

5.3 Common Powertrain Controller

The Common Powertrain Controller (CPC) has three 18-pin connectors and one 21-pin connector. The following sections contain the connector pin-outs for truck, vocational, transit bus and crane applications.

The CPC is the interface between the MCM and the vehicle/equipment for engine control and manages other vehicle/equipment functions.

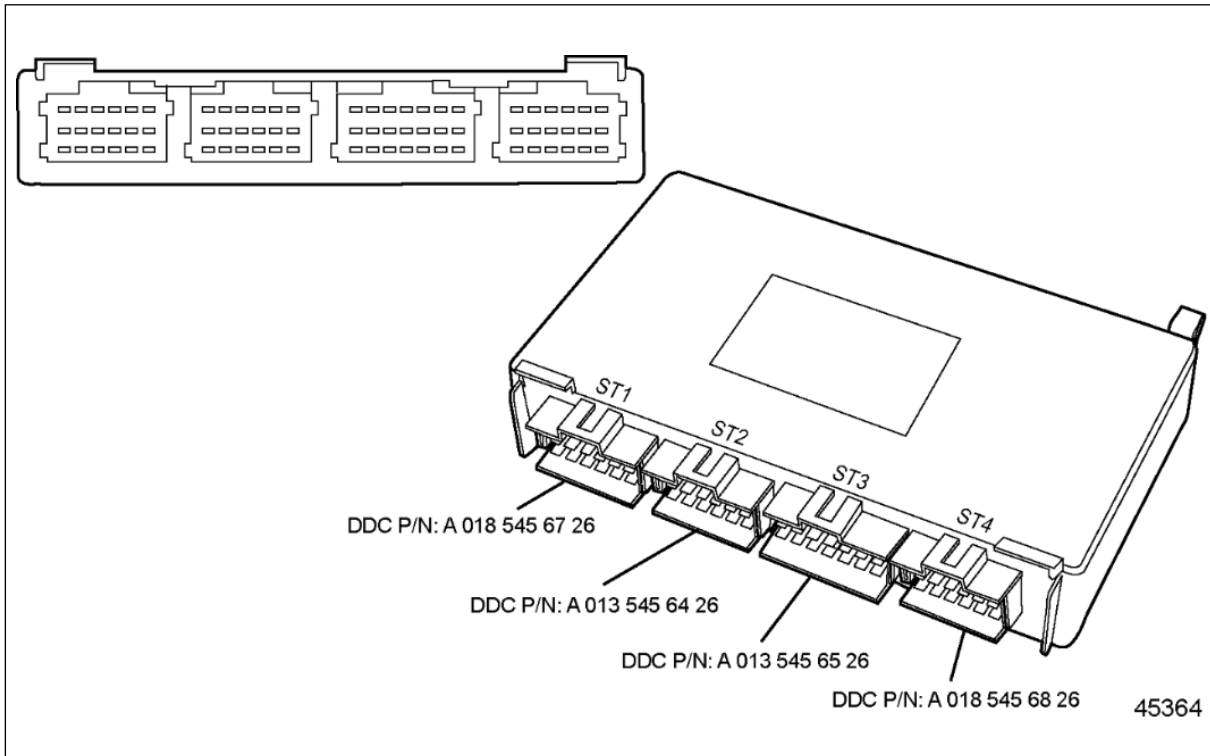


Fig 0.1, Common Powertrain Controller

The OEM is responsible for mounting this part in an enclosed, protected environment. The mounting bracket is the responsibility of the OEM. There must be maximum physical separation of the VIH from other vehicle/equipment electrical systems. Other electrical system wires should ideally be at least three feet away from the VIH and should not be parallel to the VIH. This will eliminate coupling electromagnetic energy from other systems into the VIH.

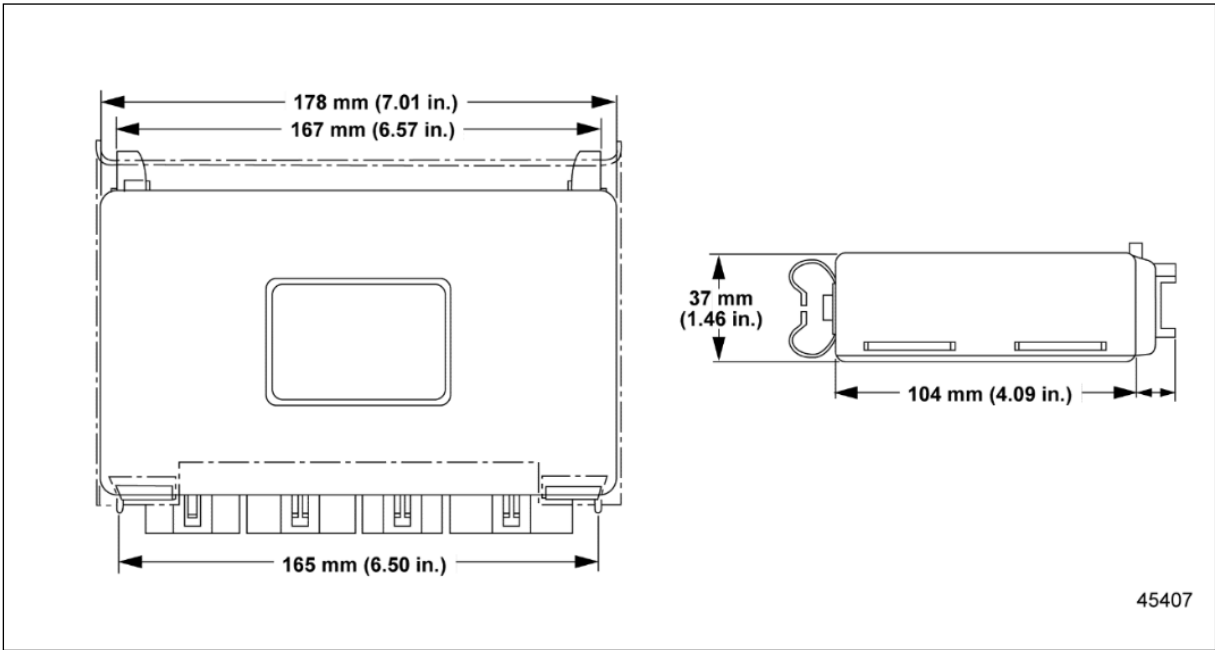


Fig 0.2, Common Powertrain Controller Dimensions

Note : The CPC should be mounted with the connectors pointing down.
 The CPC communicates over the J1587 and J1939 Data Links to the vehicle.

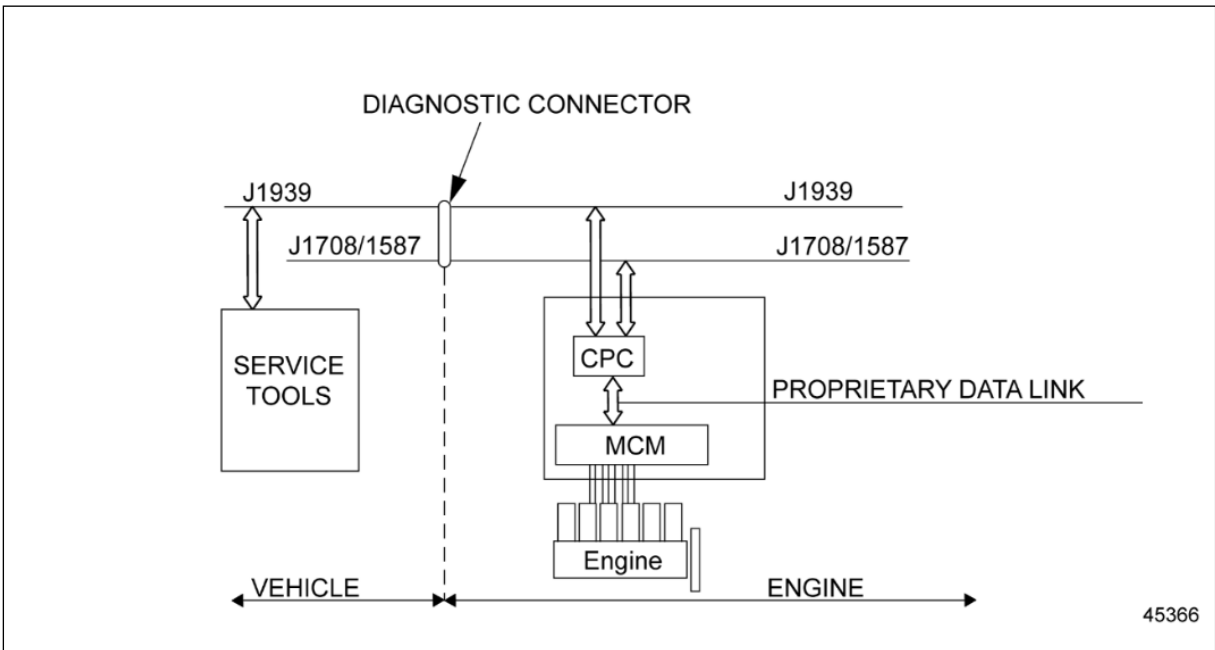


Fig 0.3, NAFTA Architecture On-highway

Within the CPC, sets of data for specific applications are stored. These include idle speed, maximum running speed, and speed limitation. Customer programmable parameters are also stored here.

The CPC receives data from the operator (accelerator pedal position, switches, various sensors) and other electronic control units (for example, synchronization controllers for more than one genset, air compressor controls).

From this data, instructions are computed for controlling the engine and transmitted to the MCM via the proprietary data link.

Connector #1 Pin Assignments		
Pin	Signal Type	Function
1	Digital Input_FLEX_01	Multiple Applications
2	Digital Input_FLEX_02	Park Brake Interlock
3	Digital Input_SFP_05	Idle Validation Switch 2 (throttle active)
4	Digital Output_LP_LS_02	Throttle Position Sensor Ground
5	Digital Output_LP_LS_01	DPF Regeneration Lamp
6	Digital Input_SFP_06	Idle Validation Switch 1 (idle active)
7	SFP_08	Throttle Position Sensor
8	SFP_07	Throttle Position Sensor Supply
9	PWM_FPO_02	Tachometer
10	Digital Input_FLEX_20	Multiple Applications
11	Digital Input_FLEX_08	Limiter 0
12	Digital Input_FLEX_03	Set / Coast Enable
13	Digital Output_LP_FLEX_01	MIL Lamp
14	Digital Input_FLEX_04	Cruise Control Enable
15	Digital Input_FLEX_05	Stop Engine Override
16	Digital Input_FLEX_06	Resume / Accel Enable
17	Digital Input_FLEX_07	Multiple Applications
18	SFP_01	Run Start

Connector #2 Pin Assignments		
Pin	Signal Type	Function
1	Battery (+) PSU (KL_30)	Main Battery +12 V
2	Battery (-) PSU (KL_31)	Main Battery Ground
3	Battery (+) Switched PSU	Ignition
4	K_DIAG_C	K-line
5	J 1708_A	Not Used
6	J 1708_B	Not Used
7	Digital Input_FLEX_15	Multiple Applications
8	Digital Input_FLEX_16	Multiple Applications
9	Digital Input_FLEX_09	Multiple Applications
10	Digital Output_LP_FLEX_03	Amber Warning Lamp
11	Digital Input_FLEX_10	Limiter 1
12	Digital Input_FLEX_11	A/C Status
13	Digital Input_FLEX_12	Multiple Applications
14	Digital Input_FLEX_13	Multiple Applications
15	Digital Input_FLEX_14	Multiple Applications
16	VCAN_L_C	J1939 (-)
17	VCAN_GND_C	J1939 Shield
18	VCAN_H_C	J1939 (+)

Connector #3 Pin Assignments		
Pin	Signal Type	Function
1	Analog_In_01	Multiple Applications
2	Analog_GND	Sensor Return
3	Analog_SUP_5V	Sensor Supply
4	Analog_In_02	PTO
5	Analog_Out_01	Multiple Applications
6	Analog_Out_02	Multiple Applications
7	Digital Output_HP_HS_01	Multiple Applications
8	Digital Output_HP_HS_02	Multiple Applications
9	Digital Output_HP_LS_01	Multiple Applications
10	Digital Output_LP_FLEX_02	DEF Low Lamp
11	SFP_14	Low Coolant Level Sensor
12	Digital Output_LP_FLEX_04	Multiple Applications
13	SFP_09	Vehicle Speed (+)
14	SF_VGND	Vehicle Speed (-)
15	Analog_In_SFP_13	Ambient Air Temp Sensor
16	Digital Output_LP_FLEX_05	Red Stop Lamp
17	Digital Output_HP_FLEX_02	Multiple Applications
18	Digital Input_SFP_02	Multiple Applications
19	PTCAN_L 5V	Powertrain CAN (-)
20	PTCAN_GND 5V	Powertrain CAN Shield
21	PTCAN_H 5V	Powertrain CAN (+)

Connector #4 Pin Assignments		
Pin	Signal Type	Function
1	C_ECAN_L	Not Used
2	C_ECAN_GND	Not Used
3	C_ECAN_H	Not Used
4	Digital Input_SFP_11	Not Used
5	Digital Input_SFP_12	Not Used
6	Digital Output_LP_FLEX_06	Wait to Start Lamp
7	Digital Output_HP_LS_02	High Exhaust Temperature Lamp
8	Digital Input_FLEX_E1	Multiple Applications
9	Digital Output_HP_FLEX_01	Multiple Applications
10	Digital Output_HP_HS_04	Multiple Applications
11	Frequency_SFP_10	Not Used
12	PWM_FPO_01	Multiple Applications
13	Digital Input_FLEX_19	DPF Inhibit Switch
14	Digital Input_SFP_03	Not Used
15	Digital Input_SFP_04	Not Used
16	Digital Input_FLEX_17	Multiple Applications
17	Digital Input_FLEX_21	DPF Regeneration Switch
18	Digital Input_FLEX_18	Multiple Applications