

Signal specification

All values listed below are between the terminal in column 1 and terminal #A9 (#39 on the breakout box), unless otherwise indicated in brackets.

Note! Connect the breakout box and check the ground terminals before taking readings.

U = DC voltage in volts (V)

U_{bat} = battery voltage

U_{low} = voltage approximately 0 V

t = time in milliseconds (ms)

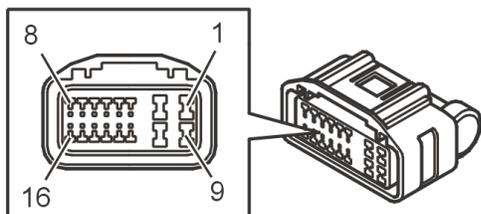
U_{AC} = AC voltage in volts (V)

F = frequency in Hertz (Hz)

% duty = duty cycle (pulse ratio) as a percentage (%)

- Connector A (16-pin) corresponds to terminals #31 – #46 on the breakout box
- Connector B (4-pin) corresponds to terminals #51 – #54 on the breakout box
- Connector C (22-pin on transmission side) corresponds to terminals #1 – #22 on the breakout box.

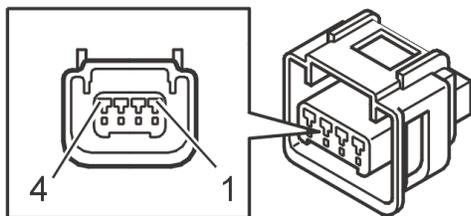
Connector A, terminals #A1-#A16.
 The following values are measured between the relevant terminal in column 1 and #A9 (#39 on the breakout box) unless otherwise stated.
 Note! Check the ground terminals before starting to take readings with the breakout box.
 U = DC in volts (V)
 U_{bat} = battery voltage in volts (V)
 U_{low} = Voltage close to 0 V



Connector A, terminals #A31 – #A46					
Breakout box terminal	Control module terminal	Signal type	Ignition on	Engine idling	Other
#31	#A1	Power supply	U _{bat}		30-supply from the fuse
#32	#A2	-	-		-

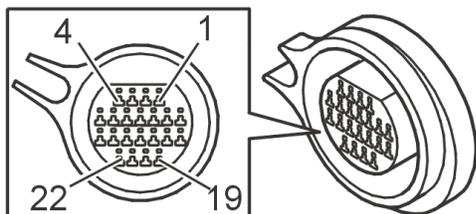
#33	#A3	-	-	-
#34	#A4	-	-	-
#35	#A5	Signal, start inhibiting system	Ulow when starting is permitted	Signal to the engine control module (ECM) about permitted start
#36	#A6	Control module communication cable CAN_L	The voltage is 1.5-2.5 V during communication	-
#37	#A7	Communication cable LIN gear selector module (GSM)	During communication the voltage is 0V - Ubat	-
#38	#A8	Control module communication cable CAN_H	The voltage is 2.0-3.5 V during communication	-
#39	#A9	Power ground	U = Ulow	
#40	#A10	-	-	-
#41	#A11	Power supply	U = Ubat	15-supply from ignition switch via fuse
#42	#A12	-	-	-
#43	#A13	Signal, shift inhibitor Shift-lock solenoid to gear selector module (GSM)	Shift inhibitor U=Ubat when the solenoid is not activated U=Ulow when the solenoid is activated	Solenoid not activated = gear selector locked Solenoid activated = gear selector can be moved
#44	#A14	Communication cable C-line	-	For serial communication
#45	#A15	-	-	-
#46	#A16	Power supply, gear selector module (GSM)	U = Ubat	-

Connector B, terminals #A17-#A20
The following values are measured between the relevant terminal in column 1 and #A9 (#39 on the breakout box) unless otherwise stated.
Note! Check the ground terminals before starting to take readings with the breakout box.
U = DC voltage in volts (V)
Ubat = battery voltage in volts (V)
Ulow = Voltage close to 0 V



Connector B, terminals #B1–#B4					
Breakout box terminal	Control module terminal	Signal type	Ignition on	Engine idling	Other
#51	#B1	Signal, transmission output speed sensor	Tooth against sensor: 14 mA Cover against sensor: 7 mA		The sensor generates a pulsed current (quadratic wave) with a fixed pulse ratio when the pulse wheel rotates. Frequency increases with speed.
#52	#B2	Power supply, transmission output speed sensor	Power supply, transmission output speed sensor $\approx 1-3 V < U_{bat}$		
#53	#B3	Signal, transmission input speed sensor	Tooth against sensor: 14 mA Cover against sensor: 7 mA		The sensor generates a pulsed current (quadratic wave) with a fixed pulse ratio when the pulse wheel rotates. Frequency increases with speed.
#54	#B4	Power supply, transmission input speed sensor	Power supply, transmission input speed sensor $\approx 1-3 V < U_{bat}$		

Connector B, terminals #A17-#A20
 The following values are measured between the relevant terminal in column 1 and #A9 (#39 on the breakout box) unless otherwise stated.
 Note! Check the ground terminals before starting to take readings with the breakout box.
 U = DC in volts (V)
 U_{bat} = battery voltage in volts (V)
 U_{low} = Voltage close to 0 V



Connector C, terminals #C1- #C22

Breakdown box terminal	Control module terminal	Signal type	Ignition on	Engine idling	Other
#1	#C1	Control signal, shift solenoid S1	Activated: U=0-2 V below Ubat Not activated: Ulow		The solenoid is supplied with voltage when activated by the transmission control module (TCM) in 1st gear
#2	#C2	Control signal, shift solenoid S2	Activated: U=0-2 V below Ubat Not activated: Ulow		The solenoid is supplied with voltage when activated by the transmission control module (TCM) in 1st and 5th gears
#3	#C3	Control signal, linear pressure solenoid SLT	f=300Hz. The frequency is constant, irrespective of driving conditions. The signal duty cycle is modified when line pressure is adapted.		The solenoid receives power when it is activated by the transmission control module (TCM).
#4	#C4	-	-		-
#5	#C5	-	-		-
#6	#C6	Signal ground, linear pressure solenoid SLT	U = Ulow		-
#7	#C7	Signal ground, Lock-up solenoid SLU	U = Ulow		-
#8	#C8	-	-		-
#9	#C9	Control signal, lock-up solenoid SLU	f=300Hz. The frequency is constant, irrespective of driving conditions. The signal duty cycle is modified when line pressure is adapted.		The solenoid receives power when it is activated by the transmission control module (TCM).
#10	#C10	Signal ground, linear pressure solenoid SLS	U = Ulow		-
#11	#C11	-	-		-
#12	#C12	-	-		-
#13	#C13	Signal ground, oil temperature sensor	Ulow		Ground
#14	#C14	Signal, oil temperature sensor	Cold transmission (+20°C): U=2.4 Hot transmission (+100°C): U=0.3-0.5 V		U decreases with increasing temperature

#15	#C15	-	-	-
#16	#C16	Control signal, line pressure solenoid SLS	f=300Hz. The frequency is constant, irrespective of driving conditions. The signal duty cycle is modified when line pressure is adapted.	The solenoid receives power when it is activated by the transmission control module (TCM).
#17	#C17	Control signal, shift solenoid S3	Activated: U=0-2 V below Ubat Not activated: Ulow	The solenoid is supplied with voltage when activated by the transmission control module (TCM) in 1st, 2nd and 3rd gears
#18	#C18	-	-	-
#19	#C19	-	-	-
#20	#C20	-	-	-
#21	#C21	Control signal, shift solenoid S5	Activated: U=0-2 V below Ubat Not activated: Ulow	The solenoid is supplied with voltage when it is activated by the transmission control module (TCM) in position R and when shifting from 2nd to 3rd gear
#22	#C22	Control signal, shift solenoid S4	Activated: U=0-2 V below Ubat Not activated: Ulow	The solenoid receives voltage when activated by the transmission control module (TCM) in 3rd, 4th and 5th gears