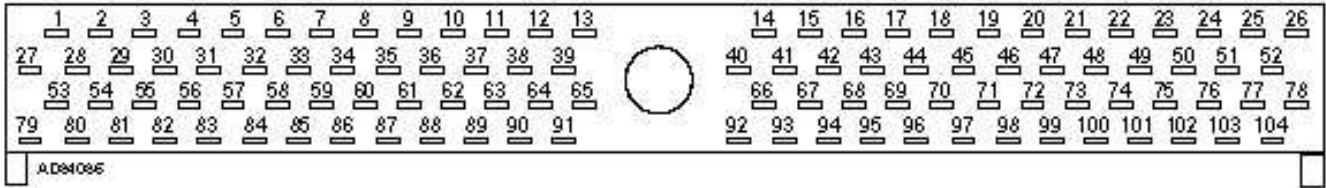
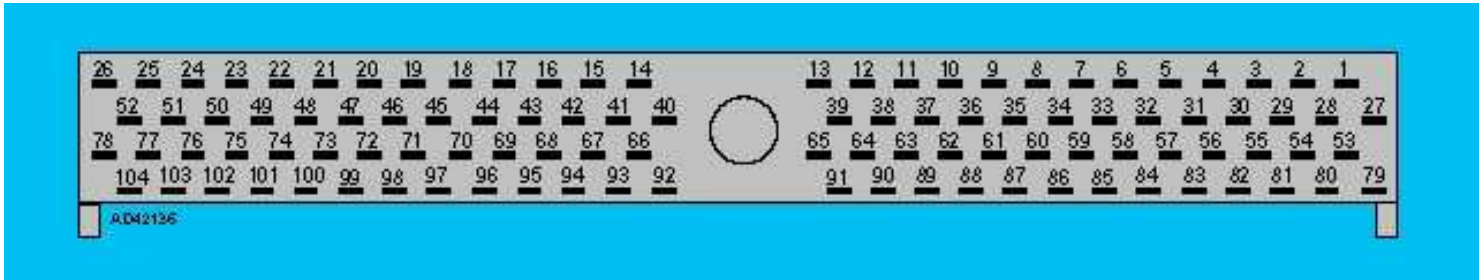


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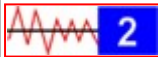
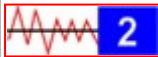
Terminal side



























Wire side



Component/circuit description	ECM pin	Signal	Condition	Typical value	Oscilloscope setting (Suggested settings - Voltage/time per division)	Wave form
ABS control module	4			Connected pin - no test data available or random digital signal		
AC compressor clutch relay	69		Engine idling - AC OFF	11-14 V		
AC compressor clutch relay	69		Engine idling - AC ON - AC compressor ON	0-1 V		
AC refrigerant pressure switch - Scorpio	41			Connected pin - no test data available or random digital signal		
AC refrigerant pressure switch - Mondeo/Cougar	86			Connected pin - no test data available or random digital signal		
Air conditioning - Scorpio	66			Connected pin - no test data available or random digital signal		
Automatic transmission	76			Connected pin - no test data available or random digital signal		

















Automatic transmission	81			Connected pin - no test data available or random digital signal		
Automatic transmission	84			Connected pin - no test data available or random digital signal		
Automatic transmission	91			Connected pin - no test data available or random digital signal		
Automatic transmission - some models	1			Connected pin - no test data available or random digital signal		
Automatic transmission	6			Connected pin - no test data available or random digital signal		
Automatic transmission	11			Connected pin - no test data available or random digital signal		
Automatic transmission	27			Connected pin - no test data available or random digital signal		
Automatic transmission	74			Connected pin - no test data available or random digital signal		
Automatic transmission	80			Connected pin - no test data available or random digital signal		
Automatic transmission	102			Connected pin - no test data available or random digital signal		
Automatic transmission - Scorpio	53			Connected pin - no test data available or random digital signal		
Automatic transmission	72			Connected pin - no test data available or random digital signal		
Automatic transmission - with PATS	80			Connected pin - no test data available or random digital signal		
Automatic transmission - without PATS	54			Connected pin - no test data available or random digital signal		
Battery	55	←	Ignition OFF	11-14 V		
Brake pedal position (BPP) switch	92	←	Ignition ON - brake pedal depressed	11-14 V		
Brake pedal position (BPP) switch	92	←	Ignition ON - brake pedal released	0 V		
Camshaft position (CMP) sensor	76	↺	Engine idling	0 V		
Camshaft position (CMP) sensor	85	←	Engine idling		5 V/20 ms	 11
Clutch pedal position (CPP) switch	64	←	Ignition ON - clutch pedal released	5 V		
Clutch pedal position (CPP) switch	64	←	Ignition ON - clutch pedal depressed	0 V		
Clutch pedal position (CPP) switch	91	↺	Ignition ON	0 V		
Crankshaft position (CKP) sensor - Mondeo/Cougar	21	←	Engine idling		2 V/1 ms	 2
Crankshaft position (CKP) sensor	22	←	Engine idling		2 V/1 ms	 2
Data link connector (DLC)	13			Connected pin - no test data available or random digital signal		

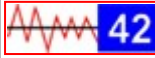
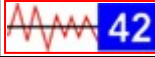

Data link connector (DLC)	15			Connected pin - no test data available or random digital signal		
Data link connector (DLC)	16			Connected pin - no test data available or random digital signal		
Earth	24		Ignition ON	0 V		
Earth	25		Ignition ON	0 V		
Earth	51		Ignition ON	0 V		
Earth	77		Ignition ON	0 V		
Earth	103		Ignition ON	0 V		
Earth - through ignition control module (ICM) - Scorpio	23		Ignition ON	0 V		
Engine control module (ECM) - pin 91 - some models	30		Ignition ON	0 V		
Engine control relay	71		Ignition OFF	0 V		
Engine control relay	71		Ignition ON	11-14 V		
Engine control relay	97		Ignition OFF	0 V		
Engine control relay	97		Ignition ON	11-14 V		
Engine coolant blower motor relay - some models	17		Engine idling - coolant blower motor OFF	11-14 V		
Engine coolant blower motor relay	17		Engine idling - coolant blower motor ON - high speed	0-1 V		
Engine coolant blower motor relay	68		Engine idling - coolant blower motor OFF	0-1 V		
Engine coolant blower motor relay	68		Engine idling - coolant blower motor ON - low speed	11-14 V		
Engine coolant blower motor relay - some models	19		Engine idling - coolant blower motor OFF	11-14 V		
Engine coolant blower motor relay	19		Engine idling - coolant blower motor ON - high speed	0-1 V		
Engine coolant blower motor relay	45		Engine idling - coolant blower motor OFF	0-1 V		
Engine coolant blower motor relay	45		Engine idling - coolant blower motor ON - low speed	11-14 V		
Engine coolant temperature (ECT) sensor	38		Ignition ON - coolant temp. 0°C	3,8-3,9 V		
Engine coolant temperature (ECT) sensor	38		Ignition ON - coolant temp. 20°C	3-3,2 V		
Engine coolant temperature (ECT) sensor	38		Ignition ON - coolant temp. 80°C	0,6-0,9 V		
Engine coolant temperature (ECT) sensor	91		Ignition ON	0 V		
Evaporative emission (EVAP) canister purge valve	56		Engine idling	11-14 V		
Evaporative emission (EVAP) canister purge valve	56		Engine running		10 V/50 ms	
Exhaust gas pressure sensor - some models	65		Ignition ON	0,5 V		
Exhaust gas pressure sensor	65		Engine idling	0,6 V		
Exhaust gas pressure sensor	65		Engine running - 3000 rpm	0,75 V		
Exhaust gas pressure sensor	90		Ignition ON	5 V		

Exhaust gas pressure sensor	91		Ignition ON	0 V		
Exhaust gas recirculation (EGR) solenoid - some models	47		Ignition ON	11-14 V		
Exhaust gas recirculation (EGR) solenoid	47		Engine running		2 V/5 ms	Intermittent 29
Fuel pump relay	40		Ignition ON	11-14 V briefly then 0 V		
Fuel pump relay	40		Engine idling	11-14 V		
Fuel pump relay - AT - with PATS	54		Ignition ON	0-1 V briefly then 11-14 V		
Fuel pump relay	54		Engine cranking	0-1 V		
Fuel pump relay - AT - without PATS	80		Ignition ON	0-1 V briefly then 11-14 V		
Fuel pump relay	80		Engine cranking	0-1 V		
Heated oxygen sensor (HO2S) 2 - bank 2 - Scorpio	61		Engine idling - engine hot	0,3-0,6 V	0,2 V/0,5 sec.	76
Heated oxygen sensor (HO2S) 2	91		Ignition ON	0 V		
Heated oxygen sensor (HO2S) 2 - bank 2 - Scorpio - heater control, without PATS	96		Start engine	11-14 V for 20 seconds		
Heated oxygen sensor (HO2S) 2	96		Start engine	0 V after 20 seconds		
Heated oxygen sensor (HO2S) 2 - bank 2 - Scorpio - heater control, with PATS	101		Start engine	11-14 V for 20 seconds		
Heated oxygen sensor (HO2S) 2	101		Start engine	0 V after 20 seconds		
Heated oxygen sensor (HO2S) 1 - bank 2	87		Engine idling - engine hot	0,1-0,9 V	0,2 V/1 sec.	21
Heated oxygen sensor (HO2S) 1	91		Ignition ON	0 V		
Heated oxygen sensor (HO2S) 1 - bank 2 - heater control, without PATS	94		Start engine	11-14 V for 20 seconds		
Heated oxygen sensor (HO2S) 1	94		Start engine	0 V after 20 seconds		
Heated oxygen sensor (HO2S) 1 - bank 2 - heater control, with PATS	99		Start engine	11-14 V for 20 seconds		
Heated oxygen sensor (HO2S) 1	99		Start engine	0 V after 20 seconds		
Heated oxygen sensor (HO2S) 2 - bank 1 - Scorpio	35		Engine idling - engine hot	0,3-0,7 V	0,2 V/0,5 sec.	76
Heated oxygen sensor (HO2S) 2	91		Ignition ON	0 V		
Heated oxygen sensor (HO2S) 2 - bank 1 - Scorpio - heater control, without PATS	95		Start engine	11-14 V for 20 seconds		
Heated oxygen sensor (HO2S) 2	95		Start engine	0 V after 20 seconds		
Heated oxygen sensor (HO2S) 2 - bank 1 - Scorpio - heater control, with PATS	100		Start engine	11-14 V for 20 seconds		
Heated oxygen sensor (HO2S) 2	100		Start engine	0 V after 20 seconds		
Heated oxygen sensor (HO2S) 1 - bank 1	60		Engine idling - engine hot	0,1-0,9 V	0,2 V/1 sec.	21
Heated oxygen sensor (HO2S) 1	91		Ignition ON	0 V		
Heated oxygen sensor (HO2S) 1 - bank 1 - heater control, with PATS	73		Start engine	11-14 V for 20 seconds		
Heated oxygen sensor (HO2S) 1	73		Start engine	0 V after 20 seconds		

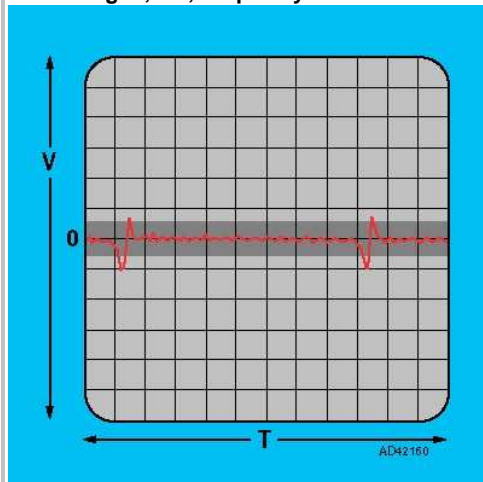
Heated oxygen sensor (HO2S) 1 - bank 1 - heater control, without PATS	93		Start engine	11-14 V for 20 seconds		
Heated oxygen sensor (HO2S) 1	93		Start engine	0 V after 20 seconds		
Heated windscreen relay - if fitted	14		Engine idling - heated windscreen OFF	0 V		
Heated windscreen relay	14		Engine idling - heated windscreen ON	5 V		
Idle air control (IAC) valve	83		Engine idling	33%	2 V/5 ms	29
Ignition coil 1 & 5 - Mondeo/Cougar	26		Engine idling		5 V/1 ms	33
Ignition coil 2 & 6 - Mondeo/Cougar	78		Engine idling		5 V/1 ms	33
Ignition coil 3 & 4 - Mondeo/Cougar	52		Engine idling		5 V/1 ms	33
Ignition control module (ICM) - Scorpio	48		Engine idling		2 V/10 ms	32
Ignition control module (ICM)	49		Engine idling		5 V/20 ms	4
Ignition control module (ICM)	50		Engine idling		2 V/10 ms	32
Injector 1 - with PATS	70		Ignition ON	11-14 V		
Injector 1	70		Engine idling	3,4 ms	10 V/2 ms	35
Injector 1 - without PATS	75		Ignition ON	11-14 V		
Injector 1	75		Engine idling	3,4 ms	10 V/2 ms	35
Injector 2 - with PATS	96		Ignition ON	11-14 V		
Injector 2	96		Engine idling	3,4 ms	10 V/2 ms	35
Injector 2 - without PATS	101		Ignition ON	11-14 V		
Injector 2	101		Engine idling	3,4 ms	10 V/2 ms	35
Injector 3 - with PATS	20		Ignition ON	11-14 V		
Injector 3	20		Engine idling	3,4 ms	10 V/2 ms	35
Injector 3 - without PATS	74		Ignition ON	11-14 V		
Injector 3	74		Engine idling	3,4 ms	10 V/2 ms	35
Injector 4 - with PATS	95		Ignition ON	11-14 V		
Injector 4	95		Engine idling	3,4 ms	10 V/2 ms	35
Injector 4 - without PATS	100		Ignition ON	11-14 V		
Injector 4	100		Engine idling	3,4 ms	10 V/2 ms	35
Injector 5 - with PATS	93		Ignition ON	11-14 V		
Injector 5	93		Engine idling	3,4 ms	10 V/2 ms	35
Injector 5 - without PATS	73		Ignition ON	11-14 V		
Injector 5	73		Engine idling	3,4 ms	10 V/2 ms	35
Injector 6 - with PATS	94		Ignition ON	11-14 V		
Injector 6	94		Engine idling	3,4 ms	10 V/2 ms	35

Injector 6 - without PATS	99		Ignition ON	11-14 V		
Injector 6	99		Engine idling	3,4 ms	10 V/2 ms	35
Instrumentation control module - AT - 07/99	79			Connected pin - no test data available or random digital signal		
Instrumentation control module - AT - 08/99-	12			Connected pin - no test data available or random digital signal		
Instrumentation control module - Scorpio	86			Connected pin - no test data available or random digital signal		
Instrument panel - Mondeo 08/99-	28			Connected pin - no test data available or random digital signal		
Intake air temperature (IAT) sensor	39		Ignition ON - air temp. 0°C	3,8-3,9 V		
Intake air temperature (IAT) sensor	39		Ignition ON - air temp. 20°C	3-3,2 V		
Intake air temperature (IAT) sensor	39		Ignition ON - air temp. 60°C	1,2-1,4 V		
Intake air temperature (IAT) sensor	91		Ignition ON	0 V		
Intake manifold air control module - Mondeo	8			Connected pin - no test data available or random digital signal		
Intake manifold air control module	42			Connected pin - no test data available or random digital signal		
Intake manifold air control module	91		Ignition ON	0 V		
Intake manifold air control solenoid - Scorpio	44		Engine idling	11-14 V		
Intake manifold air control solenoid	44		Engine idling - accelerate briefly	11-14 V		
Knock sensor (KS) - 08/99-	57		Engine idling - full throttle briefly		50 mV/1 ms	38
Knock sensor (KS)	32		Engine idling - full throttle briefly		50 mV/1 ms	38
Malfunction indicator lamp (MIL) - 12/99-	2		Ignition ON - MIL ON	0,1 V		
Malfunction indicator lamp (MIL)	2		Engine idling - MIL OFF	11-14 V		
Mass air flow (MAF) sensor	36		Ignition ON	0 V		
Mass air flow (MAF) sensor	88		Engine cranking	0,7 V		
Mass air flow (MAF) sensor	88		Engine idling - engine hot	0,9 V		
Mass air flow (MAF) sensor	88		3000 rpm	1,7 V		
Mass air flow (MAF) sensor	88		Engine running - accelerate briefly	3,3 V		
Octane coding plug	91		Ignition ON	0 V		
Overdrive selection switch	29		Ignition ON - overdrive selected	0 V		
Overdrive selection switch	29		Ignition ON - overdrive not selected	11-14 V		
Park/neutral position (PNP) switch	64		Ignition ON - AT not in P or N	5 V		
Park/neutral position (PNP) switch	64		Ignition ON - AT in P or N	0 V		

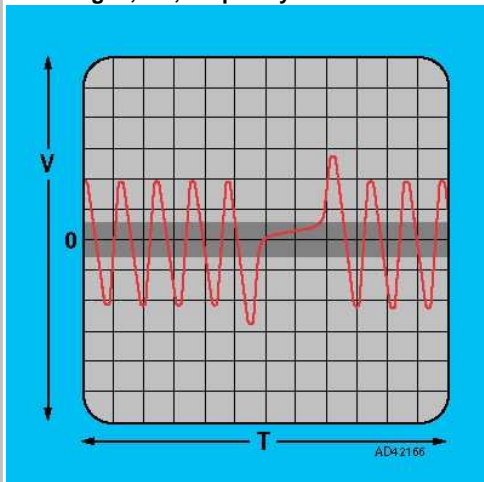
Park/neutral position (PNP) switch	91		Ignition ON	0 V		
Passive anti-theft system (PATS) - Mondeo-02/97	2			Connected pin - no test data available or random digital signal		
Passive anti-theft system (PATS) - Mondeo-07/99	17			Connected pin - no test data available or random digital signal		
Passive anti-theft system (PATS)	34			Connected pin - no test data available or random digital signal		
Passive anti-theft system (PATS)	82			Connected pin - no test data available or random digital signal		
Passive anti-theft system (PATS) - Mondeo 08/99-	19			Connected pin - no test data available or random digital signal		
Passive anti-theft system (PATS)	44			Connected pin - no test data available or random digital signal		
Passive anti-theft system (PATS)	104			Connected pin - no test data available or random digital signal		
Power steering pressure (PSP) switch	31		Engine idling - steering wheel not turned	0 V		
Power steering pressure (PSP) switch	31		Engine idling - steering wheel turned	9 V		
Power steering pressure (PSP) switch	91		Ignition ON	0 V		
Starter motor relay - Mondeo/Cougar-07/99	18		Ignition ON	11-14 V		
Starter motor relay	18		Engine cranking	0 V		
Spare cable - Cougar 12/99-	18					
Spare cable	34					
Spare cable	45					
Starter motor relay - Mondeo/Cougar 08/99-	82		Ignition ON	11-14 V		
Starter motor relay	82		Engine cranking	0 V		
Tachometer	48			Connected pin - no test data available or random digital signal		
Throttle position (TP) sensor	89		Ignition ON - throttle closed	0,5-1 V		
Throttle position (TP) sensor	89		Ignition ON - throttle fully open	4,3-4,8 V		
Throttle position (TP) sensor	90		Ignition ON	5 V		
Throttle position (TP) sensor	91		Ignition ON	0 V		
Transmission fluid temperature sensor	37			Connected pin - no test data available or random digital signal		
Transmission fluid temperature sensor	91		Ignition ON	0 V		
Transmission mode selection switch/instrumentation control module --07/99	10		Engine idling - economy mode selected	11-14 V		
Transmission mode selection switch/instrumentation control module --07/99	10		Engine idling - sport mode selected	0 V		

Transmission mode selection switch/instrumentation control module --08/99	23	←	Engine idling - economy mode selected	11-14 V		
Transmission mode selection switch/instrumentation control module --08/99	23	←	Engine idling - sport mode selected	0 V		
Trip computer - some models	43			Connected pin - no test data available or random digital signal		
Vehicle speed sensor (VSS) - some models	33	⚡	Vehicle moving		1 V/5 ms	 42
Vehicle speed sensor (VSS)	58	←	Vehicle moving		1 V/5 ms	 42
Vehicle speed sensor (VSS) - some models	58	←	Ignition ON - vehicle pushed	0 V or 10-14 V switching		
Vehicle speed sensor (VSS)	58	←	Vehicle moving		5 V/50 ms	 43

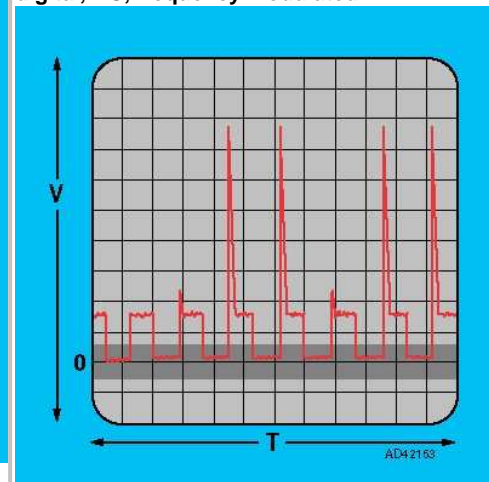
11. Analogue, AC, frequency modulated



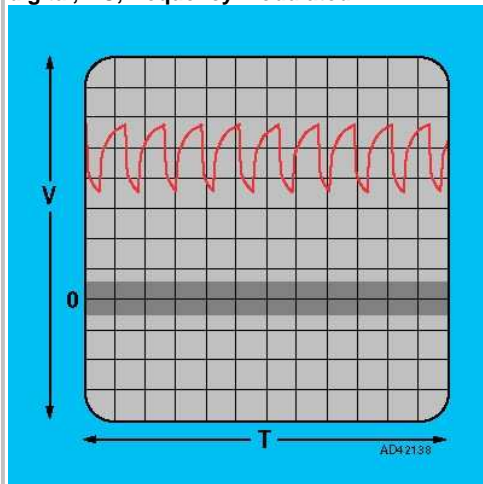
2. Analogue, AC, frequency modulated



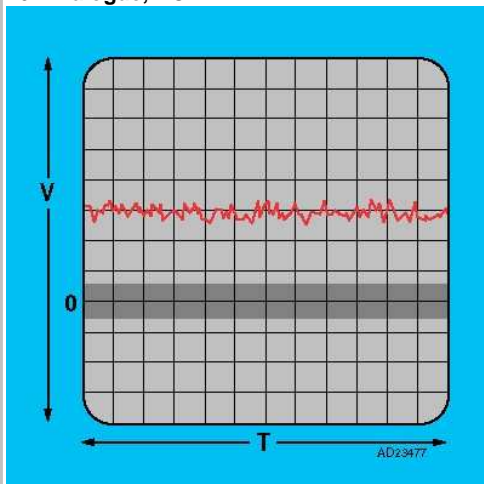
20. Digital, DC, pulse width modulated or digital, DC, frequency modulated



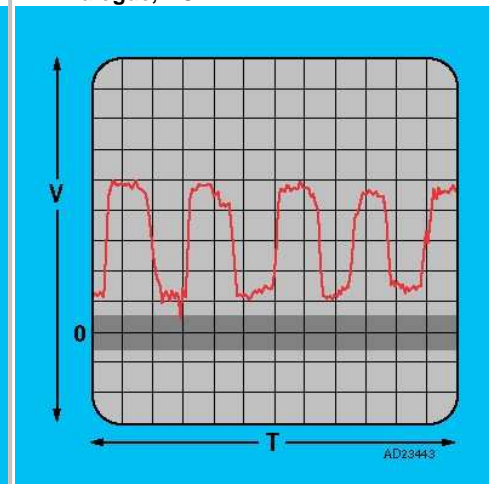
29. Digital, DC, pulse width modulated or digital, DC, frequency modulated



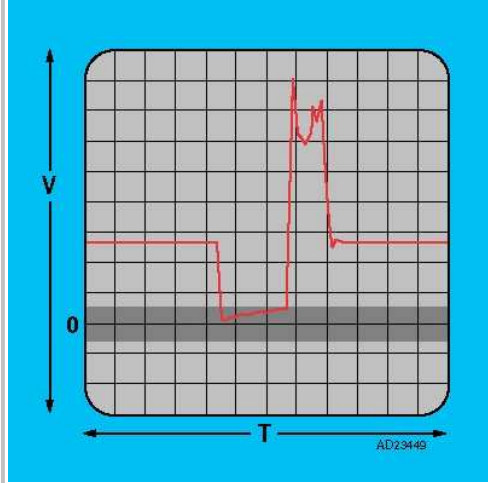
76. Analogue, DC



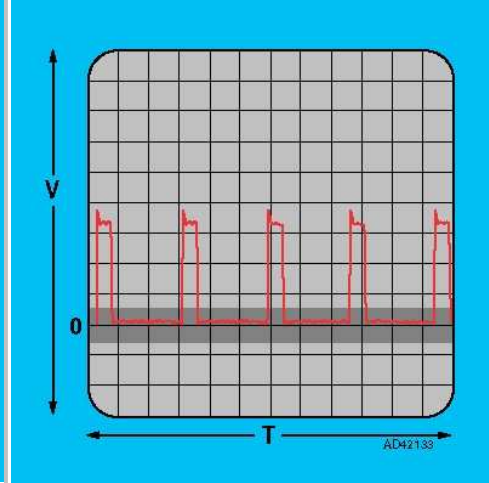
21. Analogue, DC



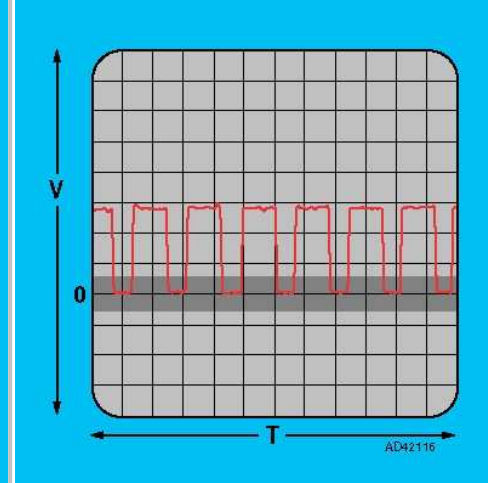
33. Digital, DC, frequency modulated



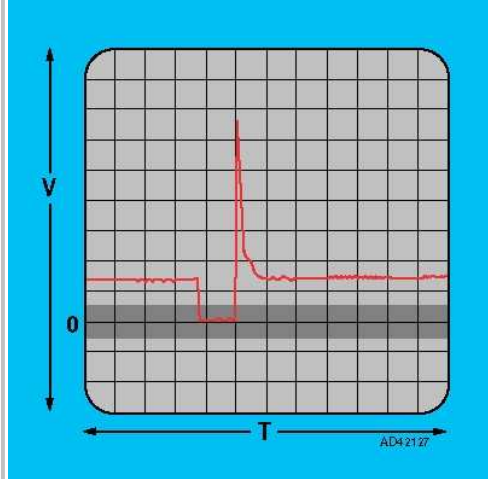
32. Digital, DC, frequency modulated



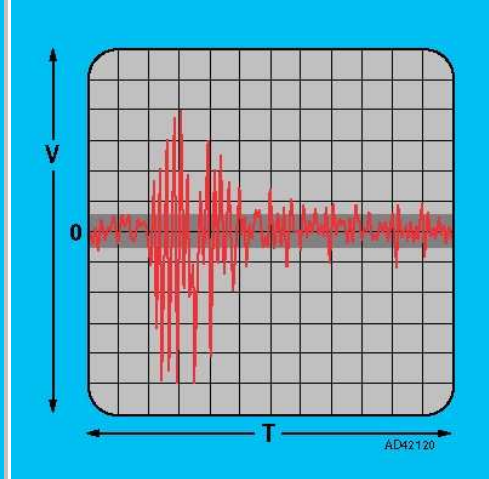
4. Digital, DC, frequency modulated



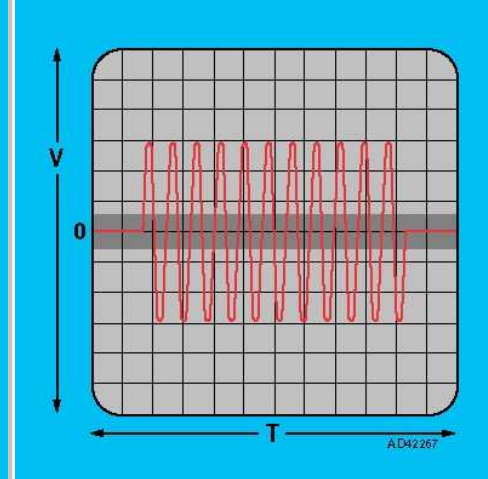
35. Digital, DC, pulse width modulated



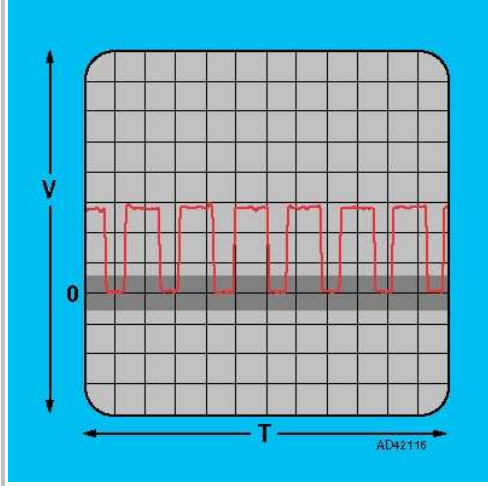
38. Analogue, AC



42. Analogue, AC, frequency modulated



43. Digital, DC, frequency modulated



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