

allocortech inc.

Taurus C60 ICD

601-0052-000

Revision B

June 2024



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Version History

| Revision | Changes |
|----------|--|
| A | Initial Release |
| B | Updated input voltage and battery info |



Introduction

The allocortech inc Taurus C60 is a BLDC motor controller that implements full FOC/SVPWM for high efficiency operation up to 6kW peak power. The Taurus C60 has isolated communications channels configurable for CAN 2.0, RS-485, and a digital input. It comes in an IP67 rated package with integrated heat-sink. It supports up to 12S (50.4V) operation and 100A peak operating current (70A continuous).

Scope of this Document

This document covers the mechanical and electrical specifications of the allocortech inc. Taurus C60 (part number 100-0054 and variants). The software development interfaces will be covered in other documents.

List of Abbreviations

| | |
|--------------|---|
| RS485 | Differential, half-duplex serial bus |
| BLDC | Brushless DC (motor) |
| CAN | Controller Area Network, serial protocol ISO 11898 |
| EMI | Electromagnetic Interference |
| GND | Power or Digital Ground, isolated from Chassis Ground |
| GPI | General Purpose Input |
| PWM | Pulse Width Modulation |

References


CAN 2.0 Specification



Electrical Interface

Connector Pinout

J1 - Communications Connector

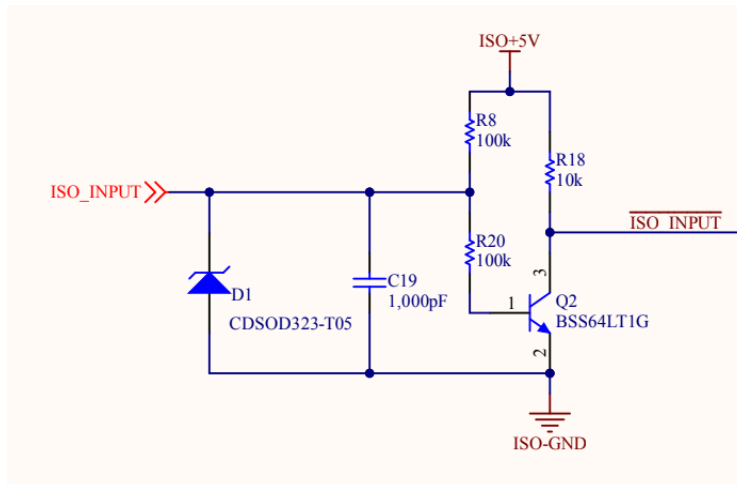
| | |
|---|--|
|  | Plug connector part number: D38999/24ZA35PN |
| | Recommended mate: D38999/26ZA35SN |
| | Available harnesses: <ul style="list-style-type: none">• 130-0082-900 - D38999 to Molex• 130-0082-901 - DB9 CAN Adapter |

J1 Pin Allocation Table

| Pin | Signal | Function |
|-----|---------------|---|
| 1 | RS-485- | RS-485 Pair |
| 5 | RS-485+ | |
| 2 | CAN_L | CAN Pair |
| 3 | CAN_H | |
| 4 | Digital Input | Isolated general-purpose input |
| 6 | ISO-GND | Isolated ground reference for CAN, RS-485, and GP Input |

General Purpose Input

The General Purpose Input is normally high when left unconnected, allowing for an external open-collector or single switch to ground to drive it. It allows operation 0-5V referenced to ISO-GND. It is ESD-protected with a unidirectional CDSOD323-T05 diode.





Absolute Maximums

| Parameter | Min | Max | Units |
|--|-------------------------------|-----------------------------|-------|
| Input Voltage on VIN to GND | -0.5 * | 52 | V |
| VIN Current | 70 (continuous) 100 (peak) | | A |
| System/Idle Power | 1.0 | 1.5 | W |
| Motor Power | 0 | 4 (continuous)* 6 (peak) | kW |
| GPIO Voltage to ISO-GND @ 1mA | -0.3 | +6.0 | V |
| CAN Common Mode to ISO-GND | -2 | +7 | V |
| RS-485 Common Mode to ISO-GND | -25 | +25 | V |
| RS-485 Transient Fault Protection to ISO-GND | -65 | +65 | V |
| GND to ISO-GND | -400 | +400 | V |

* Assumes motor controller placed in appropriate airflow for heat exchange.

Communications Parameters

| Parameter | Min | Nom | Max | Units |
|---|-----------|-----|-------|-------|
| CAN Differential Output Voltage (dominant) | 1.5 | | 3.0 | V |
| CAN Differential Output Voltage (recessive) | -0.12 | | 0.012 | V |
| RS-485 Differential Output | 1.5 @ 54Ω | | | V |
| RS-485 Common Mode Output Voltage | | 2.5 | 3 | V |
| RS-485 Input Rising Threshold | 40 | | 200 | mV |
| RS-485 Input Falling Threshold | -200 | | -40 | mV |

For more detailed information, see the datasheets for the following transceivers:

| | |
|---------|-------------|
| CAN 2.0 | SN65HVD255D |
| RS-485 | MAX14775 |



Environmental Ratings

Temperature

Operating: -40°C to 85°C *

Storage: -40° to 105°C

* Ambient airflow across the heatsink may need to be cooler depending upon the desired max power.

On-board temperature sensors are included at the following locations. The specific limits are as follows, which software should adhere to. These thresholds assume adequate air flow across the Taurus C60 heatsink.

| Device | Recommended Limit |
|---------------------|-------------------|
| Inverter MOSFETs | 125°C |
| Internal Processor | 125°C |
| Bulk Capacitor Case | 110°C |

Ingress Protection

The Taurus C60 is designed to IP67, but not yet qualified. This rating also assumes the system integrator seals around the ends of the five 10AWG flying wire leads.

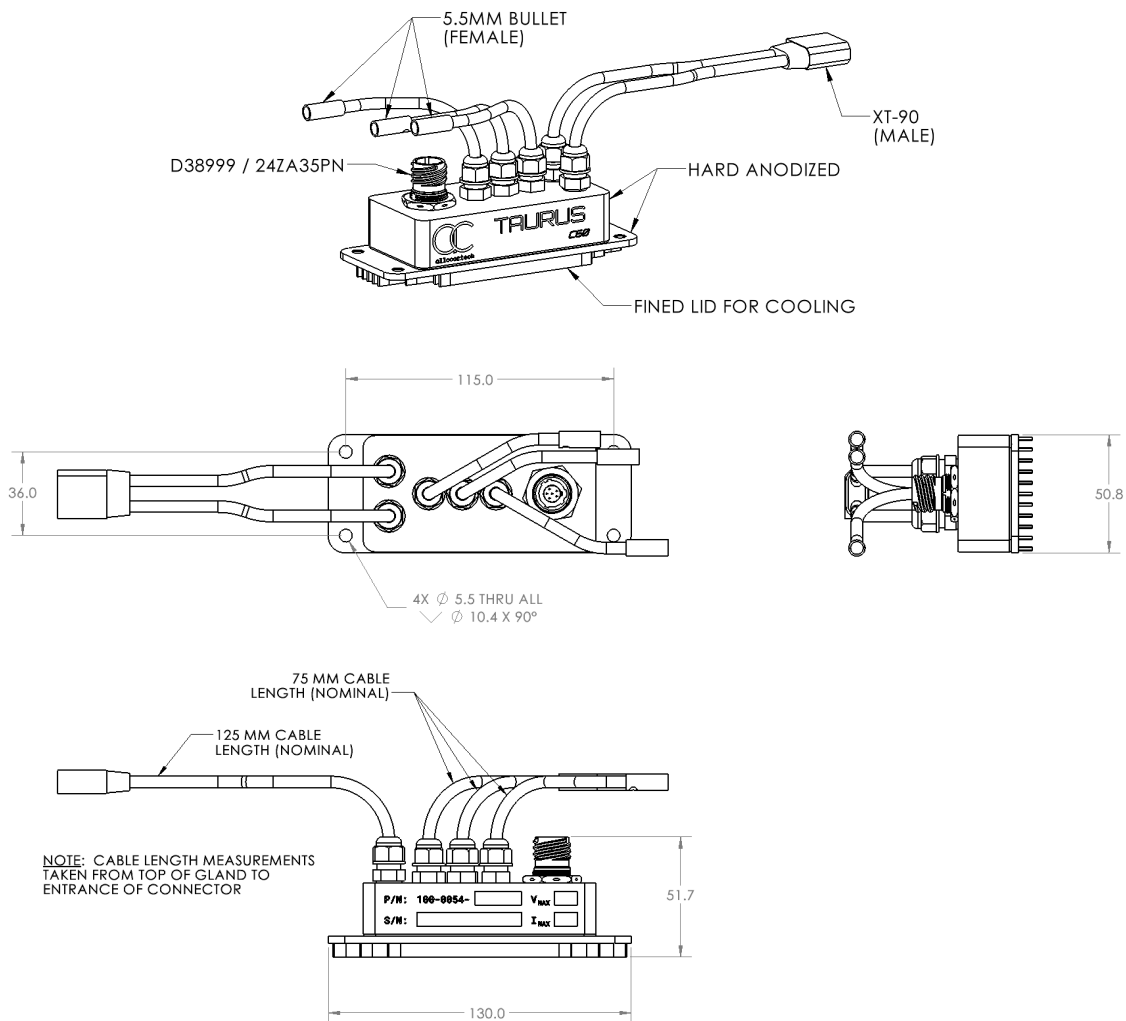


Mechanical Interface

The Taurus C60 is housed in a machined, hard-anodized Al 6061 enclosure. An array of fins on the lid provide cooling for the unit. Three 5.5mm female bullet connectors on 115 mm cables and one XT90H-M connector on 165 mm cables exit the enclosure through sealed cable glands along with a D38999 / 24ZA35PN connector. *Cable length and connector variations are available on request.*

Dimensions

Measurements given in millimeters.



Weight

Weight

With nominal cable length and cooling fins, unit weight is 280 g.