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900

FAULT CODES

5.4.8 BR900 Fault Code Overview

OBD guidelines stipulate that each fault path has important motor variables which apply at the moment the defect is rated.
The environment data (ED) is created from VCU data which is found at the time of the first fault occurrence (VCU) or fault message (PLD).
The ED1 to ED4 are identical for all paths:
ED1: Engine Speed
ED2: Current Engine Torque
ED3: Coolant Temperature
ED4: Boost Pressure

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
0	Flame Start Gate ED5:battery voltage ED6:torque demand ED7:time/date	54	PID45			--- --- 0	3 4 14		VCU	Open Circuit Shorted to Ground Special Instructions What fault condition triggers this fault?	Discontinue Flame Start or Grid Heater function
1	Vehicle Speed Sensor ED5:battery voltage ED6:torque demand ED7:time/date	84	PID84			--- ---	3 4		VCU	Open Circuit Shorted to Ground	Road speed limiter (if any) shall now use top gear ratio and limit engine speed
2	Accelerator Position Percentage ED5:battery voltage ED6:torque demand ED7:time/date	91	PID91			--- --- ---	3 2 4		VCU	Voltage Above Normal or Shorted to High Source Data Erratic Voltage Below Normal or Shorted to Low Source	IVS limp home function (Low idle speed only if IVS is defect too or in idle position) (see Table Acc. Pedal Operations for details)
3	Fuel Pressure ED5:battery voltage ED6:torque demand ED7:time/date	94	PID94	30 30	15 16	0 1	3 4		PLD	Open Circuit Shorted to Ground	not needed for FTL
4	Engine Oil Level	98	PID98			2 0	14 0		VCU	Data Valid but Very Low Data Valid but Above Normal	not used by FTL

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
	ED5:battery voltage ED6:torque demand ED7:time/date										
						1	1			Data Valid but Below Normal	
4	Engine Oil Level ED5:battery voltage ED6:torque demand ED7:time/date	98	PID98	25	16	3	3		PLD	Voltage Below Normal	not used by FTL
				25	15	4	4			Voltage Above Normal	
				25	09	5	5			Open Circuit	
				25	17	6	2			Reading Erroneous	
5	Engine Oil Pressure ED5:battery voltage ED6:torque demand ED7:time/date	100	PID100			1	14		VCU	Data Valid but Very Low	Engine speed ramped down to low idle speed, engine shutdown if enabled
						0	1			Data Valid but Below Normal	
5	Engine Oil Pressure ED5:battery voltage ED6:torque demand ED7: time/date	100	PID100	16	15	3	3		PLD	Open Circuit	substitute value
				16	17	2	2			Data Erratic	substitute value
				16	16	4	4			Shorted To Ground	substitute value
6	Boost Pressure ED5:battery voltage ED6:torque demand ED7: time/date	102	PID102	18	20	4	0		PLD	Above Normal	TBD
				18	18	3	1			Below Normal	TBD
				14	17	2	2			Data Erratic	TBD
				14	15	0	3			Open Circuit	substitute value
				14	16	1	4			Shorted to Ground	substitute value
7	Intake Manifold Temperature ED5:battery voltage ED6:torque demand ED7:time/date	105	PID105	12	15	0	3		PLD	Open Circuit	substitute value
				12	16	1	4			Shorted to Ground	substitute value
8	Air Filter Sensor ED5:battery voltage ED6:torque demand ED7:time/date	107	PID107			---	3		VCU	Open Circuit	stop performing air filter warning function
						---	4			Shorted to Ground	
9	Engine Coolant Temperature	110	PID110			1	14		VCU	Data Valid but Very High	engine shutdown if enabled

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
	ED5:battery voltage ED6:torque demand ED7:time/date					0	0			Data Valid but Above Normal	derate the engine torque
9	Engine Coolant Temperature	110	PID110	15	16	3	4		PLD	Shorted To Ground	substitute value
	ED5:battery voltage ED6:torque demand ED7:time/date			15	15	2	3			Open Circuit	substitute value
10	Coolant Level	111	PID111			---	1		VCU	Data Valid but Below Normal	engine shutdown if enabled
	ED5:battery voltage ED6:torque demand					---	3			Open Circuit	disable shutdown
	ED7:time/date					---	4			Shorted to Ground	disable shutdown
11	Battery Voltage – Switched	158	PID158			0	0		VCU	Data Valid but Above Normal	no fault reaction
	ED5:battery voltage ED6:torque demand ED7:time/date					1	1			Data Valid but Below Normal	
11	Battery Voltage – Switched	158	PID158	22	19	2	2		PLD	No Match of PLD and VCU Signals	TBD
	ED5:battery voltage ED6:torque demand ED7:time/date			23	19						
12	Battery Voltage	168	PID168	75	42	0	3		PLD	Voltage Above Normal	TBD
	ED5:battery voltage ED6:torque demand ED7:time/date			75	43	1	4			Voltage Below Normal	TBD
13	Fuel Temperature	174	PID174	11	15	0	3		PLD	Open Circuit	substitute value
	ED5:battery voltage ED6:torque demand ED7:time/date			11	16	1	4			Shorted to Ground	substitute value
14	Engine Oil Temperature	175	PID175	10	15	0	3		PLD	Open Circuit	substitute value

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
	ED5:battery voltage ED6:torque demand ED7:time/date			10	16	1	4			Shorted to Ground	substitute value
15	Engine Speed ED5:battery voltage ED6:torque demand ED7:time/date	190	PID190	05	30	1	0		PLD	Above Normal	What is the PLD fault reaction? (we have no docs about that)
16	Cruise Control - VCU internal error ED5:battery voltage ED6:torque demand ED7:time/date	527	SID254			---	TBD		VCU		Temic to provide proposal
17	Idle Validation Switch ED5:battery voltage ED6:torque demand ED7:time/date	558	SID230			5	5		VCU	Open Circuit	Low idle speed
						0	12			Both IVS Contacts Closed	
						0	12			IVS-Not Idle and APS-Idle	
						0	12			IVS-Idle and APS-Not Idle	
18	Cruise Control Switch Contact SET+COAST ED5:battery voltage ED6:torque demand ED7:time/date	599	SID242			0	12		VCU	Both SET and RES contacts closed at the same time	discontinue cruise control and PTO operation
19	Cruise Control Switch Contact RES+ACC ED5:battery voltage ED6:torque demand ED7:time/date	601	SID243			0	12		VCU	Both SET and RES contacts closed at the same time	discontinue cruise control and PTO operation
20	Anti Theft Device ED5:battery voltage ED6:torque demand ED7:time/date	609	SID217	99	65	1	2		PLD	Wrong Key	not used by FTL
				99	61	5	14			Counter Overflow	
				99	64	2	9			No Transponder Code on Hardwire	
				99	63	1	2			No Transponder Code on proprietary Data Link	
				99	62	3	11			Self Locking Active	

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
				99	60	0	0			No Additional Key Can Be Learned	
20	PLD EEPROM ED5:battery voltage ED6:torque demand ED7:time/date	609	SID233	40	53	5	14		PLD	Checksum Error 3	TBD
				40	52	5	14			Checksum Error 2	TBD
20	PLD Bad Device (used only if starter control by PLD is programmed in PLD EEPROM) ED5:battery voltage ED6:torque demand ED7:time/date	609	SID233	40	38	4	12		PLD	Starter Driver Stage Failed (Non-Conductive)	not used by FTL
				40	39	4	12			Starter Driver Path 1 Failed (Conductive)	
				40	39	4	12			Starter Driver Path 2 Failed (Conductive)	
20	PLD Bad Device (all PWM outputs will be switched off if one HS driver fails) ED5:battery voltage ED6:torque demand ED7:time/date	609	SID233	40	41	4	12		PLD	High Side Driver Failed (Conductive)	No engine brake and fan operation anymore
20	PLD Bad Device ED5:battery voltage ED6:torque demand ED7:time/date	609	SID233	40	54	4	12		PLD	RAM Area for CAN Failed	TBD
20	PLD Programming Wrong ED5:battery voltage ED6:torque demand ED7: time/date	609	SID233	40	37	5	14		PLD	Wrong # Of Cylinders Programmed	TBD
				40	48	5	14			# Of Cylinders Does Not Match Engine Type	TBD
				40	49	5	14			Calibration PWM Outputs Not Valid	TBD
				40	47	5	14			Set of Maps Erroneous	TBD
				40	50	5	14			Wrong Hardware Reference	TBD
20	PLD Bad Device (used	609	SID233	40	38	4	12		PLD	Redundant Starter Driver	not used by FTL

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
	only if starter control by PLD									Failed	
	is programmed in PLD EEPROM) ED5:battery voltage ED6:torque demand ED7:time/date			40	40	4	12			Starter Driver Voltage Reading Not Plausible	
20	PLD Bad Device ED5:battery voltage ED6:torque demand ED7:time/date	609	SID233	40	24	4	12		PLD	Limp Home Controller Failed	TBD
20	PLD EEPROM ED5:battery voltage ED6:torque demand ED7:time/date	609	SID233	40	51	5	14		PLD	Checksum Error 1	TBD
20	PLD Bad Device Press. Sensor	609	SID233	13	15	4	12		PLD	Open Circuit	substitute value
	ED5:battery voltage ED6:torque demand ED7:time/date			13	16	4	12		PLD	Shorted to ground	substitute value
21	Throttle Pedal Supply ED5:battery voltage	620	SID232				3		VCU	Above Normal	IVS limp home
	ED6:torque demand ED7:time/date						4			Below Normal	
22	Proprietary Data Link	625	SID248			0	14		VCU	CAN High Line Filed	single line operation
						0	14			CAN Low Line Filed	
	ED5:battery voltage ED6:torque demand					1	2			No Communication to PLD	turn on CEL
	ED7:time/date					1	2			PLD Data Erroneous	
22	Proprietary Data Link	625	SID248	01	02	1	2		PLD	VCU Data Erroneous	Low idle
				01	04	1	2			No Communication to VCU	
	ED5:battery voltage ED6:torque demand ED7:time/date			01	01	0	14			CAN_Low Line Failed	single line operation

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
				01	00	0	14			CAN_High Line Failed	
				01	49	0	14			Calibration not valid What is behind this fault?	TBD
23	VCU Internal Error ED5:battery voltage ED6:torque demand ED7:time/date	629	SID254			0	12		VCU	Checksum Fault Flash	Temic to provide proposal
						0	12			Checksum Fault EEPROM	
						0	12			DLU Status	
						0	12			FMS Status	
						0	12			FSS Status	
24	Crankshaft Position Sensor ED5:battery voltage ED6:torque demand ED7:time/date	636	SID21	03	10	2	1		PLD	Signal Voltage to Low	emergency run on camshaft
				03	11	3	7			No Match of Camshaft and Crankshaft Signals	
				03	12	4	8			Time Out	emergency run on camshaft
				03	13	5	14			Pin's Swapped	no fault reaction
				03	08	1	4			Shorted to Ground	emergency run on camshaft
				03	09	0	3			Open Circuit	emergency run on camshaft
25	Injector Cylinder #1 ED5:battery voltage ED6:torque demand ED7:time/date	651	SID1	50	28	0	6		PLD	Shorted Circuit	turn off valve
				50	26	2	7			No Plunger	set last valid impact time
				50	27	1	5			Current Below Normal or Open Circuit	turn off valve
				90	44	3	12			Idle Smoothness Governor at Limit	TBD
				90	45	4	14			Single Cylinder Correction at Limit	TBD
26	Injector Cylinder #2 ED5:battery voltage ED6:torque demand ED7:time/date	652	SID2	51	28	0	6		PLD	Shorted Circuit	turn off valve
				51	26	2	7			No Plunger	set last valid impact time
				51	27	1	5			Current Below Normal or Open Circuit	turn off valve
				91	44	3	12			Idle Smoothness Governor at	TBD

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
										Limit	
				91	45	4	14			Single Cylinder Correction at Limit	TBD
27	Injector Cylinder #3 ED5:battery voltage ED6:torque demand ED7:time/date	653	SID3	52	28	0	6		PLD	Shorted Circuit	turn off valve
				52	26	2	7			No Plunger	set last valid impact time
				52	27	1	5			Current Below Normal or Open Circuit	turn off valve
				92	44	3	12			Idle Smoothness Governor at Limit	TBD
				92	45	4	14			Single Cylinder Correction at Limit	TBD
28	Injector Cylinder #4 ED5:battery voltage ED6:torque demand ED7:time/date	654	SID4	53	28	0	6		PLD	Shorted Circuit	turn off valve
				53	26	2	7			No Plunger	set last valid impact time
				53	27	1	5			Current Below Normal or Open Circuit	turn off valve
				93	44	3	12			Idle Smoothness Governor at Limit	TBD
				93	45	4	14			Single Cylinder Correction at Limit	TBD
29	Injector Cylinder #5 ED5:battery voltage ED6:torque demand ED7:time/date	655	SID5	54	28	0	6		PLD	Shorted Circuit	turn off valve
				54	26	2	7			No Plunger	set last valid impact time
				54	27	1	5			Current Below Normal or Open Circuit	turn off valve
				94	44	3	12			Idle Smoothness Governor at Limit	TBD
				94	45	4	14			Single Cylinder Correction at Limit	TBD
30	Injector Cylinder #6 ED5:battery voltage ED6:torque demand ED7:time/date	656	SID6	55	28	0	6		PLD	Shorted Circuit	turn off valve
				55	26	2	7			No Plunger	set last valid impact time
				55	27	1	5			Current Below Normal or Open Circuit	turn off valve

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
				95	44	3	12			Idle Smoothness Governor at Limit	TBD
				95	45	4	14			Single Cylinder Correction at Limit	TBD
31	Injector Cylinder #7 ED5:battery voltage ED6:torque demand ED7:time/date	657	SID7	56	28	0	6		PLD	Shorted Circuit	turn off valve
				56	26	2	7			No Plunger	set last valid impact time
				56	27	1	5			Current Below Normal or 3Open Circuit	turn off valve
				96	44	3	12			Idle Smoothness Governor at Limit	TBD
				96	45	4	14			Single Cylinder Correction at Limit	TBD
32	Injector Cylinder #8 ED5:battery voltage ED6:torque demand ED7:time/date	658	SID8	57	28	0	6		PLD	Shorted Circuit	turn off valve
				57	26	2	7			No Plunger	set last valid impact time
				57	27	1	5			Current Below Normal or Open Circuit	turn off valve
				97	44	3	12			Idle Smoothness Governor at Limit	TBD
				97	45	4	14			Single Cylinder Correction at Limit	TBD
33	Engine Starter Motor Relay (used only if starter control by PLD is programmed in PLD EEPROM) ED5:battery voltage ED6:torque demand ED7:time/date	677	SID39	80	86	4	7		PLD	Starter Does Not Engage	not used by FTL
				80	33	3	14			Relay Jammed	
				80	05	2	3			Shorted to High Source (Extern Current)	
				80	08	0	6			Shorted to Ground	
				80	09	1	5			Open Circuit	
33	Engine Starter Motor Relay (Starter Lockout) ED5:battery voltage	677	SID39			6	6		VCU	Shorted to Ground	discontinue lockout function
						5	5			Open Circuit	

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
	ED6:torque demand ED7:time/date										
34	Auxiliary PWM Driver #1 (Exhaust Flap or Variable Geometry Turbocharger) ED5:battery voltage ED6:torque demand ED7:time/date	697	SID57	70	06	0	6		PLD	High Side Line Shorted to Ground	turn off output
				70	09	1	5			Open Circuit	turn off output
35	Auxiliary PWM Driver #2 (Switched or Continuous Decompression Engine Retarded) ED5:battery voltage ED6:torque demand ED7:time/date	698	SID58	73	06	0	6		PLD	High Side Line Shorted to Ground	turn off output
				73	05	2	3			High Side Line Shorted to High Source	turn off output
				73	17	1	5			Low Side Line Shorted to Ground or Open Circuit	turn off output
36	Auxiliary PWM Driver #3 (Dual Sp. Fan Low Stage or Single Sp. Fan) ED5:battery voltage ED6:torque demand ED7:time/date	699	SID59	71	06	0	6		PLD	High Side Line Shorted to Ground	turn off output
				71	09	1	5			Open Circuit	turn off output
37	Auxiliary PWM Driver #4 (Dual Speed Fan High Stage or Single Sp. Fan) ED5:battery voltage ED6:torque demand ED7:time/date	700	SID60	72	06	0	6		PLD	High Side Line Shorted to Ground	turn off output
				72	09	1	5			Open Circuit	turn off output
38	Camshaft Position Sensor ED5:battery voltage	723	SID64	04	12	2	8		PLD	Time Out	emergency run on crankshaft
				04	13	3	14			Pin's Swapped	no fault reaction
				04	08	1	4			Shorted to Ground	emergency run on

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
	ED6:torque demand ED7:time/date										crankshaft
				04	09	0	3			Open Circuit	emergency run on crankshaft
39	Throttle Select ED5:battery voltage ED6:torque demand ED7: time/date	969	SID 29				TBD			Can currently not be detected	
40	Throttle Inhibit ED5:battery voltage ED6:torque demand ED7:time/date	972	SID 29				TBD			Can currently not be detected	
41	Remote Throttle Pedal Supply ED5:battery voltage ED6:torque demand ED7:time/date	974	SID29				3		VCU	Open Load	low idle (if remote throttle is selected only)
							4			Shorted To Ground	
							2			Out of Range	
42	Fan Speed ED5:battery voltage ED6:torque demand ED7:time/date	986	158 TBD	71	12	0	8		PLD	Time out	not needed for FTL
43	Accessory bus shutdown ED5:battery voltage ED6:torque demand ED7:time/date	1004 TBD	SID56				3		VCU	Open Circuit	discontinue accessory bus shutdown function
							4			Shorted to Ground	
44	Gear output 1 ED5:battery voltage ED6:torque demand ED7:time/date	1005 TBD	SID43				3		VCU	Open Circuit	discontinue Top 2 function
							4			Shorted to Ground	
45	Gear output 2 ED5:battery voltage ED6:torque demand ED7:time/date	1006 TBD	SID44				3		VCU	Open Circuit	discontinue Top 2 function
							4			Shorted to Ground	

Nr.	PATH OF FAULT	SPN	PID/ SID	MB Path	MB Id	INT FMI	FMI	OBD	VCU PLD	Failure	Fault Reactions
46	Analogue Output Oil Pressure (Imo) ED5:battery voltage ED6:torque demand ED7:time/date	1012 TBD	TBD 156				3		VCU	TBD	not needed for FTL
							4			TBD	
							5			TBD	
							6			TBD	
47	Analogue Output Coolant Temperature (Imo) ED5:battery voltage ED6:torque demand ED7:time/date	1013 TBD	TBD 157				3		VCU	TBD	not needed for FTL
							4			TBD	
							5			TBD	
							6			TBD	