



Arens CAN Controller

Wiring Diagram

AES-210

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ECN	REV	REVISION RECORD	DATE	ENGINEER

ARENS CONTROLS

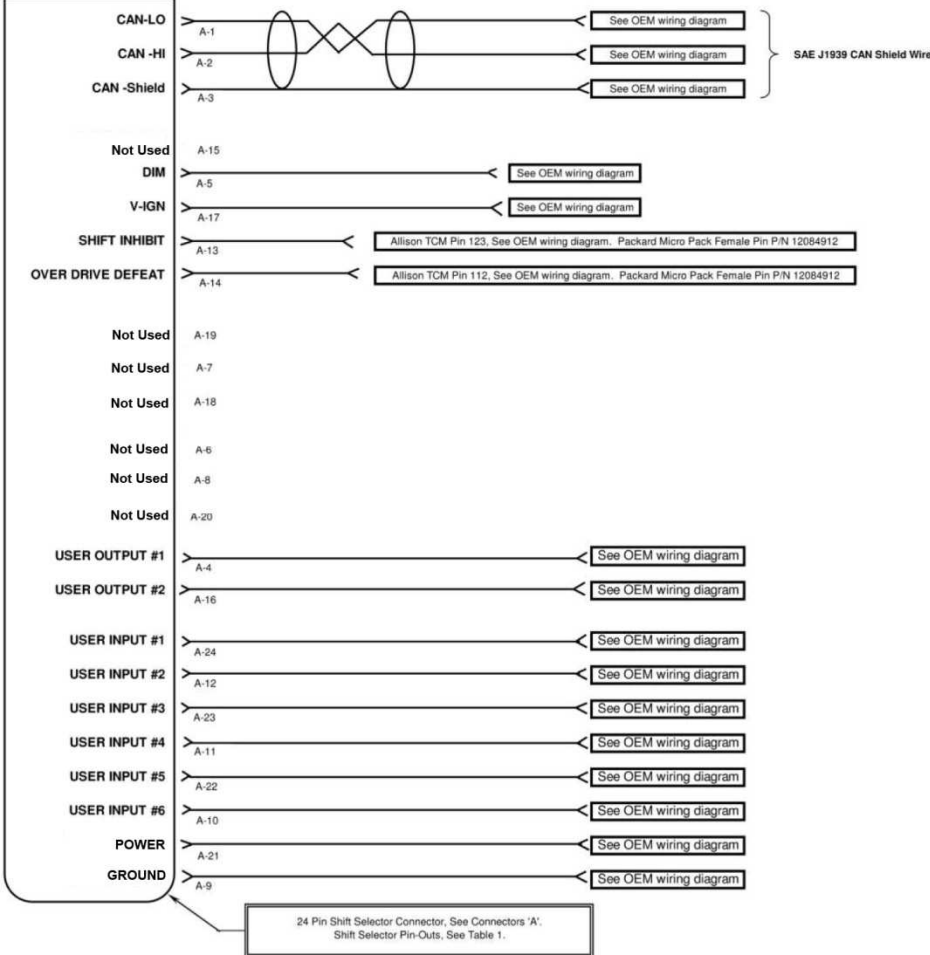
Confidential Information

Wiring Diagram

Revision(s):

Rev. A Released
 Rev. B Added inputs 7 and 8
 Rev. C Revised & Redrawn, added Wiring Diagram NOTES page

Push Button Shift Selector Connector "A"



Push Button Shift Selector Connector "B"

Connector B is not used on Arens CAN Controller

Consult Page 4 of this document for more details about the connector and wire plugs

See Wiring Diagram Notes on following page
 *See Wiring Diagram Notes on following page for more details.

Notes for Wiring Diagram (5 and 6 Speed)

FIELD TECHNICIAN NOTE(s)

- 1) User I/O's (Inputs and Outputs) are determined by the Chassis Manufacturer and / or Body Builder. Typically not all I/O's are used. See OEM / Body Builder documentation for their use and connector information.
- 2) Wire lengths and any bulk-head connector to be specified by the Chassis Manufacturer and / or Body Builder.

CHASSIS MANUFACTURE AND / OR BODY BUILDER NOTE(s):

- 1) Power line fused to a 0.5 amp fuse. Fuses may not be shared with any other vehicle circuitry. Automatic reset-able fuses (for example: bimetal type) are not permitted. Use of automatic reset-able fuses will void warranty.
- 2) All relays and solenoids used on the vehicle installation must be suppressed. Large relays or solenoids have a 0.5 AMP continuous rating or greater must have a diode suppression circuit. Relays less than 0.5 AMPS can use a resistance suppression. All inductive loads that are switched using a vehicle interface module relay must be diode suppressed.
- 3) No Starter or Alternator currents are to be wired in series with the SBW II (Shift By Wire II) system.
- 4) Terminals and Bus Bars used for the SBW II System must have no other systems wired to them.
- 5) Other than the battery and the Bus Bars, the cabling from the vehicle electrical system must not be run parallel to the SBW II system electrical cables.
- 6) Any SBW II System ground or return wire must not be used as a ground point for any other system.
- 7) All SBW II System Power and Ground leads must be disconnected when welding is to be done on the vehicle
- 8) Chassis may not be used as a ground.
- 9) All SBW II System Power and Ground terminations must be tight without multiple connection. Multiple connection may result in loose connections in time.
- 10) Minimum wire gauge to be used for any wire connected to Connector "A" (e.g. Connector D, I/O's, MODE, Overdrive Defeat, Shift Inhibit, Etc.) must be, SAE 20 gage GXL or TXL. See Table 2 for connector information
- 11) All wire must be encased in protective Loom/Conduit
- 12) Wire lengths and any bulk-head connector to be specified by the Chassis Manufacturer and / or Body Builder.

NOTE:

This information is stated here for convenience of our customers only.
 The Part Numbers and Component Related Data may be changed by Delphi without notice.
 Please refer to Delphi for the latest information.

VEHICLE HARNESS

A	Harness connector for Shift Selector communication/signal connection	<u>Delphi Micro-Pack 100W female, 24-way</u>		
	- Connector	qty-1	Delphi 12129225	Color: natural. Material: PBT.
	- Retainer (TPA)	qty-1	Delphi 12129183	Provides Terminal Position Assurance (TPA).
	- Cable Seal	qty-1	OE Selected: Delphi 12110403, all holes open (need plugs) or Delphi 12160558, no holes open (OE must pierce)	-Validated for 0.80 to 0.50 (18 TXL to 20 GXL gage) cross-section cables. The seal can handle 1.67 mm dia to 2.12 mm dia cables. 18 gage recommended if wires are not bundled. -NOTE: 18 gage must be TXL to fit in seal. -NOTE: If seal 12110403 is used, then non-used holes must be plugged with cavity plug 12129557. -NOTE: OE can set up a custom special seal with Delphi, only the holes that are needed are punched.
	- Strain Relief	qty-1	OE Selected (see note for options)	The strain relief is selected by the OE and depends on the application constraints. Examples: a) P/N 12129666, wires exit left. b) P/N 12110155, wires exit right. c) P/N 12160848, wires exit right at a different angle. Many other options exist, OE to contact Delphi-Packard.

-	Terminal- female	TBD	OE to select terminal depending on harness wire gage: Delphi 12084912 for 18 gage (0.80 mm2 cable) thin wall TXL Delphi 12084913 for 20 gage (0.50 mm2)	-Phosphor bronze w/ gold/nickel plating (only option available, needed for light forces). -18 gage recommended if wires are not bundled. See Seal Notes for cable dia limitations.
-	CPA	qty-1 optional	Delphi 12110299, optional, recommended by Arens	Connector Position Assurance.
-	Cavity Plug	as req'd	Delphi 12129557	Used for plugging seal holes, if required. See "Cable Seal Notes" above.

B	8-Pin Connector, not used	<u>Delphi Metri-Pack 280, female, 8-way, -40C to 125C rating</u>		
	connector/seal assembly	qty-1	Delphi 12176335 (includes connector 12176334 and seal 12146444)	-Delphi Packard Drawing no. 1214 6510 TYPE 104.
	TPA Secondary Terminal Lock	qty-1	Delphi 12146443	Terminal Position Assurance
	CPA Secondary Lock	qty-1	Delphi 12129551, optional, recommended by Arens	Connector Position Assurance
	Cable Seal & Cavity Pins	qty-8	Delphi Cable Cavity Plug - Mfg P/N 12010300	-Seal with qty 8 of the Cable Cavity Plugs, as this connector is not used on CAN J1939 controlled SBW II Controllers.

-					Cable X- section	gage
<u>SHIFT SELECTOR (molded in housing)</u>					5.0 mm ²	10
F	Shift Selector communication/signal connection	qty-1 header	Autosplice 21-1042N24PEAA5 male pin-header Delphi Micro-Pack 24 pin	2 by 12, SMT, 3mm centers, 0.99 square, Autopak, L=11.0, H=14.5 30 micro-inch min gold end, 120 micro-inch min tin/lead base plating	3.0 mm ²	12
-					2.0 mm ²	14
-					1.0 mm ²	16
-					0.80 mm ²	18

Wire Harness Multimeter Check (see wiring diagram for connector detail)	
Note:	Pins in bold can only be measured while plugged in
Connector A	
Pin 1 - CAN Low	60 Ohms across pins 1 and 2
Pin 2 - CAN High	
Pin 3 - CAN Shield	0 volts
Pin 4 - User Output 1	As Defined
Pin 5 - Dimmer input	Voltage should change as Dimmer is adjusted with Instrument lights on
Pin 6 – Not Used	
Pin 7 – Not Used	
Pin 8 – Not Used	
Pin 9 - Ground	Ground
Pin 10 - User Input 6	Unused
Pin 11 - User Input 4	Unused
Pin 12 - User Input 2	Unused
Pin 13 - User Defined Input	As Defined
Pin 14 - User Defined Output	As Defined
Pin 15 - User Defined Output	As Defined
Pin 16 – Not Used	
Pin 17 - Ignition	0 volts with key off, 12 or 24 volts with key on
Pin 18 – Not Used	
Pin 19 – Not Used	
Pin 20 – Not Used	
Pin 21 - Power	Power 12 or 24 volts
Pin 22 - User Input 5	Unused
Pin 23 - User Input 3	Unused
Pin 24 - User Input 1	Unused
Connector D	
Pin A - Position 1 Power	+ 5 volts
Pin B - Position 1 Gnd	0 volts
Pin C - Position 1 Output	Voltage between 0.5 volts and 4.5 volts depending on actuator position
Pin D - Position 2 Output	Voltage between 0.5 volts and 4.5 volts depending on actuator position
Pin E - Position 2 Gnd	0 volts
Pin F - Position 2 Power	+ 5 volts

	F	G	H	J
VBATT 1				
VBATT 2				
GND 1				
GND 2				
SHIELD				
CAN H				
CAN L				
VIGN				
USER INPUT 1				
USER INPUT 2				
USER INPUT 3				
USER INPUT 4				
USER OUTPUT 1				
USER OUTPUT 2				
SHIFT INHIBIT				
OVER DRIVE				
MODE OUT				
DIM				
POSITION 1B				
POSITION 2B				
POSITION 1C GND				
POSITION 2C GND				
POSITION 1A POWER				
POSITION 2A POWER				
MOTOR 1A				
MOTOR 1B				
MOTOR 2A				
MOTOR 2B				
USER INPUT 5				
USER INPUT 6				
DO NOT USE				
DO NOT USE				

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