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WIRING SCHEMATICS

ON-ROAD VEHICLE CONVERSION SINGLE AND DUAL MOTOR APPLICATION

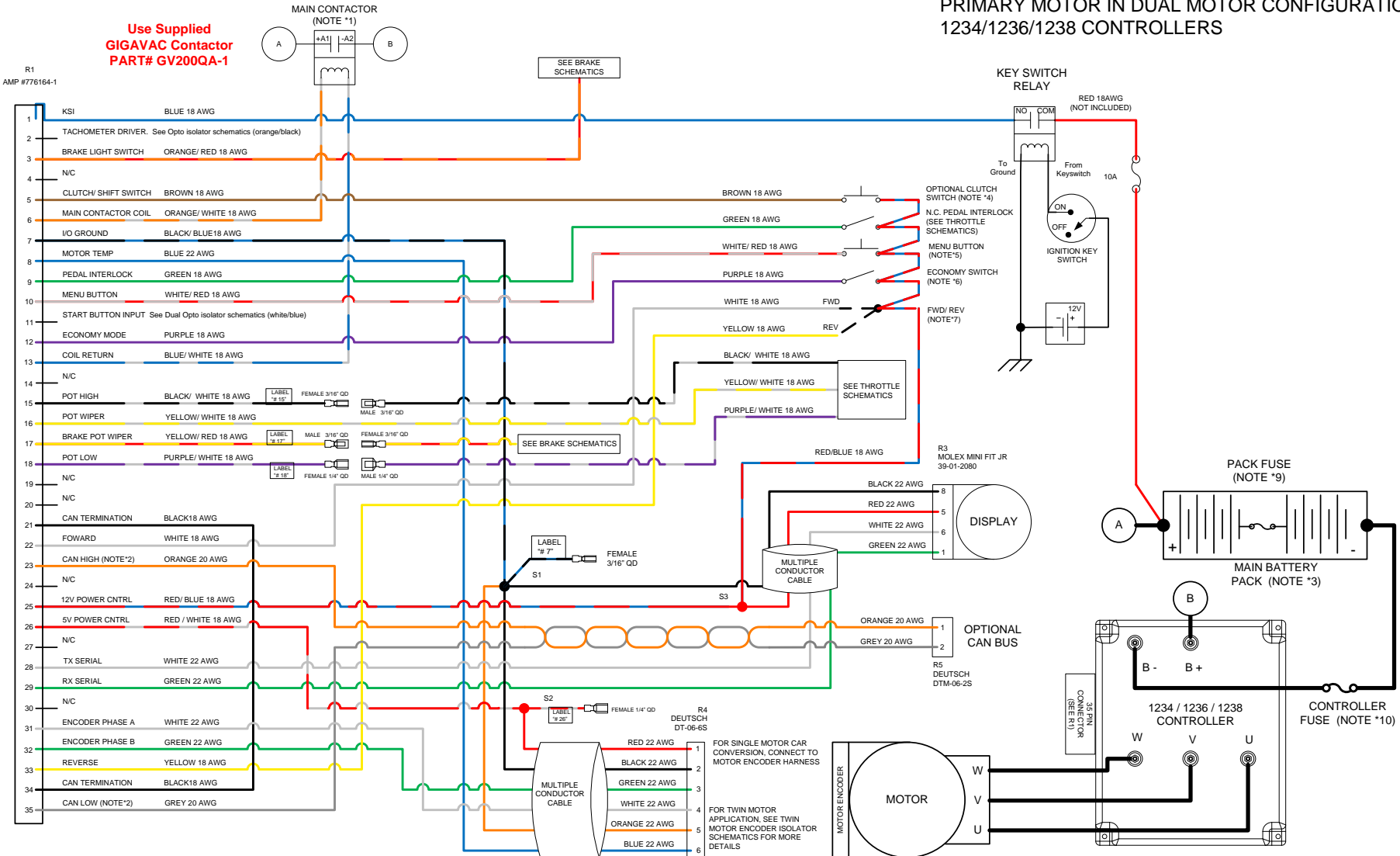
FOR SOFTWARE VERSIONS 5.13 AND HIGHER

FOR CURTIS CONTROLLERS 1234/1236/1238

REVISION: E
Date: 10/27/15

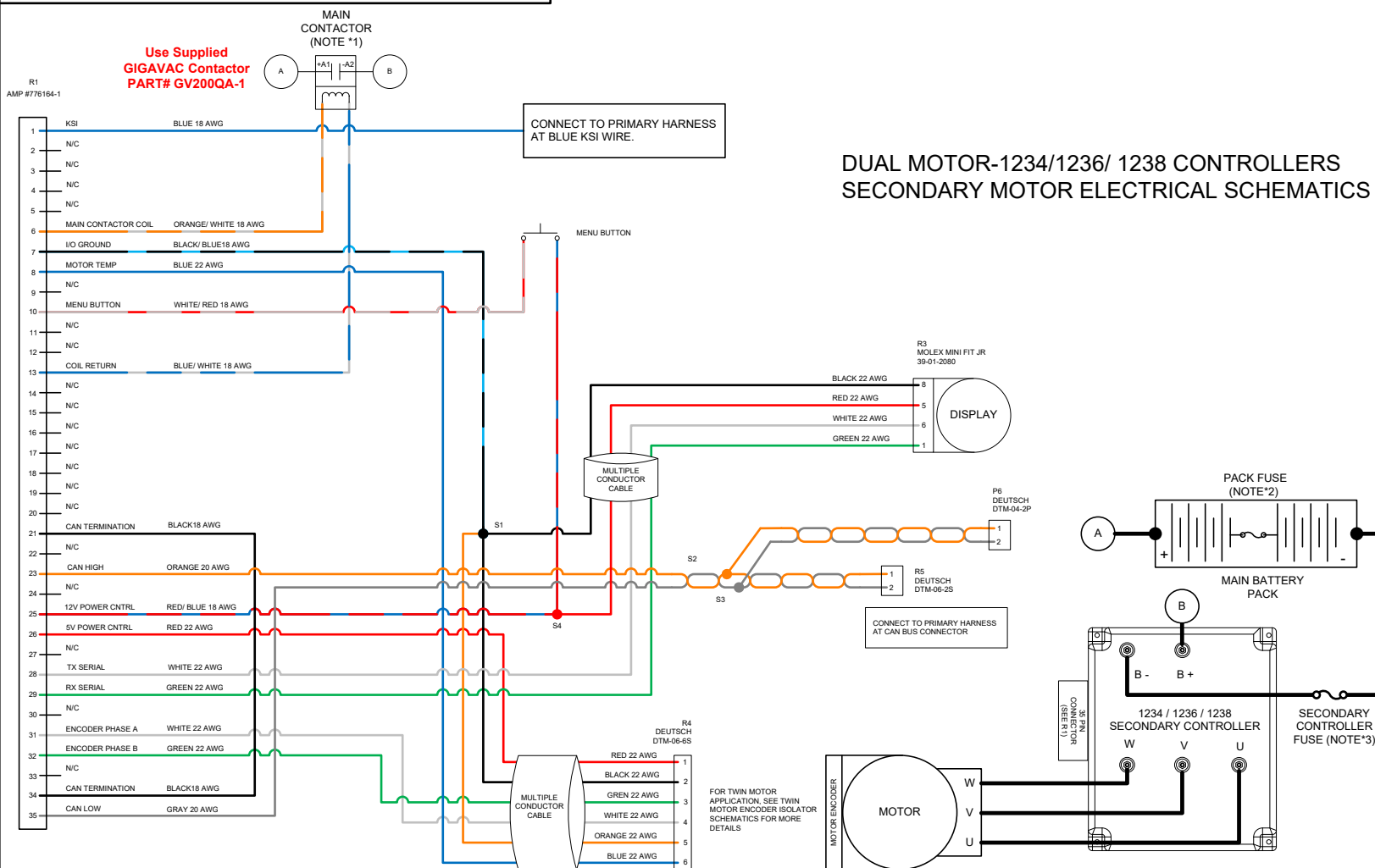
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ELECTRICAL SCHEMATICS FOR SINGLE MOTOR OR PRIMARY MOTOR IN DUAL MOTOR CONFIGURATION 1234/1236/1238 CONTROLLERS



CAD TYPE	VISION	APPLICABLE SOFTWARE	VERSION 5.13
UNIT	NONE	DRAWING	1010-AUTO-CONVERSION
DRW SIZE	A	TITLE	ON-ROAD VEHICLE CONVERSION / PRIMARY DUAL MOTOR SCHEMATICS
DATE	2/12/13	SUPPLIER PART	HW-AUTOCONVERSION-HPG
SCALE	NONE	SHEET	1 OF 1
REVISION	D	HPEVS	

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NOTES:

(*) Use supplied Contactor (GIGAVAC Part #GV200QA-1). Use only a Contactor WITHOUT PWM AND COIL SUPPRESSION. FAILURE TO DO SO CAN CAUSE CONTROLLER FAILURE AND WILL VOID WARRANTY.

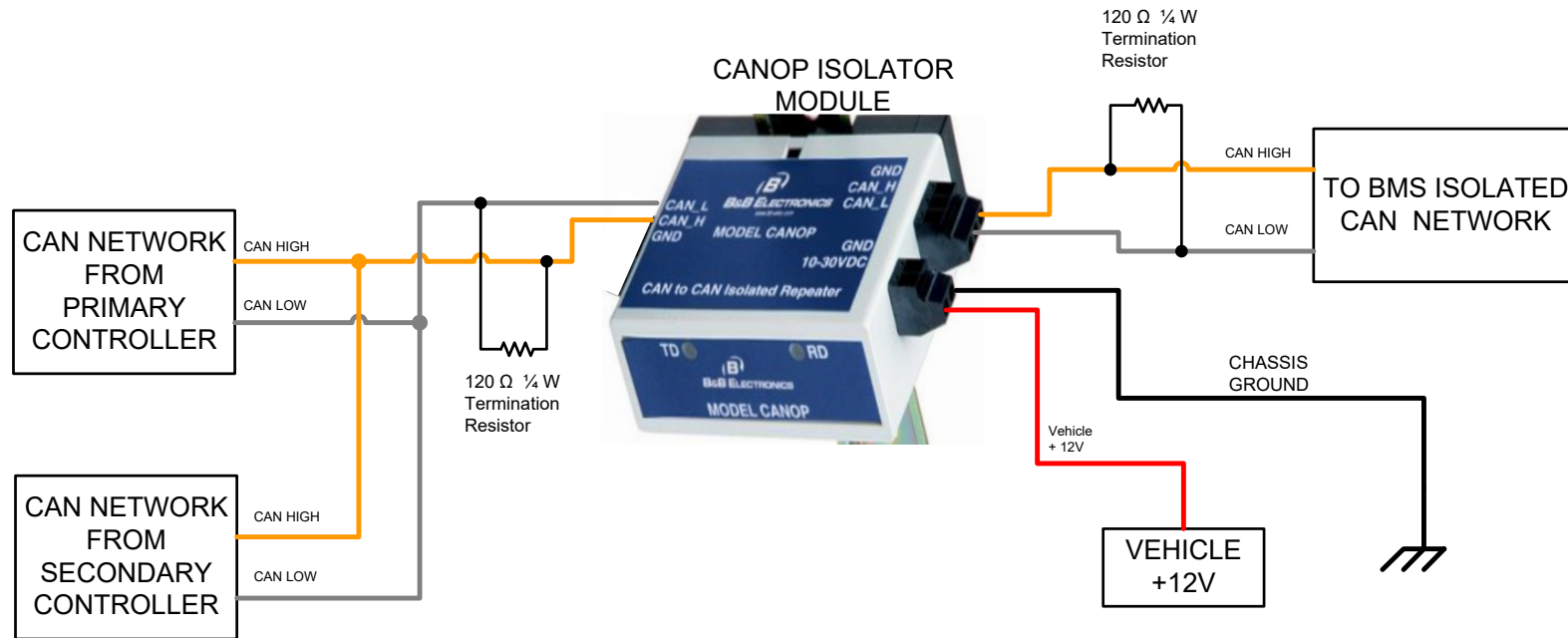
(*2) Use Pack Fuse rated at 500A for Single controller applications. For Dual controller use 800A Pack fuse.

(*3) Only for Dual motor application. Use Controller Fuse rated at 500A for each controller.

CAD TYPE VISIO	APPLICABLE SOFTWARE	VERSION 5.13	
UNIT NONE	DRAWING	1010-AUTO-CONVERSION-TWIN MOTOR	
DRW SIZE A	TITLE SECONDARY DUAL MOTOR SCHEMATICS		
DATE 4/2/13			
SCALE 1:1	SHEET 1 OF 1	REVISION B	HPEV3

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REVISIONS		
REV	DESCRIPTION	APPROVED
A	INITIAL RELEASE	3/11/2013
B	Revision for clarification	10/30/2013



CAN BE FOUND AT B&B ELECTRONICS
www.bb-elec.com

CAD TYPE	CAD LOC.	CAD FILE	DRW SIZE A
VISION	UNIT	DRAWING 1010-CAN-OP-ISOLATOR	
DESIGN	DETAIL	TITLE CAN ISOLATOR DUAL 1238 CONTROLLER	
CHECKED	SAFETY		
SCALE	DATE	REVISION B	HPEVS
NONE	4/17/13	SHEET 1 OF 1	

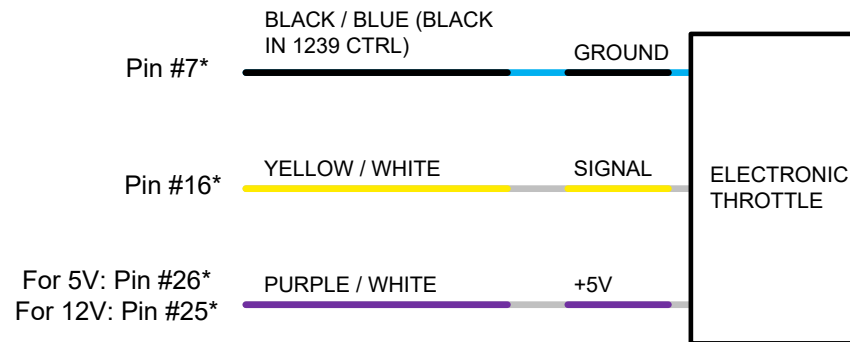
THROTTLE CONFIGURATION

Depending on the type of throttle used for the application, the different types of throttle configurations are listed within the table below. Electrical schematics are also included within the following pages.

THROTTLE CONFIGURATION	TYPE
ELECTRONIC without SWITCH	TYPE 1
2 WIRE with SWITCH 0-5k Ω	TYPE 2
3 WIRE with SWITCH 0-5k Ω	TYPE 3
CURTIS PB8 THROTTLE ASSEMBLY	TYPE 3

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TYPE 1 ELECTRONIC THROTTLE**

* Typical connection, verify correct voltage and connection in throttle documents or instructions.

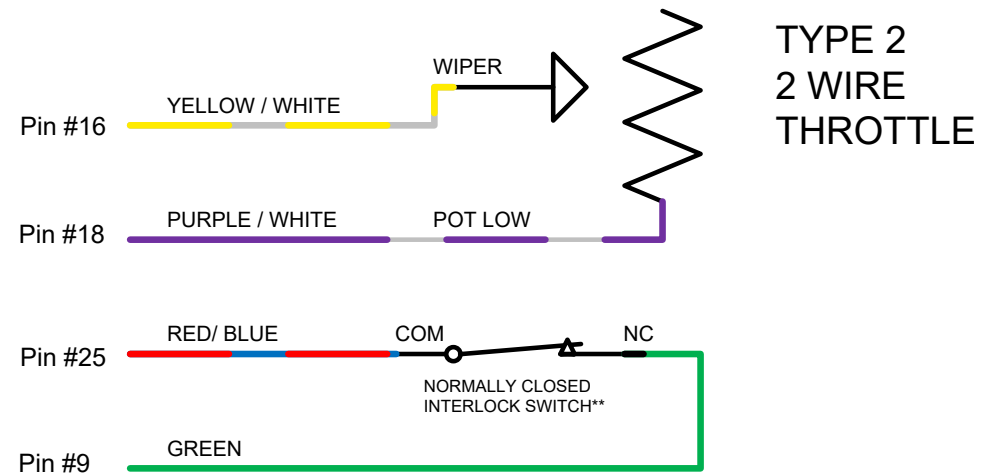
Not all Electronic Throttles supported

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

CAD TYPE VISIO	APPLICABLE SOFTWARE		
UNIT NONE	DRAWING 1010-THROTTLE-001		
DRW SIZE A	TITLE TYPE 1 ELECTRONIC THROTTLE		
DATE 1/22/13			
SUPPLIER PART			
SCALE NONE	SHEET 4 OF 4	REVISION B	HPEVS

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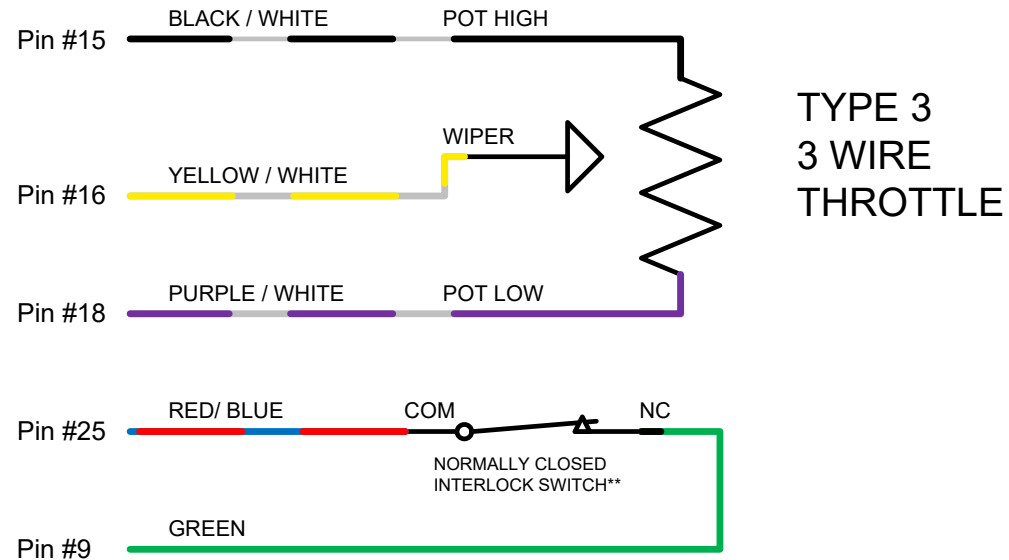


** When the accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

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

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A	INITIAL RELEASE	1/22/2013

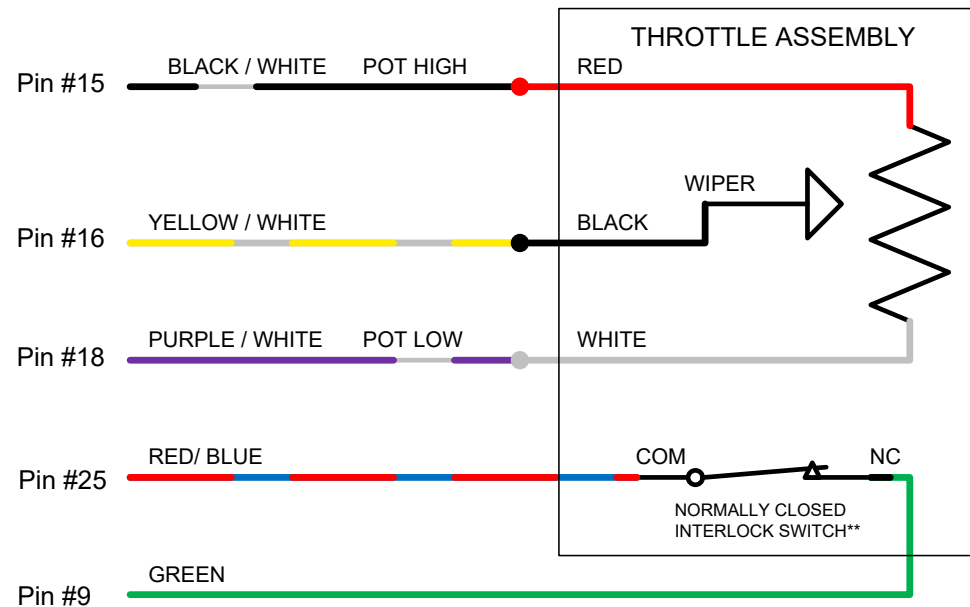


** When the accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

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

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CURTIS PB8 THROTTLE ASSEMBLY

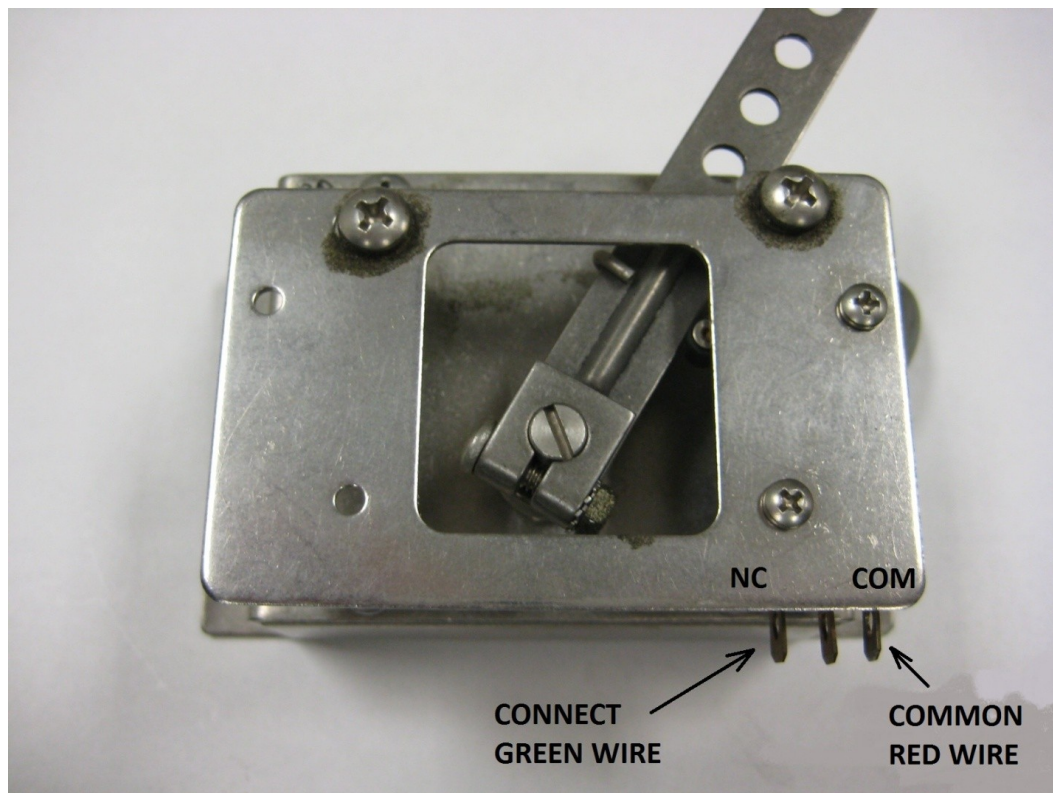
** When the accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

CAD TYPE VISIO	APPLICABLE SOFTWARE		
UNIT NONE	DRAWING 1010-THROTTLE-001		
DRW SIZE A	TITLE CURTIS PB8 THROTTLE ASSEMBLY		
DATE 1/22/13			
SUPPLIER PART			
SCALE NONE	SHEET 3 OF 4	REVISION A	HPEVS

PEDAL INTERLOCK CONNECTION

The pedal interlock connection is required for both 2 and 3 wire throttle pot assemblies. The Green wire is connected to the Normally Closed tab. The red/blue wire is connected to the common tab. See picture below.

NOTE: when the 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.



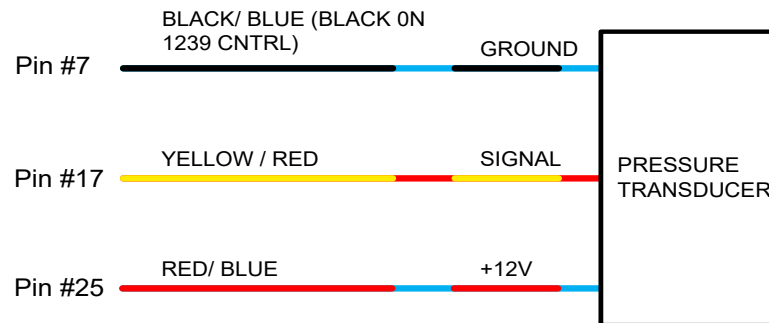
BRAKE INPUT CONFIGURATION

Depending on the type of brake input used for the application, the different types of brake input configurations are listed within the table below. Electrical schematics are also included in the following pages.

BRAKE INPUT CONFIGURATION	TYPE
NO BRAKE POT INSTALLED	TYPE 0
PRESSURE TRANSDUCER/ ELECTRONIC 0-5V INPUT	TYPE 1
2 WIRE 0-5k Ω POT	TYPE 2
SWITCH	TYPE 3

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TYPE 1 PRESSURE TRANSDUCER



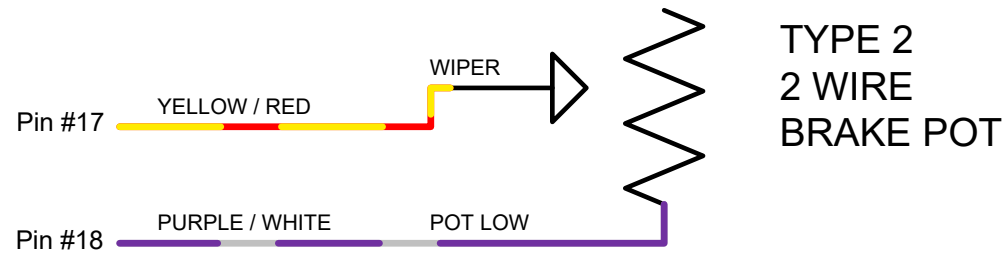
**** Typical Pressure Transducer Ratings**
 8-30 Volt Input
 1-5 Volt Output
 2500 PSI

Website Link: www.digikey.com
Part Number: M3041-000005-2K5PG-ND
Manufacturer Part #: M3041-000005-2K5PG

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

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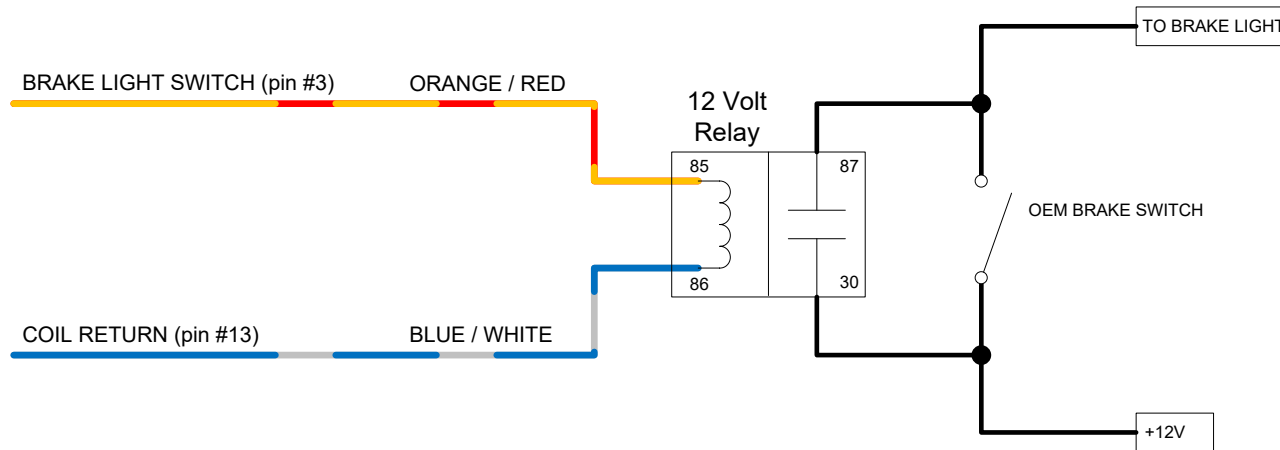


CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-BRAKE	
DESIGN	DETAIL	TITLE TYPE 2 2 WIRE BRAKE POT	
CHECKED	SAFETY		
SCALE NONE	DATE 2/19/13	REVISION A SHEET 1 OF 2	HPEVS

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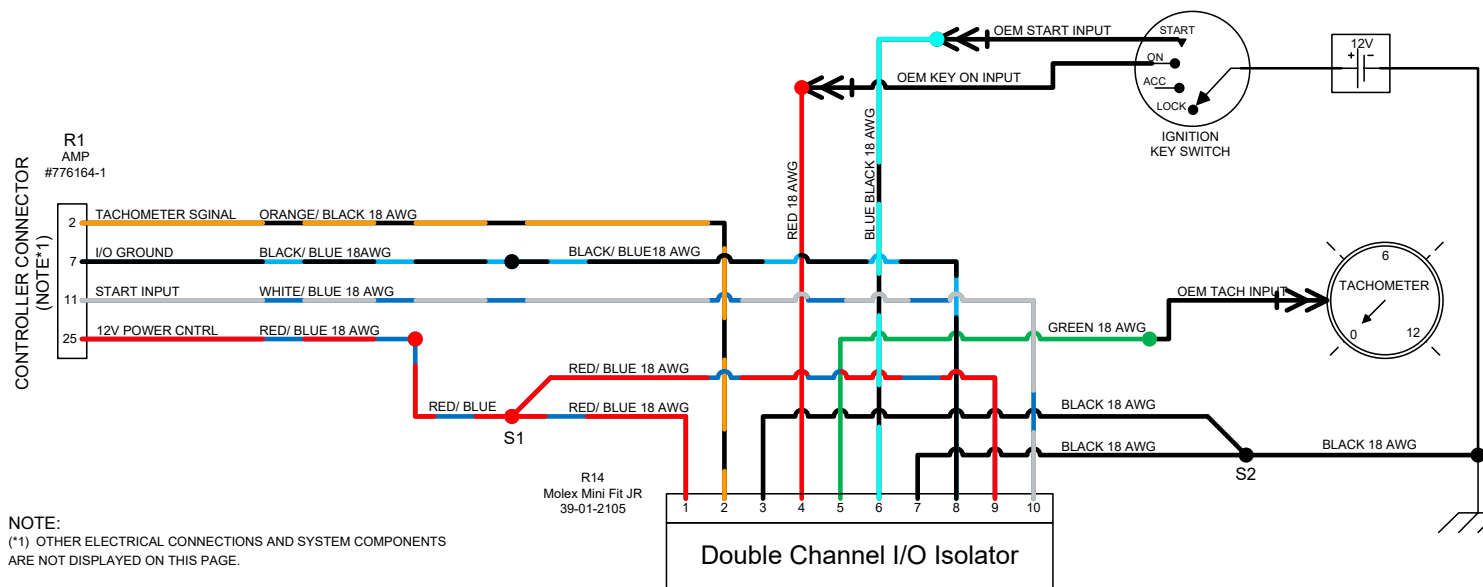
ACTIVE BRAKE LIGHT CONFIGURATION FOR BRAKE TYPE 0, 1 OR 2 CONFIGURATIONS



** This option turns the brake lights ON during REGEN. Brake TYPE 0 does not allow for BOOSTED BRAKE while pressing the brake pedal. Brake TYPE 1 & 2 uses a variable input for BOOSTED REGEN.

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-BRAKE	
DESIGN	DETAIL	TITLE	
CHECKED	SAFETY	BRAKE LIGHT CONFIGURATION	
SCALE NONE	DATE 12/5/13	REVISION A SHEET 3 OF 4	HPEVS

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NOTE:
 (*1) OTHER ELECTRICAL CONNECTIONS AND SYSTEM COMPONENTS
 ARE NOT DISPLAYED ON THIS PAGE.

I/O ISOLATOR PIN FUNCTION

- 1 – CHANNEL 1 CONTROLLER 12V
- 2 – CHANNEL 1 TACHOMETER SIGNAL
- 3 – CHANNEL 1 GROUND
- 4 – CHANNEL 1 VEHICLE 12V
- 5 – CHANNEL 1 OUTPUT TO TACHOMETER
- 6 – CHANNEL 2 IGNITION KEY INPUT
- 7 – CHANNEL 2 GROUND
- 8 – CHANNEL 2 CONTROLLER I/O GROUND
- 9 – CHANNEL 2 CONTROLLER 12V
- 10 – CHANNEL 2 CONTROLLER START INPUT

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE B
OPER. NO.	UNIT	DRAWING 1010-2CH-ISOLATOR-001	
DESIGN	DETAIL	TITLE DUAL CHANNEL OPTO-ISOLATOR SYSTEM SCHEMATICS	
CHECKED	SAFETY		
SCALE NONE	DATE 4/19/12	REVISION B SHEET 1 OF 1	HPEVS