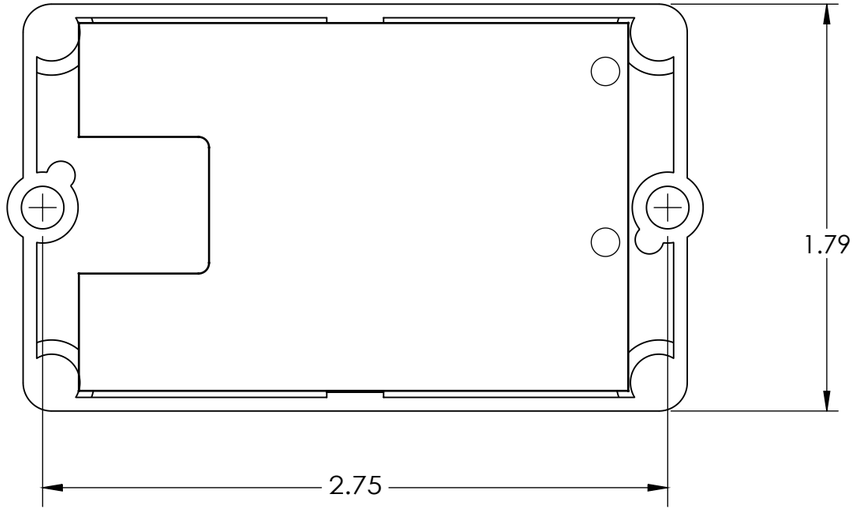
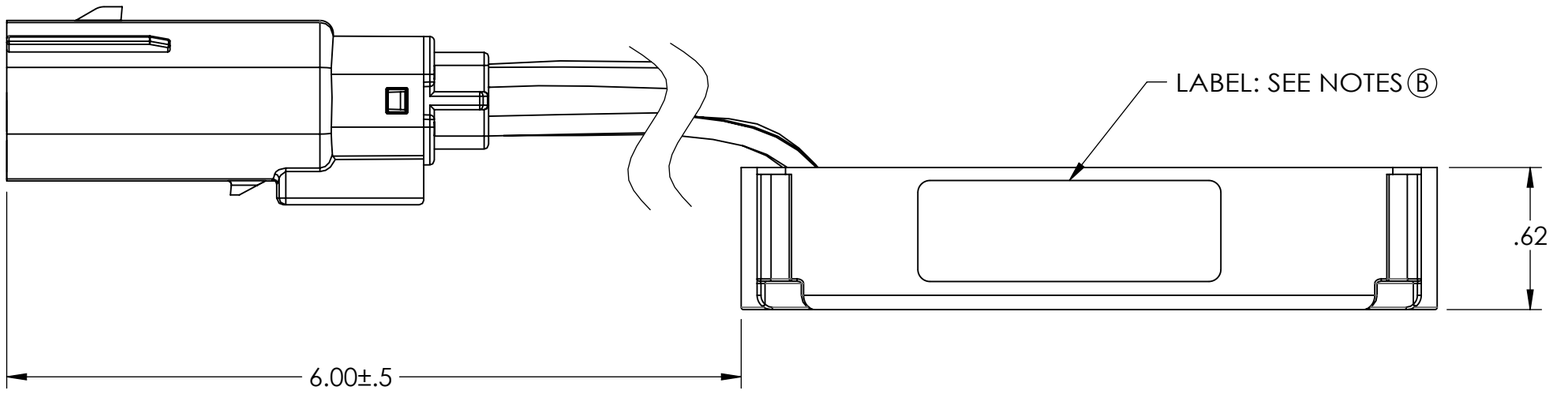
HARNESS NOT SHOWN FOR CLARITY




Ⓑ NOTES:
1) LABEL WILL CONTAIN THE FOLLOWING MANDATORY INFORMATION;
   - TROMBETTA LOGO
   - TROMBETTA PART NUMBER
   - DATE CODE
   - COUNTRY OF ORIGIN
2) OTHER DETAILS MAY BE ADDED AT TROMBETTA'S DISCRETION




SHEET 1 OF 2

| REV | DESCRIPTION | BY | ECN | DATE | APP |
|---|---|---|---|---|---|
| H | CHANGED VERBIAGE FOR MODULE SPECIFICATIONS, UNDER OUTPUT SPECIFICATIONS, THE MINIMUM VOLTAGE REQUIRED TO ENSURE OPERATION WAS 6 VOLTS | CAW | 7491 | 2/11/16 | DAH |
| G | ADDED VIBE SPEC THAT WAS REMOVED IN REV F, KEPT REVISED SPEC, SEE SHEET 2 | CAW | 6859 | 5/22/13 | DAH |
| F | REDRAWN IN SOLIDWORKS. REVISED VIBE SPEC ON SHEET 2. | SMS | 6853 | 05/13/13 | DAM |
| E | ADDED NOTES, SEE PAGE 2. | CAW | 6774 | 01/16/13 | SMS |
| D | UPDATED DIAGRAM & NOTES, SEE PAGE 2. | CAW | 6756 | 12/05/12 | JRH |
| C | ADDED MATING CONNECTOR PART NUMBERS, SEE PAGE 2. | CAW | 6676 | 06/20/12 | JRH |
| B | ADDED NOTES FOR LABEL CRITERIA. | CAW | 6622 | 04/10/12 | DAM |
| A | RELEASED. | CAW | 6565 | 01/10/12 | JRH |

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED:
BREAK ALL EDGES .005-.015 FILLETS R.010-.020
.XXX±.005 .XX±.01 ANGLES ±1° 125 FINISH
NUMBER REVISIONS ARE PROTOTYPE

k CONTROL PLAN REQUIRED

PROJECT 2262

TROMBETTA
DC Power Solutions for a Harsh World

# S500-A21 MODULE DIMENSIONAL ASSEMBLY

| DRAWN | APP | DRAWING NUMBER | REV |
|---|---|---|---|
| CAW | JRH | D04350 | H |
| DATE 01/10/12 | SCALE 3:2 | | |

| | |
|---|---|
| SINUSOIDAL VIBRATION TESTING<br>UNIT WILL MEET EITHER/OR OF THESE SPECS | **VIBE SPEC: TEST CONDITION 1**<br>A LOGARITHMIC SWEEP FROM 10 Hz TO 2000 Hz TO 10 Hz IN A PERIOD OF 20 MINUTES SHALL BE PERFORMED FOR A MINIMUM OF 12 HOURS IN EACH OF THE 2 AXES (ONLY 2 BECAUSE THE SOLENOID IS AXI-SYMETRICAL).<br><br>THE AMPLITUDE SHALL BE CONSTANT DISPLACEMENT OF 1.5 mm PEAK TO PEAK FROM 10 Hz TO 32 Hz AND AT A CONSTANT ACCELERATION OF 20.8 m/s2 RMS (3g PEAK) FROM 32 Hz TO 2000 Hz.<br><br>THE SOLENOID COILS ARE TO BE ENERGIZED HALF OF EACH TEST TIME. |
| | **VIBE SPEC: TEST CONDITION 2**<br><br>TEST LEVEL: 196 m/s^2 (20 g) PEAK.<br><br>LOGARITHMIC FREQUENCY SWEEP: 100-500 Hz TO AND FRO SWEEP IN 1 MINUTE EACH DIRECTION.<br><br>TEST DURATION: 3 HOURS FOR EACH OF THE THREE AXIS FOR A TOTAL OF NINE HOURS.<br><br>THE MODULES ARE UNPOWERED AND THEIR PLUG SHELLS ARE SECURED TO THE SHAKER TABLE WITH .75±.25 INCHES OF SLACK IN THE LEAD ASSEMBLY. |
| | PASSING CRITERIA: THREE MODULES PASS FUNCTIONAL AND SHOW NO EVIDENCE OF PHYSICAL DAMAGE AFTER VIBRATION. |
| | AMBIENT OPERATING TEMPERATURE: -40c TO +85c |

MODULE SPECIFICATIONS: (D)(H)

PIN 1-B TYPICAL PULL CURRENT: 10 AMPS @ 12 VOLTS (AFFECTED BY ACTUAL LOAD & WIRING)

PIN 1-B TYPICAL HOLD CURRENT: 1.5 AMPS @ 12 VOLTS (AFFECTED BY ACTUAL LOAD & WIRING)

PIN 1-B WILL DRAW LESS THAN 85uA (at 12 VOLTS) IF THERE IS NO ACTIVATION SIGNAL ON P1-C

ACTIVATE SIGNAL CURRENT: 26mA NOMINAL @ 12 VOLTS

MINIMUM VOLTAGE REQUIRED TO ENSURE OPERATION: 10 VOLTS

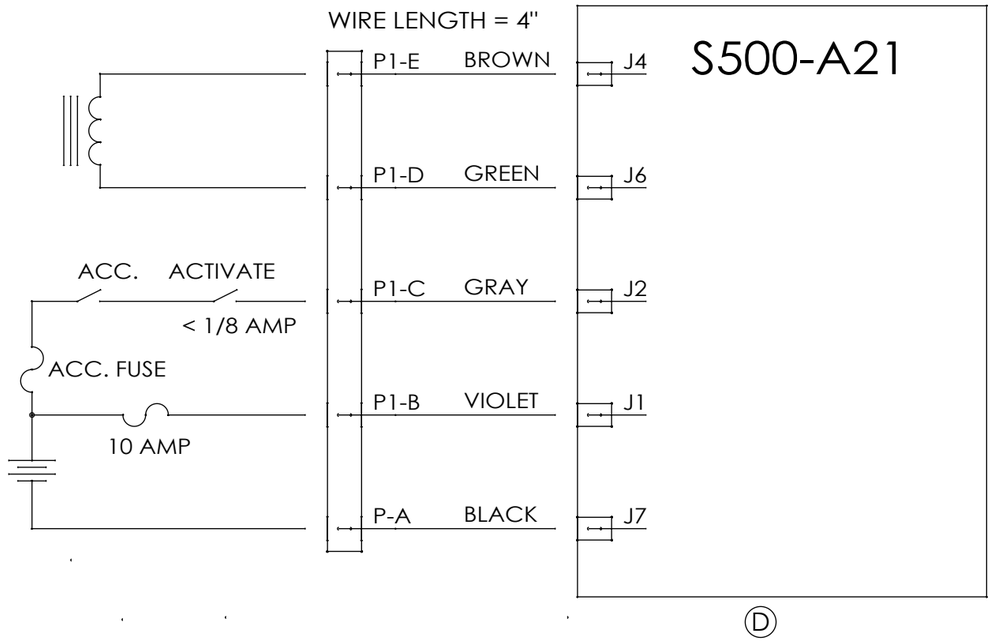
MAXIMUM VOLTAGE UNIT IS ENSURED TO OPERATE AT: 16 VOLTS

TRANSIENT PROTECTION: CAN HANDLE LOAD DUMPVOLTAGE UP TO 100 VOLTS.

RATED NUMBER OF CYCLES: > 50,000 (E)
ENVIRONMENTAL SEAL: IP66/IP67

CONNECTOR:
MOLEX CONNECTOR HOUSING: 33482-0601
MOLEX CONNECTOR PINS: 33000-0002
MOLEX CONNECTOR SEALS: 34345-0001

MATING CONNECTOR: (C)
MOLEX CONNECTOR HOUSING: 33472-0601
MOLEX CONNECTOR PINS: 33012-3001
MOLEX CONNECTOR SEALS: 34345-0001




OUTPUT SPECIFICATIONS: (D)

THIS MODULE IS A LOW-SIDE PWM DRIVER INTENDED FOR NOMINAL 12 VOLT VEHICLE APPLICATIONS DRIVING SOLENOID COIL RESISTANCES OF 1.4 OHMS OR GREATER SPECIFICALLY TROMBETTA P/N Q613-A20.

AS SOON AS THE ACTIVATE SIGNAL RISES ABOVE THE MINIMUM VOLTAGE REQUIRED TO ENSURE OPERATION, (H) THE SOLENOID WILL BE 100% DRIVEN FOR 1 SECOND, THEN WILL BE PWM DRIVEN AT 1.5 AMPS (TYPICAL) UNTIL THE ACTIVATE SIGNAL IS REMOVED.



| | | | |
|---|---|---|---|
| MATERIAL | | TROMBETTA DC Power Solutions for a Harsh World | |
| FINISH | | S500-A21 MODULE DIMENSIONAL ASSEMBLY | |
| UNLESS OTHERWISE SPECIFIED: BREAK ALL EDGES .005-.015 FILLETS R.010-.020 .XXX±.005 .XX±.01 ANGLES ±1° 125 FINISH | | | |
| NUMBER REVISIONS ARE PROTOTYPE | | | |
| k CONTROL PLAN REQUIRED | PROJECT 2262 | DRAWN CAW / APP JRH | DRAWING NUMBER D04350 / REV H |
| | | DATE 01/10/12 / SCALE 3:2 | |