Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		**CC/ISC control module (N4/3)** Voltage supply Circuit 87 U	N4/3  3 — V — 51 4 — V — 52	Ignition: **ON**	11 – 14 V	⇒ 1.1, Wiring **Model 124, 202** Fuse from K1/2, Overvoltage protection relay (K1/2). **Models 129, 140** Base module (N16/1), DM, Chassis & Drivetrain, Vol. 1. **Model 210** Relay module (K40), DM, Chassis & Drivetrain, Vol. 1.
1.1		Ground **Model 124** Main ground (W1) Below instrument cluster **Model 202** Ground, right or left component compartment (W16/3 or W16/4)	N4/3  X11/4 3 — V — 16 N4/3  X11/4 4 — V — 3	Ignition: **ON** Ignition: **OFF**	11 – 14 V	Wiring, **Model 124:** W1 **Model 202:** W16/3 or W16/4

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
[1.1]		Ground			11 – 14 V	**Model 129:** W27 **Model 140:** W15 **Model 210:** W15/1
		Model 129 Module box bracket (W27)	N4/3  X11/4 3 — ◄ — V — ► — 3	Ignition: **OFF**		
		Model 140 Right footwell (W15)	N4/3  X11/4 4 — ◄ — V — ► — 3	Ignition: **OFF**		
		Model 210 Right footwell (W15/1)	N4/3  X11/4 3 — ◄ — V — ► — 3 4 — ◄ — V — ► — 3	Ignition: **OFF**		

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
2.0	064	**CC switch (S40)**	N4/3	Ignition: **ON**		Wiring, CC switch (S40).
		V Decelerate/Set	4 — 50	CC switch not activated	< 1 V	
				Position: **DECEL/SET**	11 – 14 V	
		SP Resume	4 — 47	Position: **RESUME**	11 – 14 V	
		B Accelerate/Set	4 — 49	Position: **ACCEL/SET**	11 – 14 V	
		A Off	4 — 48	CC switch not activated	11 – 14 V	
				Position: **OFF**	< 1 V	
		Control switch contact	4 — 11	CC sontrol switch contact in position: **DECEL/SET, ACCEL/SET, RESUME, OFF**	11 – 14 V	
3.0	054 056 048 049	**CC/ISC actuator (M16/2)** Voltage supply, throttle valve actual value potentiometer (M16/2r1) and drive actual value potentiometer (M16/2r2)	N4/3 41 — 40	Ignition: **ON**	4.7 – 5.3 V **Reference value for tables I, II and III.**	Wiring, CC/ISC actuator (M16/2), CC/ISC control module (N4/3).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	049	**CC/ISC actuator (M16/2)** Drive actual value potentiometer (M16/2r2) signal	N4/3 4 — 5	Ignition: **OFF** Disconnect ABS control module (N30) **Connect first signal generator.** (front axle speed simulation) U=set to 10 V f=value from tabel **IV**		Wiring, CC/ISC actuator (M216/2), CC/ISC control module (N4/3).
			N4/3 3 — 9	**Connect second signal generator.** (rear axle speed simulation) U=set to 10 V f=value from tabel **IV**		**Note:** Upon completion of test, erase DTC's stored in ASD control module (N30/2), DM, Chassis & Drivetrain, Vol. 1, sections 4.1 to 4.3
			N4/3 3 — 61	Ignition: **ON** Accelerator pedal position: Closed throttle position	**Table I**, column "**a**".	
				Activate CC switch in position "Accel/Set" until a constant voltage value can be read.	**Table I**, column "**b**".	

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	048	**CC/ISC actuator (M16/2)** Throttle valve actual value potentiometer (M16/2r1) signal	N4/3 3 — ◄ (V) ► — 63	Ignition: **ON** Accelerator pedal position: Closed throttle position Wide open throttle or Kickdown	**Table II** column "**e**" column "**f**"	Wiring, CC/ISC actuator (M16/2), CC/ISC control module (N4/3).
6.0	050 051	**CC/ISC actuator (M16/2)** Voltage supply Safety contact switch (M16/2s1) and CTP switch (M16/2s2)	N4/3 3 — ◄ (V) ► — 20	Ignition: **ON** Accelerator pedal position: Closed throttle position	6 – 12 V (value jumps)	Wiring, CC/ISC actuator (M16/2).
7.0	051	**CC/ISC actuator (M16/2)** CTP switch (M16/2s2) switching point	N4/3 3 — ◄ (V) ► — 37	Ignition: **ON** Accelerator pedal position: Closed throttle position Slowly depress accelerator until switching point occurs.	6 – 12 V (value jumps) 1 V	Wiring, CC/ISC actuator (M16/2).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0	050	**CC/ISC actuator (M16/2)** Safety contact switch (M16/2s1) switching point ⚠ **To reference the correct voltage value in Table III, columns "h" and "i", observe the reference value obtained in test step 3.0.**	N4/3 4 — 5	Ignition: **OFF** Disconnect ABS control module (N30) **Connect first signal generator.** (front axle speed simulation) U= set to 10 V f=value from tabel **IV**		Wiring, CC/ISC actuator (M16/2).
			N4/3 3 — 9	**Connect second signal generator.** (rear axle speed simulation) U= set to 10 V f=value from tabel **IV**		
			N4/3 3 — 61	**Connect first multimeter**		

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
[8.0]			N4/3 3 — V — 59	**Connect 2nd multimeter** Ignition: **ON** Read voltage value from first multimeter (drive actual value potentiometer) Read voltage value from second multimeter (safety contact switch) Activate CC switch in position “Accel/Set” until voltage value on first multimeter does not decrease Simultaneously read voltage value from second multimeter	 **Tabel III** column “**h**” 6 – 10 V (value jumps, safety contact switch closed) **Tabel III** column “**i**” 1 V (safety switch open)	⇒ 1.1, W15 Masse Federdom rechts, Leitungen.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
[8.0]				**Note:** If voltage does not drop, release CC switch, adjust frequency on second signal generator and repeat test procedure		
9.0	054 056	**CC/ISC actuator (M16/2)** Actuator motor (M16/2m1) resistance	N4/3 15 — Ω — 17 16 — Ω — 18	Ignition: **OFF**	< 10 Ω	Wiring, CC/ISC actuator (M16/2).
10.0	054 056	**CC/ISC actuator (M16/2)** Magnetic clutch (M16/2k1)	N4/3 56 — V — 34	Ignition: **ON**	7.0 – 10 V	Wiring, CC/ISC actuator (M16/2), CC/ISC control module (N4/3).
11.0		**Starter lock-out/backup lamp switch (S16/1)** P/N recognition	N4/3 4 — V — 26	Ignition: **ON** Transmission range: P/N R/D/3/2	0 V 11 – 14V	Wiring, Starter lock-out/backup lamp switch (S16/1), CC/ISC control module (N4/3), Ignition/starter switch (S2/1).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
12.0		**CC/ISC control module (N4/3)** A/C compressor signal	N4/3 4 — 27	Engine: **Start** Accelerator pedal position: Closed throttle position Set temperature selector wheel to MIN and blower to highest speed	<1 V 11 – 14 V	Wiring, **Model 124:** A/C compressor control module (N6) **Models 129, 140:** Base module (N16/1) **Model 202, 210:** A/C pushbutton control module (N22).
13.0	160	**CC/ISC control module (N4/3)** Engine speed signal (TN) from engine control module (N3/4)	N4/3 4 — 7	Engine: **Start** Accelerator pedal position: Closed throttle position	6 – 12 V	⇒ 15.0, Engine control module (N3/4), Instrument cluster, CC/ISC control module (N4/3).
14.0	128 129 130	**Left front axle VSS sensor (L6/1)** Speed signal	N4/3 4 — 5	Raise front of vehicle. ABS (N30) or ETS/SPS (N47-2) control module connected. Ignition: **ON** Turn left front wheel by hand	2 – 5 V	Wiring, ABS control module (N30), see DM, Chassis & Drivetrain, Vol. 2, sections 6.1 to 6.3. ETS/SPS control module (N47-2), see DM, Chassis & Drivetrain, Vol. 3.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
15.0	144	**Rear axle VSS sensor (L6)** Speed signal (ABS)	N4/3 4 — ◄V► — 9	Raise rear of vehicle. ABS control module (N30) connected. Ignition: **ON** Turn left rear wheel by hand	2 – 5 V	⇒ 15.1 Wiring, ABS control module (N30), see DM, Chassis & Drivetrain, Vol. 2, sections 6.1 to 6.3.
15.1	144 146	Left rear axle VSS sensor (L6/3) Speed signal (ETS)	N4/3 4 — ◄V► — 9	Raise rear of vehicle. ETS/SPS control module (N47-2) connected. Ignition: **ON** Turn left rear wheel by hand	2 – 5 V	Wiring, ETS/SPS control module (N47-2), see DM, Chassis & Drivetrain, Vol. 3.
16.0	5	**Stop lamp switch (S9/1)** Signal (N.C. contact)	N4/3 4 — ◄V► — 24	Ignition: **ON** Brake pedal not applied Brake pedal applied	 < 1 V 11 – 14 V	Wiring, S9/1
		Signal (N.O. contact)	N4/3 4 — ◄V► — 23	Ignition: **ON** Brake pedal not applied Brake pedal applied	 11 – 14 V < 1 V	

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
17.0	11	**CC/ISC control module (N4/3)** Fuel safety shut-off signal to engine control module (N3/4)	N4/3 4 — (V) — 42	Ignition: **ON**	2.0 – 11 V (value jumps).	Wiring, CC/ISC actuator (M16/2), N4/3
18.0		**CC/ISC control module (N4/3)** Closed throttle position recognition signal to engine control module (N3/4)	N4/3 4 — (V) — 25	Ignition: **ON** Accelerator pedal position: Closed throttle position Accelerator pedal applied	 4.8 V 5.5 V	Wiring, N4/3
19.0	7	**Serial data bus (CAN)**	N4/3 45 (CAN-L) — (Ω) — 44 (CAN-H)	Ignition: **OFF** Disconnect CC/ISC control module (N4/3)	**Models 124, 202, 210:** 55 – 65 Ω **Models 129, 140:** 115 – 125 Ω	Wiring, Engine control module (N3/4), see DM, Engines, Vol. 2, section 1.1.
20.0	9	**ETS signal**	N4/3 4 — (V) — 6	Ignition: **ON** Engine: **at Idle**	< 1 V 11 – 14 V	Wiring, ETS/SPS control module (N47-2).

Electrical Test Program – Test

Table I Voltage values - Drive actual value potentiometer (M16/2r2)

Reference voltage supply value	"**a**" Accelerator pedal position: **Closed throttle**	"**b**" Activate CC switch until voltage value is constant
4.7 V	4.46 V	0.23 V
4.8 V	4.56 V	0.24 V
4.9 V	4.65 V	0.24 V
5.0 V	4.75 V	0.25 V
5.1 V	4.84 V	0.25 V
5.2 V	4.94 V	0.26 V
5.3 V	5.03 V	0.26 V

Electrical Test Program – Test

Table II Voltage values - Throttle valve actual value potentiometer (M16/2r1)

Reference voltage supply values	"**e**" Accelerator pedal position: **Closed throttle**	"**f**" Accelerator pedal position: **Wide open throttle or Kickdown**
4.7 V	4.55 V	0.23 V
4.8 V	4.65 V	0.24 V
4.9 V	4.75 V	0.24 V
5.0 V	4.85 V	0.25 V
5.1 V	4.94 V	0.25 V
5.2 V	5.04 V	0.26 V
5.3 V	5.14 V	0.26 V

Electrical Test Program – Test

Table III Voltage values - Drive actual value potentiometer (M16/2r2)

Reference voltage supply values	**"h"** Safety switch: **Closed**	**"i"** Safety switch: **Open**
4.7 V	4.09 V	3.66 V
4.8 V	4.17 V	3.74 V
4.9 V	4.26 V	3.82 V
5.0 V	4.35 V	3.90 V
5.1 V	4.43 V	3.97 V
5.2 V	4.52 V	4.05 V
5.3 V	4.61 V	4.13 V

Electrical Test Program – Test

Table IV Frequency values for vehicle speed simulation (front and rear axle VSS sensors)

Model	Front axle (ABS)	Rear axle (ABS)				Front and Rear axle (ETS)
	Frequency (Hz)	4 speed AT Axle ratio	Frequency (Hz)	5 speed AT Axle ratio	Frequency (Hz)	Frequency (Hz)
124.028 124.032/052/066/092	1375	2.65 2.65	1370 1370	 3.69	 1378	–
129.063	1375	–	–	3.69	1337	669
140.032	688	3.27	1255	3.46	1282	635
202.028	688	2.87	1360	–	–	689