Hi Performance Electric Vehicle Systems

1551 S. Vineyard Avenue
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WIRING SCHEMATICS

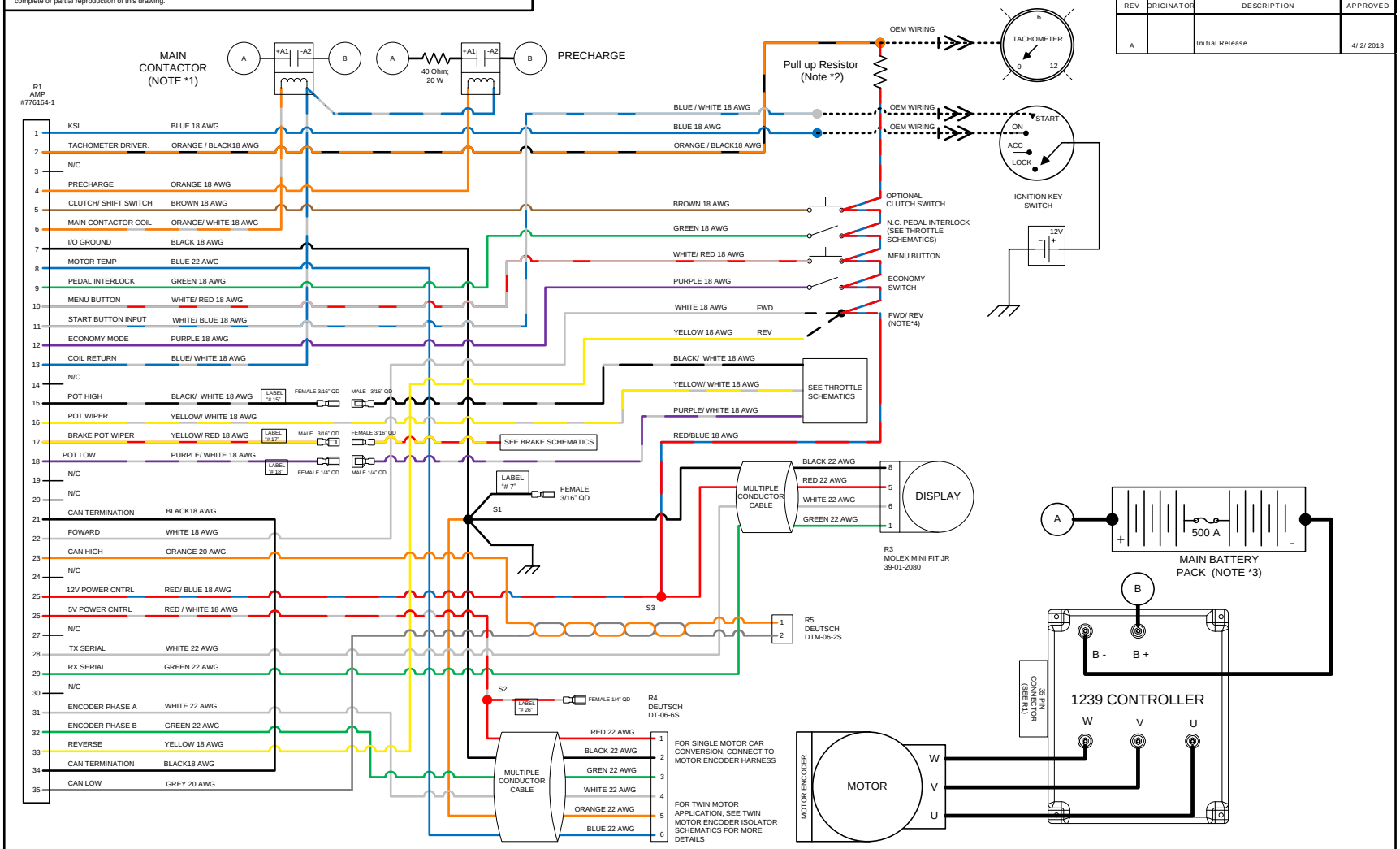
1239 CONTROLLER

BASIC AUTOMOTIVE CONVERSION

WITH TWIN MOTOR

REVISION: A
Date 4/26/2013

REVISIONS			
REV	ORIGINATOR	DESCRIPTION	APPROVED
A		Initial Release	4/ 2/ 2013



NOTES:

(*1) USE SUPPLIED CONTACTOR

(*2) TACHOMETER THAT IS DESIGNED TO WORK OFF OF AN IGNITION COIL WILL NOT WORK. SOME TACHOMETER MAY NEED A PULL UP RESISTOR FROM 470 TO 10K Ω

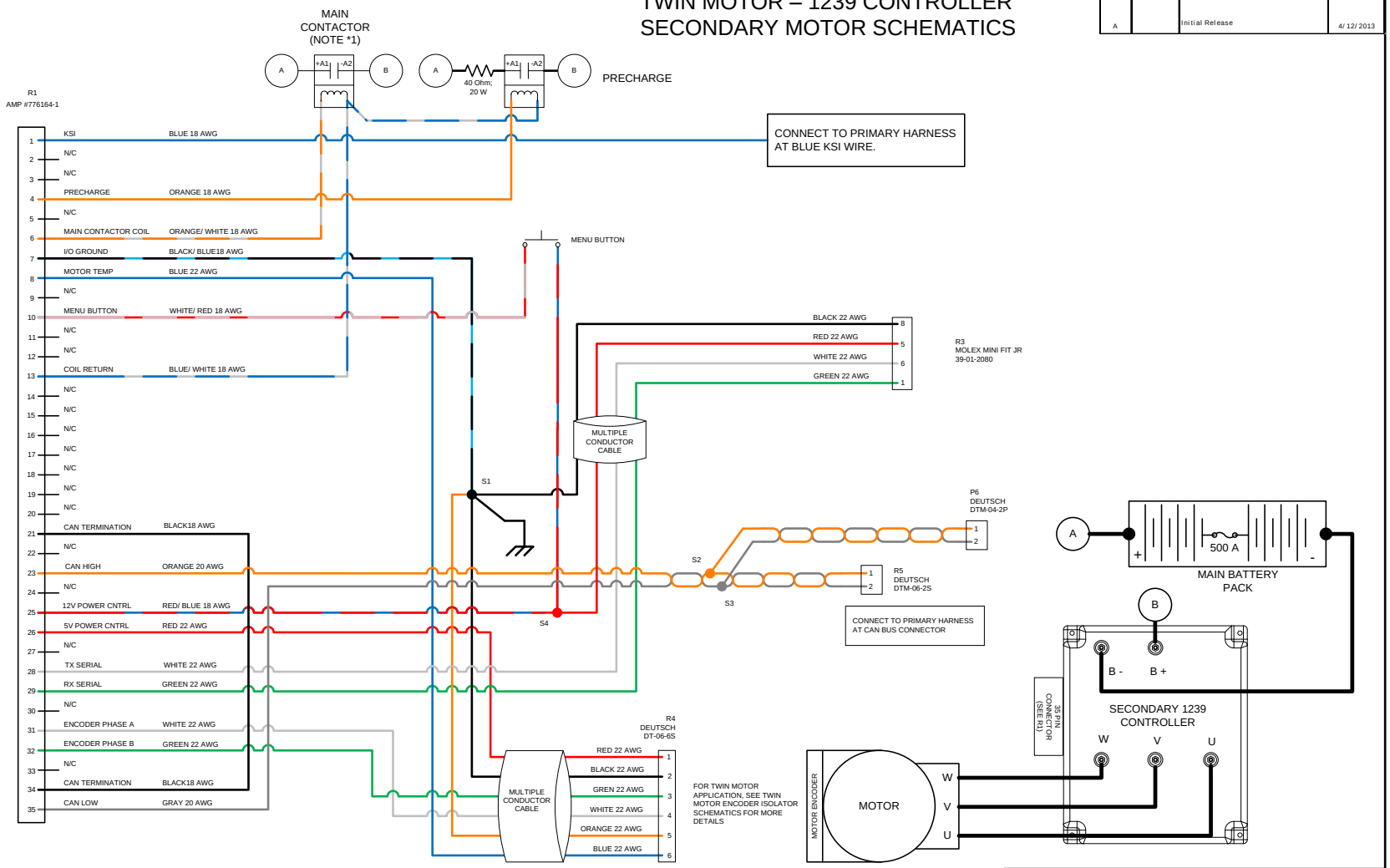
(*3) A BATTERY MANAGEMENT SYSTEM (BMS) IS STRONGLY RECOMMENDED IF LITHIUM ION BATTERIES ARE USED. POSSIBLE SOURCE OF BMS IS EWERT ENERGY SYSTEM'S ORION BMS (www.orionbms.com)

(*4) FORWARD IS CLOCKWISE MOTOR ROTATION FROM ENCODER SIDE VIEW. DEPENDING ON TRANSMISSION CONFIGURATION, USE EITHER WIRE TO OBTAIN DESIRED ROTATION. USE FWD & REV SWITCH IN DIRECT DRIVE APPLICATIONS

CAD TYPE VISIO	APPLICABLE SOFTWARE		
UNIT NONE	DRAWING 1010-AUTO-CONVERSION-1239		
DRW SIZE A	TITTLE 1239 CONTROLLER BASIC CAR CONVERSION / PRIMARY TWIN MOTOR SCHEMATICS		
DATE 4/12/13			
SCALE 1:1	SHEET 1 OF 1	REVISION A	**HPEVS**

REVISIONS			
REV	ORIGINATOR	DESCRIPTION	APPROVED
A		Initial Release	4/ 12/ 2013

TWIN MOTOR – 1239 CONTROLLER SECONDARY MOTOR SCHEMATICS

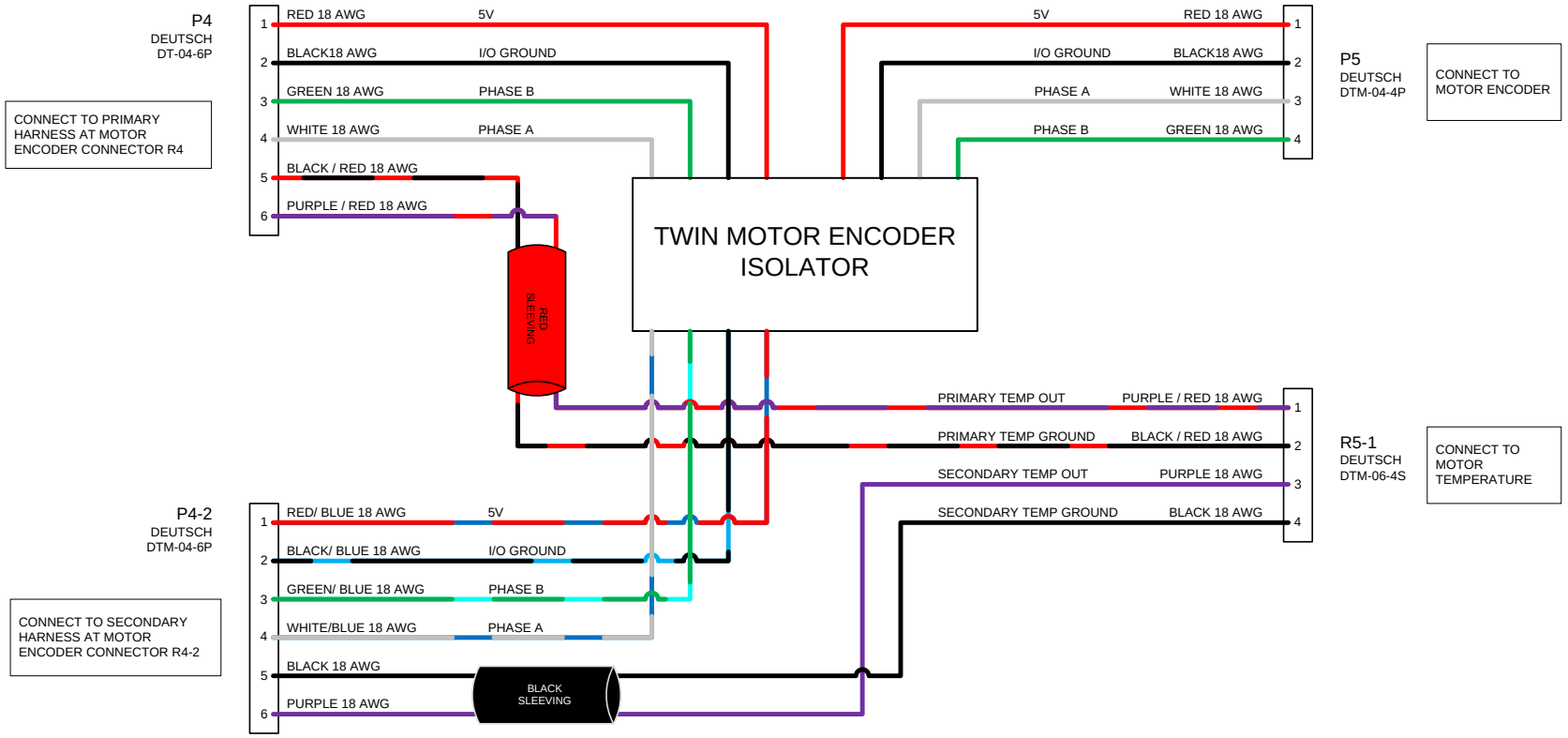


NOTES:

(*1) USE SUPPLIED CONTACTOR

CAD TYPE VISIO	APPLICABLE SOFTWARE		
UNIT NONE	DRAWING	1010-AUTO-CONVERSION-1239-TWIN-MOTOR SECONDARY	
DRW SIZE A	TITTLE	1239 CONTROLLER SECONDARY TWIN MOTOR SCHEMATICS	
DATE 4/12/13			
SCALE 1:1	SHEET 1 OF 1	REVISION A	**HPEVS**

REVISIONS			
REV	ORIGINATOR	DESCRIPTION	APPROVED
A		Initial Release	4/2/2013



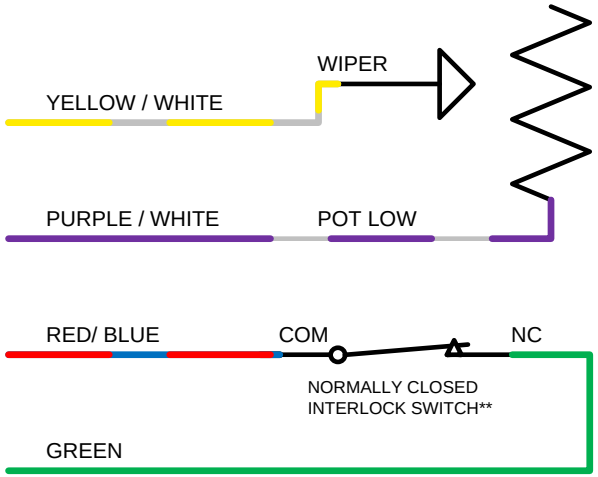
CAD TYPE VISIO	CAD LOC.	APPLICABLE SOFTWARE	DRW SIZE B
OPER. NO.	UNIT	DRAWING 1010-TWIN-ENCODER-ISOLATOR	
DESIGN	DETAIL	TITTLE TWIN MOTOR ENCODER ISOLATOR SCHEMATICS	
CHECKED	SAFETY		
SCALE NONE	DATE 4/2/2013	REVISION A SHEET 1 OF 1	HPEVS

THROTTLE CONFIGURATION

Depending of the type of throttle used for the application, see below table to determine the appropriate connection. Electrical schematics are also included in page 6 through 8.

THROTTLE CONFIGURATION	**TYPE**	**ELECTRICAL CONNECTIONS**
2 WIRE with SWITCH 0-5k Ω	TYPE 2	Connect PURPLE / WHITE wire labeled #18 with PURPLE / WHITE wire. Ending connection at throttle pot low. YELLOW / WHITE wire connected to throttle wiper
3 WIRE with SWITCH 0-5k Ω	TYPE 3	Connect BLACK / WHITE wire labeled #15 with BLACK/ WHITE wire. Ending connection at throttle pot high. Connect PURPLE / WHITE wire labeled #18 WITH PURPLE / WHITE wire. Ending connection at throttle pot low. Connect YELLOW / WHITE wire connected to throttle wiper.
ELECTRONIC without SWITCH	TYPE 1	Disconnect any wire connected to BLACK/WHITE wire labeled #15. Disconnect any wire from PURPLE/ WHITE wire labeled #18. Connect BLACK WIRE LABELED #7 with BLACK wire. Ending connection at electronic throttle ground. Connect RED/ WHITE wire labeled #26 with PURPLE / WHITE wire. Ending connection at throttle +5V input. Connect YELLOW / WHITE wire to electronic throttle signal.

REVISIONS		
REV	DESCRIPTION	APPROVED
A	INITIAL RELEASE	1/22/2013

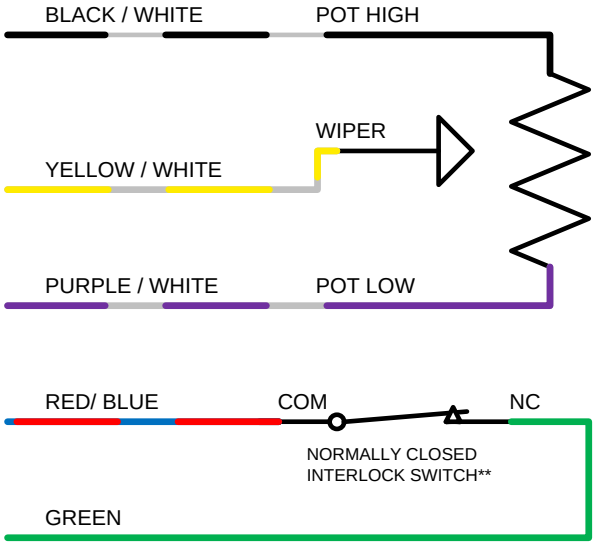


2 WIRE TYPE 2 THROTTLE

** When accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-THROTTLE-001	
DESIGN	DETAIL	TITTLE 2 WIRE TYPE 2 THROTTLE	
CHECKED	SAFETY		
SCALE NONE	DATE 1/22/13	REVISION A SHEET 1 OF 3	HPEVS

REVISIONS		
REV	DESCRIPTION	APPROVED
A	INITIAL RELEASE	1/22/2013



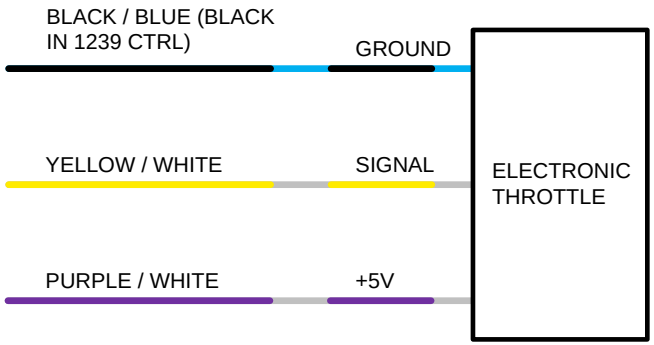
3 WIRE TYPE 3 THROTTLE

** When accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-THROTTLE-001	
DESIGN	DETAIL	TITTLE 3 WIRE TYPE 3 THROTTLE	
CHECKED	SAFETY		
SCALE NONE	DATE 1/22/13	REVISION A SHEET 2 OF 3	HPEVS

REVISIONS		
REV	DESCRIPTION	APPROVED
A	INITIAL RELEASE	1/22/2013

ELECTRONIC THROTTLE**



** When Electronic pedal is used, the GREEN wire from pedal interlock does not need to be connected

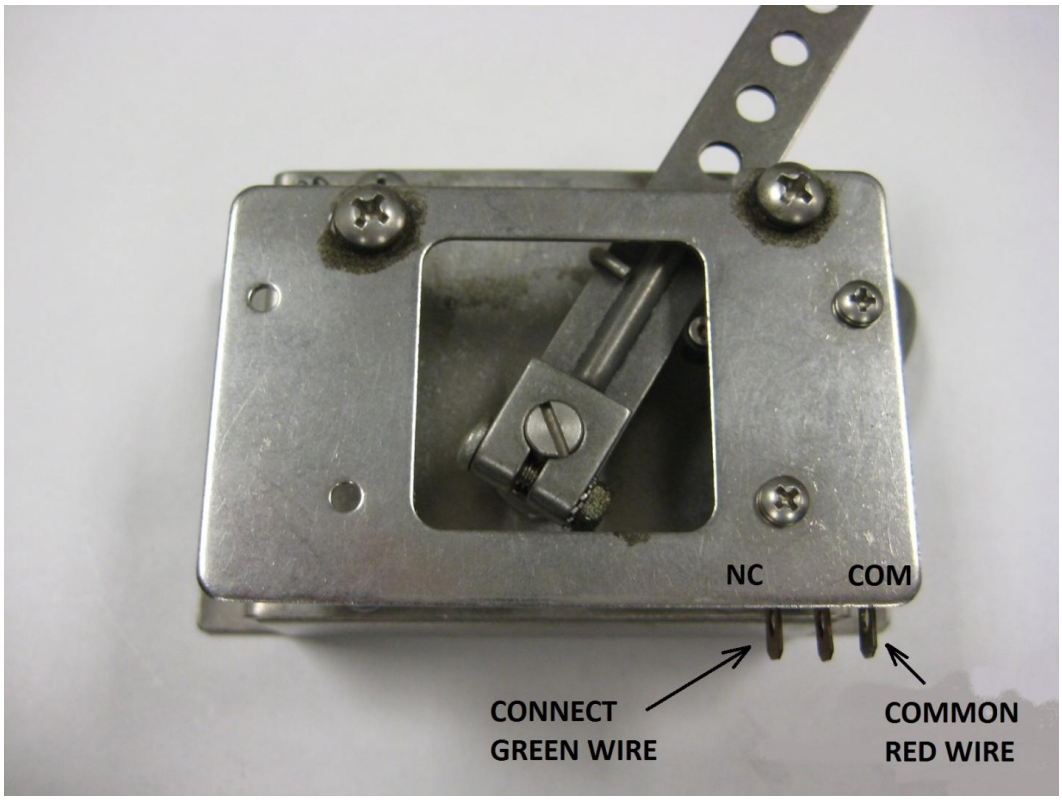
CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-THROTTLE-001	
DESIGN	DETAIL	TITTLE ELECTRONIC THROTTLE	
CHECKED	SAFETY		
SCALE NONE	DATE 1/22/13	REVISION A SHEET 3 OF 3	**HPEVS**

PEDAL INTERLOCK CONNECTION

The pedal interlock connection is required for both 2 and 3 wire throttle pot assemblies. The Green wire is connected at Normally Closed tab. Red wire is connected at common tab. See below picture.

NOTE, when accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

Electronic throttles usually do not have an interlock switches. In this application, the Green and Red wires are connected together.

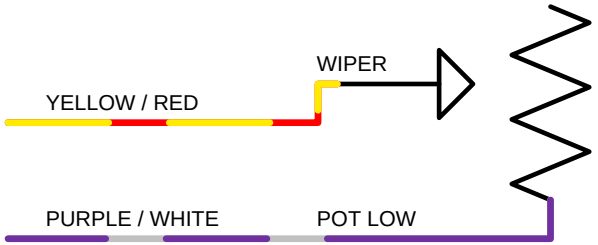


BRAKE POT CONFIGURATION

Depending of the type of brake pot used for the application, see below table to determine the appropriate connection. Electrical schematics are also included in page 11 & 12.

BRAKE POT CONFIGURATION	**TYPE**	**ELECTRICAL CONNECTIONS**
2 WIRE 0-5k Ω	TYPE 2	Connect PURPLE / WHITE wire labeled #18 with PURPLE / WHITE wire. Ending connection at brake pot low. Connect YELLOW / RED wire labeled #17 with wire YELLOW/ RED wire. Ending connection at brake wiper.
BRAKE TRANSDUCER	TYPE 1	Connect RED/ BLUE wire to brake transducer +12V input. Connect BLACK wire labeled #7 with Black wire. Ending connection at brake transducer ground. Connect YELLOW / RED wire labeled #17 with wire YELLOW/ RED wire. Ending connection at brake transducer output signal.

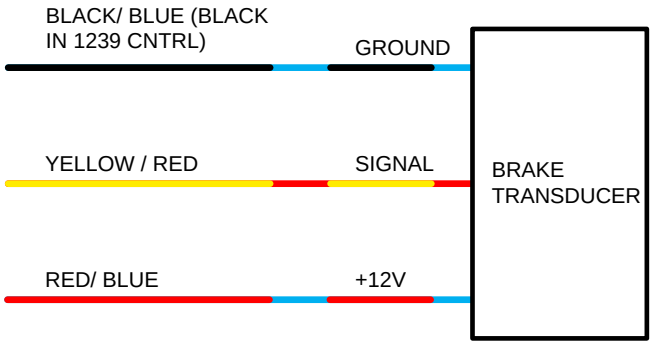
REVISIONS		
REV	DESCRIPTION	APPROVED
A	INITIAL RELEASE	2/19/2013



2 WIRE BRAKE POT

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-BRAKE-001	
DESIGN	DETAIL	TITTLE 2 WIRE BRAKE	
CHECKED	SAFETY		
SCALE NONE	DATE 2/19/13	REVISION A SHEET 1 OF 2	HPEVS

REVISIONS		
REV	DESCRIPTION	APPROVED
A	INITIAL RELEASE	2/19/2013



BRAKE TRANSDUCER

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-BRAKE-001	
DESIGN	DETAIL	TITTLE BRAKE TRANSDUCER	
CHECKED	SAFETY		
SCALE NONE	DATE 2/19/13	REVISION A SHEET 2 OF 2	HPEVS