

YMMS: 2001 Volvo S80 Base
 Engine: 2.9L Eng
 VIN:

Mar 30, 2022
 License:
 Odometer:

Signal Description. MSA 15.8

General

All values given below are between the respective terminal in column 1 and terminal #A53 (power ground) unless otherwise stated in brackets after the entry. Control module terminals #A1-#A60 correspond to terminals #A1-#60 on the breakout box, #A61-#A70 correspond to terminals #B1-#B10 on the breakout box and terminals #B1-#B50 correspond to terminals #B10-#B60 on the breakout box.

NOTE: *It is important to connect the breakout box and check the ground terminals before taking readings.*

HINT: If the numbering of the connector is different from the numbering on the breakout box, the connector number is given first, terminal #A61, followed by the breakout box number in brackets, (terminal #B1).

HINT: Example: #A61 (#B1)

U=	DC voltage in volts (V)	U _{AC} =	AC voltage in volts (V)
U _{bat} =	Battery voltage (V)	f =	Frequency in Hertz (Hz)
U _{low} =	Voltage approximately 0 V	% duty =	Duty cycle (pulse ratio) as a percentage (%)
t =	Time in milliseconds (ms)		

Terminal	Breakout box	Signal type	Ignition on	Engine idling	Other
#A1	#A1	-	-	-	
#A2	#A2	EGR converter, control signal	U _{bat}	U _{bat}	During control, a single pulsed signal between approximately 0V and U _{bat} with a fixed frequency and variable pulse ratio. Pulse ratio increases with exhaust gas recirculation
#A3	#A3	Fuel temperature sensor, signal	Cold fuel (+10 degrees C) U=4.2V Cold fuel (+20 degrees	The voltage decreases with increasing temperature	The voltage decreases with increasing temperature

			C) U=3.9V Warm fuel (+50 degrees C) U=2.7V Warm fuel (+80 degrees C) U=1.6V		
#A4	#A4	Engine coolant temperature (ECT) sensor, signal	Cold engine (+10 degrees C) U=4.2V Warm engine (+80 degrees C) U=1.6V Warm engine (+100 degrees C) U=1.2V	The voltage decreases with increasing temperature	The voltage decreases with increasing temperature
#A5	#A5	Intake air temperature (IAT) sensor, signal	+10 degrees C U=4.1V +30 degrees C U=3.3V +50 degrees C U=2.5V +80 degrees C U=1.5V	The voltage decreases with increasing temperature	The voltage decreases with increasing temperature
#A6	#A6	-	-	-	
#A7	#A7	Control	f=100Hz	f=100Hz	Pulsed signal between U_{bat} and

		signal to and from the engine cooling fan control module	pulse ratio= 10-95%	pulse ratio= 10-95%	U_{low} with fixed frequency and variable pulse ratio
#A8	#A8	-	-	-	
#A9	#A9	Needle lift sensor, signal	$U=3.2V$	$U=3.2V$	Direct current with retained alternating current when the needle is lifted.
#A10	#A10	-	-	-	
#A11	#A11	Engine coolant heater relay 1, control signal		Relay activated: U_{low} Relay not activated: U_{bat}	
#A12	#A12	Engine coolant heater relay 2+3, control signal		Relay activated: U_{low} Relay not activated: U_{bat}	
#A13	#A13	Engine pads valve, control signal			When regulating
#A14	#A14	Injection timing valve, control signal			During control, a pulsed signal between approximately 0V and U_{bat} with a fixed frequency and variable pulse ratio. The pulse ratio decreases with earlier injection timing
#A15	#A15	Fuel shut-off valve, control signal		Valve activated: U_{bat} Valve not activated: U_{low}	
#A16	#A16	Power supply control module (from system relay)	$U = U_{bat}$	$U = U_{bat}$	
#A17	#A17	Power supply control module (from system relay)	$U = U_{bat}$	$U = U_{bat}$	
#A18	#A18	Power supply control	$U = U_{bat}$	$U = U_{bat}$	

		module (from system relay)			
#A19	#A19	-	-	-	
#A20	#A20	Generator (GEN) load signal	U_{low}		During charging, a pulsed signal between U_{low} and U_{bat} with variable frequency and pulse ratio. The pulse ratio decreases and frequency increases as charging increases
#A21	#A21	-	-	-	
#A22	#A22	Mass air flow (MAF) sensor, signal	$U=1.0V$	approximately 1.8 V	
#A23	#A23	-	-	-	
#A24	#A24	-	-	-	
#A25	#A25	-	-	-	
#A26	#A26	Oil pressure switch, signal	$U=U_{low}$	$U = U_{bat}$	
#A27	#A27	-	-	-	
#A28	#A28	Needle lift sensor, signal ground	$U=U_{low}$	$U=U_{low}$	
#A29	#A29	-	-	-	
#A30	#A30	-	-	-	
#A31	#A31	-	-	-	
#A32	#A32	-	-	-	
#A33	#A33	-	-	-	
#A34	#A34	-	-	-	
#A35	#A35	Fuel regulator, control signal	$U = U_{bat}$		
#A36	#A36	-	-	-	
#A37	#A37	-	-	-	
#A38	#A38	Turbocharger (TC) control valve, control signal	$U = U_{bat}$		
#A39	#A39	Power	$U=5 V$		

		supply air conditioning (A/C) linear pressure sensor			
#A40	#A40	-	-	-	
#A41	#A41	Power supply, fuel regulator position sensor	U=2.5V AC=0.7-0.8V	Direct current with retained alternating current.	Direct current with retained alternating current.
#A42	#A42	Fuel regulator position sensor, signal	U=2.5V		
#A43	#A43	Power supply, fuel regulator position sensor	U=2.5V AC=0.4-0.5V	Direct current with retained alternating current which increases with increased injected fuel volume	Direct current with retained alternating current which increases with increased injected fuel volume
#A44	#A44	-	-	-	
#A45	#A45	-	-	-	
#A46	#A46	-	-	-	
#A47	#A47	-	-	-	
#A48	#A48	Engine speed (RPM) sensor, signal	U _{low}	When the engine is running: alternating current which increases in frequency and amplitude with engine speed (RPM)	When the engine is running: alternating current which increases in frequency and amplitude with engine speed (RPM)
#A49	#A49	-	-	-	
#A50	#A50	-	-	-	
#A51	#A51	-	-	-	
#A52	#A52	-	-	-	
#A53	#A53	Power ground 3	U _{low}	Measured to battery negative terminal	Measured to battery negative terminal
#A54	#A54	Power ground 4	U _{low}	Measured to battery negative terminal	Measured to battery negative terminal
#A55	#A55	-	-	-	
#A56	#A56	-	-	-	

#A57	#A57	-	-	-	
#A58	#A58	Mass air flow (MAF) sensor, ground	U=U _{low}		
#A59	#A59	Mass air flow (MAF) sensor power supply	U=5 V		
#A60	#A60	Engine coolant temperature (ECT) sensor, ground			
#A61	#B1	Fuel temperature sensor, ground	U=U _{low}		
#A62	#B2	-	-	-	
#A63	#B3	Signal ground	U=U _{low}		
#A64	#B4	-	-	-	
#A65	#B5	-	-	-	
#A66	#B6	Engine speed (RPM) sensor, signal ground	U=U _{low}		
#A67	#B7	A/C linear pressure sensor, ground	U=U _{low}		
#A68	#B8	A/C linear pressure sensor, signal	U = 1V	Voltage increases with the pressure in the A/C system	Voltage increases with the pressure in the A/C system
#A69	#B9	-	-	-	
#A70	#B10	-	-	-	

Terminal	Breakout box	Signal type	Ignition on	Engine idling	Other
#B1	#B11	CAN-L	2-3V		

#B2	#B12	-	-	-	
#B3	#B13	Control area network (CAN) screen			
#B4	#B14	Ground for clutch position sensor, brake position sensor	$U=U_{low}$		
#B5	#B15	Analog accelerator pedal (AP)	$U=U_{low}$		
#B6	#B16	-	-	-	
#B7	#B17	-	-	-	
#B8	#B18	Engine coolant level switch, signal			
#B9	#B19	Accelerator pedal (AP) position sensor power supply, analog sensor	$U = 5 V$		
#B10	#B20	-	-	-	
#B11	#B21	-	-	-	
#B12	#B22	-	-	-	
#B13	#B23	CAN-H	2-3V		
#B14	#B24	-	-	-	
#B15	#B25	Clutch position sensor, signal		Unaffected 3.1 V Fully depressed 0.9V	
#B16	#B26	Brake position sensor, signal		Unaffected 3.2 V Fully depressed 2.5 V	
#B17	#B27	Analog accelerator pedal (AP) position sensor, signal		Unaffected 0.4 V Fully depressed 4.3 V	
#B18	#B28	-	-	-	
#B19	#B29	Cruise control signal, signal "+"			
#B20	#B30	Cruise control signal, signal "resume"			
#B21	#B31	-	-	-	
#B22	#B32	Diagnostic lead C-link	$U=90\%$ of U_{bat}		

#B23	#B33	Signal 50 from the ignition switch			
#B24	#B34	-	-	-	A pulsed signal between U_{low} and U_{bat}
#B25	#B35	Digital accelerator pedal (AP) position sensor, signal	t=5ms pulse ratio=8-88%	A pulsed signal between U_{low} and U_{bat}	
#B26	#B36	Stop lamp switch, signal	Brake pedal up: U_{low} Brake pedal depressed: U_{bat}		
#B27	#B37	-	-	-	
#B28	#B38	-	-	-	
#B29	#B39	-	-	-	
#B30	#B40	Boost pressure sensor, ground	U_{low}		
#B31	#B41	-	-	-	
#B32	#B42	-	-	-	
#B33	#B43	-	-	-	
#B34	#B44	-	-	-	
#B35	#B45	-	-	-	
#B36	#B46	-	-	-	
#B37	#B47	Signal 15 from the ignition switch	$U = U_{bat}$		
#B38	#B48	System relay, control signal	$U=U_{low}$	Relay activated: U_{low} Relay not activated: U_{bat}	Relay activated: U_{low} Relay not activated: U_{bat}
#B39	#B49	-	-	-	
#B40	#B50	-	-	-	
#B41	#B51	-	-	-	
#B42	#B52	Power supply, boost pressure sensor	5V		
#B43	#B53	Boost pressure sensor, signal	approximately 1.8 V	approximately 1.8 V	Voltage increases with engine speed (RPM) and boost pressure
#B44	#B54	A/C relay, control signal	$U = U_{bat}$		
#B45	#B55	-	-	-	
#B46	#B56	Malfunction indicator lamp	$U=U_{low}$	Malfunction	Malfunction indicator

		(MIL), control signal		indicator lamp (MIL) lamp lit: U_{low} Malfunction indicator lamp (MIL) lamp out: U_{bat}	lamp (MIL) lamp lit: U_{low} Malfunction indicator lamp (MIL) lamp out: U_{bat}
#B47	#B57	-	-	-	
#B48	#B58	internally connected to A13			
#B49	#B59	Glowplug indicator lamp, control signal	Lamp lit: U_{low} Lamp not lit: U_{bat}		
#B50	#B60	Glow plug relay, control signal	Relay activated: U_{low} Relay not activated: U_{bat}		