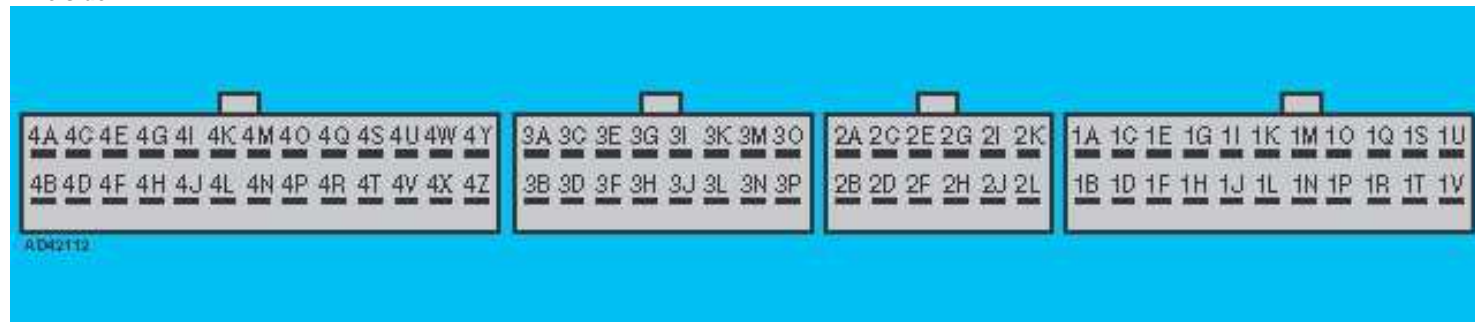




Terminal side











































Wire side












Component/circuit description	ECM pin	Signal	Condition	Typical value	Oscilloscope setting (Suggested settings - Voltage/time per division)	Wave form
AC condenser blower motor relay - 1,8	1B		AC ON - condenser blower motor OFF	11-14 V		
AC condenser blower motor relay - 1,8	1B		AC ON - condenser blower motor ON	0 V		
AC condenser blower motor relay - 1,5	1A		AC ON - condenser blower motor OFF	11-14 V		
AC condenser blower motor relay - 1,5	1A		AC ON - condenser blower motor ON	0 V		
AC control module - through refrigerant pressure switch	1K		Engine idling - AC OFF	11-14 V		
AC control module - through refrigerant pressure switch	1K		Engine idling - AC ON	0 V		
AC relay	1G		Engine idling - AC OFF	11-14 V		
AC relay	1G		Engine idling - AC ON	0 V		
Automatic transmission	2A			Connected pin - no test data available or random digital signal		
Automatic transmission	2B			Connected pin - no test data available or random digital signal		
Automatic transmission	2C			Connected pin - no test data available or random digital signal		
Automatic transmission	2D			Connected pin - no test data available or random digital signal		
Automatic transmission	2E			Connected pin - no test data available or random digital signal		
Automatic transmission	2F			Connected pin - no test data available or random digital signal		
Automatic transmission	2G			Connected pin - no test data available or random digital signal		
Automatic transmission	2H			Connected pin - no test data available or random digital signal		
Automatic transmission	2I			Connected pin - no test data available or random digital signal		

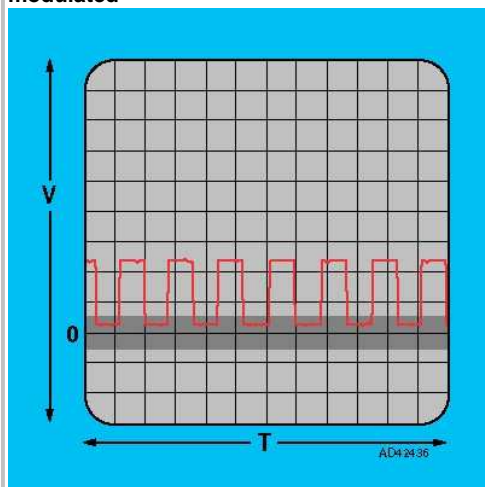
Automatic transmission	2J			Connected pin - no test data available or random digital signal		
Automatic transmission	2K			Connected pin - no test data available or random digital signal		
Automatic transmission	2L			Connected pin - no test data available or random digital signal		
Battery	4I	←	Ignition OFF	11-14 V		
Brake pedal position (BPP) switch - MT	1Q	←	Ignition OFF - brake pedal released	0 V		
Brake pedal position (BPP) switch - MT	1Q	←	Ignition OFF - brake pedal depressed	11-14 V		
<u>Camshaft position (CMP) sensor</u>	4G	←	Ignition ON - engine turned	0 V or 5 V switching		
<u>Camshaft position (CMP) sensor</u>	4G	←	Engine idling	2,5 V	2 V/0,1 sec.	
<u>Closed throttle position (CTP) switch</u>	3L	←	Ignition ON - throttle closed	0 V		
<u>Closed throttle position (CTP) switch</u>	3L	←	Ignition ON - throttle slightly open	11-14 V		
<u>Clutch pedal position (CPP) switch</u>	1L	←	Ignition ON - gear lever not in neutral - clutch pedal depressed	0 V		
<u>Clutch pedal position (CPP) switch</u>	1L	←	Ignition ON - gear lever not in neutral - clutch pedal released	11-14 V		
<u>Crankshaft position (CKP) sensor</u>	4F	←	Ignition ON - engine turned	0 V or 5 V switching		
<u>Crankshaft position (CKP) sensor</u>	4F	←	Engine idling	2 V	2 V/10 ms	
Data link connector (DLC)	1D	↔		Connected pin - no test data available or random digital signal		
Data link connector (DLC)	1E	↔		Connected pin - no test data available or random digital signal		
Earth	4A		Ignition ON	0 V		
Earth	4C		Ignition ON	0 V		
Earth	4D		Ignition ON	0 V		
<u>Engine control relay</u>	4B	←	Ignition OFF	0 V		
<u>Engine control relay</u>	4B	←	Ignition ON	11-14 V		
Engine coolant blower motor relay	1B	↔	Engine idling - coolant blower motor OFF	11-14 V		
Engine coolant blower motor relay	1B	↔	Engine idling - coolant blower motor ON	0 V		
Engine coolant blower motor relay - 1,8	1A	↔	Engine idling - coolant blower motor OFF	11-14 V		
Engine coolant blower motor relay - 1,8	1A	↔	Engine idling - coolant blower motor ON	0 V		
<u>Engine coolant temperature (ECT) sensor</u>	3G	←	Ignition ON - engine hot	1 V max.		
<u>Engine coolant temperature (ECT) sensor</u>	3O	↔	Ignition ON	0 V		
<u>Engine coolant temperature (ECT) sensor</u> - 1,6	3G	←	Ignition ON - coolant temp. 20°C	2,5 V		
<u>Engine coolant temperature (ECT) sensor</u> - 1,3/1,5/1,8	3G	←	Ignition ON - coolant temp. 20°C	5 V		
<u>Evaporative emission (EVAP) canister purge valve</u>	4T	↔	Ignition ON	11-14 V		
<u>Evaporative emission (EVAP) canister purge valve</u>	4T	↔	Engine idling	11-14 V		

Exhaust gas recirculation (EGR) solenoid - vacuum - except 1,3	4P		Ignition ON	11-14 V		
Exhaust gas recirculation (EGR) solenoid - vacuum - except 1,3	4P		Engine idling	11-14 V		
Exhaust gas recirculation (EGR) solenoid - vent - except 1,3	4O		Ignition ON	11-14 V		
Exhaust gas recirculation (EGR) solenoid - vent - except 1,3	4O		Engine idling	11-14 V		
Exhaust gas recirculation (EGR) valve position sensor - except 1,3	3I		Ignition ON	5 V		
Exhaust gas recirculation (EGR) valve position sensor - except 1,3	3O		Ignition ON	0 V		
Exhaust gas recirculation (EGR) valve position sensor - 1,5 & 1,6	3J		Ignition ON	0,8 V		
Exhaust gas recirculation (EGR) valve position sensor - 1,5 & 1,6	3J		Engine running	0,8-4,5 V		
Fuel pressure regulator control solenoid - except 1,6	4J		Ignition ON	11-14 V		
Fuel pressure regulator control solenoid - except 1,6	4J		Start engine - engine hot	0 V for 120 secs then 11-14 V		
Fuel pressure regulator control solenoid - high temperature - 1,6	4M		Ignition ON	11-14 V		
Fuel pressure regulator control solenoid - high temperature - 1,6	4M		Start engine - coolant temp. 94°C min. - air temp. 60°C min.	0 V for 149 secs then 11-14 V		
Fuel pressure regulator control solenoid - low temperature - 1,6	4J		Ignition ON	11-14 V		
Fuel pressure regulator control solenoid - low temperature - 1,6	4J		Start engine - coolant temp. 90-94°C - air temp. 51-60°C	0 V for 149 secs then 11-14 V		
Fuel pump relay	1U		Ignition ON	11-14 V		
Fuel pump relay	1U		Engine idling	0 V		
Headlamp switch	1H		Headlamps OFF	0 V		
Headlamp switch	1H		Headlamps ON	11-14 V		
Heated oxygen sensor (HO2S)	3C		Engine idling - engine hot	0-1 V fluctuating		
Heated oxygen sensor (HO2S)	3C		RPM increasing - engine hot	0,5-1 V fluctuating		
Heated oxygen sensor (HO2S)	3C		RPM decreasing - engine hot	0-0,5 V fluctuating		
Heated oxygen sensor (HO2S) - 1,3	3O		Ignition ON	0 V		
Heated oxygen sensor (HO2S) - 1,6	4Y		Ignition ON	0 V		
Heated oxygen sensor (HO2S) - 1,6	4Y		Engine idling	0 V		
Heated rear window switch	1J		Ignition ON - heated rear window OFF	0 V		
Heated rear window switch	1J		Ignition ON - heated rear window ON	11-14 V		
Heater/AC motor switch	1P		Ignition ON - heater motor switch in position OFF or 1	11-14 V		
Heater/AC motor switch	1P		Ignition ON - heater motor switch in position 2, 3 or 4	0 V		
Idle air control (IAC) valve	4Q		Ignition ON	0,1-1 V		
Idle air control (IAC) valve	4Q		Engine idling - engine hot	10 V		
Idle air control (IAC) valve	4Q		Engine idling - engine hot		5 V/5 ms	 24

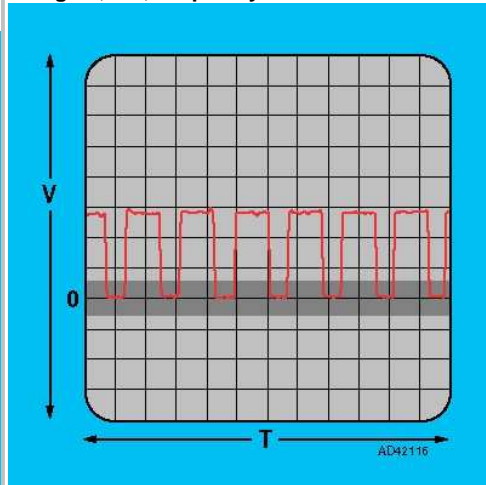
Ignition adjustment connector	1I	←	Ignition ON - not connected to earth	11-14 V		
Ignition adjustment connector	1I	←	Ignition ON - connected to earth	0 V		
Ignition amplifier - 1,6	1O	←	Ignition ON	0 V		
Ignition amplifier - 1,6	1O	←	Engine idling	40 Hz		
Ignition amplifier - 1,6	1O	←	Engine idling		1 V/10 ms	 32
Ignition amplifier - 1,6 - cylinders 1 & 4	4N	⇒	Ignition ON	0 V		
Ignition amplifier - 1,6 - cylinders 1 & 4	4N	⇒	Engine idling	20 Hz	1 V/10 ms	 32
Ignition amplifier - 1,6 - cylinders 2 & 3	4R	⇒	Ignition ON	0 V		
Ignition amplifier - 1,6 - cylinders 2 & 3	4R	⇒	Engine idling	20 Hz	1 V/10 ms	 32
Ignition amplifier - except 1,6	4N	⇒	Ignition ON	0 V		
Ignition amplifier - except 1,6	4N	⇒	Engine idling	0,3-1 V	1 V/10 ms	 32
Injector 1	4U	⇌	Ignition ON	11-14 V		
Injector 1	4U	⇌	Engine idling	3 ms	10 V/2 ms	 35
Injector 2	4V	⇌	Ignition ON	11-14 V		
Injector 2	4V	⇌	Engine idling	3 ms	10 V/2 ms	 35
Injector 3	4W	⇌	Ignition ON	11-14 V		
Injector 3	4W	⇌	Engine idling	3 ms	10 V/2 ms	 35
Injector 4	4X	⇌	Ignition ON	11-14 V		
Injector 4	4X	⇌	Engine idling	3 ms	10 V/2 ms	 35
Intake air temperature (IAT) sensor	3K	←	Ignition ON - air temp. 20°C	2,5 V		
Intake air temperature (IAT) sensor - some models	3O	⇌	Ignition ON	0 V		
Intake manifold air control solenoid - 1,6 & 1,8	4K	⇌	Engine running - 4900 rpm max.	0 V		
Intake manifold air control solenoid - 1,6 & 1,8	4K	⇌	Engine running - 4900 rpm min.	11-14 V		
Mass air flow (MAF) sensor	3B	←	Ignition ON	2 V max.		
Mass air flow (MAF) sensor	3B	←	Engine idling	1-2,5 V		
Mass air flow (MAF) sensor - 1,6 & 1,8	3O	⇌	Ignition ON	0 V		
Neutral position (NP) switch - MT	1L	←	Ignition ON - gear lever in neutral	0 V		
Neutral position (NP) switch - MT	1L	←	Ignition ON - gear lever not in neutral	11-14 V		
Park/neutral position (PNP) switch - AT	1L	←	Ignition ON - AT in P or N	0 V		
Park/neutral position (PNP) switch - AT	1L	←	Ignition ON - AT not in P or N	11-14 V		
Power steering pressure (PSP) switch - if fitted	3P	←	Engine idling - steering wheel not turned	11-14 V		
Power steering pressure (PSP) switch - if fitted	3P	←	Engine idling - steering wheel turned	0 V		
Starter motor	1C	←	Engine cranking	9 V		
Tachometer - 1,6	4L	⇒	Ignition ON	11 V		
Throttle position (TP) sensor	3I	⇒	Ignition ON	5 V		

<u>Throttle position (TP) sensor</u>	3O		Ignition ON	0 V		
<u>Throttle position (TP) sensor</u> - 1,8	3F		Ignition ON - throttle closed	0,1-1,1 V		
<u>Throttle position (TP) sensor</u> - 1,8	3F		Ignition ON - throttle fully open	2,8-4,5 V		
<u>Throttle position (TP) sensor</u> - except 1,8	3F		Ignition ON - throttle closed	0,3-0,7 V		
<u>Throttle position (TP) sensor</u> - except 1,8	3F		Ignition ON - throttle fully open	3,4-5,3 V		
Transmission fluid temperature sensor - except 1,3	3E		Ignition ON - transmission fluid temp. 20°C	5 V		
Transmission fluid temperature sensor - except 1,3	3E		Ignition ON - transmission fluid temp. 130°C	1,5 V		
Vehicle speed sensor (VSS)	1M		Ignition ON - vehicle pushed	0 V or 5 V switching		
Vehicle speed sensor (VSS)	1M		Vehicle moving	2,5 V		

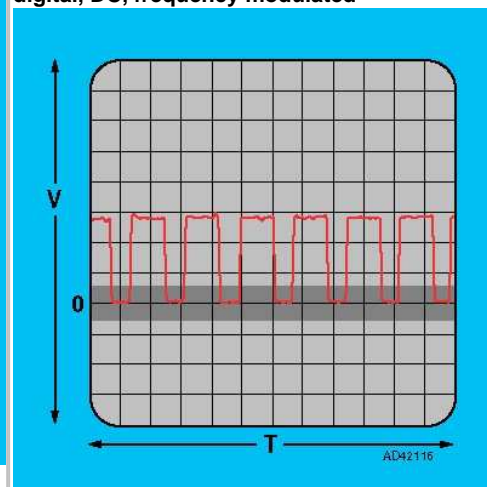
45. Digital, DC, frequency & pulse width modulated



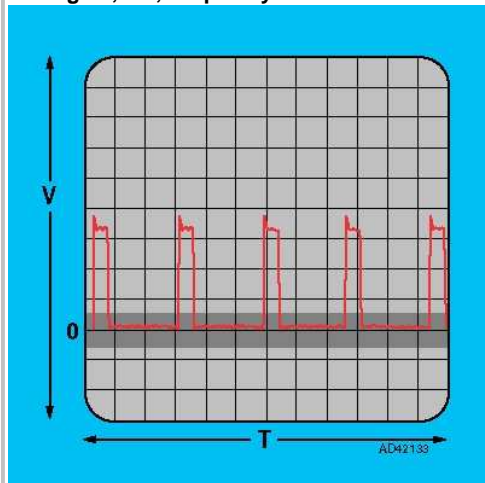
4. Digital, DC, frequency modulated



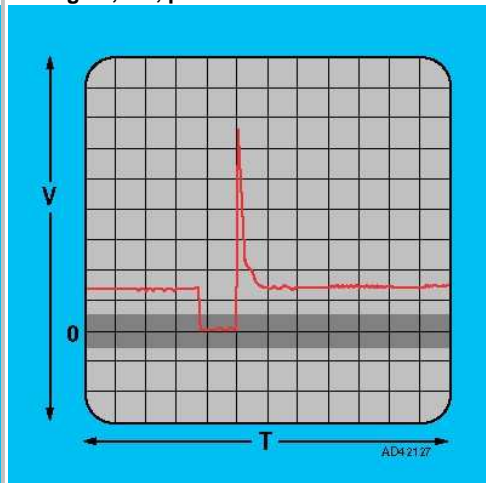
24. Digital, DC, pulse width modulated or digital, DC, frequency modulated








32. Digital, DC, frequency modulated



35. Digital, DC, pulse width modulated



	input/output signal
	input signal
	output signal
	ECM switched earth
	ECM earth circuit