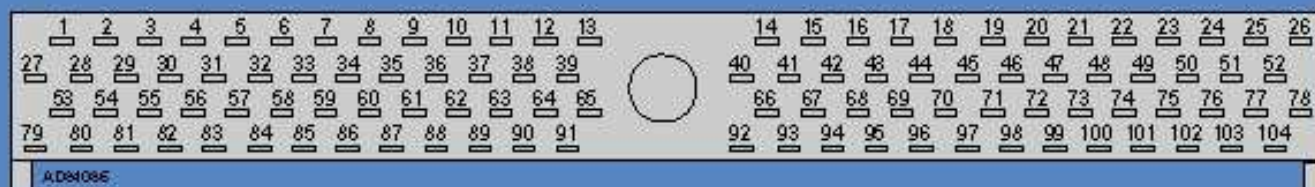


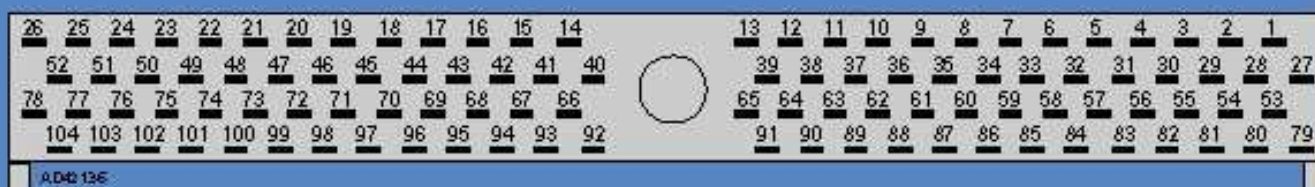
Telephone:  
Fax:  
VAT Registration No.:

Name:		Manufacturer:	Ford
Address:		Model:	KA
		Year:	1998
		Registration:	
Tel - Private:		Mileage:	
Tel - Business:		Job number:	

Terminal side



Wire side



Component/circuit description	ECM pin	Signal	Condition	Typical value	Oscilloscope setting (Suggested settings - Voltage/time per division)	Wave form
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Manufacturer: Ford

Engine code: J4M

Tuned for: R-Cat

Model: Ka 1,3

Output: 44 (60) 5000






















Year: 1998-00
























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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 1	41			Connected pin - no test data available or random digital signal		
AC refrigerant pressure switch 2	86			Connected pin - no test data available or random digital signal		
Alternator	59		Engine idling	8-9 V		
Battery	55		Ignition OFF	11-14 V		
<a href="#">Camshaft position (CMP) sensor</a>	76		Engine idling	0 V		
<a href="#">Camshaft position (CMP) sensor</a>	85		Engine idling		5 V/20 ms	
<a href="#">Clutch pedal position (CPP) switch</a>	64		Ignition ON - clutch pedal released - gear lever not in neutral	5 V		
<a href="#">Clutch pedal position (CPP) switch</a>	64		Ignition ON - clutch pedal depressed	0 V		
<a href="#">Clutch pedal position (CPP) switch</a>	91		Ignition ON	0 V		
<a href="#">Crankshaft position (CKP) sensor</a>	21		Engine idling		2 V/1 ms	
<a href="#">Crankshaft position (CKP) sensor</a>	22		Engine idling		2 V/1 ms	Reversed 
Data link connector (DLC)	13		Engine idling	0,5 V		
Data link connector (DLC)	15		Engine idling	5 V		
Data link connector (DLC)	16		Engine idling	0 V		
Data link connector (DLC) - some models	79		Engine idling	11-14 V		
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 - without PATS	27		Ignition ON	0 V		
<a href="#">Engine control module (ECM) - without PAS</a>	31		Ignition ON	0 V		
<a href="#">Engine control relay</a>	71		Ignition OFF	0 V		
<a href="#">Engine control relay</a>	71		Ignition ON	11-14 V		
<a href="#">Engine control relay</a>	97		Ignition OFF	0 V		
<a href="#">Engine control relay</a>	97		Ignition ON	11-14 V		
Engine coolant blower motor relay	68		Engine idling - coolant blower motor OFF	11-14 V		

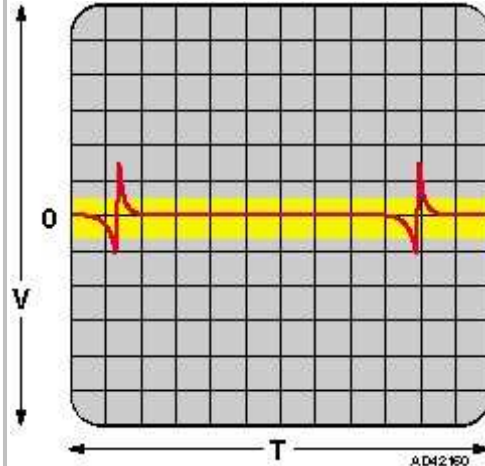
Engine coolant blower motor relay - with AC	68		Engine idling - coolant blower motor ON - low speed	0-1 V		
Engine coolant blower motor relay - with AC - except Escort	17		Engine idling - coolant blower motor OFF	11-14 V		
Engine coolant blower motor relay	17		Engine idling - coolant blower motor ON - high speed	0-1 V		
Engine coolant blower motor relay - without AC	68		Engine idling - coolant blower motor ON	0-1 V		
Engine coolant 'hot' warning lamp - some models	98		Ignition ON - lamp OFF	11-14 V		
Engine coolant 'hot' warning lamp	98		Ignition ON - lamp ON	0 V		
<a href="#">Engine coolant temperature (ECT) sensor</a>	38		Ignition ON - coolant temp. 10°C	3,5 V		
<a href="#">Engine coolant temperature (ECT) sensor</a>	38		Ignition ON - coolant temp. 80°C	0,5 V		
<a href="#">Engine coolant temperature (ECT) sensor</a>	91		Ignition ON	0 V		
<a href="#">Evaporative emission (EVAP) canister purge valve</a>	67		Ignition ON	11-14 V		
<a href="#">Evaporative emission (EVAP) canister purge valve</a>	67		Engine hot - valve operating		10 V/50 ms	 20
Exhaust gas pressure sensor - some models	65		Engine idling	0,6 V		
Exhaust gas pressure sensor	65		Engine running	0,6-4 V - varies with pressure		
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 idling - valve operating	0 V		
<a href="#">Fuel pump relay</a>	40		Ignition ON	11-14 V briefly then 0 V		
<a href="#">Fuel pump relay</a>	40		Engine idling	11-14 V		
<a href="#">Fuel pump relay</a> - with PATS	54		Ignition ON	0-1 V briefly then 11-14 V		
<a href="#">Fuel pump relay</a>	54		Engine cranking	0-1 V		
<a href="#">Fuel pump relay</a> - without PATS	80		Ignition ON	0-1 V briefly then 11-14 V		
<a href="#">Fuel pump relay</a>	80		Engine cranking	0-1 V		
<a href="#">Heated oxygen sensor (HO2S)</a>	60		Engine idling - engine hot	0,1-0,9 V fluctuating	0,2 V/1 sec.	 21
<a href="#">Heated oxygen sensor (HO2S)</a>	91		Ignition ON	0 V		

<a href="#">Heated oxygen sensor (HO2S)</a>	93		Start engine	11-14 V for 20 seconds		
<a href="#">Heated oxygen sensor (HO2S)</a>	93		Start engine	0 V after 20 seconds		
Heated rear window relay - some models	14		Engine idling - heated rear window OFF	0 V		
Heated rear window relay	14		Engine idling - heated rear window ON	5 V		
Heater function control module	48		Engine idling	6,5 V		
<a href="#">Idle air control (IAC) valve</a>	83		Engine idling - engine hot	40%	2 V/5 ms	 29
<a href="#">Ignition coil</a>	26		Engine idling		5 V/1 ms	 33
<a href="#">Ignition coil</a>	52		Engine idling		5 V/1 ms	 33
<a href="#">Injector 1</a> - with PATS	70		Ignition ON	11-14 V		
<a href="#">Injector 1</a>	70		Engine idling	4 ms	10 V/2 ms	 35
<a href="#">Injector 1</a> - without PATS	75		Ignition ON	11-14 V		
<a href="#">Injector 1</a>	75		Engine idling	4 ms	10 V/2 ms	 35
<a href="#">Injector 2</a> - with PATS	96		Ignition ON	11-14 V		
<a href="#">Injector 2</a>	96		Engine idling	4 ms	10 V/2 ms	 35
<a href="#">Injector 2</a> - without PATS	101		Ignition ON	11-14 V		
<a href="#">Injector 2</a>	101		Engine idling	4 ms	10 V/2 ms	 35
<a href="#">Injector 3</a> - with PATS	20		Ignition ON	11-14 V		
<a href="#">Injector 3</a>	20		Engine idling	4 ms	10 V/2 ms	 35
<a href="#">Injector 3</a> - without PATS	74		Ignition ON	11-14 V		
<a href="#">Injector 3</a>	74		Engine idling	4 ms	10 V/2 ms	 35
<a href="#">Injector 4</a> - with PATS	95		Ignition ON	11-14 V		
<a href="#">Injector 4</a>	95		Engine idling	4 ms	10 V/2 ms	 35
<a href="#">Injector 4</a> - without PATS	100		Ignition ON	11-14 V		
<a href="#">Injector 4</a>	100		Engine idling	4 ms	10 V/2 ms	 35
<a href="#">Intake air temperature (IAT) sensor</a>	39		Ignition ON - air temp. 10°C	3,5 V		
<a href="#">Intake air temperature (IAT) sensor</a>	91		Ignition ON	0 V		
<a href="#">Mass air flow (MAF) sensor</a>	36		Ignition ON	0 V		

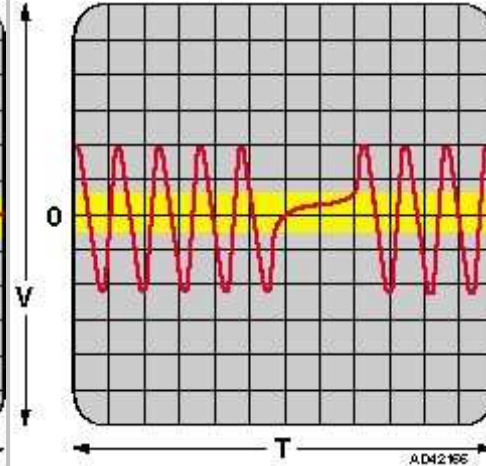
<a href="#">Mass air flow (MAF) sensor</a>	88	←	Engine idling - engine hot	0,7 V		
<a href="#">Mass air flow (MAF) sensor</a>	88	←	3000 rpm	1,5 V		
Neutral position (NP) switch	91	↯	Ignition ON	0 V		
Neutral position (NP) switch - some models	64	←	Ignition ON - gear lever not in neutral	5 V		
Neutral position (NP) switch	64	←	Ignition ON - gear lever in neutral	0 V		
Octane coding plug	91	↯	Ignition ON	0 V		
Octane coding plug - some models	30	←	Ignition ON	0 V		
Octane coding plug	30	←		Connected pin - no test data available or random digital signal		
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		
Passive anti-theft system (PATS)	8	←	Engine idling	11-14 V		
Passive anti-theft system (PATS)	19	←	Engine idling	11-14 V		
Passive anti-theft system (PATS)	27		Engine idling	0 V		
Passive anti-theft system (PATS)	42		Engine idling	11-14 V		
Passive anti-theft system (PATS)	53		Engine idling	11-14 V		
Passive anti-theft system (PATS) - Escort	6	←		Connected pin - no test data available or random digital signal		
Passive anti-theft system (PATS) - Fiesta	11	←	Engine idling	11-14 V		
<a href="#">Power steering pressure (PSP) switch</a>	31	←	Engine idling - steering wheel not turned	0 V		
<a href="#">Power steering pressure (PSP) switch</a>	31	←	Engine idling - steering wheel turned	9 V		
<a href="#">Power steering pressure (PSP) switch</a>	91	↯	Ignition ON	0 V		
<a href="#">Throttle position (TP) sensor</a>	89	←	Ignition ON - throttle closed	0,9 V		
<a href="#">Throttle position (TP) sensor</a>	89	←	Ignition ON - throttle fully open	4,8 V		
<a href="#">Throttle position (TP) sensor</a>	90	⇒	Ignition ON	5 V		
<a href="#">Throttle position (TP) sensor</a> - 9/97-98	91	↯	Ignition ON	0 V		
<a href="#">Vehicle speed sensor (VSS)</a>	58	←	Ignition ON - vehicle pushed	0 V or 11-14 V		
<a href="#">Vehicle speed sensor (VSS)</a>	58	←	Vehicle moving - 10 mph	20 Hz - increases with vehicle speed		



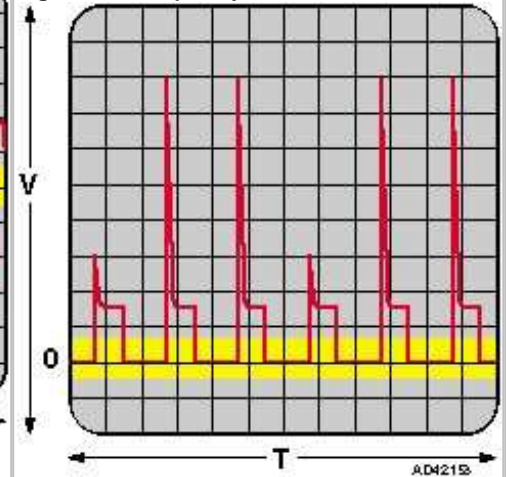
11. Analogue, AC, frequency modulated



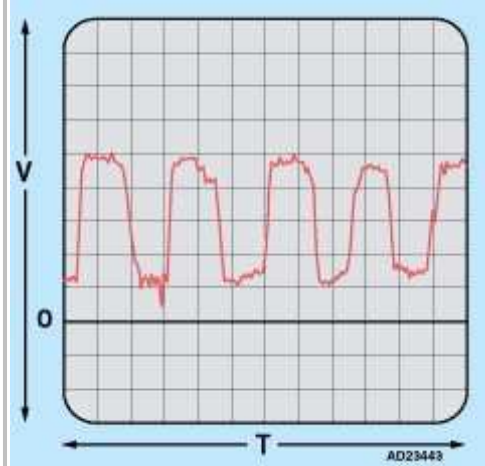
2. Analogue, AC, frequency modulated



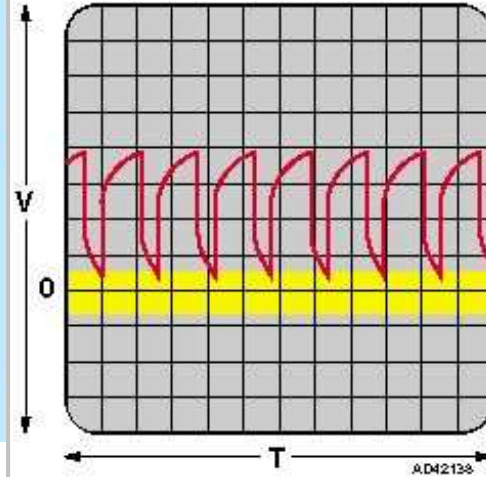
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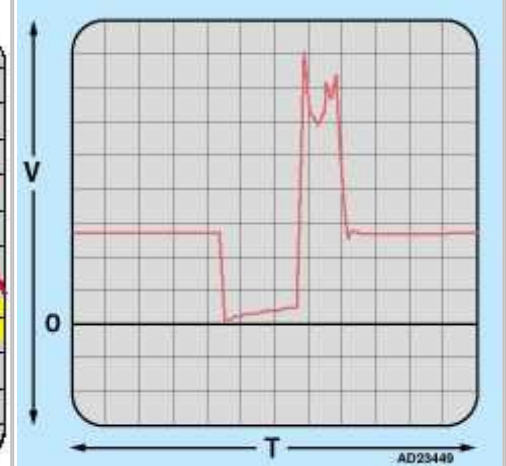
21. Analogue, DC



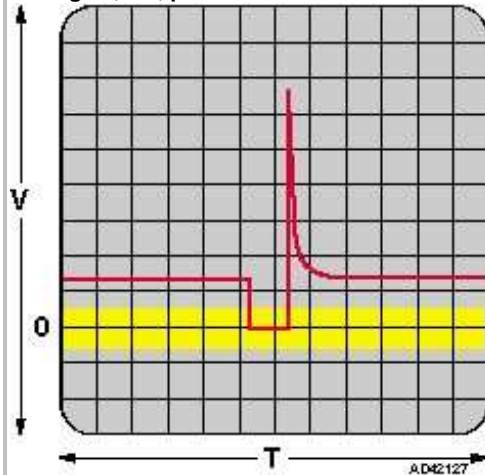
29. Digital, DC, pulse width modulated or digital, DC, frequency modulated



33. Digital, DC, frequency modulated



35. Digital, DC, pulse width modulated



43. Digital, DC, frequency modulated

