

# Data Sheet 13BX5 Controller

## ELECTRICAL CHARACTERISTICS

### Absolute Maximum Ratings†

Battery (B+).....	33V
All digital inputs with respect to ground.....	▼ 200V @ 15% D.C.
All analog inputs with respect to ground.....	▼ 90V
D+ or D- signal pins.....	▼ 250mA
Frequency input.....	-0.7V to 33V
Outputs (back feed condition).....	Battery +0.7V
Storage temperature.....	-65°C to +150°C
Ambient temperature with power applied.....	-40°C to +85°C
ESD protection on all pins.....	4 kV

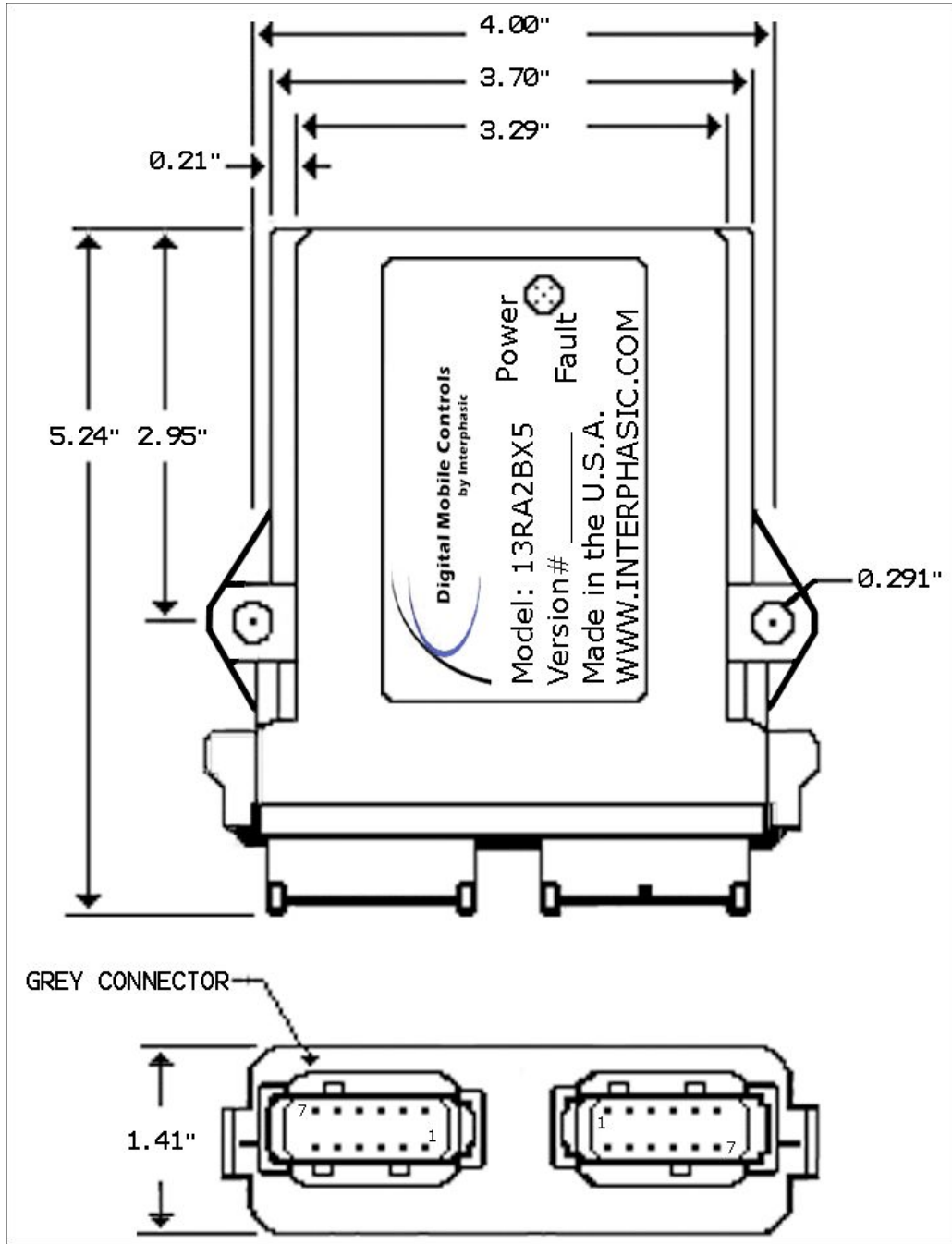
† **NOTICE:** Stress above those listed under “Absolute Maximum Ratings” may cause permanent damage to the controller. This is a stress rating only and functional operation of the controller at these or any other conditions above those indicated in the operational listings of this specification is not implied. Exposure to Absolute Maximum Rating conditions for extended periods may affect controller reliability.

**Specifications:** This is a LEAD-FREE (Pb) assembly.



Power supply input - nominal	9-30 VDC
Reverse polarity protection	Yes
Transient suppression	1500W@35 VDC
<b>Digital inputs</b>	All digital inputs active high
Input voltage span	▼ 30 VDC
Input impedance	3.3K ↕
High-level input voltage threshold (1)	~ 3.1 VDC
Low-level input voltage threshold (0)	~ 1.35 VDC
<b>Analog inputs</b>	
Input voltage span	0-5 VDC
Input impedance	50K ↕
Cutoff Frequency filter pole location	-3dB/Dec @90Hz
<b>Frequency input</b>	
Input voltage span	-0.7 to 33 VDC Clamped
Maximum amperage at clamped voltage (33 VDC)	33mA
Input impedance	3.3K ↕

High-level input voltage threshold	2.75 VDC
Low-level input voltage threshold	1.75 VDC
Hysteresis of input voltage	1 VDC
Frequency bandwidth	0 to 100Khz
<b>Outputs</b>	
Number of outputs	5
Short proof protected	Yes
Driver resistance	.016Ω
Nominal drive current	3 Amp RMS
Peak drive current	20 Amps for 3 seconds @ 25°C
Inductive clamping	Diode
Programmable PWM signal outputs	4
PWM bandwidth	0 to 20Khz
PWM resolution	10 bits; depending on frequency
PWM inductive clamping	Diode
<b>Communications</b>	
EIA RS-485 or CAN BUS 2.0B port	1
Baud rates	1200 to 1250K baud
Maximum sink current on D+ /D- pins	250mA
Maximum source current on D+ /D- pins	250mA
Maximum network nodes	48
Termination is standard pre-bias	120Ω optional
<b>General specifications</b>	
Battery voltage monitor	9-30 VDC
Status LED	RED/GREEN
Controller weight	9.4 oz
Microprocessor: Microchip (RISC)	PIC18F65K80
Frequency of operation	64Mhz
Execution time	62.5nS
Controller quiescent current	14mA
Controller logic family	100% CMOS
<b>Environmental</b>	
Nylon 6/6 thermoplastic sealed housing	IP67 rated
Environmental design practices for electronic equipment	SAE J1455
EMC, transient, shock, vibration design practices	SAE J1113
Flame retardant classification	UL 94V-0



### Connection Detail

#### Grey Connector Pins:

1 = INPUT 1	7 = COM1 D+
2 = INPUT 2	8 = COM1 D-
3 = INPUT 3	9 = I/O 5
4 = INPUT 4	10 = I/O 6
5 = +5 REF	11 = I/O 7
6 = A/D 3	12 = I/O 8

#### Black Connector Pins:

1 = OUTPUT 1	7 = GND
2 = OUTPUT 2	8 = INPUT, CNT 1
3 = OUTPUT 3	9 = INPUT 12, A/D 2
4 = OUTPUT 4	10 = INPUT 11, A/D 1
5 = OUTPUT 5	11 = INPUT 10
6 = B+ (POWER)	12 = INPUT 9

Analog inputs are "INPUT 11 & INPUT 12". Configure internal controller header for use.