



ELECTRONIC CONTROL
SYSTEM DIAGNOSTICS

International® Beginning of 2004 Model Year DT 466, DT 570 and HT 570

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SIGNAL VALUES (All values with the breakout box installed on the ECM and harness)

WARNING: Read Safety Instructions in EGES-270 *Diagnostic Manual*, before starting diagnostic procedures.

Pin	Item	Circuit	Circuit No.	Key ON		Low Idle			High Idle			Operating Range	Comments
				Signal	Actual value	Signal	Data List	Actual value	Signal	Data List	Actual value		
X1 ENGINE CONNECTOR (GRAY)													
1	CKP (+)	Crankshaft Position	97BE3	Min 130 Hz at crank		650 – 700Hz	700 RPM		2.55 – 3.0 kHz	2750 RPM		0 – Governed speed	DMM set to DCV – Hz (DCmV – Hz at crank)
2	CKP (–)	Crankshaft Position	97BE4										CKP Ground
6	SIGNAL GND	Signal ground	97DC	0V		0V			0V			0V	Ground for engine sensors
7	IAT	Intake Air Temperature	97AX	Temp depend		Temp depend			Temp depend			0V – 5V	DMM set to V , EST – Continuous Monitor Session
8	ECT	Engine Coolant Temperature	97BF	Temp depend		Temp depend			Temp depend			0V – 5V	DMM set to V , EST – Continuous Monitor Session
9	CMP (+)	Camshaft Position	97BE1	Min 130 RPM ② at crank		700 RPM ②	700 RPM		2750 RPM ②	2750 RPM		0 – Governed speed	DMM set to DCV – RPM ② , (DCmV – RPM② at crank)
10	CMP (–)	Camshaft Position	97BE2										CMP Ground
11	CMP/CKP SHD	CMP/CKP Shield	97DW2	0V		0V			0V			0V	Ground shield for CMP/CKP sensors
12	IPR	Injection Pressure Regulator	97BH									0V – B+	Duty cycle , duty controlled, low side driver
14	VREF A	Voltage Reference A	97CY	5V ± 0.5V		5V ± 0.5V			5V ± 0.5V			5V ± 0.5	VREF for engine sensors
15	BNO1	Brake Normally Off switch 1	97BNO1	0V Off / B+ On		0V Off / B+ On	Off / On		0V Off – B+ On	Off / On		0V / B+	0V = Off / B+ On. Applications without ESC module
16	BNO2	Brake Normally Off switch 2	97BNO2	0V Off / B+ On		0V Off / B+ On	Off / On		0V Off – B+ On	Off / On		0V / B+	0V = Off / B+ On. Applications without ESC module
17	IAH	Intake Air Heater	97CH	0V Off / B+ On		0V Off / B+ On	Off / On		0V Off / B+ On	Off / On		0V / B+	0V = IAH Off, B+ = IAH On, EST Output State Test.
18	VGT	Variable Geometry Turbo Control	97VG	Performance Specs								0 – 100% Duty Cycle	Duty Cycle controlled, High side driver
19	CKPO	Crankshaft Position Out	97CKO	Min 130 Hz at crank		650 – 700Hz	700 RPM		2.75 – 3.0 kHz	2750 RPM		0 – Governed speed	DMM set to DCV – Hz, EST – PID Engine Speed
20	ICP	Injection Control Pressure	97BG	0.2V		Performance Specs			Performance Specs			0 – 4061 PSI	1.0V = 625 PSI , EST – No Start session
24	CMPO	Camshaft Position Out	97CMO	Min 130 RPM ② at crank		700 RPM ②	700 RPM		2750 RPM②	2750 RPM		0 – Governed speed	DMM set to DCV – RPM ② , EST – PID Engine Speed
X2 ENGINE CONNECTOR (GRAY)													
1	EOT	Engine Oil Temperature	97CE	Temp depend		Temp depend			Temp depend			0V – 5V	DMM set to V , EST – Continuous Monitor Session
3	MAP	Manifold Absolute Pressure	97AY	Performance Specs		Performance Specs			Performance Specs			0 – 38 PSI	DMM set to V , EST – Continuous Monitor Session
6	CAN 2 (+)	CAN 2 (Private)	97CN + 2	1 – 4V		1 – 4V			1 – 4V			1 – 4V	Digital signal communications
7	EOP	Engine Oil Pressure	97BK	0.62V at 0 PSIG		Performance Specs			Performance Specs			0 – 100 PSI	0.62V = 0 PSI 3.61V = 60 PSI
8	EBP	Exhaust Back Pressure	97BD	Performance Specs		Performance Specs			Performance Specs			0 – 38 PSI	0.8 – 1.0V = 0 PSI 2.72V = 18 PSI
9	WIF	Water In Fuel	97WIF	0 – 2.5V		0V – 2.5V	No / Yes		0 – 2.5V	No / Yes		0V – 5V	0V = No water , 2.5V = water in fuel , EST – No/Yes
11	BCP	Engine Brake Control Pressure	97BCP	Performance Specs		Performance Specs			Performance Specs			4061 PSI	0.4 – 0.9V= 0% open 4.0 – 4.5V= 100% open
12	CAN 2 Shd	CAN 2 Shield	97CNSH2	0V		0V			0V			0V	Shield ground for CAN 2
13	CAN 2 (–)	CAN 2 (Private)	97CN – 2	1 – 4V		1 – 4V			1 – 4V			1V – 4V	Digital signal communications
14	MAT	Manifold Air Temperature	97MAT	Temp depend		Temp depend			Temp depend			0V – 5V	DMM set to V , EST – Continuous Monitor Session
16	EFP	Engine Fuel Pressure	97EFP	0V ??		Performance Specs			Performance Specs			0V – 5V	DMM set to V , EST – Continuous Monitor Session
18	ENG BRK	Engine Brake (control)	97CBE	0V		0V			0V			0V / B+	0V = CBE Off, B+ = CBE On, EST Output State Test.
24	IPR PWR	IPR Power	97KPW3	B+		B+			B+			0V / B+	Switched ignition power , B+ = Key On, 0V = Key Off
X3 CHASSIS CONNECTOR (WHITE)													
3	VIGN	ECM Ignition Voltage		B+		B+			B+			0V / B+	Switched Ignition power B+ = Key On , 0V = Key Off
4	ECL	Engine Coolant Level		0V Low – 5V Full		0V Low – 5V Full			0V Low – 5V Full			0V – 5V	0V = Low coolant 5V = Full coolant
5	ECM MPR	ECM Main Power Relay Control		0.6 – 1.0V		0.6 - 1.0V			0.6 – 1.0V			0.6 – 1.0V / B+	0.6 – 1.0V = MPR on B+ = MPR off
6	Battery ground	Battery ground		0V		0V			0V			B+	ECM ground from B –
7	Battery ground	Battery ground		0V		0V			0V			0V	ECM ground from B –
8	DDS	Drive Line Disengagement Switch		0V – B+		B+			B+			0V / B+	0V = In gear , B+ = Park , Neutral or clutch pedal down
11	TACH	Tachometer output											Chassis body builder option only
12	CAN 1 (+)	CAN 1 (Public)		1 – 4V		1 – 4V			1 – 4V			1 – 4V	Digital signal communications
13	CAN 1 (–)	CAN 1 (Public)		0V		1 – 4V			1 – 4V			1 – 4V	Digital signal communications
14	RAS	Resume Accel Switch											Chassis body builder option only
15	CAN 1 SHD	CAN 1 Shield		0V		0V			0V			0V	Shield group for CAN 1
17	VSS CAL	Vehicle Speed Output											Chassis body builder option only
19	RPRE	Remote Preset PTO											Chassis body builder option only
20	RVAR	Remote Variable PTO											Chassis body builder option only
21	SCS	Speed Control Switch											Chassis body builder option only
22	RSE	Radiator Shutter Enable		0V / B+		0V / B+			0V / B+			0V / B+	0V = Shtr Closed, B+ = Shtr Open, Low side driver.
23	ECI	Engine Crank Inhibit		0V / 4 - 5V		4 – 5V			4 – 5V			0V / 4 – 5V	0V allows cranking 4 – 5V inhibits cranking
24	BAP	Barometric Pressure		Alt depend		Alt depend			Alt depend			2.55V – 4.8V	4.6V = Sea level 2.6V = 10,000 ft. (approx)
X4 CHASSIS CONNECTOR (WHITE)													
1	ECM PWR	ECM2 Power		B+		B+			B+			B+	B+ from ECM power relay
2	ECM PWR	ECM2 Power		B+		B+			B+			B+	B+ from ECM power relay
4	VREF B	Voltage Reference B		5V ± 0.5V		5V ± 0.5V			5V ± 0.5V			5V ± 0.5V	VREF for chassis sensors
9	VSS (–)	Vehicle Speed Signal				2 – 14 VAC			2 – 14 VAC			2 – 14 VAC	VSS (–) is used on applications without an Allison Trans
10	VSS (+)	Vehicle Speed Signal				2 – 14 VAC			2 – 14 VAC			2 – 14 VAC	VSS signal is an AC sine wave
12	IVS	Idle Validation Switch		0V		0V			B+			0V / B+	0V at normal state, B+ Accelerator pedal depressed
14	EFAN	Engine Fan		0V / B+		0V / B+			0V / B+			0V / B+	0V = Fan Off, B+ = Fan On, Low Side Driver
18	APS	Accelerator Position Sensor		0.65V		0.65V			4V			0 – 102%	0.64V = 0% 3.84V = 102%
20	ATA (+)	Communication Link		2.8 – 4.0V		2.8 – 4.0V			2.8 – 4.0V			0V – 5V	Diagnostic/programming
21	ATA (–)	Communication Link		0.2 – 1.8V		0.2 – 1.8V			0.2 – 1.8V			0V – 5V	Diagnostic/programming
24	SIGNAL GND	Signal ground		0V		0V			0V			0V	Signal ground for chassis mounted sensors