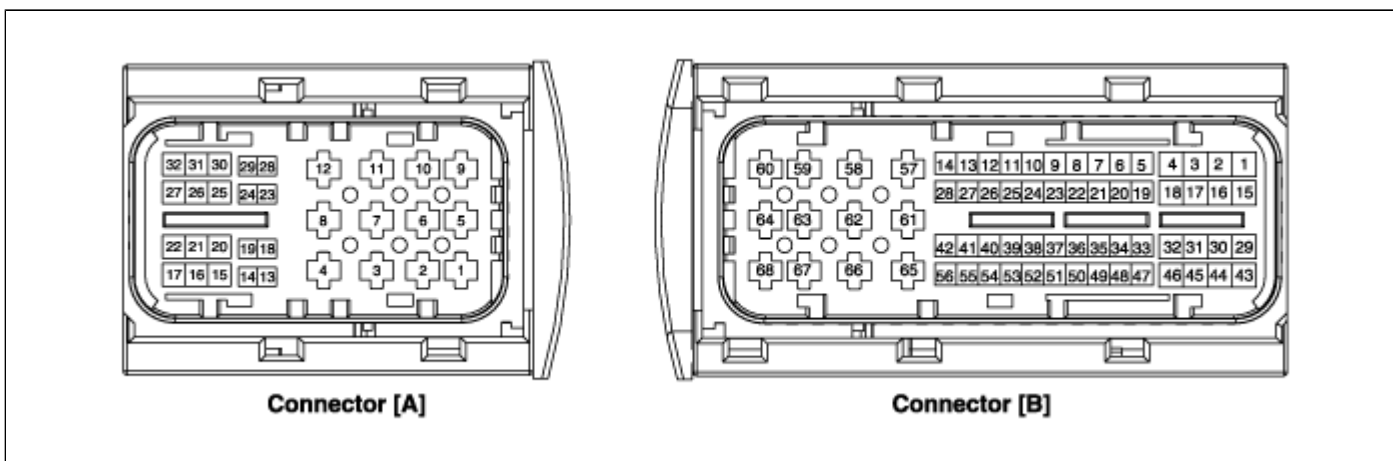


1. TCM Connector and Terminal Function



2. TCM Terminal Function

Connector [A]

Pin	Description	Pin	Description
1	Clutch Actuator (Clutch Motor 1 (ODD)_Phase V)	17	-
2	Clutch actuator (Clutch Motor 2 (EVEN) Phase V)	18	Clutch Actuator (Clutch Motor 1 (ODD)_HALL 1)
3	Select Actuator (Select Solenoid 2 (EVEN)_Ground)	19	Clutch Actuator (Clutch Motor 1 (ODD)_Sensor Supply)
4	Select Actuator (Select Solenoid 1 (ODD) Push)	20	Select Actuator (Select Solenoid 1 (ODD)_Sensor Sensor Supply)
5	Clutch Actuator (Clutch Motor 1 (ODD)_Phase U)	21	Select Actuator (Select Solenoid 2 (EVEN)_Sensor Sensor Supply)
6	Clutch Actuator (Clutch Motor 2 (EVEN)_Phase U)	22	Select Actuator (Select Solenoid 2 (EVEN)_Sensor Output)
7	Select Actuator (Select Solenoid 1 (ODD)_Ground)	23	Clutch Actuator (Clutch Motor 2 (EVEN)_HALL 2)
8	Select Actuator (Select Solenoid 2 (EVEN)_ Pull)	24	Clutch Actuator (Clutch Motor 2 (EVEN)_HALL 3)
9	Clutch Actuator (Clutch Motor1 (ODD)_Phase W)	25	Clutch Actuator (Clutch Motor 2 (EVEN)_Ground)
10	Clutch Actuator (Clutch Motor 2 (EVEN)_Phase W)	26	Select Actuator (Select Solenoid 1 (ODD)_Sensor Output)
11	Select Actuator (Select Solenoid 1 (ODD) Pull)	27	-
12	Select Actuator (Select Solenoid 2 (EVEN) Push)	28	Clutch Actuator (Clutch Motor 2 (EVEN)_HALL 1)
13	Clutch Actuator (Clutch Motor 1 (ODD)_HALL 2)	29	Clutch Actuator (Clutch Motor 2 (EVEN)_Sensor Supply)
14	Clutch Actuator (Clutch Motor (ODD)_HALL 3)	30	Select Actuator (Select Solenoid 1 (ODD)_Sensor Ground)
15	Clutch Actuator (Clutch Motor 1 (ODD)_Ground)	31	Select Actuator (Select Solenoid 2 (EVEN)_Sensor Ground)
16	-	32	-

Connector [B]

Pin	Description	Pin	Description
-----	-------------	-----	-------------

1	-	35	-
2	-	36	-
3	ON / START Input	37	-
4	Paddle Shift (Up) Switch signal	38	-
5	Inhibitor Switch "P" Input signal	39	-
6	Inhibitor Switch "R" Input signal	40	-
7	Inhibitor Switch "D" Input signal	41	Shift Actuator (Shift Motor 2 (EVEN) _HALL 2)
8	Sports mode "Down" shift	42	Shift Actuator (Shift Motor 2 (EVEN) _HALL 3)
9	Clutch Speed Sensor (EVEN) Ground	43	Inhibitor Switch "M" Input signal
10	-	44	CAN1 Communication Port1 High
11	-	45	CAN1 Communication Port1 Low
12	-	46	-
13	Shift Actuator (Shift Motor 1 (ODD) _HALL 2)	47	-
14	Shift Actuator (Shift Motor 1 (ODD) _HALL 3)	48	Flex ray High (BP)
15	-	49	Input Speed Sensor Supply 1 (ODD)
16	-	50	Input Speed Signal 1 (ODD)
17	Battery Power Low VBD	51	-
18	Paddle Shift Down signal	52	-
19	Shift Lever Select Switch	53	-
20	Inhibitor Switch "N" Input signal	54	Shift Actuator (Shift Motor 2 (EVEN) _Sensor Supply)
21	Sports mode "Up" shift	55	Shift Actuator (Shift Motor 2 (EVEN) _HALL 1)
22	-	56	Shift Actuator (Shift Motor 2 (EVEN) _Sensor Ground)
23	Input Speed Sensor Supply 2 (EVEN)	57	Power Ground 1 for High Current Modules
24	5V spare Sensor Supply output	58	Power Ground 2 for High Current Modules
25	-	59	Shift Actuator (Shift Motor 2 (EVEN)_Phase W)
26	Shift Actuator (Shift Motor 1 (Odd)_Sensor Supply)	60	Shift Actuator (Shift Motor 1 (ODD)_Phase W)
27	Shift Actuator (Shift Motor 1 (ODD)_HALL 1)	61	Power Ground 3 for High Current Modules
28	Select Actuator (Shift Motor 1 (ODD)_Sensor Ground)	62	-
29	-	63	Shift Actuator (Shift Motor 2 (EVEN)_Phase V)
30	CAN2 Communication Port2 High	64	Shift Actuator (Shift Motor 1 (ODD)_Phase V)
31	CAN2 Communication Port2 Low	65	Motor Sensor Supply Voltage 1 from Direct Battery
32	-	66	Motor Sensor Supply Voltage 2 from Direct Battery
33	-	67	Shift Actuator (Shift Motor 2 (EVEN)_Phase U)
34	Flex ray bus, BM	68	Shift Actuator (Shift Motor 1 (ODD)_Phase U)

3. Terminal input/output signal

Connector [A]

Pin	Description	Condition	Input / output value	
			Type	Level
1	Clutch Actuator (Clutch Motor 1 (ODD)_Phase V)	Low	Output	0V
		PWM		0V - Battery voltage
2	Clutch actuator (Clutch Motor 2 (EVEN) Phase V)	Low	Output	0V
		PWM		0V - Battery voltage
3	Select Actuator (Select Solenoid 2 (EVEN)_Ground)	Static on	Output	0V
4	Select Actuator (Select Solenoid 1 (ODD) Push)	On	Output	9V
		Off		0V
5	Clutch Actuator (Clutch Motor 1 (ODD)_Phase U)	Low	Output	0V
		PWM		0V - Battery voltage
6	Clutch Actuator (Clutch Motor 2 (EVEN)_Phase U)	Low	Output	0V
		PWM		0V - Battery voltage
7	Select Actuator (Select Solenoid 1 (ODD) Ground)	Static on	Output	0V
8	Select Actuator (Select Solenoid 2 (EVEN)_ Pull)	On	Output	9V
		Off		0V
9	Clutch Actuator (Clutch Motor1 (ODD)_Phase W)	Low	Output	0V
		PWM		0V - Battery voltage
10	Clutch Actuator (Clutch Motor 2 (EVEN)_Phase W)	Low	Output	0V
		PWM		0V - Battery voltage
11	Select Actuator (Select Solenoid 1 (ODD) Pull)	On	Output	9V
		Off		0V
12	Select Actuator (Select Solenoid 2 (EVEN) Push)	On	Output	9V
		Off		0V
13	Clutch Actuator (Clutch Motor 1 (ODD)_HALL 2)	High	Input	4.5V
		Low		0V
14	Clutch Actuator (Clutch Motor 1 (ODD)_HALL 3)	High	Input	4.5V
		Low		0V
15	Clutch Actuator (Clutch Motor 1 (ODD)_Ground)	Ground	Ground	0V
16	-	ã	ã	ã
		ã		ã
17	-	ã	ã	ã
		ã		ã
18	Clutch Actuator (Clutch Motor 1 (ODD)_HALL 1)	High	Input	4.5V
		Low		0V
19	Clutch Actuator (Clutch Motor 1 (ODD)_Sensor Supply)	-	Power	8.75V
20	Select Actuator (Select Solenoid 1 (ODD)_Sensor Sensor Supply)	-	Power	8.75V
	Select Actuator (Select Solenoid 2			

21	(EVEN)_Sensor Sensor Supply)	-	Power	8.75V
22	Select Actuator (Select Solenoid 2 (EVEN)_Sensor Ouput)	High	Input	4V
		Low		1V
23	Clutch Actuator (Clutch Motor 2 (EVEN)_HALL 2)	High	Input	4.5V
		Low		0V
24	Clutch Actuator (Clutch Motor 2 (EVEN)_HALL 3)	High	Input	4.5V
		Low		0V
25	Clutch Actuator (Clutch Motor 2 (EVEN)_Ground)	Ground	Ground	0V
26	Select Actuator (Select Solenoid 1 (ODD)_Sensor Output)	High	Input	4V
		Low		1V
27	-	ã	ã	ã
		ã		ã
28	Clutch Actuator (Clutch Motor 2 (EVEN)_HALL 1)	High	Input	4.5V
		Low		0V
29	Clutch Actuator (Clutch Motor 2 (EVEN)_Sensor Supply)	-	Power	9V < Battery voltage < 16V
30	Select Actuator (Select Solenoid 1 (ODD)_Sensor Ground)	Ground	Ground	0V
31	Select Actuator (Select Solenoid 2 (EVEN)_Sensor Ground)	Ground	Ground	0V
32	-	ã	ã	ã
		ã		ã

Connector [B]

Pin	Description	Condition	Input / output value	
			Type	Level
1	ã	ã	ã	ã
		ã		ã
2	ã	ã	ã	ã
		ã		ã
3	ON / START Input	-	Power	9V < Battery voltage < 16V
4	Paddle Shift (Up) Switch signal	High	Input	9V < Battery voltage < 16V
		Low		0V
5	Inhibitor Switch "P" Input signal	High	Input	9V < Battery voltage < 16V
		Low		0V
6	Inhibitor Switch "R" Input signal	High	Input	9V < Battery voltage < 16V
		Low		0V
		High		9V < Battery voltage < 16V

7	Inhibitor Switch "D" Input signal		Input	
		Low		0V
8	Sports mode "Down" shift	High	Input	9V < Battery voltage < 16V
		Low		0V
9	Clutch Speed Sensor (EVEN) Ground	High	Input	0.448V
		Low		0.224V
10	-	ã	ã	ã
		ã		ã
11	-	ã	ã	ã
		ã		ã
12	-	ã	ã	ã
		ã		ã
13	Shift Actuator (Shift Motor 1 (ODD) _HALL 2)	High	Input	4.5V
		Low		0.8
14	Shift Actuator (Shift Motor 1 (ODD) _HALL 3)	High	Input	4.5V
		Low		0.8
15	-	ã	ã	ã
		ã		ã
16	-	ã	ã	ã
		ã		ã
17	Battery Power Low VBD	-	Power	9V < Battery voltage < 16V
18	Paddle Shift Down signal	High	Input	9V < Battery voltage < 16V
		Low		0V
19	Shift Lever Select Switch	High	Input	9V < Battery voltage < 16V
		Low		0V
20	Inhibitor Switch "N" Input signal	High	Input	9V < Battery voltage < 16V
		Low		0V
21	Sports mode "Up" shift	High	Input	9V < Battery voltage < 16V
		Low		0V
22	-	ã	ã	ã
		ã		ã
23	Input Speed Sensor Supply 2 (EVEN)	-	Power	8.75V
24	5V spare Sensor Supply output	-	Power	5V
25	-	ã	ã	ã
		ã		ã
26	Shift Actuator (Shift Motor 1 (Odd)_Sensor Supply)	ã	Power	8.75V
		High		

27	Shift Actuator (Shift Motor 1 (ODD)_HALL 1)	Low	Input	4.5V / 0.8V
28	Shift Actuator (Shift Motor 1 (ODD)_Sensor Ground)	Ground	Ground	0V
29	-	ã	ã	ã
		ã		ã
30	CAN2 Communication Port2 High	Rec./Dom	CAN Line	Recessive : 2.5V Dominant : 3.5V
31	CAN2 Communication Port2 Low	Rec./Dom	CAN Line	Recessive : 2.5V Dominant : 1.5V
32	-	ã	ã	ã
		ã		ã
33	-	ã	ã	ã
		ã		ã
34	Flex ray bus, BM	Idle	CAN Line	Idle : 2.5V
		Differential		Differential : 2.0 V / 3.0 V
35	-	ã	ã	ã
		ã		ã
36	-	ã	ã	ã
		ã		ã
37	-	ã	ã	ã
		ã		ã
38	-	ã	ã	ã
		ã		ã
39	-	ã	ã	ã
		ã		ã
40	-	ã	ã	ã
		ã		ã
41	Shift Actuator (Shift Motor 2 (EVEN)_HALL 2)	High	Input	4.5V
		Low		0.8V
42	Shift Actuator (Shift Motor 2 (EVEN)_HALL 3)	High	Input	4.5V
		Low		0.8V
43	Inhibitor Switch "M" Input signal	High	Input	9V < Battery voltage < 16V
		Low		0V
44	CAN1 Communication Port1 High	Idle	CAN Line	ã
		Differential		ã
45	CAN1 Communication Port1 Low	Idle./DiFF	Rec./Dom	Recessive : 2.5V Dominant : 3.5V
46	-	ã	ã	ã
		ã		ã
		ã		ã

47	-	ã	ã	ã
48	Flex ray High (BP)	Idle./DiFF	CAN Line	Idle : 2.5V Differenital : 2.0V / 3.0V
49	Input Speed Sensor Supply 1 (ODD)	-	Power	8.75V ã
50	Input Speed Signal 1 (ODD)	High Low	Input	0.448V 0.224V
51	-	ã ã	ã	ã ã
52	-	ã ã	ã	ã ã
53	-	ã ã	ã	ã ã
54	Shift Actuator (Shift Motor 2 (EVEN)_Sensor Supply)	-	Power	8.75V
55	Shift Actuator (Shift Motor 2 (EVEN)_HALL 1)	High Low	Input	4.5V 0.8V
56	Shift Actuator (Shift Motor 2 (EVEN)_Sensor Ground)	Ground	Ground	Ground
57	Power Ground 1 for High Current Modules	Ground	Ground	Ground
58	Power Ground 2 for High Current Modules	Ground	Ground	Ground
59	Shift Actuator (Shift Motor 2 (EVEN)_Phase W)	Low PWM	Output	0V 0V-Battery voltage
60	Shift Actuator (Shift Motor 1 (ODD)_Phase W)	Low PWM	Output	0V 0V-Battery voltage
61	Power Ground 3 for High Current Modules	Ground	Ground	Ground
62	-	ã ã	ã	ã ã
63	Shift Actuator (Shift Motor 2 (EVEN)_Phase V)	Low PWM	Output	0V 0V-Battery voltage
64	Shift Actuator (Shift Motor 1 (ODD)_Phase V)	Low PWM	Output	0V 0V-Battery voltage
65	Motor Sensor Supply Voltage 1 from Direct Battery	-	Power	9V < Battery voltage < 16V
66	Motor Sensor Supply Voltage 2 from Direct Battery	-	Power	9V < Battery voltage < 16V
67	Shift Actuator (Shift Motor 2 (EVEN)_Phase U)	Low PWM	Output	0V 0V-Battery voltage
68	Shift Actuator (Shift Motor 1 (ODD)_Phase U)	Low PWM	Output	0V 0V-Battery voltage

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