2015 RAM 2500/3500 VSIM USAGE INSTRUCTIONS

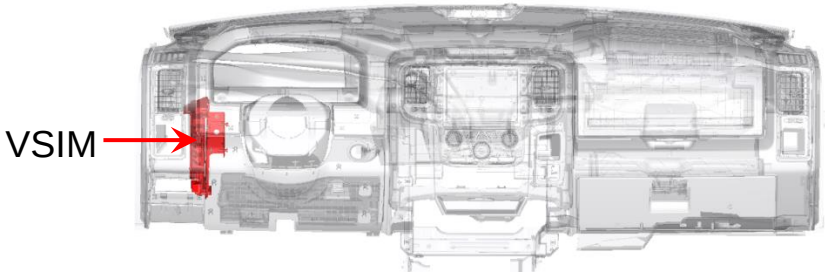
VSIM (VEHICLE SYSTEM INTERFACE MODULE) USAGE INSTRUCTIONS

Overview:

The RAM Truck engineered upfitter module called the VSIM (Vehicle System Interface Module) with sales code "XXS" is standard with Ambulance Prep (sales code AH2), a "must have" option with PTO Prep (sales codes LBN or LBV), and is available as a stand-alone option. It provides a multitude of useful I/O's to increase upfitter friendliness and upfit simplification. Vehicles not ordered with this option from the factory cannot be retrofitted.

Specifics supplied below:

1. Ghost drawings showing the module location within the dash panel.
2. The VSIM includes an upfitter wire harness kit (part number 68211680AA or 68211680AB) consisting of four separate color coded harness bundles. Each individual color harness must only be plugged into its corresponding VSIM connector cavity, see photos below showing harness color installations.
3. A photo of the four individual color coded VSIM upfitter harness bundles. Note that in a few instances an individual wire color is duplicated within a bundle – these duplications are further identified with a paper "flag" showing its circuit number. It's recommended that the upfitter, upon harness bundle routing direction determination(s), install additional harness bundle abrasion protection over each bundle (such as harness convolute).
4. Photos showing module installation within a vehicle and harness bundles.
5. A chart below delineates the circuits within each color harness bundle, circuit number, signal, wire insulation colors, maximum allowable amperage per circuit, and circuit function.
6. A chart below delineates the available 125 kbaud CAN bus messages. If downloadable "DBC" files are needed, they should be requested via the website rambbg@chrysler.com.
7. Note 3: PTO idle speed circuits W541, W542, W543 can only be programmed to function if the vehicle was built with PTO option sales codes LBN or LBV.



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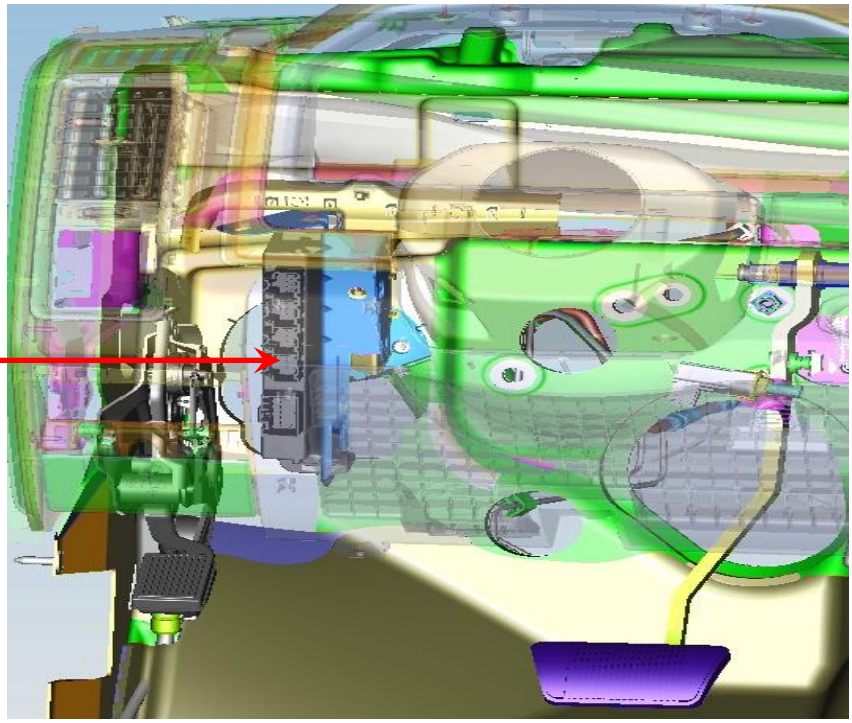

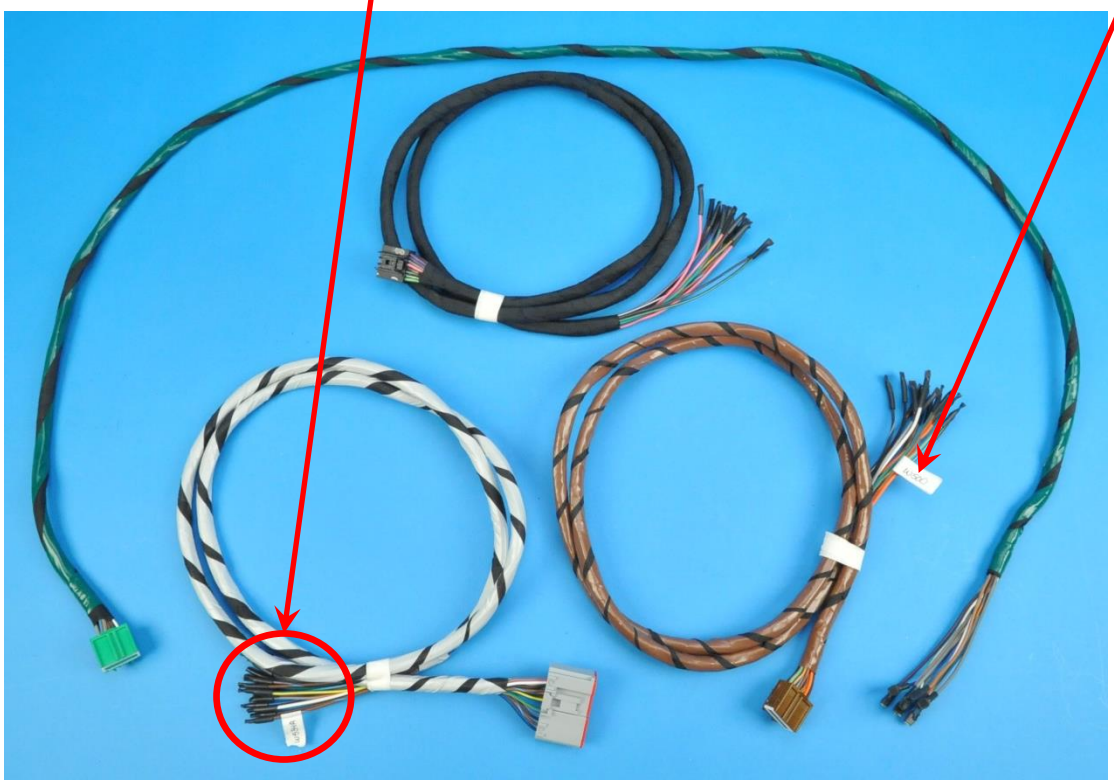

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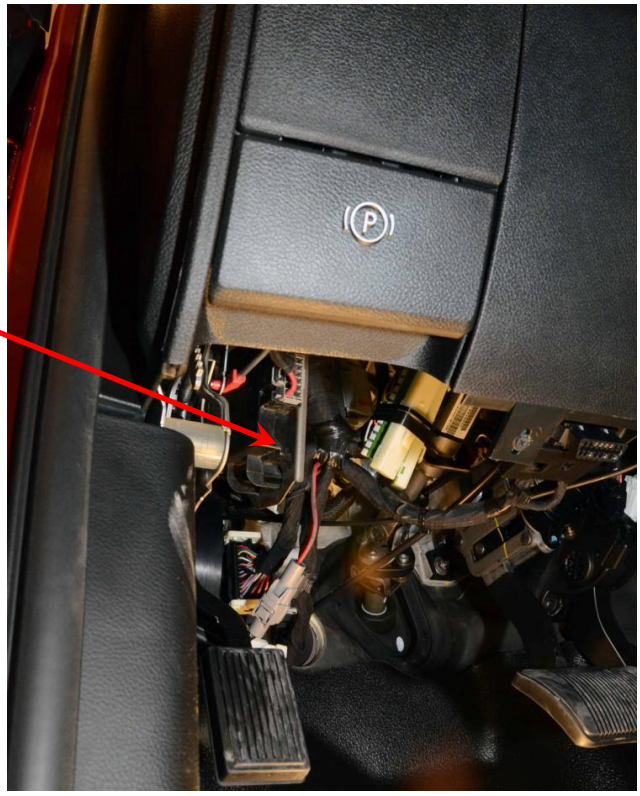

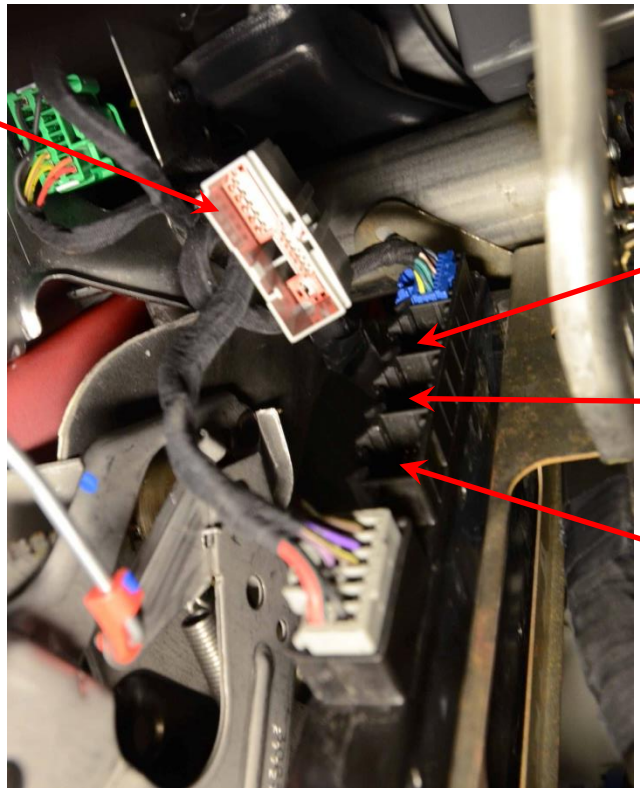

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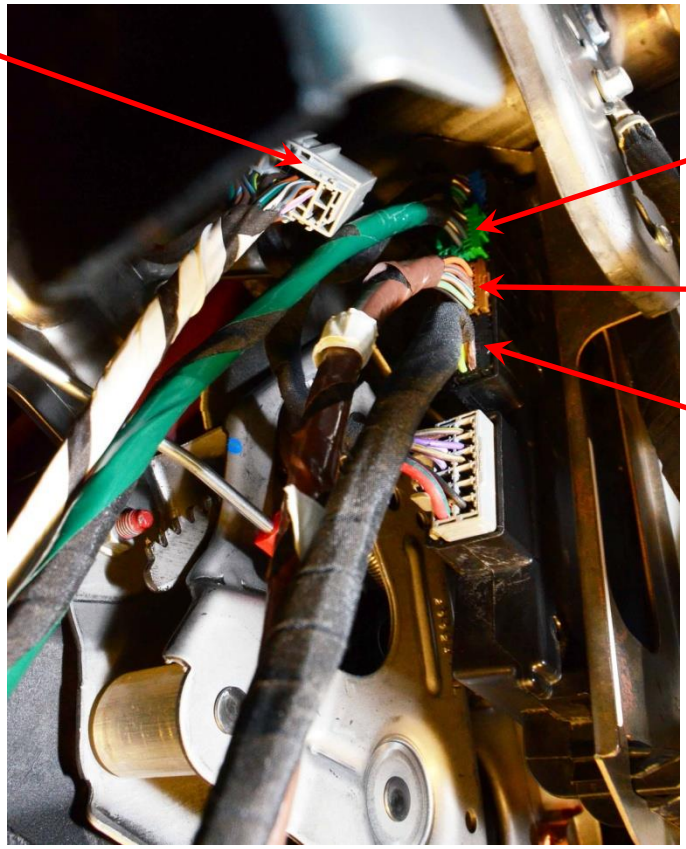

Note: When inserting the VSIM harness connectors an audible “click” will be heard when the connector is fully seated.

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#	Connector Identity	Circuit #	Upfitters Signal	Cavity #	Wire Color	Max. Amps	Function
1	gray 24-cavity	W719	Hazard indicator on - HSD output	2	WT/VT	0.5	open circuit when hazard flashers are off, battery positive voltage (+12V) when hazard flashers are selected
2	gray 24-cavity	W504	Transmission out of "Park" - HSD output	3	BR	0.5	open circuit when gear selector is in Park, battery positive voltage (+12V) when gear selector is in any other position
3	gray 24-cavity	W545	diesel Regeneration (DPF) on - HSD output	4	BR/LB	0.5	open circuit when diesel regeneration is not energized, battery positive voltage (+12V) when it is energized
4	gray 24-cavity	W743	PTO on indicator - HSD output	5	VT/TN	1.0	open circuit when PTO circuit is not energized, battery positive voltage (+12V) when PTO circuit is energized (W708 must be grounded [via PTO pressure switch] for this output to function)
5	gray 24-cavity	W540	MIL lamp on - HSD output	6	BR/DG	0.5	open circuit when MIL is not illuminated, battery positive voltage (+12V) when MIL is illuminated
6	gray 24-cavity	W700	Transmission "Park" position - LSD output	7	YL/DB	0.5	open circuit when gear selector is not in Park, grounded when in Park
7	gray 24-cavity	W701	Transmission "Neutral" position - LSD output	8	DG/YL	0.5	open circuit when gear selector is not in Neutral, grounded when in Neutral
8	gray 24-cavity	W652	HVAC - A/C clutch engaged - LSD output	9	LB/BR	0.5	open circuit when A/C clutch is not engaged, grounded when engaged
9	gray 24-cavity	W532	**CAN communication - side CAN 125+	10	BR/DB	--	125 Kbaud CAN+, use in conjunction with W534; *refer to CAN spreadsheet for available messages
10	gray 24-cavity	W534	**CAN communication - side CAN 125-	11	BR/LB	--	125 Kbaud CAN-, use in conjunction with W532; *refer to CAN spreadsheet for available messages
11	gray 24-cavity	W702	Transmission "Reverse" position - LSD output	12	DG/DB	0.5	open circuit when gear selector is not in Reverse, grounded when in Reverse
12	gray 24-cavity	W654	HVAC - when A/C is selected via dash switch - LSD output	14	LB/OR	0.5	open circuit when A/C has not been selected, grounded when A/C has been selected
13	gray 24-cavity	W711	Cargo Lamp output - LSD output	15	WT/TN	0.5	activated via W506, relay driver, open circuit when W506 is "OFF", grounded when is "ON", times out after 30 minutes, re-enable by cycling W506 switch
14	gray 24-cavity	W703	Transmission "Drive" position - LSD output	16	DG/LB	0.5	open circuit when gear selector is not in Drive, grounded when in Drive
15	gray 24-cavity	W720	any Door Ajar - HSD output	17	VT/OR	0.5	open circuit when all doors are closed, battery positive voltage (+12V) when any door is ajar
16	Black 16-cavity	W505	howler Siren disable - HSD output	1	LG	0.25	open circuit when vehicle speed is below 25MPH, battery positive voltage (+12V) when vehicle speed is 25MPH or above
17	Black 16-cavity	W513	Horn activation - HSD output	2	BR/GY	0.5	open circuit when horn not pressed (not energized), battery positive voltage (+12V) when pressed (energized)
18	Black 16-cavity	W517	side Airbag deployed - HSD output	3	BR/LG	0.5	open circuit when side airbags have not deployed during current key cycle, battery positive voltage (+12V) upon airbag deployment during current key on cycle
19	Black 16-cavity	W662	Tire Pressure Monitor active - HSD output (applicable only to RAM 2500 under 10,000 GVW)	4	VT/YL	0.5	open circuit when the Tire Pressure Monitor (TPM) indicator lamp is off, battery positive voltage (+12V) when the TPM indicator lamp is active
20	Black 16-cavity	W735	Power feed, "Off" - HSD output	5	PK	0.5	open circuit when key position is in "Accessory/Run/Start", battery positive voltage (+12V) when key position is in "Off"

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#	Connector Identity	Circuit #	Upfitters Signal	Cavity #	Wire Color	Max. Amps	Function
21	Black 16-cavity	W710	driver's Seat Belt not latched - HSD output	6	LG/VT	0.25	open circuit when the drivers seat belt is latched, battery positive voltage (+12V) when the drivers seat belt is not latched (key must be in "run" position)
22	Black 16-cavity	W707	Oil Pressure warning signal - LSD digital output	7	VT/GY	0.1	oil pressure signal: Pulse Width Modulation (PWM) between open circuit and battery negative voltage (0V), 100Hz, linear with 0% PWM =0PSI, and 100% PWM=147PSI
23	Black 16-cavity	W733	Voltage gauge - LSD digital output	8	VT	0.5	battery voltage signal: Pulse Width Modulation (PWM) between open circuit and battery ground, 100Hz, linear with 0% PWM =5V, and 100% PWM=18V
24	Black 16-cavity	W518	front Airbag deployed - HSD output	9	BR/DG	0.5	open circuit when front airbags have not deployed during current key cycle, battery positive voltage (+12V) upon airbag deployment during current key on cycle
25	Black 16-cavity	W515	Panic Alarm activation - HSD output	10	BR/LB	0.5	open circuit when panic alarm is not active, battery positive voltage (+12V) when panic alarm is active (key must be in "off" or "accessory" position)
26	Black 16-cavity	W726	Service Brake pedal depressed - HSD output	11	DG/OR	0.25	open circuit when the service brake pedal is not pressed, battery positive voltage (+12V) when the brake pedal is depressed (key may be in any position)
27	Black 16-cavity	W734	Power feed, "Accessory" - HSD output	12	PK/GY	0.5	open circuit when key position is in "Off/Run/Start", battery positive voltage (+12V) when key position is in "Accessory"
28	Black 16-cavity	W736	Power feed, "Run/Crank" - HSD output	13	PK/YL	0.5	open circuit when key position is in "Off/Accessory", battery positive voltage (+12V) when key position is in "Run" and "Cranking Engine"
29	Black 16-cavity	W538	Fuel level signal LSD digital output	14	BR/OR	0.1	fuel level signal: Pulse Width Modulation (PWM) between open circuit and battery negative voltage (0V), 100Hz, linear with 0% PWM = empty tank, and 100% PWM = full tank
30	Black 16-cavity	W744	engine RPM signal - LSD digital output	15	BR/WT	0.25	engine RPM signal: modulation between open circuit and ground, output with 0.2Hz/RPM (12 pulses per minute per 1 RPM) @ 50% duty cycle
31	Black 16-cavity	W524	vehicle MPH speed signal, LSD digital output	16	BR/YL	0.1	vehicle speed signal: modulation between open circuit and ground, output with 10Hz/MPH (600 pulses per minute per 1 MPH) 50% duty cycle
32	Brown 16-cavity	W521	Cluster/Auxiliary lighting dimmer, LSD digital output	1	BR/WT	0.1	using the vehicles instrument cluster dimmer control - will dim auxiliary lighting: PWM between open circuit and ground, 100Hz, linear with 0%PWM = zero intensity, and 100%PWM = full intensity
33	Brown 16-cavity	W722	Door Lock double lock function - "Unlock" all, LSD output	2	DG/TN	0.5	relay driver, mirrors vehicle unlock request with a ground potential for 500ms (key need not be in switch)
34	Brown 16-cavity	W503	Auxiliary upfitter added flashing lights front output, LSD output	3	TN/VT	0.25	relay driver for front auxiliary light(s), open circuit when W500 is "OFF", grounded (flash) on/off at 80 flashes per minute (1.333Hz square wave @ 50% duty cycle) when W500 is "ON"

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#	Connector Identity	Circuit #	Upfitters Signal	Cavity #	Wire Color	Max. Amps	Function
35	Brown 16-cavity	W506	auxiliary Cargo Lamp switch signal - digital input	4	WT	--	cargo lamp ON/OFF, use N.O. switch to ground to activate a relay via W711, times out after 30 minutes, re-enable by cycling switch
36	Brown 16-cavity	W501	Wig Wag switch signal rear, digital input	5	BR/VT	--	when grounded actuates Wig Wag vehicle rear stop/turn lamps, 80 flashes per minute (1.3Hz square wave @ 50% duty cycle), also actuates circuit W502 (key need not be in switch)
37	Brown 16-cavity	W640	Radio mute - digital input Functions only on sales code RA3/RA4 radios.	6	GY	--	when grounded mutes the vehicle radio (via vehicles CAN messaging)
38	Brown 16-cavity	W708	PTO pressure switch - digital input	8	OR/BR	--	**MANDATORY CIRCUIT FOR PTO USEAGE** When grounded via PTO pressure switch, provides feedback to the vehicle that the PTO has pressure; controls PTO actuation and vehicles dash PTO switch LED illumination status. Reference the PTO Operation & Installation Guide chapter, "PTO Quick Start Information" section, pages 2&3. Use the pass through circuit G425 (VT/YL) to interconnect the PTO pressure switch to this circuit W708.
39	Brown 16-cavity	W721	Door Lock double lock function - "Lock" all, LSD output	9	LG/TN	0.5	relay driver, mirrors vehicle lock request with a battery ground potential for 500ms (key need not be in switch)
40	Brown 16-cavity	W502	Auxiliary upfitter added flashing lights rear output, LSD output	10	TN/BR	0.25	relay driver for rear auxiliary light(s), open circuit when W501 is "OFF", grounded (flash) on/off at 80 flashes per minute (1.333Hz square wave @ 50% duty cycle) when W501 is "ON"
41	Brown 16-cavity	W725	Park Brake applied - LSD output	11	DG/WT	0.5	relay driver, open circuit when park brake not set, grounded when park brake set
42	Brown 16-cavity	W500	Wig Wag switch signal front lights, digital input **NOTE**: this function must **not** be used on Laramie, Long Horn, nor 7X91 sales code Power Wagon's - all of which which are equipped with Projector Headlamps (sales code LMC)	12	BR/OR	--	when grounded actuates Wig Wag vehicles front high beams, 80 flashes per minute (1.3Hz square wave @ 50% duty cycle), also actuates circuit W503 (key needs to be in switch)
43	Brown 16-cavity	W537		13	BR/OR	--	this wire is included in the VSIM upfitter harness but is not used
44	Brown 16-cavity	W536	Panic alarm **and** Horn switch mute - digital input	14	BR/YL	--	when grounded mutes the vehicle horns (via vehicles CAN messaging)
45	Brown 16-cavity			15	OR		this wire is included in the VSIM upfitter harness but is not used
46	Brown 16-cavity	W709	Ground - ground return	16	BK	--	a source for ground - **for use on VSIM switched digital inputs only**
47	Green 16-cavity	W544	Split Shaft PTO - digital input	2	GY	--	when grounded signals the controller it's OK to initiate split shaft PTO
48	Green 16-cavity			3	DB		this wire is included in the VSIM upfitter harness but is not used

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#	Connector Identity	Circuit #	Upfitters Signal	Cavity #	Wire Color	Max. Amps	Function
49	Green 16-cavity	W509	rear Bulb Out detection off - digital input	4	WT/BR	--	when grounded turns off rear (turn/run/brake/license plate/reverse/CHMSL/cargo) bulb fault detection; allows use of rear LED's in place of incandescent bulbs; **may be grounded either before OR after disconnecting the vehicles OEM incandescent bulbs**
50	Green 16-cavity	W541	PTO idle speed 1 - digital input	5	GY/OR	--	***NOTE:*** *vehicle must have been built with PTO option sales code LBN or LBV for the cluster to have the necessary programing software for this feature.* When grounded sets the PTO Remote 1 RPM (Set the desired RPM for this circuit by using the instrument cluster programing screen, select: PTO/Remote/RPM Preset 1 - then set the desired RPM); speed 1 trumps F425 @ 900RPM and speeds 2&3; RPM up/down ramp rate is 200RPM/sec.
51	Green 16-cavity	W543	PTO idle speed 3 - digital input	6	GY/YL	--	***NOTE:*** *vehicle must have been built with PTO option sales code LBN or LBV for the cluster to have the necessary programing software for this feature.* When grounded sets the PTO Remote 3 RPM (Set the desired RPM for this circuit by using the instrument cluster programing screen, select: PTO/Remote/RPM Preset 3 - then set the desired RPM), speed 3 trumps F425 @ 900RPM; is trumped by speeds 1 or 2; RPM up/down ramp rate is 200RPM/sec.
52	Green 16-cavity	W742	Throttle Valve actuator signal - HSD output	7	BR/OR	0.5	open circuit when Electronic Throttle indicator is not illuminated, battery positive voltage (+12V) when Electronic Throttle indicator is illuminated
53	Green 16-cavity	W656	HVAC - upfitter remote A/C select - digital input	11	LB	--	**NOTE: for 3500/4500/5500 Chassis Cabs only equipped with either Ambulance Prep (AH2), or with Touch Screen radios (RH3/RH4) combined with the VSIM module (XXS).** Initiated on vehicles built starting Feb., 2014. When grounded it commands the vehicle A/C system to be activated. If the vehicle A/C isn't on, this input will activate the Freon compressor and turn the vehicles blower to "Low" (3-knob control head); or last selected blower speed (on the touch screen controls). Once this circuit is activated (grounded), the vehicles blower speed control can be used to control the vehicles blower speeds BUT the blower-A/C system cannot be turned completely off. When this circuit is deactivated (un-grounded), the vehicles A/C controls return to normal operation.
54	Green 16-cavity	W546	Separated rear tail lighting - digital input	12	TN/GY	--	when grounded rear stop/turn lamps become turn only (via CAN message)
55	Green 16-cavity	W542	PTO idle speed 2 - digital input	13	GY/BR	--	***NOTE:*** *vehicle must have been built with PTO option sales code LBN or LBV for the cluster to have the necessary programing software for this feature.* When grounded sets the PTO Remote 2 RPM (Set the desired RPM for this circuit by using the instrument cluster programing screen, select: PTO/Remote/RPM Preset 2 - then set the desired RPM); speed 2 trumps F425 @ 900RPM, is trumped by speed 1 but trumps speed 3; RPM up/down ramp rate is 200RPM/sec.

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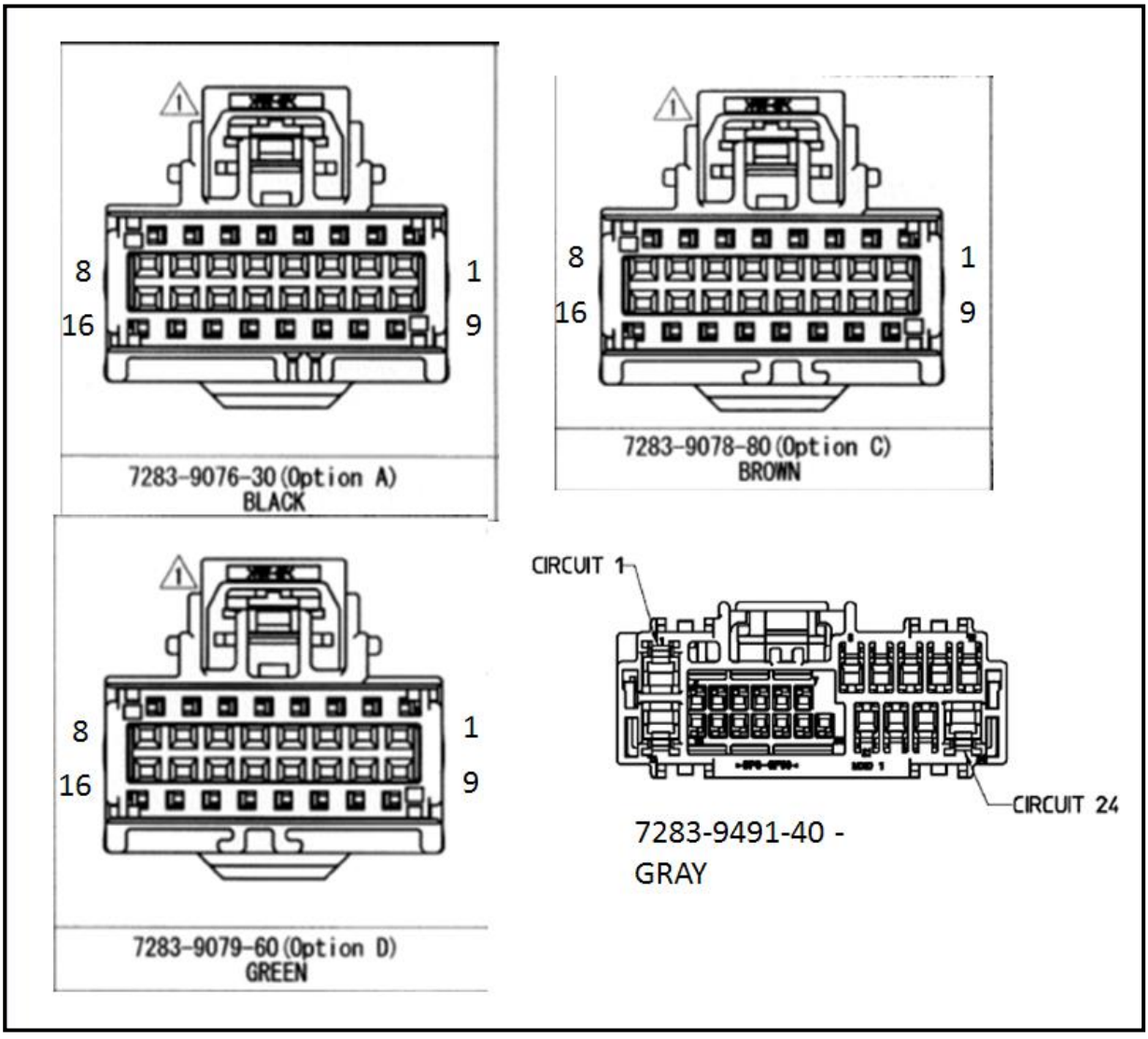
#	Connector Identity	Circuit #	Upfitters Signal	Cavity #	Wire Color	Max. Amps	Function
56	Green 16-cavity	W522	engine running Hour Meter - HSD output	14	BR/VT	0.5	open circuit when engine RPM <450, battery positive voltage (+12V) when RPM >450
57	Green 16-cavity	W699	Park Lamp on - HSD output	15	WT/LG	0.5	open circuit when park lamps are not on, battery positive voltage (+12V) when park lamps are on
			1. LSD=low side driver HSD=high side driver				
	7/21/2014		2. within a bundle one wire of two duplicate colors will be labeled with its circuit number, the non-labeled wire will be the other circuit number with that color				
			3. **readable CAN messages are delineated on the separate CAN spreadsheet; "DBC" files available via request to the rambbg@chrysler.com.				



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VSIM CAN BUS Messages

#	Name	Unit	Comment	FlexKomComment	FlexKomSigName
1	WakeupRsn_VSIM		Wakeup reason VSIM	Mode 2 of NM_Ud_Srv	Wakeup_VSIM
2	WakeupCnt		Counter for module wakeup states during network sleep	Mode 2 of NM_Ud_Srv	Wakeup_VSIM
3	VIN_MSG		VIN Message Information	Vin Information	VIN_INFO
4	VEH_SPEED	km/h	Vehicle speed	Vehicle speed	VEH_SPEED
5	RT_DIST	cm	Distance Traveled by Right Wheel	Distance traveled by wheels	ESP_DIST
6	PRND_STAT		PRND Status	PRND Status	PRND_STAT
7	PANEL_INTS	%	Panel-/display intensity	Interior lighting status (VSIM bus)	Int_LT_Stat
8	OIL_PRESS	kPaG	Oil pressure	Oil pressure	OIL_PRESS
9	ODO	km	Odometer	Odometer	ODO
10	Nw_Id		Network identification no.	Network identification no.	Nw_Id
11	NM_Ud_Srv		Network management userdata service no.	Network management state	NM
12	NM_Ud_Launch		Network management userdata launch type	Network management state	NM
13	NM_Successor		Network management logical successor	Network management state	NM
14	NM_Mode		Network management mode	Network management state	NM
15	MIL_LMP_STAT		Malfunction indicator lamp status	Malfunction indicator lamp status	MIL_LMP_STAT
16	LT_DIST	cm	Distance Traveled by Left Wheel	Distance traveled by wheels	ESP_DIST
17	HL_SW_MODE		Headlamp switch mode	Headlamp switch mode	HL_SW_MODE
18	EngHours	Hours	Engine hours	Engine hours	EngHours
19	ENG_RPM	rpm	Engine revolutions per minute	Engine revolutions per minute	ENG_RPM
20	DRV_SEATBELT		Drivers seat belt status	Drivers seat belt status	DRV_SEATBELT
21	CmdIgnStat		Commanded ignition switch status	Commanded ignition switch status	CmdIgnStat
22	BRK_SW		Brake switch status	Brake switch status	BRK_SW
23	BATT_VOLT	Volts	System voltage	System voltage	BATT_VOLT
24	AvgFuelLvl	liters	Average filtered fuel level in liters	Average filtered fuel level in liters	AvgFuelLvl
25	X_IMPACT		Any impact event (VSIM bus)	Impact events (VSIM bus)	Impact
26	AudMuteRq		Audio mute request from VSIM	Audio mute request from VSIM	AudMuteRq
27	DAY_LGT_MD		Day light brightness mode	Night=[0], Day=[1]	Interior lighting status (VSIM bus)
28	DRV_AJAR		Driver door ajar	Door ajar	DR_AJAR
29	FtWigWagRq		Front wig wag request	Exterior lighting wig wag packet	WigWagPkt
30	HORN_RQ		Horn On Request = [1]	Horn On Request = [1]	HORN_RQ
31	L_R_AJAR		Left rear door ajar	Door ajar	DR_AJAR
32	Impact_F		Less severe front event	Impact events (VSIM bus)	Impact
33	NM_Outfitter		Network management	Network management	NM_Outfitter
34	NM_Sleep_Ack		Network management sleep acknowledge	Network management state	NM
35	NM_Sleep_Ind		Network management sleep indication	Network management state	NM
36	PNC_ALM_MUTE		Panic alarm mute	Panic alarm mute	PNC_ALM_MUTE
37	PNC_MD_ACT		Panic mode active	Panic mode active	PNC_MD_ACT
38	PARK_LMP_ON		Parklamps are on	off=[0], on=[1]	Parklamps are on
39	PSG_AJAR		Passenger door ajar	Door ajar	DR_AJAR
40	RrWigWagRq		Rear wig wag request	Exterior lighting wig wag packet	WigWagPkt
41	R_R_AJAR		Right rear door ajar	Door ajar	DR_AJAR
42	Awake_Diag_Actv		Stay awake for diagnostics active	Mode 15 of NM_Ud_Srv	Awake_VSIM
43	Awake_NwSt		Stay awake for network startup	Mode 15 of NM_Ud_Srv	Awake_VSIM
44	SupHrnRq		Suppress horn request	Suppress horn request	SupHrnRq
45	LT_TURN_ON		Turn indication left is on	Turn indication status	TURN_STAT
46	RT_TURN_ON		Turn indication right is on	Turn indication status	TURN_STAT
47	VIN_DATA		VIN Digits (8 bit ascii encoded)	Vin Information	VIN_INFO