



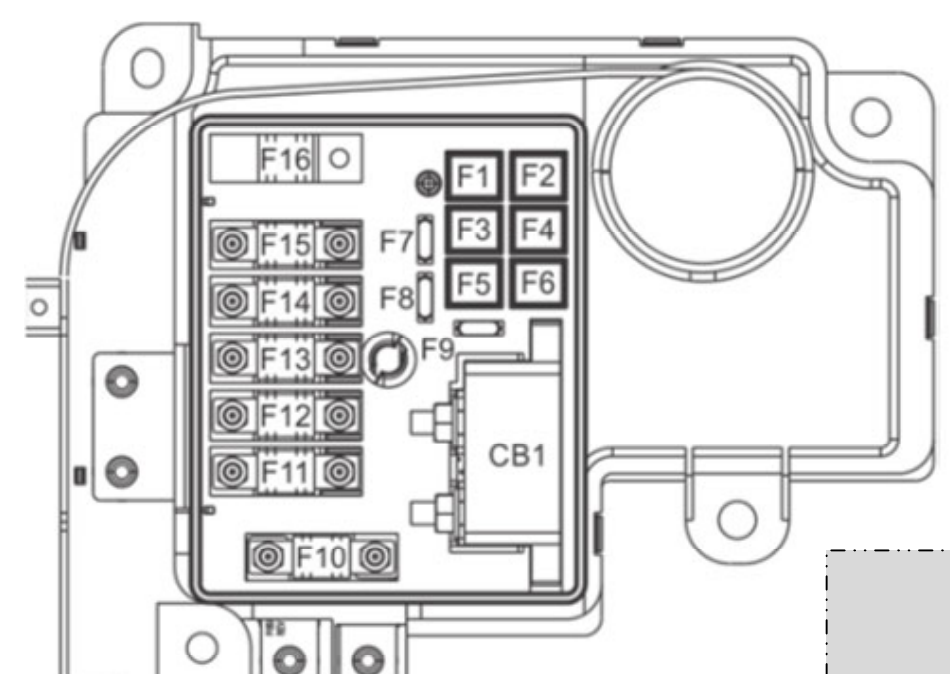
WESTERN STAR

VPDM

(Vehicle Power Distribution Module)

VPDM Pin Layout

STI-530



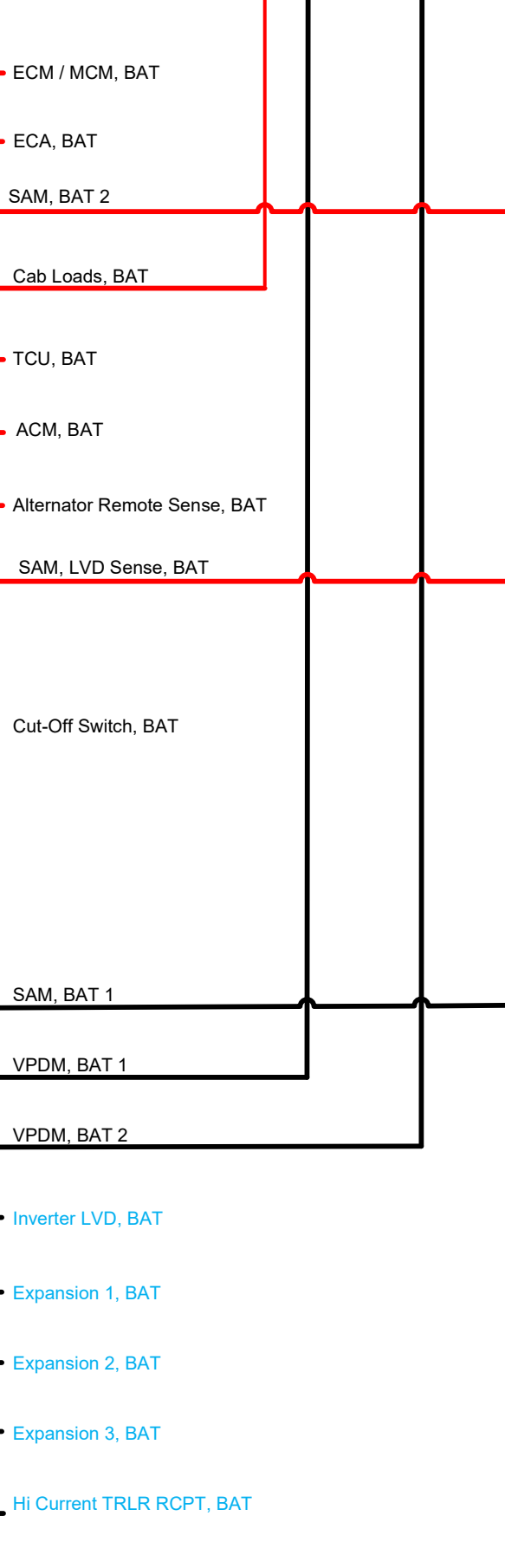
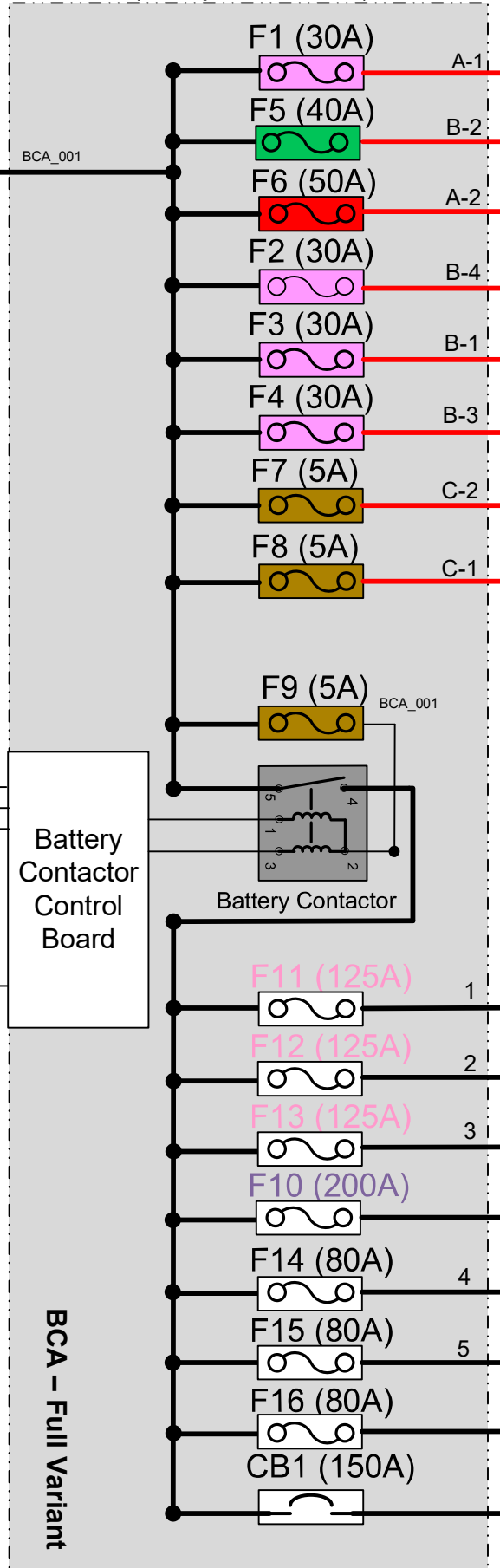
BCA

(Battery Cable Access)

* For all Keep alive circuits, ECU must adhere to Iq < 300microA.

ASAM

(Signal Actuation Module)



Note: All relay control logic from aSAM to vPDM are source grounds

aSAM Signal Actuation Module - refer to module 32a for additional information

- Lane Departure/Guidance, GND J6-A10
- Camera/Video/Imaging System, GND J7-B7
- Collision Avoidance/Obstacle Detection System, GND J7-B9
- 3PC (third party connector), GND J6-A11
- SODS/SGA, GND J4-D2
- Driver Facing Camera, GND J4-D3
- ABS Power Return 1, GND DE J6-B11
- Instrument Cluster, GND DE J6-B7
- Diagnostics Connector, GND1 J6-D8
- ECU Power Return 1, GND J6-E8
- CGW, GND J6-B8
- SRS Airbag, GND J6-E10
- Fleet Management System, GND J6-A9
- Tire Pressure Monitoring, GND J7-B11
- Air Suspension (ECAS), GND J7-B6
- Bi-Stable Relay 1 (House), Feedback J4-K8

- VPDM Cab Loads BAT, Feedback J4-C5
- Bi-Stable Relay, House Control, Close J4-C8
- Bi-Stable Relay, House Control, Open J4-C7
- Bi-Stable Relay 2 (House), Feedback J4-H1
- VPDM Power Supply 1, Feedback J4-A7
- VPDM Power Supply 2, Feedback J4-C6
- Bi-Stable Relay 3 (Basic), Feedback J4-H4
- Bi-Stable Relay, Basic Control, Close J4-A4
- Bi-Stable Relay, Basic Control, Open J4-A5
- Bi-Stable Relay 4 (Basic), Feedback J4-H3
- D+/CTRL Relay Control J4-A3
- Ignition (IGN_1), Relay Control J4-A8
- PT Early WakeUp J4-A6
- Spare Relay R11, Relay Control J4-C1
- Retained Accessory, Relay Control J4-C3
- Spare Relay R09, Relay Control J4-C2

cTP (common Telematic Platform), GND J6-B10

Fuse/ Circuit Breaker Type & Description

FU/CB POS	FU/CB TYPE	RATING (Amps)	Standard (S) Optional (O)	FUSE LABEL DESCRIPTION
F01	FU,T2,T3	5A	S	READING LAMP FRONT, BAT
F02	FU,T2,T3	15A	S	EXPANSION FUSE 33, BAT
F03	FU	5A	S	IPPC/EDGE/CLOCK/TELEMATICS, PWR
F04	FU	10A	S	METHANE DET/PCP/DEF PUMP, PWR
F05	FU,T2,T3	15A	O	EXPANSION FUSE 32, BAT
F06	FU,T2,T3	30A	O	EXPANSION FUSE 1, BAT
F07	FU,T2,T3	30A	O	EXPANSION FUSE 2, BAT
F08	FU,T2,T3	15A	O	EXPANSION FUSE 11, BAT
F09	FU	3A	S	FCU/ACU HVAC CTRLR, BAT
F10	FU,T2,T3	20A	O	EXPANSION FUSE 51, CTRL
F11	FU	3A	O	AUX CAB/AUX COLINT HTR, ENABLE/BAT
F12	FU,T2,T3	10A	O	EXPANSION FUSE 38, PWR
F13	FU,T2,T3	10A	O	EXPANSION FUSE 12, PWR
F14	JCASE	30A	S	CAB HVAC FAN MOTOR, BAT
F15	FU,T2,T3	20A	O	EXPANSION FUSE 35, BAT
F16	FU	20A	O	RADIO/CONNECT-S/MMI, BAT/PWR
F17	FU,T2,T3	25A	O	EXPANSION FUSE 45, BAT/PWR
F18	FU,T2,T3	25A	O	EXPANSION FUSE 46, BAT/PWR
F19	JCASE	30A	S	EXPANSION FUSE 13, BAT
F20	FU,T2,T3	20A	O	EXPANSION FUSE 41, BAT
F21	FU,T2,T3	20A	S	AUX CAB/AUX COLINT HTR, BAT1
F22	FU,T2,T3	30A	O	EXPANSION FUSE 52, BAT
F23	FU,T2,T3	30A	O	EXPANSION FUSE 42, BAT
F24	FU,T2,T3	10A	S	DASH SPLICEPACK, BAT1
F25	FU,T2,T3	20A	O	EXPANSION FUSE 34, BAT
F26	FU,T2,T3	25A	O	EXPANSION FUSE 53, BAT
F27	FU	5A	S	RADIO, ACC
F28	FU,T2,T3	30A	O	EXPANSION FUSE 5/6, ACC
F29	FU,T2,T3	30A	O	EXPANSION FUSE 14, ACC
F30	FU,T2,T3	30A	O	EXPANSION FUSE 15, BAT
F31	FU,T2,T3	20A	O	EXPANSION FUSE 16, BAT
F32	FU,T2,T3	10A	O	EXPANSION FUSE 40, BAT
F33	FU	5A	S	CGW/INST CLUSTER, BAT
F34	FU,T2,T3	20A	O	EXPANSION FUSE 17, BAT
F35	FU,T2,T3	25A	O	EXPANSION FUSE 3, BAT
F36	FU,T2,T3	30A	O	EXPANSION FUSE 18, BAT
F37	FU,T2	10A	S	OBD J1939, BAT1
F38	FU,T2,T3	20A	O	EXPANSION FUSE 19, CTRL/BAT
F39	FU,T2,T3	15A	O	EXPANSION FUSE 31, CTRL
F40	FU,T2,T3	30A	O	DEF LINE HEATER #1/#2/#3 CTRL
F41	JCASE	50A	S	BASIC LOAD 2, BAT
F42	JCASE	50A	S	HOUSE LOAD 1, BAT
F43	FU,T2,T3	30A	S	FUEL WATER SEP HTR, IGN
F44	FU,T2,T3	20A	O	EXPANSION FUSE 44, CTRL
F45	FU,T2,T3	20A	O	EXPANSION FUSE 47, CTRL
F46	JCASE	50A	S	HOUSE LOAD 2, BAT
F47	JCASE	50A	S	BASIC LOAD 1, BAT
F48	FU,T2,T3	20A	O	EXPANSION FUSE 20, BAT
F49	FU	5A	S	VPDM,RELAY COIL, BAT
F50	FU	20A	O	EXPANSION FUSE 21, BAT
F51	FU,T2,T3	20A	O	EXPANSION FUSE 22, BAT
F52	FU,T2,T3	20A	O	EXPANSION FUSE 23, BAT
F53	FU	10A	O	EXPANSION FUSE 37, IGN
F54	FU,T2,T3	10A	S	DASH SWITCH/SPLICEPACK, IGN
F55	FU,T2,T3	5A	O	EXPANSION FUSE 39, IGN
F56	FU,T2,T3	5A	O	EXPANSION FUSE 4, IGN
F57	FU	10A	S	COLL AVOID/OBSTACLE DET SYS, IGN
F58	FU,T2,T3	20A	O	EXPANSION FUSE 24, BAT
F59	FU,T2,T3	30A	O	EXPANSION FUSE 25, BAT
F60	FU,T2,T3	30A	O	EXPANSION FUSE 7, BAT
F61	FU,T2,T3	30A	O	EXPANSION FUSE 8, BAT
F62	FU,T2,T3	30A	O	ABS POWER FEED 1 PLC/NO PLC, BAT
F63	FU,T2,T3	25A	O	EXPANSION FUSE 48, BAT/IGN
F64	FU,T2,T3	20A	O	12V PWR RCPT1,DASH/CIGAR, BAT1/IGN
F65	FU,T2,T3	15A	O	EXPANSION FUSE 49, BAT/PWR
F66	FU,T2,T3	30A	S	TRAILER ABS CONN (7) & ABS PLC, IGN
F67	FU,T2	5A	S	CPC / MCM / ACM / TCM / ECM, IGN
F68	FU,T2,T3	25A	O	EXPANSION FUSE 26, IGN
F69	FU	20A	O	EXPANSION FUSE 27, IGN
F70	FU	5A	S	COLLAVOID/OBSTACLE DET SYS, BAT
F71	FU	5A	S	INST CLSTR/SRS/CAB HVAC CTRLR, IGN
F72	FU	10A	O	EXPANSION FUSE 28, IGN
F73	FU	15A	O	EXPANSION FUSE 29, IGN
F74	FU	20A	O	EXPANSION FUSE 30, IGN
F75	FU	10A	O	EXPANSION FUSE 10, IGN
F76	FU	15A	O	EXPANSION FUSE 36, IGN
F77	FU	15A	O	EXPANSION FUSE 9, IGN
F78	FU	20A	O	EXPANSION FUSE 50, CTRL

Notes:
1. When replacing fuse, circuit breaker or relay, replace with similar value and type
2. Highlighted Label Descriptions "Expansion Fuse XX, XXX" or "Spare Relay XX" are flexible outputs driven by SMARTPARTS and dependant on vehicle configurations. Reference 49-00306 and SMARTPART Functional Assignment Spec 49-00329 for more information.
NOTE: For all fuses with multiple positions, this document shows their primary (A) position, with the secondary (B) position shown as open.

Key Position Legend

- PWR => Keep Alive Powered
- BAT => Powered During Key-Off
- IGN => Powered During Key-On/Crank
- ACC => Powered During Key-On
- GND => See 28G GND Architecture

Relay Legend

- bR => Bi-stable Relay
- HCR => High Current Relay
- Mini => ISO Mini Relay
- Micro => ISO Micro Relay
- uMicro => ISO Ultra Micro Relay

Spare Relay Trace Sizing

- uMicro => 20A
- Micro => 30A
- Mini => 50A
- HCR => 70A
- Control => 5A for all relays

NOTE: Bistable relays magnetically latch in either the open or closed state with a pulse from the SAM as battery charge levels are reached. SAM will check the state of the relay on ignition transition. The ignition switch should be cycled after replacing a bistable relay.

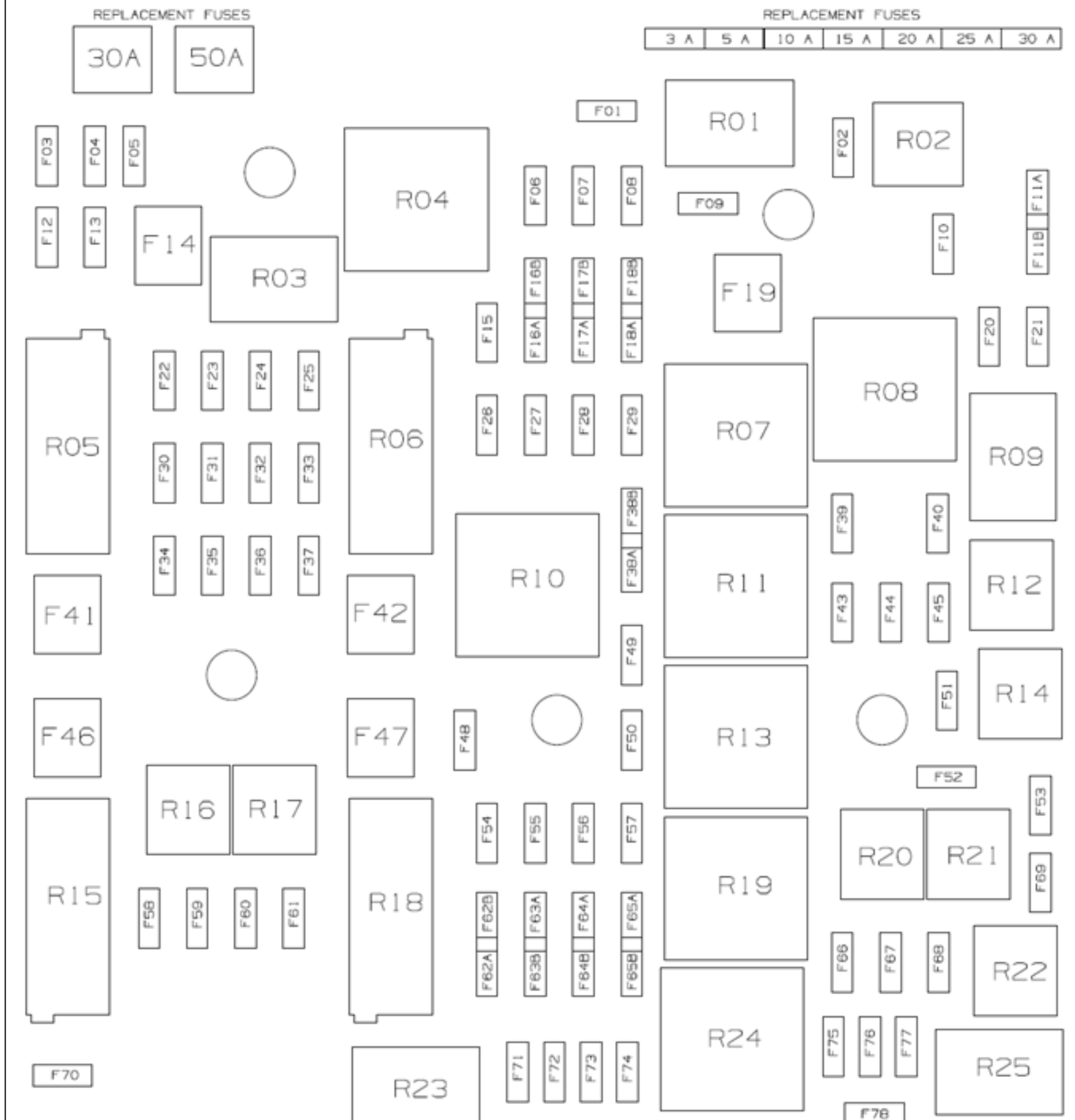
Fuse Legend

- 2A
- 3A
- 5A
- 7.5A CB
- 10A
- 15A
- 20A
- 25A
- 30A
- 30A J-CASE
- 40A J-CASE
- 50A J-CASE

Relay Type & Description

RELAY POS	RELAY TYPE	Standard (S) Optional (O)	RELAY LABEL DESCRIPTION
RE01	Micro	O	AUX CAB / AUX COLINT HTR
RE02	U-Micro	O	SPARE RELAY 14
RE03	Micro	O	SPARE RELAY 3
RE04	Hi-Current	O	SPARE RELAY 6
RE05	Bi-Stable	S	BASIC LOAD 2
RE06	Bi-Stable	S	HOUSE LOAD 1
RE07	Hi-Current	S	ACCESSORY
RE08	Mini	O	DEF LINE HEATER
RE09	Micro	O	SPARE RELAY 10
RE10	Mini	O	SPARE RELAY 5
RE11	Mini	O	SPARE RELAY 11
RE12	U-Micro	O	SPARE RELAY 12
RE13	Hi-Current	S	D+ / ALT CHARGE/ CTRL
RE14	U-Micro	O	SPARE RELAY 7
RE15	Bi-Stable	S	HOUSE LOAD 2
RE16	U-Micro	O	SPARE RELAY 1
RE17	U-Micro	O	SPARE RELAY 2
RE18	Bi-Stable	S	BASIC LOAD 1
RE19	Hi-Current	S	IGNITION 1
RE20	U-Micro	O	SPARE RELAY 8
RE21	U-Micro	O	SPARE RELAY 9
RE22	U-Micro	S	IGN/PT EARLY WAKE UP
RE23	Micro	O	SPARE RELAY 4
RE24	Hi-Current	S	IGNITION 2
RE25	Micro	O	SPARE RELAY 13

Fuse/CB and Relay Map



Cummins Engine Controller

- DEF Line Heater, LS Control J7-B5
- Spare Relay R25, HC Control J7-C2
- Spare Relay R02, LS Control J7-B4

- Spare Relay 9, Terminal 30 J7-F3
- Spare Relay 9, Terminal 87 J7-E4
- Spare Relay 9, Terminal 85 J7-E3
- Spare Relay 1, Terminal 30 J5-C3
- Spare Relay 1, Terminal 87 J5-B4
- Spare Relay 1, Terminal 85 J5-B3
- Spare Relay 1, Terminal 86 J5-C4
- Spare Relay 2, Terminal 30 J5-E3
- Spare Relay 2, Terminal 87 J5-D4
- Spare Relay 2, Terminal 85 J5-D3
- Spare Relay 2, Terminal 88 J5-E4
- Spare Relay 3, Terminal 30 J5-A12
- Spare Relay 3, Terminal 87a J5-F11
- Spare Relay 3, Terminal 87 J5-E12
- Spare Relay 3, Terminal 85 J5-F9
- Spare Relay 3, Terminal 86 J5-F8
- Spare Relay 4, Terminal 30 J6-A2
- Spare Relay 4, Terminal 87a J6-C1
- Spare Relay 4, Terminal 87 J6-A1
- Spare Relay 4, Terminal 85 J5-F4
- Spare Relay 4, Terminal 86 J5-F5
- Spare Relay 5, Terminal 30 J6-D9
- Spare Relay 5, Terminal 87a J6-C9
- Spare Relay 5, Terminal 87 J6-B9
- Spare Relay 5, Terminal 85 J6-C8
- Spare Relay 5, Terminal 86 J6-C10
- Spare Relay 6, Terminal 30 J8-D1
- Spare Relay 6, Terminal 87 J8-C1
- Spare Relay 6, Terminal 85 J6-A5
- Spare Relay 6, Terminal 86 J6-A7

VPDM - Full Variant

- R21 uMicro
- R16 uMicro
- R17 uMicro
- R03 Micro
- R23 Micro
- R10 Mini
- R04 HCR

R13 HCR

R01 Micro

R19 HCR

R24 HCR

R11 Mini

R08 Mini

R22 uMicro

R25 Micro

R07 HCR

R09 Micro

R12 uMicro

R14 uMicro

R20 uMicro

R02 uMicro

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