

Terminal side

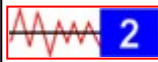
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20
 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38

AD72618

Wire side

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37
 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55

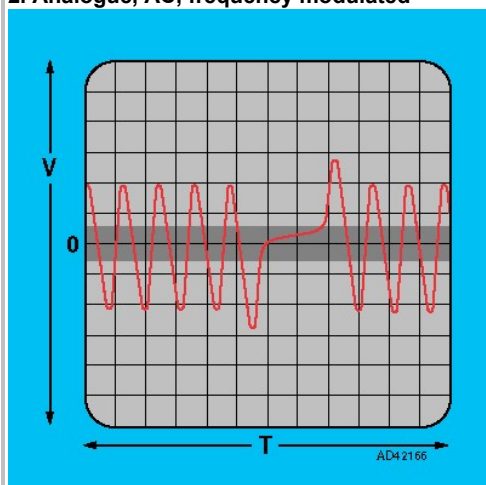
AD42977

Component/circuit description	ECM pin	Signal	Condition	Typical value	Oscilloscope setting (Suggested settings - Voltage/time per division)	Wave form
Battery	18	←	Ignition OFF	11-14 V		
<u>Closed throttle position (CTP) switch</u>	31	←	Ignition ON - throttle closed	0 V		
<u>Closed throttle position (CTP) switch</u>	31	←	Ignition ON - throttle slightly open	11-14 V		
<u>Crankshaft position (CKP) sensor</u>	11	↺	Ignition ON	0 V		
<u>Crankshaft position (CKP) sensor</u>	30	←	Engine idling	9 V ac	2 V/1 ms	
Data link connector (DLC)	13			Connected pin - no test data available or random digital signal		
Data link connector (DLC)	16			Connected pin - no test data available or random digital signal		
Data link connector (DLC)	22			Connected pin - no test data available or random digital signal		
Earth	2		Ignition ON	0 V		
Earth	14		Ignition ON	0 V		
Earth	19		Ignition ON	0 V		
<u>Engine control module (ECM)</u>	22			Connected pin - no test data available or random digital signal		
<u>Engine control module (ECM)</u>	13			Connected pin - no test data available or random digital signal		
<u>Engine coolant temperature (ECT) sensor</u>	25	←	Ignition ON - coolant temp. 20°C	2 V		

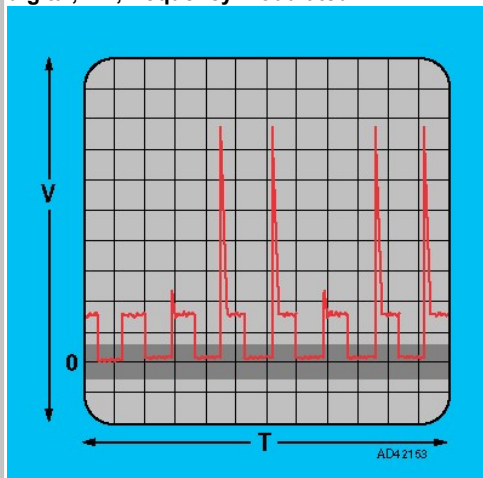
Engine coolant temperature (ECT) sensor	25	←	Ignition ON - coolant temp. 80°C	0,4 V		
Engine coolant temperature (ECT) sensor	26	↗	Ignition ON	0 V		
Evaporative emission (EVAP) canister purge valve	5	↗	Ignition OFF	11-14 V		
Evaporative emission (EVAP) canister purge valve	5	↗	Engine running		10 V/50 ms	 20
Heated oxygen sensor (HO2S)	10	↗	Ignition ON	0 V		
Heated oxygen sensor (HO2S)	28	←	Engine idling - accelerate briefly	0,1-1,0 V fluctuating	0,2 V/1 sec.	 21
Idle speed control (ISC) actuator	15	⇒	Ignition ON	0 V		
Idle speed control (ISC) actuator	15 (33)	⇒	Engine idling		5 V/5 ms	Intermittent  25
Idle speed control (ISC) actuator	33	⇒	Ignition ON	0 V		
Idle speed control (ISC) actuator	33 (15)	⇒	Engine idling		5 V/5 ms	Intermittent  25
Ignition coil - cylinders 1 & 4	1	↗	Engine idling		5 V/2 ms	 33
Ignition coil - cylinders 2 & 3	20	↗	Engine idling		5 V/2 ms	 33
Injector	17	↗	Engine idling	1,5 ms	10 V/2 ms	 35
Injector	17	↗	3000 rpm	1,6 ms	10 V/2 ms	 35
Intake air temperature (IAT) sensor	26	↗	Ignition ON	0 V		
Intake air temperature (IAT) sensor	27	←	Ignition ON - air temp. 20°C	2 V		
Malfunction indicator lamp (MIL)	13		Ignition ON - MIL ON	0-1 V		
Malfunction indicator lamp (MIL)	13		Engine running - MIL OFF	11-14 V		
Malfunction indicator lamp (MIL)	22	↗	Ignition ON - MIL ON	0-1 V		
Malfunction indicator lamp (MIL)	22	↗	Engine running - MIL OFF	11-14 V		
Relay module	3	↗	Ignition ON	0-1 V briefly then 11-14 V		
Relay module	3	↗	Engine cranking	0-1 V		
Relay module	3	↗	Engine running	0-1 V		
Relay module	37	←	Ignition ON	11-14 V		
Tachometer - some models	6	⇒	Engine idling	29 Hz		
Tachometer - some models	6	⇒	3000 rpm	140 Hz		
Throttle position (TP) sensor	7	←	Ignition ON - throttle closed	1 V		
Throttle position (TP) sensor	7	←	Ignition ON - throttle fully open	4,5 V		
Throttle position (TP) sensor	12	⇒	Ignition ON	5 V		
Throttle position (TP) sensor	26	↗	Ignition ON	0 V		
Throttle position (TP) sensor	29	←	Ignition ON - throttle closed	0 V		

<u>Throttle position (TP) sensor</u>	29	←	Ignition ON - throttle fully open	4 V		
<u>Vehicle speed sensor (VSS) - some models</u>	9	←	Vehicle moving	Voltage varies with vehicle speed		

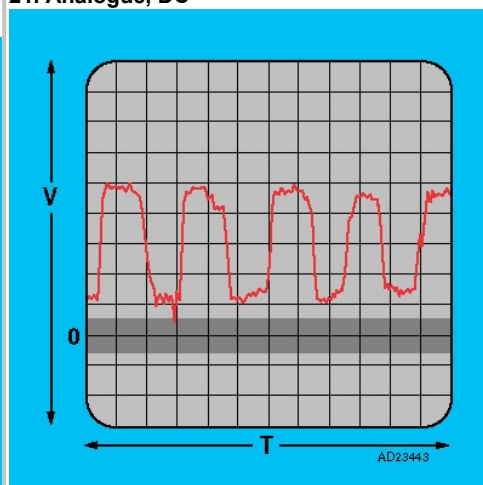
2. Analogue, AC, frequency modulated



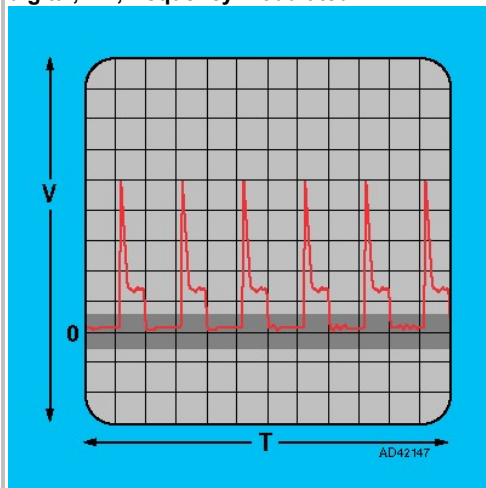
20. Digital, DC, pulse width modulated or digital, DC, frequency modulated



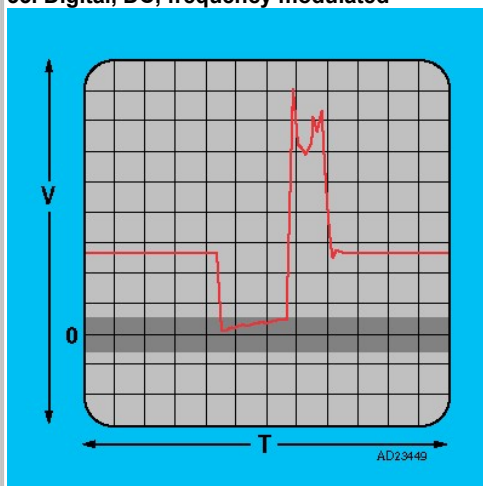
21. Analogue, DC



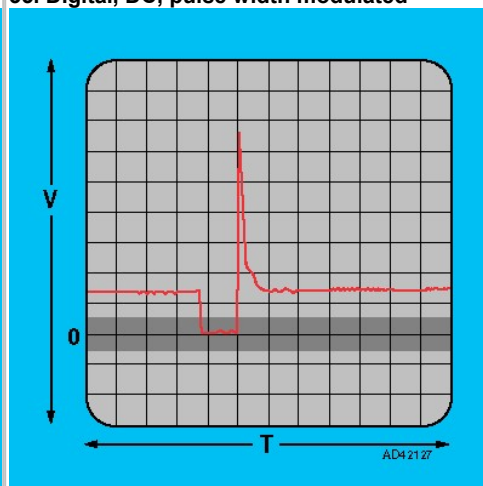
25. Digital, DC, pulse width modulated or digital, DC, frequency modulated



33. Digital, DC, frequency modulated



35. Digital, DC, pulse width modulated



↔	input/output signal
←	input signal
⇒	output signal
⚡→	ECM switched earth
⚡	ECM earth circuit