                               |
| MIL-STD 1275B / MIL-STD 704A              | Power input        |                               |
| MIL-STD-810F                              | Environmental      |                               |

## Power input connector

| ITB4102R24-9P |           |                    |
|---------------|-----------|--------------------|
| PIN           | Function  | Remarks            |
| A             | (+) Power | 27VDC power        |
| B             | (-) Power | 27VDC power return |

| ITB4102R20-22S |               |     |                   |
|----------------|---------------|-----|-------------------|
| PIN            | Function      | PIN | Function          |
| A              | Motor Phase A | B   | Thermostat IN     |
| C              | Motor Phase B | D   | Thermostat Return |
| E              | Motor Phase C | E   | Spare             |

## Controller Input and Digital I/O Connector

| D38999/20WB35SN |                       |                                        |
|-----------------|-----------------------|----------------------------------------|
| 1               | 27vDC                 | Debug Power bypass                     |
| 2               | Ground                |                                        |
| 3               | Current status output | Analog 0-10V output signal             |
| 4               | Analog Ground         |                                        |
| 5               | NC                    |                                        |
| 6               | NC                    |                                        |
| 7               | Digital input 1       | Leave open or connect to 27VDC         |
| 8               | NC                    |                                        |
| 9               | NC                    |                                        |
| 10              | Digital input 2       | Leave open or connect to 27VDC         |
| 11              | Digital input 3       | Leave open or connect to 27VDC         |
| 12              | Digital input 4       | Leave open or connect to 27VDC         |
| 13              | Speed command         | + Hall sensors Power supply            |
| 14              | RS232_RX              | Data to BLDC 60A                       |
| 15              | RS232_TX              | Data from BLDC 60A                     |
| 16              | Ground                |                                        |
| 17              | CAN H                 | CAN BUS High signal 150 ohm terminated |
| 18              | CAN L                 | CAN BUS Low signal 150 ohm terminated  |
| 19              | Digital input 5       | Leave open or connect to 27VDC         |
| 20              | Thermistor high       |                                        |
| 21              | Thermistor Low        |                                        |
| 22              | 4-20mA input signal   | 4-20mA speed command                   |



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