Hi Performance Electric Vehicle Systems

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WIRING SCHEMATICS

FOR CURTIS 1239 "E" VERSION CONTROLLERS

SOFTWARE VERSIONS 365.00 AND HIGHER

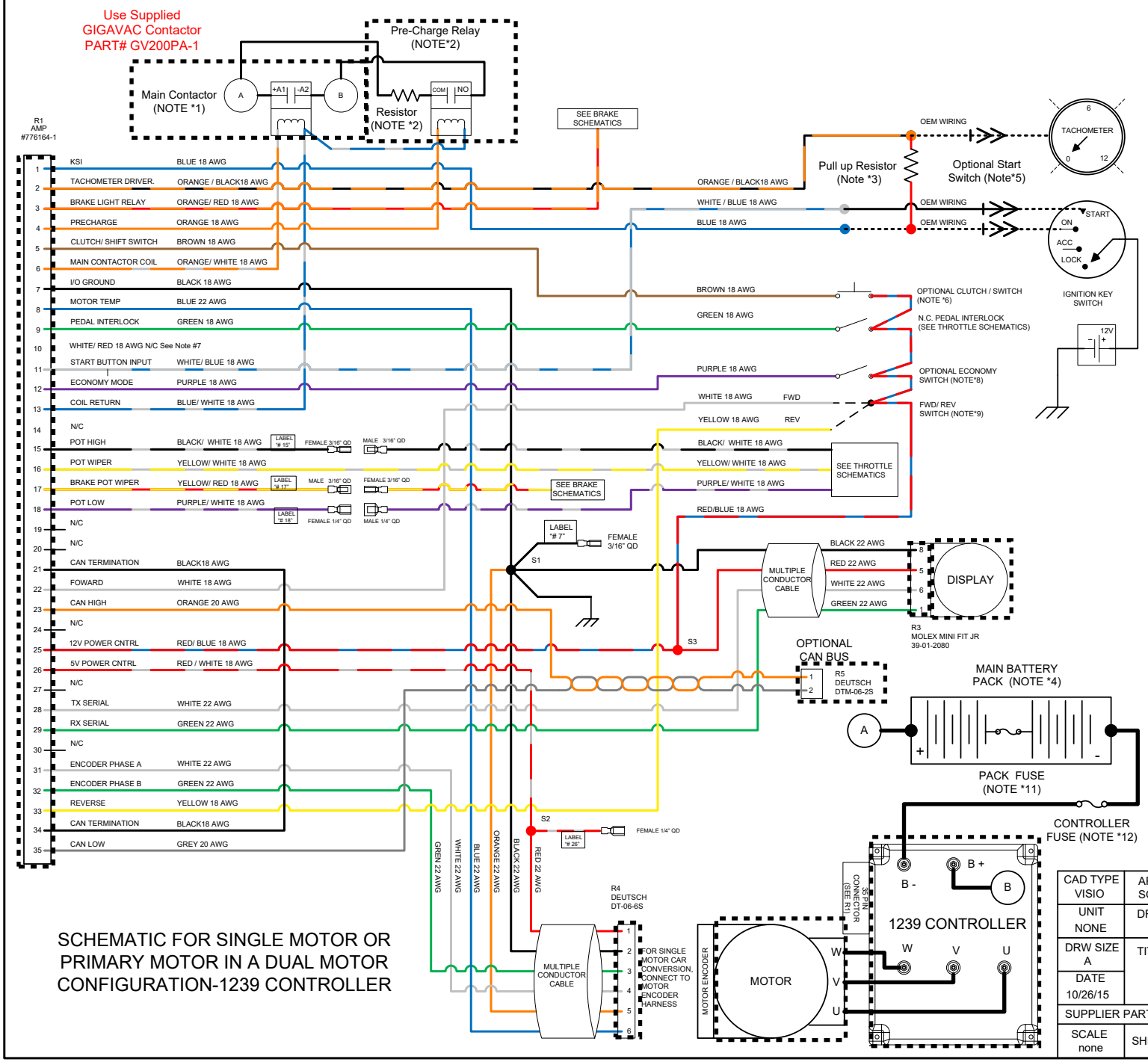
96 AND 144 VOLT DRIVE SYSTEMS

ON-ROAD VEHICLE CONVERSION

FOR SINGLE OR DUAL MOTOR

APPLICATIONS

REVISION: A
Date 10/26/15



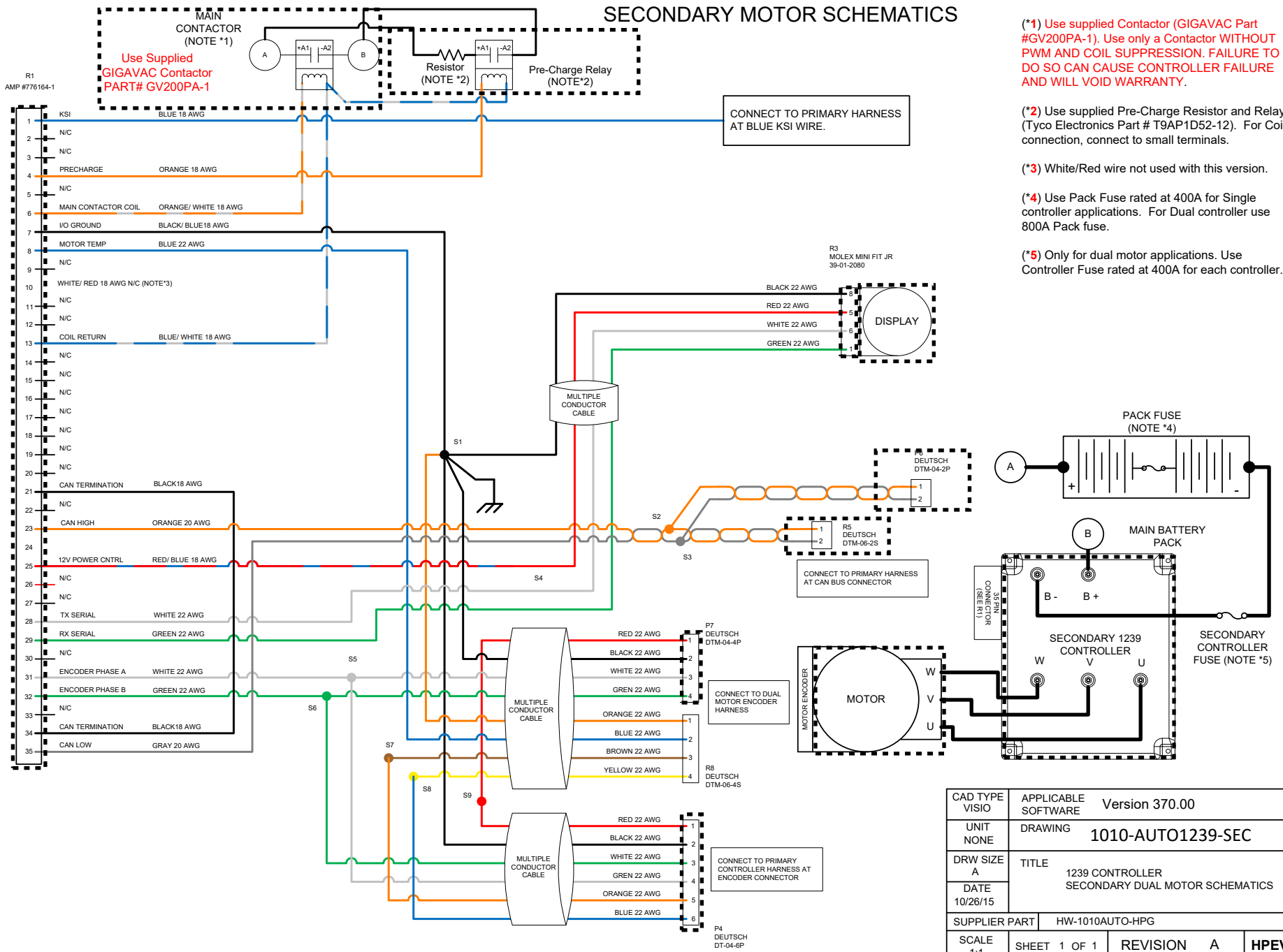
SCHEMATIC FOR SINGLE MOTOR OR PRIMARY MOTOR IN A DUAL MOTOR CONFIGURATION-1239 CONTROLLER

NOTES:

(*1) Use supplied Contactor (GIGAVAC Part #GV200PA-1). Use only a Contactor WITHOUT PWM AND COIL SUPPRESSION. FAILURE TO DO SO CAN CAUSE CONTROLLER FAILURE AND WILL VOID WARRANTY.
(*2) Use supplied Pre-Charge Resistor and Relay (Tyco Electronics Part # T9AP1D52-12). For Coil connection, connect to small terminals.
(*3) Tachometers that are designed to work off of an ignition coil may not function properly in this application. Some tachometers may need a pull up resistor of 4.7K Ω to function
(*4) 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)
(*5) A start switch is required if Idle or Creep Torque parameters are ENABLED. See Programming Instructions. A start switch CAN be used without IDLE. See programming instructions for information
(*6) Install the Optional Clutch/ Shift Switch so that is ON when the clutch pedal is pressed. When clutch pedal is pressed the regen setting is changed to Shift Neutral Braking Parameter to prevent the motor from stalling during gear shifting. In a clutchless system, this allows you to set the coast down rate of the motor so that the gears align properly See Instructions on SHIFT-NEUTRAL BRAKING PARAMETERS.
(*7) White/Red wire not used with this version.
(*8) Allows the use of ECONO Mode Parameters. See Programming Instructions.
(*9) Forward is CLOCKWISE motor rotation from Encoder end view. Depending on Transmission configuration, use either wire to obtain desired rotation. Use FWD & REV Switch in direct drive applications.
(*10) N/A
(*11) Use Pack Fuse rated at 400A for Single controller applications. For Dual controller use 800A Pack Fuse.
(*12) Only for dual motor applications. Use Controller Fuse rated at 400A for each controller.

CAD TYPE VISIO	APPLICABLE SOFTWARE	Version 365.00	
UNIT NONE	DRAWING	1010-AUTO1239-PRI	
DRW SIZE A	TITLE	1239 CONTROLLER ON-ROAD VEHICLE CONVERSION / PRIMARY DUAL MOTOR SCHEMATICS	
DATE 10/26/15			
SUPPLIER PART	HW-1010AUTO1239-HPG		
SCALE none	SHEET 1 OF 1	REVISION A	HPEVS

DUAL MOTOR – 1239 CONTROLLER SECONDARY MOTOR SCHEMATICS



NOTES:

(*1) Use supplied Contactor (GIGAVAC Part #GV200PA-1). Use only a Contactor WITHOUT PWM AND COIL SUPPRESSION. FAILURE TO DO SO CAN CAUSE CONTROLLER FAILURE AND WILL VOID WARRANTY.

(*2) Use supplied Pre-Charge Resistor and Relay (Tyco Electronics Part # T9AP1D52-12). For Coil connection, connect to small terminals.

(*3) White/Red wire not used with this version.

(*4) Use Pack Fuse rated at 400A for Single controller applications. For Dual controller use 800A Pack fuse.

(*5) Only for dual motor applications. Use Controller Fuse rated at 400A for each controller.

CAD TYPE VISIO	APPLICABLE SOFTWARE	Version 370.00	
UNIT NONE	DRAWING	1010-AUTO1239-SEC	
DRW SIZE A	TITLE	1239 CONTROLLER SECONDARY DUAL MOTOR SCHEMATICS	
DATE 10/26/15			
SUPPLIER PART	HW-1010AUTO-HPG		
SCALE 1:1	SHEET 1 OF 1	REVISION A	**HPEVS**

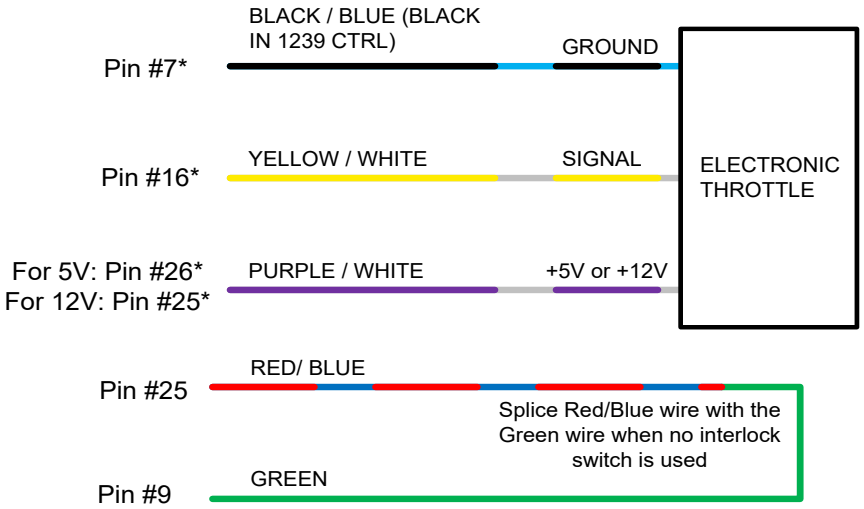
THROTTLE CONFIGURATION

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 2
2 WIRE with SWITCH 0-5k Ω	TYPE 3
3 WIRE with SWITCH 0-5k Ω	TYPE 2 Default
CURTIS PB8 THROTTLE ASSEMBLY	TYPE 2

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

TYPE 2 ELECTRONIC THROTTLE

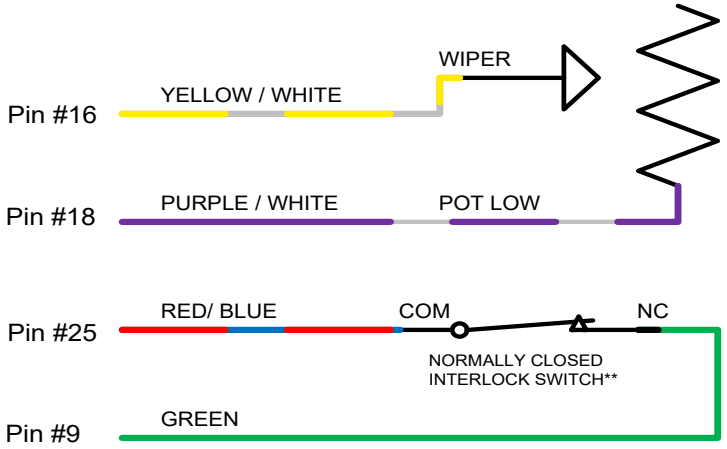


* Typical connection, verify correct voltage and connection in throttle documents or instructions.

Not all Electronic Throttles supported

CAD TYPE VISIO	APPLICABLE SOFTWARE		
UNIT NONE	DRAWING 1010-THROTTLE-001		
DRW SIZE A	TITLE TYPE 2 ELECTRONIC THROTTLE		
DATE 1/22/13			
SUPPLIER PART			
SCALE NONE	SHEET 1 OF 1	REVISION A	HPEVS

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

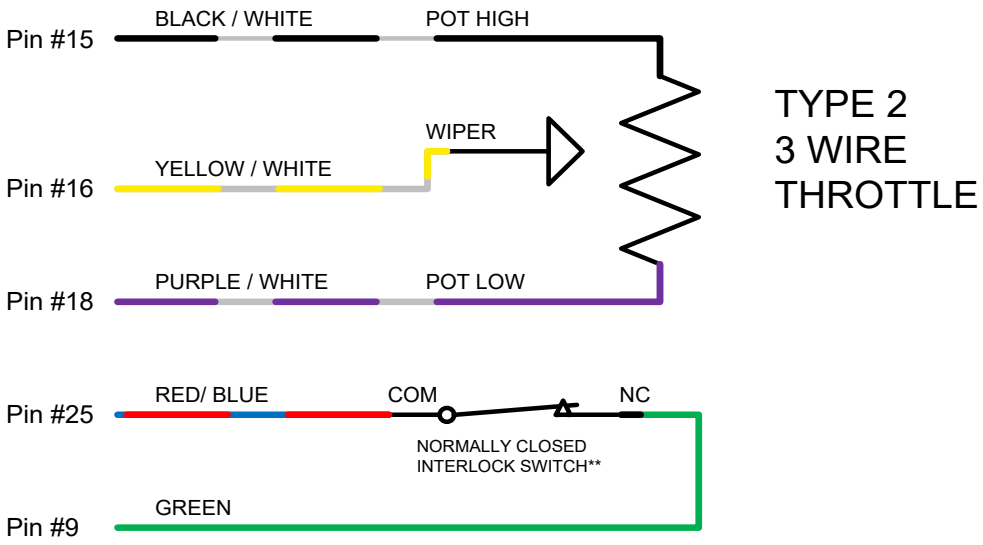


TYPE 3
2 WIRE
THROTTLE

** 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 3 2 WIRE THROTTLE	
CHECKED	SAFETY		
SCALE NONE	DATE 1/22/13	REVISION A SHEET 1 OF 1	HPEVS

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

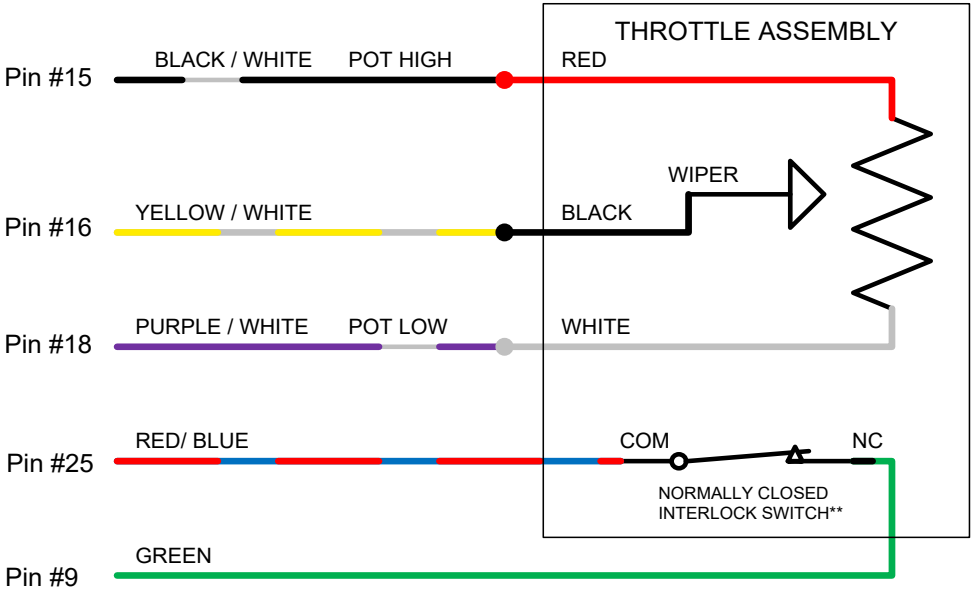


TYPE 2
3 WIRE
THROTTLE

** 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 3 WIRE THROTTLE	
CHECKED	SAFETY		
SCALE NONE	DATE 1/22/13	REVISION A SHEET 1 OF 1	HPEVS

REVISIONS		
REV	DESCRIPTION	APPROVED
A	INITIAL RELEASE	11/27/2013



CURTIS PB8 THROTTLE ASSEMBLY TYPE 2

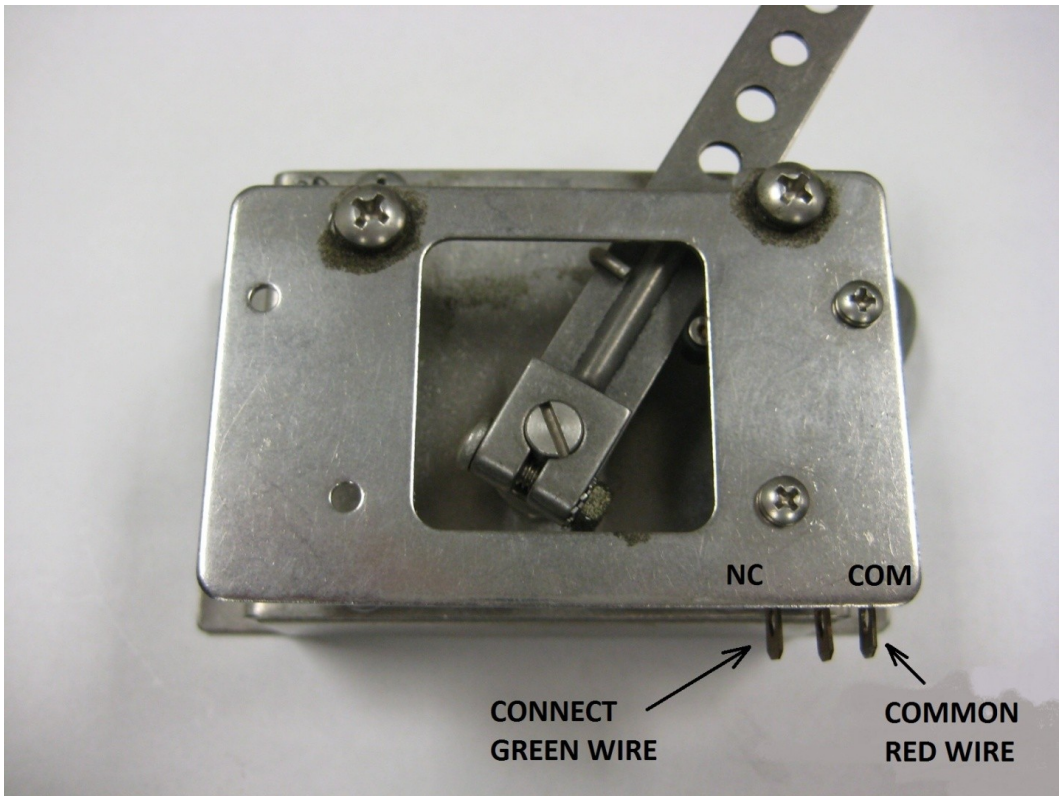
** When the accelerator pedal IS PRESSED the interlock switch is released to its NORMAL position (switch not activated) thus completing the circuit since its green wire is connected to the normally closed (NC) connection.

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 1 OF 1	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.

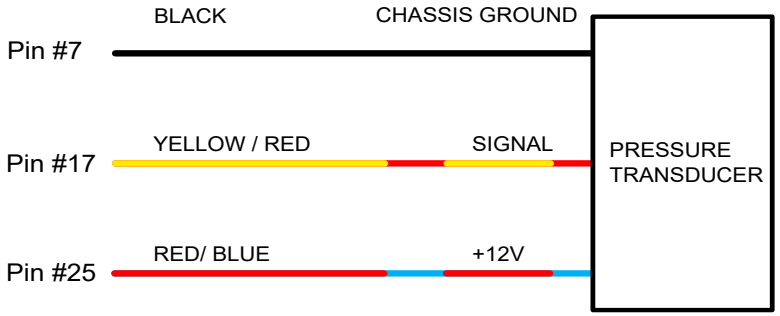


BRAKE INPUT CONFIGURATION

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

BRAKE INPUT CONFIGURATION	**TYPE**
NO BRAKE INPUT USED	TYPE 5 and Brake Input Enabled = OFF Default
PRESSURE TRANSDUCER/ ELECTRONIC 0-5V INPUT or 3-WIRE POT	TYPE 2
2 WIRE 0-5k Ω POT	TYPE 3

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



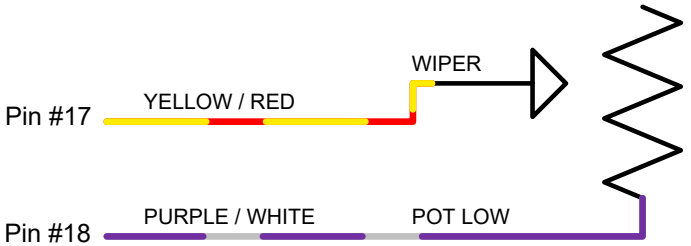
TYPE 2 PRESSURE TRANSDUCER

** 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 2 PRESSURE TRANSDUCER	
CHECKED	SAFETY		
SCALE NONE	DATE 2/19/13	REVISION A SHEET 1 OF 1	HPEVS

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



TYPE 3
2 WIRE BRAKE POT

CAD TYPE VISIO	CAD LOC.	CAD FILE	DRW SIZE A
OPER. NO.	UNIT	DRAWING 1010-BRAKE	
DESIGN	DETAIL	TITLE TYPE 3 2 WIRE BRAKE POT	
CHECKED	SAFETY		
SCALE NONE	DATE 2/19/13	REVISION A SHEET 1 OF 1	HPEVS