

# 2 Channel Universal Stepper Motor Controller



The Aeroflex 2 Channel Universal Stepper Motor Controller (USMC) provides two configurable stepper motor drive circuits, suitable for driving either two independent stepper motors or one dual-redundant stepper motor pair. The 2 Channel USMC may receive commands from the host system either in the form of isolated (optically coupled) discrete commands, or in serial digital (RS-422/485) format. The stepper motors may be of any configuration, either 2-phase or 3-phase, either unipolar or bipolar.

Output waveshapes are synthesized using high-efficiency Pulse Width Modulation, to provide constant-current pulses to the motor windings, regardless of fluctuations in the +28 VDC line voltage. Microstepping is also available, with resolution down to 1/64. EMI filters on the input line provide compliance with Conducted Emitted (CE) and Conducted Susceptibility (CS) requirements of MIL-STD-461E. Output filters and gaskets provide compliance with Radiated Susceptibility (RS) and Radiated Emitted (RE) requirements.

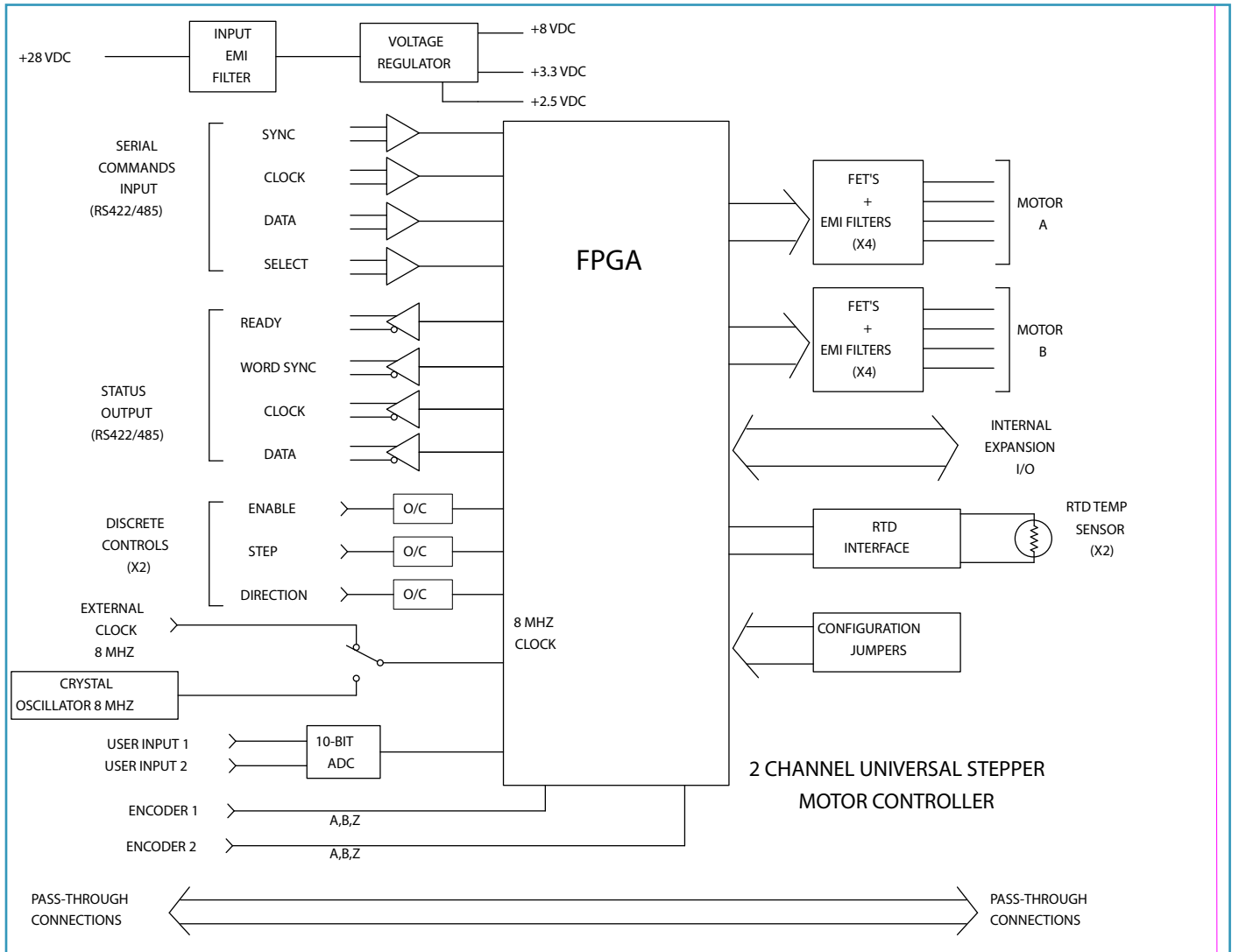
The serial digital (RS-422/485) Status/Telemetry Output provides Temperature data from two RTD temperature sensors, which may be connected externally at convenient locations, e.g. the two stepper motors.

The unit is radiation hardened to a Total Ionizing Dose (TID) level of 100k Rads (Si), and is completely immune to latch up

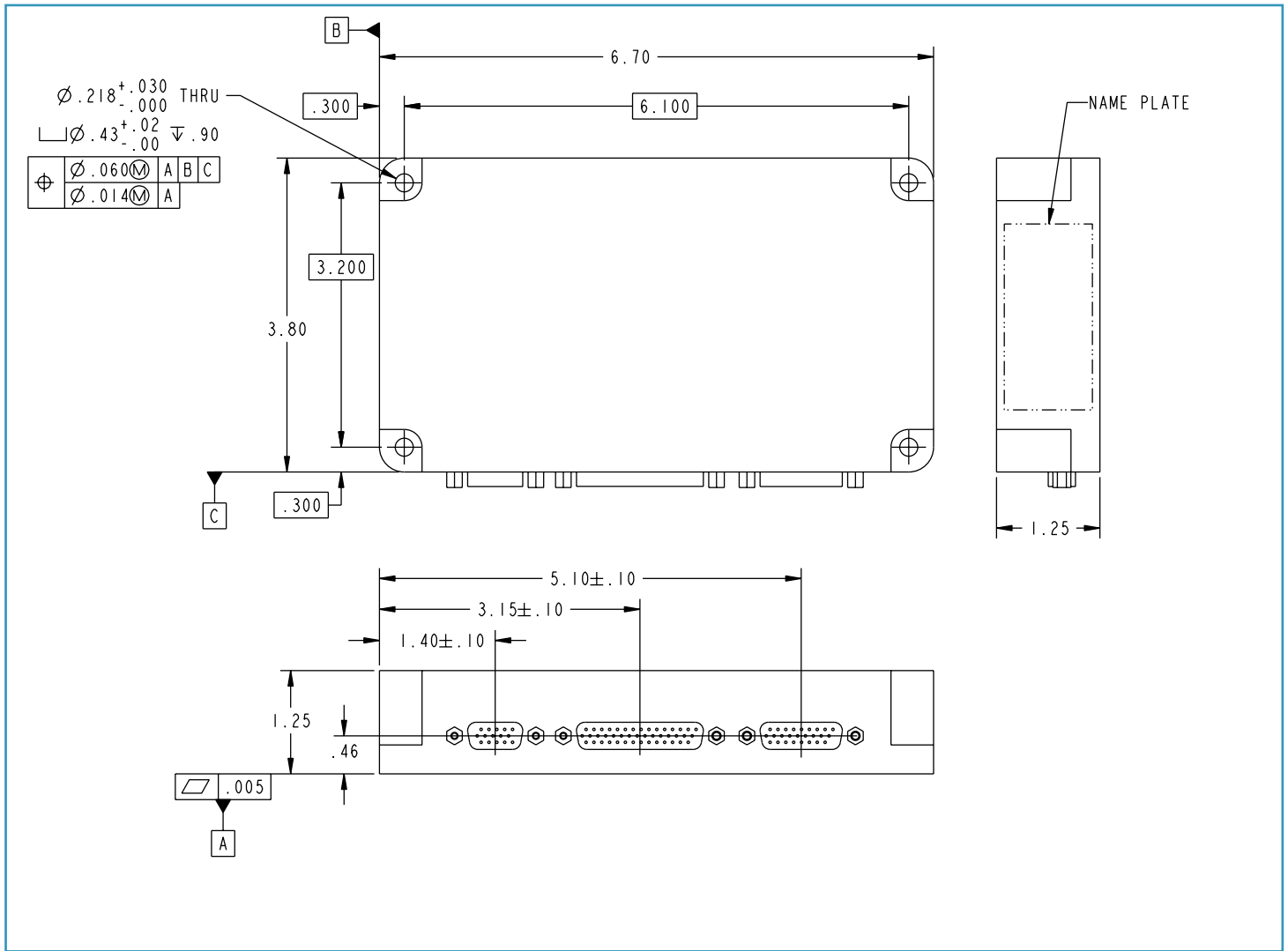
## Key Features

- Configurable for 2-phase or 3-phase stepper motors, with unipolar or bipolar drive.
- Independent control of two stepper motors; ideal for 2-axis gimbal application or dual winding steppers.
- Microstepping capability, with 1/2, 1/4, 1/8, 1/16, 1/32, and 1/64 resolution.
- Constant-current drive, independent of line voltage variations. Voltage drive mode available.
- Radiation-hardened to 100 Krad.
- Motor drive current settable on Controller by jumpers or by serial commands, independent for each motor.
- Pulse Width Modulation (PWM) at 62.5 KHz provides high efficiency motor drive.
- Requires only +28VDC input.
- User interface either opto-coupled discrete (Enable, Step, Direction) or serial digital (RS-422/485).
- Serial digital input control provides telemetry, status and motor control commands.
- Telemetry outputs provide motor status, temperature and supply voltage data.
- Clock may be either internal (8 MHz crystal) or external.
- Two RTD inputs provided to measure temperature of motors or other devices.
- EMI filters on input (+28 VDC line) and motor outputs to provide compliance with MIL-STD-461E.
- Internal expansion connector allows connection to additional circuits for custom requirements
- Two 10-bit A/D input for user connection to external sensors.
- Automatic stepping. Step rate, step width and number of steps can be programmed via serial interface then executed without further interventions.
- Two incremental encoder interfaces allows position feedback via telemetry.

# BLOCK DIAGRAM



# OUTLINE DRAWING



## SPECIFICATIONS

Line Voltage Range	18 to 36 VDC
Operating Temperature Range	-55°C to +70°C
Maximum Motor Current	1.5 amperes
Standby Current (with zero motor current)	70 ma
Microstepping Resolution	1/2, 1/4, 1/8, 1/16, 1/32, 1/64
Size (Chassis)	6.70" x 3.80" x 1.37"
Weight (Including Chassis)	0.60 Kg

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