

Bettis TEC2 Electric Actuator with Model 500 Intelligence Made Simple (Model 500 Discontinued)

For over 50 years, Emerson Valve Automations electric actuators have provided the process world with a customer-proven, reliable electric actuator control platform. BETTIS actuators are used in virtually every application where valves are operated automatically. Emerson's electric brand, established in 1949, has pioneered the industry with innovation and technical performance. BETTIS actuators and controls have a myriad of applications and can be found in virtually every part of the energy and hydrocarbon processing industries – oil and gas, power, refining chemical and petrochemical. Customers also rely on BETTIS actuators and controls for their established track record for outstanding performance in water/wastewater, food and beverage, pulp and paper, and marine applications. The new TEC2 actuator controls product brings to market the next generation of innovative smart controls; flexible technology solutions that cover all your automation needs, from high-duty cycle, low-torque applications to bigger valves requiring higher-torque capability.

In addition to an innovative control platform, TEC2 extends the mechanical Series 2000 to include Model 500 (Model 500 Discontinued), the latest smaller and lightweight multi-turn actuator frame size designed to meet application needs requiring lower torque ranges.



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TEC2 Series Key Benefits and Features

Improved Asset Productivity and Operational Efficiency

- Advanced diagnostics capability and predictive analytics through DCMLink software platform.
- DCMLink integration path - DeltaV, Emerson PlantWeb solution.
- Partial and Full-Stroke tests with torque trending diagnostics.
- Absolute position detector with 0.002% full-stroke resolution. Requires no battery, provides consistent and accurate position feedback—with no loss of calibration during power failures.
- Encoder based torque switch with 1% of torque resolution in each direction.
- Enhanced monitoring, recording, alarm capability.
- TEC2 available with Model 500 – Smallest, lightest multi-turn actuator frame size. (Model 500 Discontinued)
- Broad range of digital networking and analog control options.
- Wireless Bluetooth capability.

Rugged Reliability and Operational Safety

- Non-intrusive design. Rugged ductile iron gear housing is shock and vibration-resistant.
- Non-penetrating, vibration-resistant Hall Effect switches enable setup without opening control compartments.
- Emergency shutdown.
- Corrosion resistant, 316 stainless steel fasteners throughout.
- Double sealed terminal chamber allows installation wiring to be performed without exposing control components to hazardous environments.
- Optional battery backup allows LCD to remain powered during electrical outages; no battery required to maintain any data or position calibration.
- Space heater prevents internal condensation (thermostatically controlled; turns off at 105°F (40°C)).
- Patented remote module for safe calibration and monitoring from safe and convenient location.
- Improved product reliability through complexity reduction of electrical components .
- Explosion-proof and weather-proof capability. Control enclosure is made of low-copper aluminium alloy, powder-coated, salt-resistant, and certified by F.M., C.S.A., Cenelec, and TSA for all gas groups in explosion-proof environments. Also rated for IP68 submersible service.
- Coating options for corrosive and fire-proof protection.

TEC2 Series Key Benefits and Features (continuation)

Ease of Use

- New and improved graphical interface with polarized glass for better visibility. 37% larger, adjustable contrast LCD display.
- Multi-Language support.
- The industry's most convenient declutch lever can be locked out with a padlock in either Hand or Motor position.
- Twin access ports give users the freedom to easily access internal components.
- Improved serviceability – Record over 4800 events and monitor over 60 actuator functions.
- Convenient, multiple-mounting configurations for local display module allows for easy access and ease of use.
- Interoperable with existing TEC2000 installation base. Upgrade Conversion kit.
- Local and Remote monitoring.



REMOTE MODULE



LCD (CLOSE-UP)



DE-CLUTCH LEVER

TEC2 Series Model Options, Modules and Specification

Model Options

| Series | Actuator Type | Torque Range | Mounting Options | Bus Options |
|--------|---------------------|--|--------------------------------|--|
| TEC2 | Quarter Turn | 50 to 400,000 Ft-Lbs (68 to 542,300 Nm) | Direct-Mount, Side-Mounted | Modbus RTU DeviceNet FOUNDATION™ Fieldbus PROFIBUS HART Ethernet |
| | Multi-Turn | 4 to 16,000 Ft-Lbs (6 to 21,693 Nm) | Direct-Mount, Side-Mounted | |
| | Multi-turn (Thrust) | 1 to 1,056 KLbs (5 to 4,700 KN) | Direct-Mounted/ Rising Stem | |

Standard Modules

Absolute Position Detector – APD

- Patent Pending limit switch utilizing Hall-Effect sensors
- Impervious to grease and grime
- Supports up to 6144 drive sleeve revolutions
- 12-Bit accuracy
- 0.002% full-stroke resolution (typical)
- Mechanically coupled to worm drive of actuator
- Requires no battery backup

Torque Switch Module – TSM

- Proven encoder based Torque Switch
- 8-bit magnetic encoder coupled directly to torque pinion
- Torque resolution of 2% each direction
- LED indication for no-load on torque switch

Motor Control/Power Supply Module – MCM

- Model 500
 - Solid State Starter standard
 - Current limiting circuitry
 - Phase detect and auto correct
 - Power Supply Module - PSM
(Model 500 Discontinued)
- TEC2 Larger actuators
 - Current production motor control modules

Input Output Module – IOM

- Separate field serviceable module (not part of CCM)
- 6 Discrete optically isolated inputs
 - Default settings defined for discrete service
 - Input ratings
 - 18 to 150 VDC or 20 to 250 VAC
- Discrete outputs RO#1 - RO#4
 - Four individually configurable SPST latching relays
 - Trigger on 1 of 28 different selectable events
 - NO, NC, Blinking
 - Default settings defined for discrete service
 - Relay ratings
 - 5 Amp at 30 VDC or 250 VAC Resistive
 - 2 Amp Inductive load
- Discrete output RO#5
 - SPST, (1) NO, (1) NC non-latching, monitor relay or network control
 - Relay ratings
 - 5 Amp at 30 VDC or 250 VAC Resistive
 - 2 Amp Inductive load

Separate Terminal Chamber – STC

- Double-sealed terminal chamber
 - Permits field wiring without exposing controls
 - Watertight seal between conduit and controls
 - Watertight/XP seal - terminals and atmosphere

TEC2 Series Model Options, Modules and Specification (continuation)

- All external power and control wiring termination
 - 48-point terminal block
 - Pre-installed nickel-plated steel screws
 - Highly visible terminal labels
 - Includes Lexan HVC (High Voltage Cover)
 - 2 user accessible and replaceable primary fuses
 - Conduit Entries
 - Model 500 (fixed position)
 - 3 x 1" NPT bottom entry,
 - 1 x 0.5" NPT top entry
- (Model 500 Discontinued)*

Optional Modules

Auxiliary Control Module – ACM

- Installed at factory or field upgrade
- One board for Futronic and Controlinc
- Analog I/O
 - Independently isolated
 - Loop powered (internal or external 24 Vdc)
 - Calibration per user standards
 - Futronic II and IV accuracy
 - Accuracy to 0.5% at 15 seconds operating time
 - Up to 1200 starts per hour
 - Model 500 is Futronic IV
- *(Model 500 Discontinued)*
- Two 4-20mA analog inputs
 - Modulating control (setpoint)
 - Network monitor and report
- Two 4-20mA analog outputs
 - Valve position/torque feedback
 - Valve setpoint
 - Network control

Auxiliary Relay Module – ARM

- Installed at factory or field upgrade
- Adds 4 latching individually configurable relays
 - Trigger on 1 of 28 different events
 - NO or NC or Flashing (Blinking)
- Compatible as standalone or with ACM
 - Used with Futronic
- Relay ratings
 - 5 Amp at 30 VDC Resistive
 - 5 Amp at 250 VAC Resistive
 - 2 Amp Inductive load

Communication Adapter Module – CAM

- Installed at factory or field upgrade
 - CAM201 Modbus (Bus connection)
 - CAM205 Modbus (E>Net)
 - CAM206 HART
 - CAM207 Devicenet
 - CAM209 Ethernet
 - CAM218 Foundation Fieldbus H1
 - CAM220 Profibus DPV1

Space Heater Module – SHM

- Mounted under auxiliary cover on TEC2
- Rated 12 watts and maintains -40 to +45°C

Display Backup Module – DBM

- Backup for display and discrete output
 - IOM Relays, Monitor Relay, ARM
- Shelf life 12 yrs, expected life 5 yrs, operational life 417 hrs (static)
- Mounted under auxiliary cover on TEC2
- Not required to maintain position and settings

Remote Display Module – RDM






- Maximum 2 RDMs per actuator
- Identical messages display at all modules
- Patented control algorithm for L-O-R
- Actuators can be set up remotely at any RDM
- Display cover lists agency approvals
- Communicates via RS485 from actuator to RDM
 - 1200 meters (4000 ft) max combined distance
- Power via 24VDC or 115/208/220/230 VAC, 50/60 Hz
 - RDM accepts any listed voltage (1 interface board)
 - Actuator can power 1 RDM at 24 Vdc

General Specifications


Available Voltages

- 3 Phase, 60 Hz 208, 230, 380, 440, 460, 575, and 690
- 3 Phase, 50 Hz 220, 380, 415, and 460
- 1 Phase, 60 Hz 115, and 230
- 1 Phase, 50 Hz 115, and 230
- DC 12, 24, 48, and 125

Environmental Ratings and Certifications

| | | |
|---------|---|--|
| FM |  | Class I, II, III Division 1 Groups B,C,D,E,F,G T4 @ Ta 60°C, Type 4X, 6P (50 ft for 7 days) T4 @ Ta 60°C, Type 4X, 6P (50 ft for 7 days) |
| CSA |  | Class I, Groups B C & D, Class II Groups E,F,G, Class III T4 or T4A, Type 6P Class I, Groups D; T3C RDM Class I, Groups B, C, D; Class II, Groups E,F,G; Class III; T6: Type 6P/4X CBM Class I, Groups C and D; Class II, Groups E,F,G; Class III; T6; Type 6p/4X |
| ATEX |  | SIRA 03ATEX1510X II 2 GD Ex d IIB T4 Gb Ex d IIB + H ₂ T135°C Db IP68 Ex tb IIIC T135°C Db IP68 Ta -20°C to +60°C The M8 fasteners used to secure each cover to the electronics enclosure and the RDM cover to the RDM enclosure are of property class (or 'grade') 8.8. The fasteners used to secure the motor enclosure to the electronics enclosure, the electronics enclosure to the gear box and the end caps to the motor frame are of property class (or 'grade') 5. Replacement fasteners shall meet these minimum values. RDM II 2 GD Ex d IIB +H ₂ T6 Gb Ex tb IIIC T85°C Db 1P68 Ta -20°C to +60°C |
| IECEX |  | IECEX SIR 12.0035X Ex d IIB T4 Gb Ex d IIB + H ₂ T135°C Db IP68 Ex tb IIIC T135°C Db IP68 Ta -20°C to +60°C RDM II 2 GD Ex d IIB +H ₂ T6 Gb Ex tb IIIC T85°C Db 1P68 |
| GOST | GOST | №POCC US.ГБ08.B00188 dtd 28.01.2013 |
| InMetro |  | CEPEL 08.1640X Ex d IIB T4 Gb IP68; Ta 60°C -20°C ≤ Tamb ≤ +60°C |

Environmental Ratings and Certifications (continuation)

| | | |
|------------------------------|---|--|
| <p>AWWA</p> |  <p>American Water Works Association Dedicated to the World's Most Important Resource™</p> | <p>ANSI/ AWWA C542-09 Standard</p> |
| <p>MIL-STD-167-1 (SHIPS)</p> | | <p>MIL-STD-167-1 (SHIPS), Mechanical Vibrations of Shipboard Equipment (Type I – Environmental and Type II – Internally Excited)</p> |
| <p>MIL-S-901D (Navy)</p> | | <p>MIL-S-901D (Navy), "Military Specification, Shock Tests, H.I. (High Impact); Shipboard Machinery</p> |

Performance Data

| Model Series | Maximum Stem Size | | Maximum Thrust | | Maximum Torque | | Output Speed (rpm) | | Mounting Base | |
|---------------------------------------|-------------------|------|----------------|-------|----------------|--------|----------------------|--------|---------------|-------|
| | (inch) | (mm) | (lb) | (kN) | (ft-lb) | (Nm) | 60 Hz | 50 Hz | MSS | ISO |
| Multi-Turn (Thrust and Torque) | | | | | | | | | | |
| 500 | 1.57 | 40 | 9,000 | 40 | 125 | 170 | 12-192 | 10-160 | FA 10 | FA 10 |
| 1000 | 1.38 | 35 | 10,000 | 44 | 130 | 176 | 0-144 | 0-120 | FA 10 | FA 10 |
| 2000 | 2.25 | 57 | 30,000 | 133 | 410 | 555 | 0-144 | 0-120 | FA 14 | FA 14 |
| 3000 | 3.00 | 76 | 45,000 | 200 | 900 | 1,220 | 0-144 | 0-120 | FA 16 | FA 16 |
| 4000 | 3.50 | 89 | 75,000 | 334 | 1,400 | 1,900 | 0-144 | 0-120 | FA 25 | FA 25 |
| 5000 | 3.50 | 89 | 90,000 | 400 | 1,900 | 2,575 | 0-144 | 0-120 | FA 30 | FA 30 |
| 6000-1 | 3.50 | 89 | 116,000 | 516 | 3,000 | 4,100 | 0-48 | 0-40 | FA 30 | FA 30 |
| 6000-2 | 5.00 | 127 | 160,000 | 712 | 5,800 | 7,865 | 0-48 | 0-40 | FA 36 | FA 35 |
| 6000-3 | 4.50 | 114 | 196,000 | 872 | 5,800 | 7,865 | 0-48 | 0-40 | FA 36 | FA 35 |
| 7000 | 6.00 | 152 | 250,000 | 1,112 | 8,100 | 10,980 | 0-30 | 0-25 | FA 40 | FA 40 |
| 8000 | 6.00 | 152 | 335,000 | 1,490 | 15,000 | 20,340 | 0-18 | 0-15 | FA 40 | FA 40 |
| 9000 | 9.00 | 228 | 1,000,000 | 2,250 | 35,000 | 47,450 | 0-18 | 0-15 | FA 48 | FA 48 |
| Multi-Turn (Torque Only) | | | | | | | | | | |
| D | 1.25 | 32 | - | - | 300 | 410 | 0-250 | 0-208 | FA 10 | FA 10 |
| U | 2.00 | 51 | - | - | 600 | 815 | 0-250 | 0-208 | FA 14 | FA 14 |
| S | 2.00 | 51 | - | - | 1,900 | 2,575 | 0-200 | 0-167 | FA 16 | FA 16 |
| Model Series | Maximum Stem Size | | Maximum Thrust | | Maximum Torque | | Operating Time (sec) | | Mounting Base | |
| | (inch) | (mm) | (lb) | (kN) | (ft-lb) | (Nm) | 60 Hz | 50 Hz | MSS | ISO |
| Part-Turn (90° Rotation) | | | | | | | | | | |
| P | 1.13 | 29 | - | - | 210 | 285 | 15-60 | 18-72 | FA 10 | FA 10 |
| Q | 2.00 | 51 | - | - | 750 | 1,020 | 5-120 | 6-144 | FA 12 | FA 12 |
| R | 3.25 | 82 | - | - | 1,500 | 2,035 | 15-360 | 18-432 | FA 16 | FA 16 |
| M/MG02 | 3.25 | 82 | - | - | 2,500 | 3,390 | 10-360 | 12-432 | FA 16 | FA 16 |
| M/MG03A | 4.00 | 101 | - | - | 5,000 | 6,780 | 10-600 | 12-720 | FA 30 | FA 30 |
| M/MG03B | 5.00 | 127 | - | - | 7,500 | 10,170 | 10-600 | 12-720 | FA 30 | FA 30 |
| M/MG05 | 6.00 | 152 | - | - | 15,000 | 20,340 | 15-900 | 18-720 | FA 40 | FA 40 |
| W/MG05 | 7.00 | 178 | - | - | 30,000 | 40,675 | 15-900 | 18-720 | FA 40 | FA 40 |
| W/MG07 | 8.00 | 203 | - | - | 70,000 | 94,910 | 45-900 | 45-720 | FA 18 | FA 18 |

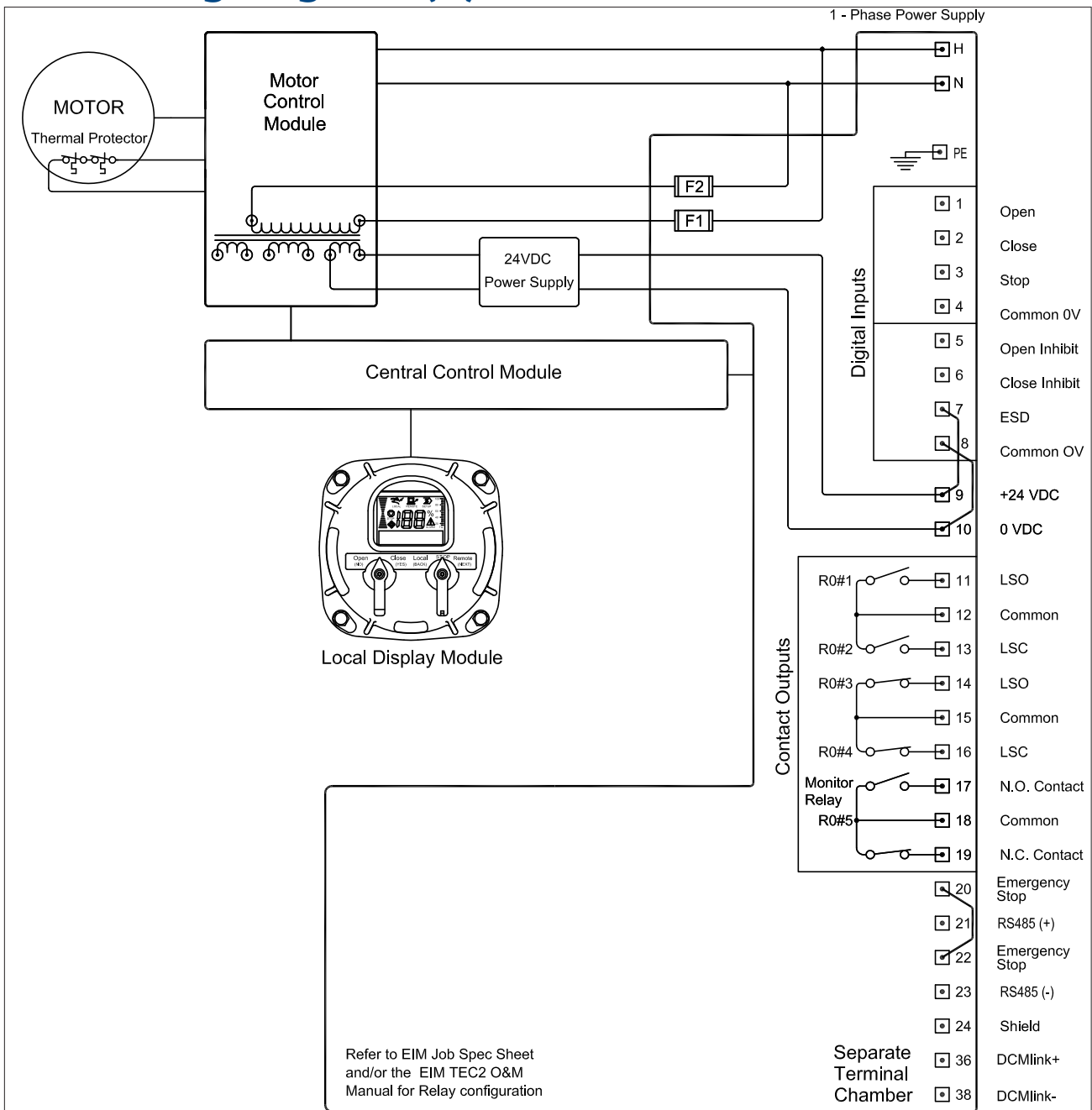
Model 500 Number Codes and Selection Standard (Model 500 Discontinued)

Model 500 Series electric actuator model numbers are coded ten (10) digit alpha-numeric, to describe basic actuator features for computer-assisted order entry system. The first six (6) digits allow computerized material control of basic components including application, motor, motor gears, electric worm gear ratio. The seventh digit (to the right of the second dash) is for electric actuator power voltage provided at job site by user for actuator motor. The eighth digit is for special services. The ninth digit is for auxiliary gearbox gear type (auxiliary gearboxes are optional). The tenth digit is for auxiliary gearbox gear size and ratio. Model number selection charts are based on actuator ratings at power voltage listed. Torques shown for run (ft-lb) can be maintained for 15 minute duty before motor or gearbox overheats. Model number for other voltage is obtained by seventh digit modification (see voltage modifier factor chart). For other load conditions contact Bettis for application assistance.

| 500 | - | C | L | A | - | 3 | 0 | 2 | A |
|---|---|--|---|--|---|--|---|---|---|
| 3 rd digit | 4 th digit | 5 th digit | 6 th digit | 7 th digit | 8 th digit | For Auxiliary Gearboxes Only | | | |
| Application | Motor Size | Motor Gear Ratio | Electric Worm Gear | Power Supply | Special Services | 9 th digit | 10 th digit | | |
| | | | | | | Gear Type | Gear Size and Ratio | | |
| Multi-turn torque & thrust 0 Torque Only 1 | AC Motors 4 Pole A 400 Watts (1/4 HP) B 60 Watts (1/12 HP) C 120 Watts (1/6 HP) AC Motors 2 Pole D 820 Watts (1/4 HP) E 60 Watts (1/12 HP) F 120 Watts (1/6 HP) DC Motors G 15 Watts (1/50 HP) H 60 Watts (1/12 HP) J 90 Watts (1/8 HP) K 120 Watts (1/6 HP) | 2nd Stage Reduction Gear Ratio A 4.00 B 3.65 C 3.33 D 3.04 E 2.78 F 2.55 G 2.33 H 2.14 Single Stage Reduction Gear Ratio J 2.00 K 1.82 L 1.67 M 1.53 N 1.40 O 1.29 P 1.18 Q 1.09 R 1.00 S 0.85 T 0.78 U 0.71 V 0.66 W 0.60 Y 0.55 Z 0.50 | Gear Ratio A 36 B 18 C 12 D 9 E 7.2 | Volts Φ Hz 1 208AC 3 60 2 230AC 3 60 3 460AC 3 60 T 460AC 3 50 4 575AC 3 60 5 380AC 3 50 N 380AC 3 60 6 115AC 1 60 7 208AC 1 60 8 230AC 1 60 9 415AC 3 50 K 220AC 1 50 P 220AC 3 50 L 115AC 1 50 R 550AC 3 50 A 400AC 3 50 DC Motors E 24 DC F 48 DC G 90 DC H 125 DC | 0 None 1 Cathodic C Ceramic F Fireproof G Gearbox Purchased Direct H Ceramic Coating With Gearbox N Special Motors Q 9:1 GGM Gearbox | 0 KWG Worm Gear (Special) 2 KWG Worm Gear (Bronze W.G.) 3 KWG Worm Gear (Ductile Iron W.G.) 4 KBG Bevel Gear 8 KWG Worm Gear (90°) A KWG Worm Gear Traveling Nut (Bronze W.G.) B KWG Worm Gear Traveling Nut (Ductile Iron W.G.) | KWG Worm Gear Size Ratio 9 KWG-00M 40 A KWG-01M 44 C KWG-02M 48 8 KWG-01-1SM 88 D KWG-02-1SM 120 F KWG-03-1SM 132 7 KWG-04-1SDM 504 J KWG-35-1SM 132 | | |

| KBG Bevel Gear | |
|----------------|-------|
| Size | Ratio |
| A KBG-V0M | 3.25 |
| B KBG-V1M | 3.50 |
| C KBG-V2M | 4.00 |
| D KBG-V3M | 5.00 |
| E KBG-V35M | 5.50 |
| F KBG-V4M | 6.00 |

TEC2 Wiring Diagrams (A)



| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| ARM | CCM | DBM | LDM | MCM | RDM | STC |
| 00 | 01 | 00 | 01 | 01 | 00 | 01 |

- NOTES:
- 1) All digital inputs have an input voltage range of 18-150 VDC or 20-250 VAC.
 - 2) All digital relay outputs are rated for 5A @ 30 VDC or 5A @ 250 VAC Resistive, 2A Inductive load.
 - 3) Jumpers shown connected between terminals are permissible but not required.
 - 4) Emergency stop requires jumper or normally closed contact (actuator stops when contact open).
 - 5) Remote display communication port is RS-485.
 - 6) If bare wires (without terminals) are connected, remove a maximum of .25 inch insulation.
 - 7) User replaceable primary fuses (F1 and F2) are located in the Terminal Chamber Enclosure. All transformer secondary fuses are automatic resetting.
 - 8) Contact Outputs and Output Switch Contact Development Chart shown for default configuration only. User may redefine all Outputs (See TEC2 Installation & Operation Manual).

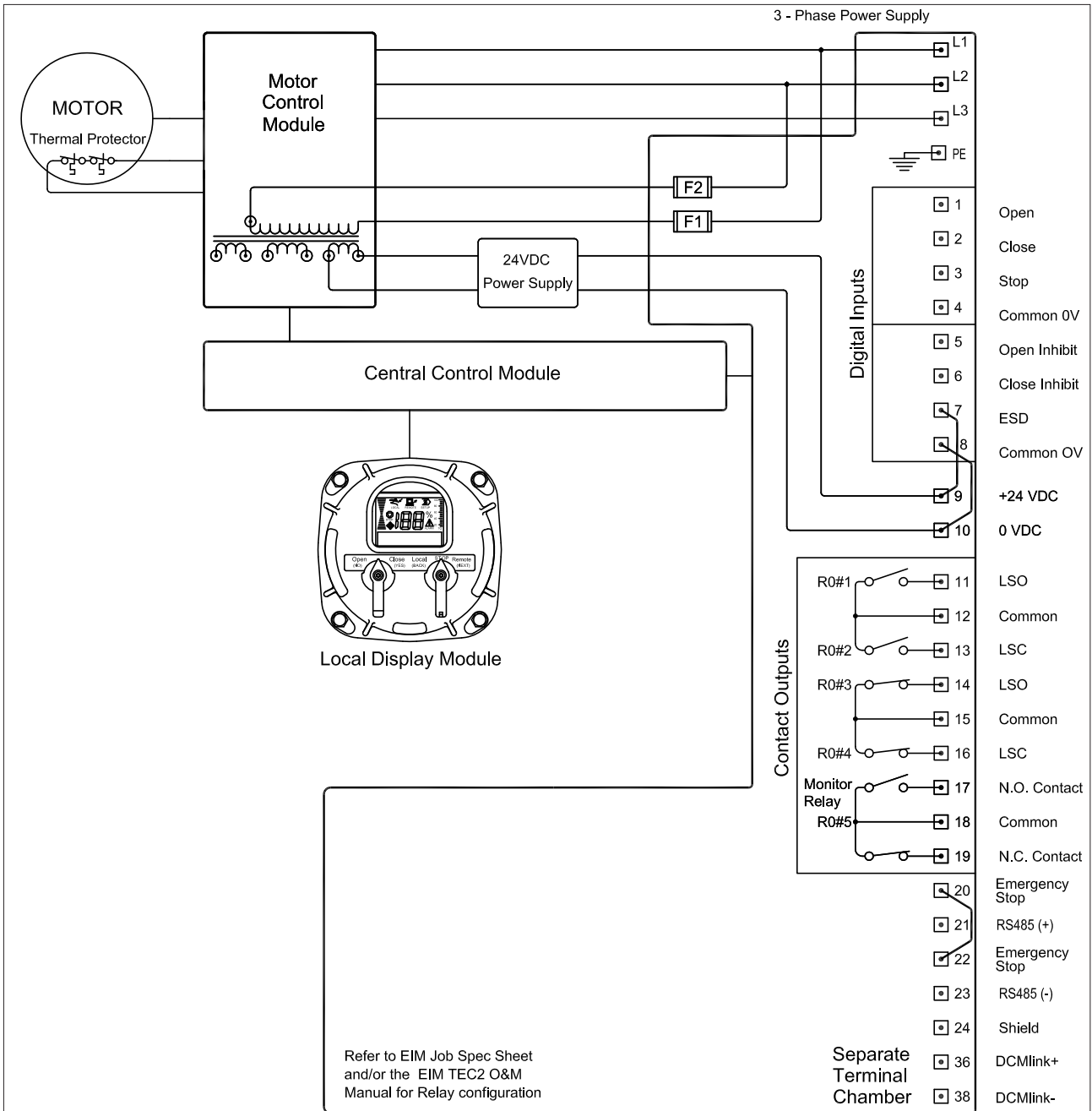
| | Valve Position | | | Contact Function |
|-----|----------------|-----|------|------------------|
| | Close | MID | Open | |
| LSO | | | | Open Limit |
| LSC | | | | Close Limit |
| LSA | | | | Open Limit |
| LSB | | | | Close Limit |

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Process Management

DWN BY DJG ORIGINAL DATE 11-19-14

WIRING DIAGRAM **TEC2 1-PH**

TEC2 Wiring Diagrams (B)



| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| ARM | CCM | DBM | LDM | MCM | RDM | STC |
| 00 | 01 | 00 | 01 | 02 | 00 | 01 |

- NOTES: 1) All digital inputs have an input voltage range of 18-150 VDC or 20-250 VAC.
 2) All digital relay outputs are rated for 5A @ 30 VDC or 5A @ 250 VAC Resistive, 2A Inductive load.
 3) Jumpers shown connected between terminals are permissible but not required.
 4) Emergency stop requires jumper or normally closed contact (actuator stops when contact open).
 5) Remote display communication port is RS-485.
 6) If bare wires (without terminals) are connected, remove a maximum of .25 inch insulation.
 7) User replaceable primary fuses (F1 and F2) are located in the Terminal Chamber Enclosure. All transformer secondary fuses are automatic resetting.
 8) Contact Outputs and Output Switch Contact Development Chart shown for default configuration only. User may redefine all Outputs (See TEC2 Installation & Operation Manual).

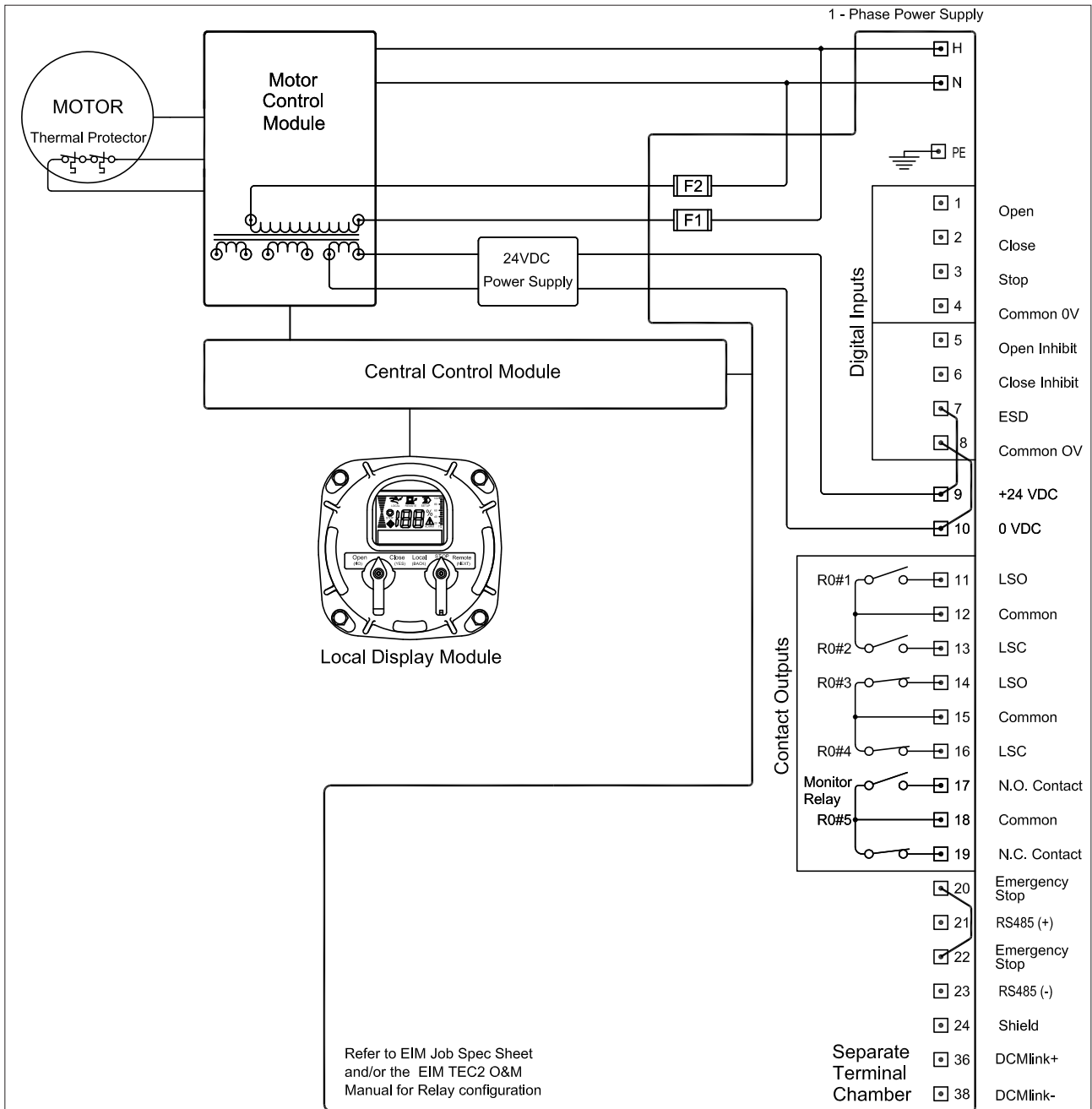
| | Output Switch Contact Development | | | Contact Function |
|-----|-----------------------------------|-----|------|------------------|
| | Close | MID | Open | |
| LSO | | | | Open Limit |
| LSC | | | | Close Limit |
| LSA | | | | Open Limit |
| LSB | | | | Close Limit |

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DWN BY: DJG ORIGINAL DATE: 11-19-14

WIRING DIAGRAM **TEC2 3-PH**

Model 500 Wiring Diagrams (A) (Model 500 Discontinued)



| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| ARM | CCM | DBM | LDM | MCM | RDM | STC |
| 00 | 01 | 00 | 01 | 01 | 00 | 01 |

- NOTES:
- 1) All digital inputs have an input voltage range of 18-150 VDC or 20-250 VAC.
 - 2) All digital relay outputs are rated for 5A @ 30 VDC or 5A @ 250 VAC Resistive, 2A Inductive load.
 - 3) Jumpers shown connected between terminals are permissible but not required.
 - 4) Emergency stop requires jumper or normally closed contact (actuator stops when contact open).
 - 5) Remote display communication port is RS-485.
 - 6) If bare wires (without terminals) are connected, remove a maximum of .25 inch insulation.
 - 7) User replaceable primary fuses (F1 and F2) are located in the Terminal Chamber Enclosure. All transformer secondary fuses are automatic resetting.
 - 8) Contact Outputs and Output Switch Contact Development Chart shown for default configuration only. User may redefine all Outputs (See TEC2 Installation & Operation Manual).

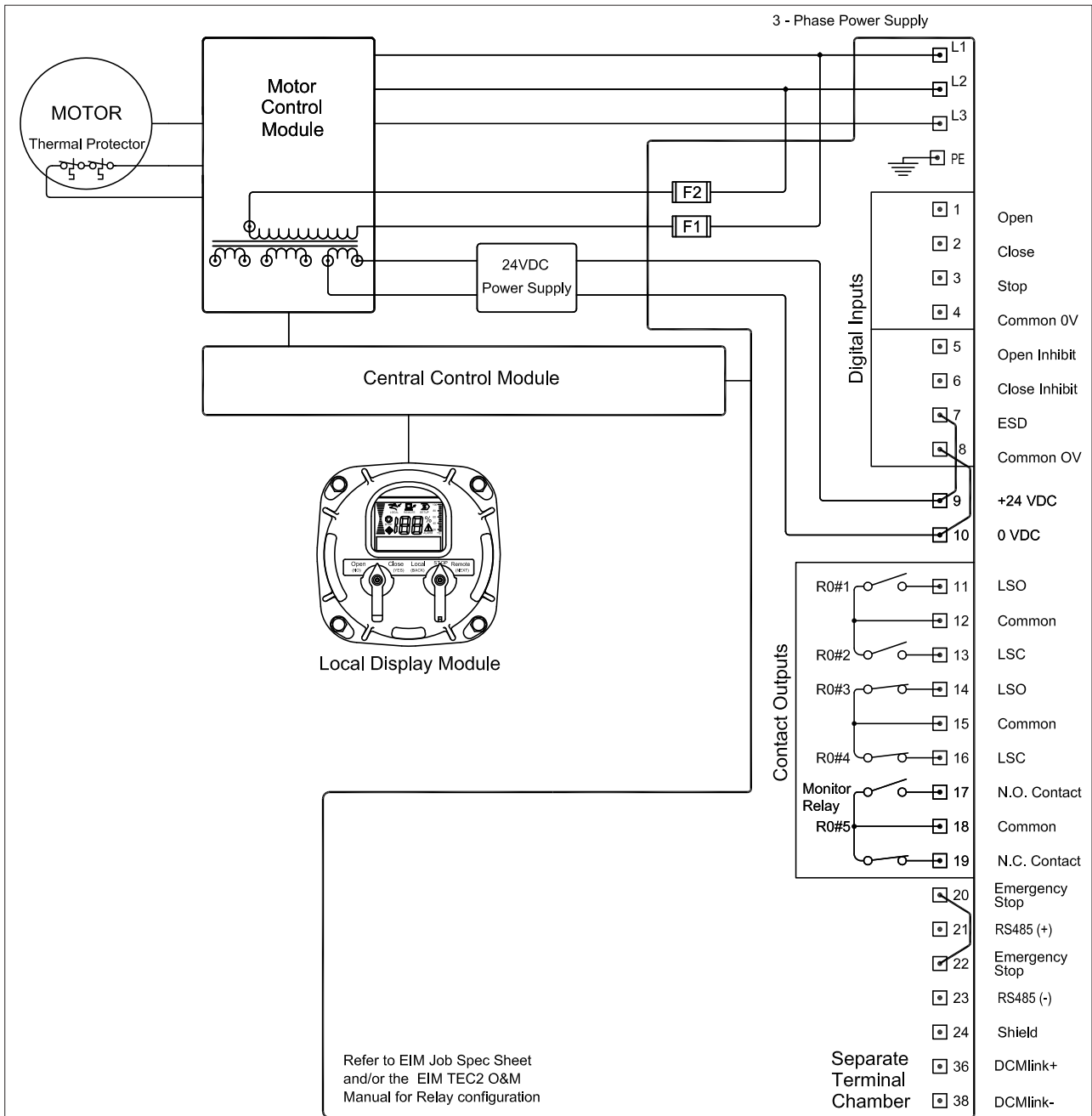
| | Valve Position | | | Contact Function |
|-----|----------------|-----|------|------------------|
| | Close | MID | Open | |
| LSO | | | | Open Limit |
| LSC | | | | Close Limit |
| LSA | | | | Open Limit |
| LSB | | | | Close Limit |

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DWN BY DJG ORIGINAL DATE 11-19-14

WIRING DIAGRAM **Model 500**

Model 500 Wiring Diagrams (B) (Model 500 Discontinued)



| ARM | CCM | DBM | LDM | MCM | RDM | STC |
|-----|-----|-----|-----|-----|-----|-----|
| 00 | 01 | 00 | 01 | 02 | 00 | 01 |

- NOTES:
- 1) All digital inputs have an input voltage range of 18-150 VDC or 20-250 VAC.
 - 2) All digital relay outputs are rated for 5A @ 30 VDC or 5A @ 250 VAC Resistive, 2A Inductive load.
 - 3) Jumpers shown connected between terminals are permissible but not required.
 - 4) Emergency stop requires jumper or normally closed contact (actuator stops when contact open).
 - 5) Remote display communication port is RS-485.
 - 6) If bare wires (without terminals) are connected, remove a maximum of .25 inch insulation.
 - 7) User replaceable primary fuses (F1 and F2) are located in the Terminal Chamber Enclosure. All transformer secondary fuses are automatic resetting.
 - 8) Contact Outputs and Output Switch Contact Development Chart shown for default configuration only. User may redefine all Outputs (See TEC2 Installation & Operation Manual).

| | Valve Position | | | Contact Function |
|-----|----------------|-----|------|------------------|
| | Close | MID | Open | |
| LSO | | | | Open Limit |
| LSC | | | | Close Limit |
| LSA | | | | Open Limit |
| LSB | | | | Close Limit |

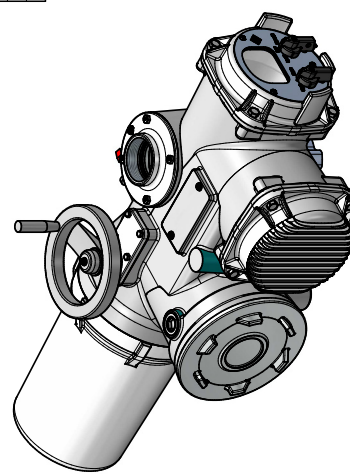
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WIRING DIAGRAM **Model 500**

Model 500 Drawings (B) (Model 500 Discontinued)

| REVISIONS | | |
|-----------|----------|-----------|
| REV | ECN | DATE |
| 00 | Released | 11/4/2014 |



LDM Cover may be rotated 90°, 180° or 270° as required in field

WARNING: The installation and servicing instructions are for use for qualified personnel only. To avoid injury and electric shock, do not perform any services on Bettis Equipment unless qualified.

Installation shall be accordance with current edition of National Electrical Code or Applicable Regional Standard.

NOTES:

- Customer Wire entry to STC Separate Terminal Chamber. Conduit should always enter from below STC if possible.
- Lubrication 1/2" NPT plugs.
- Lubrication 1/8" NPT plug.
- To move actuator to another valve, bronze stem nut P/N 38244 may be threaded up to 1.57" max. (Ref Dwg 90719 for details).

Model 500 Standard
42 Frm Motor w/TB FA10

INTERPRET DIMENSIONS AND TOLERANCE PER ASME Y14.5

THIRD ANGLE PROJECTION

APPROXIMATE WEIGHT
.0 lbm

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DRAWING NO. **500-TB0710V**

DRAWN BY: Ryan Hoang
CHECKED BY: Josh Johnson
APPROVED BY: Doyle Blume
SCALE: 1:5
DWG. SIZE: A2
SHEET: 1 of 1
REV. 00

Mounting Detail

4 Places Tapped 3/8-16 UNC-2B ∇ .80 \varnothing 4.000 (102) B.C on Straddle Centerline

3 x 1" NPT
Ground
1/2" NPT
2" NPT
1/8" NPT

Dimensions:
10.3 [261]
1.4 [34]
7.8 [197]
19.0 [482]
29.3 [745]
1/2" NPT
5.5 [140]
9.4 [240]
2.1 [53]
10.3 [261]
13.0 [330]
3 [8]
6.0 [152]
1.1 [29]
10.1 [256]
6.3 [161]
6.0 [152]
1 [2]
6.8 [171]
4.5 [114]
2.3 [57]
6.3 [161]
2.6 [65]
2.312 [59]
1/2" NPT

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