THERMO KING

# Diagrams Manual

## Truck Edition
## T-80 Series Wiring and Schematic Diagrams

Revision A

February 2019

TK 56539-1-DM-EN

Ingersoll Rand

THERMO KING

# Introduction

This manual is published for informational purposes only. Thermo King® makes no representations warranties express or implied, with respect to the information recommendations and descriptions contained herein. Information provided should not be regarded as all-inclusive or covering all contingencies. If further information is required, Thermo King Corporation Service Department should be consulted.

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## General Information

The information in this manual covers unit models:

| | |
|---|---|
| T-580R | T-1080R |
| T-680R | T-1080S |
| T-680S | T-1080S Spectrum |
| T-880R | T-1280R Spectrum |
| T-880S | UT-1280 |

The information in this manual is provided to assist owners, operators, and service personnel in the proper upkeep and maintenance of Thermo King units.

## Revision History

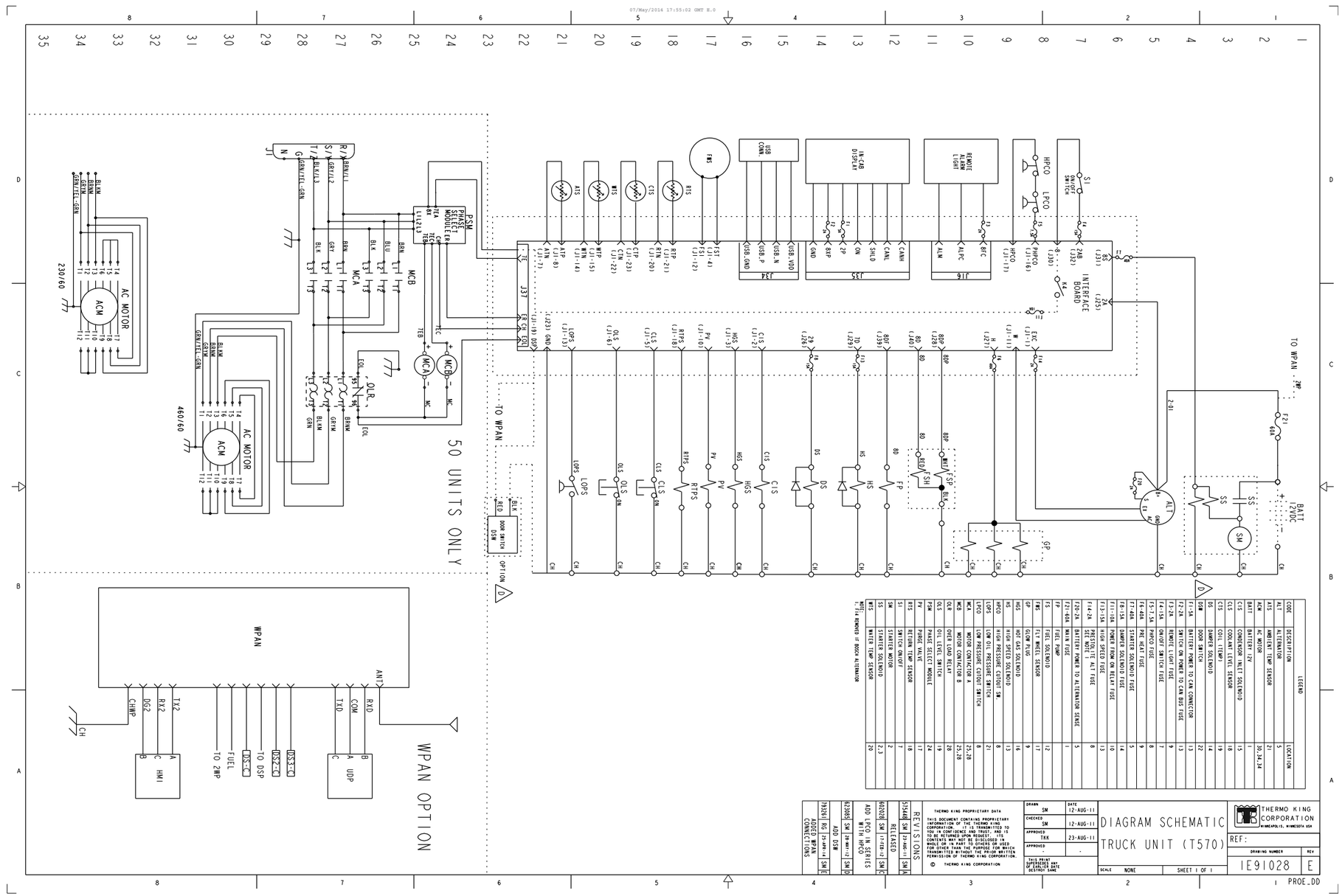
Revision A (Feb 2019) Manual refresh. 1E28188 and 1E28189 updated to Rev H; 2E24811 and 2E24812 updated to Rev C.

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# Diagram Index

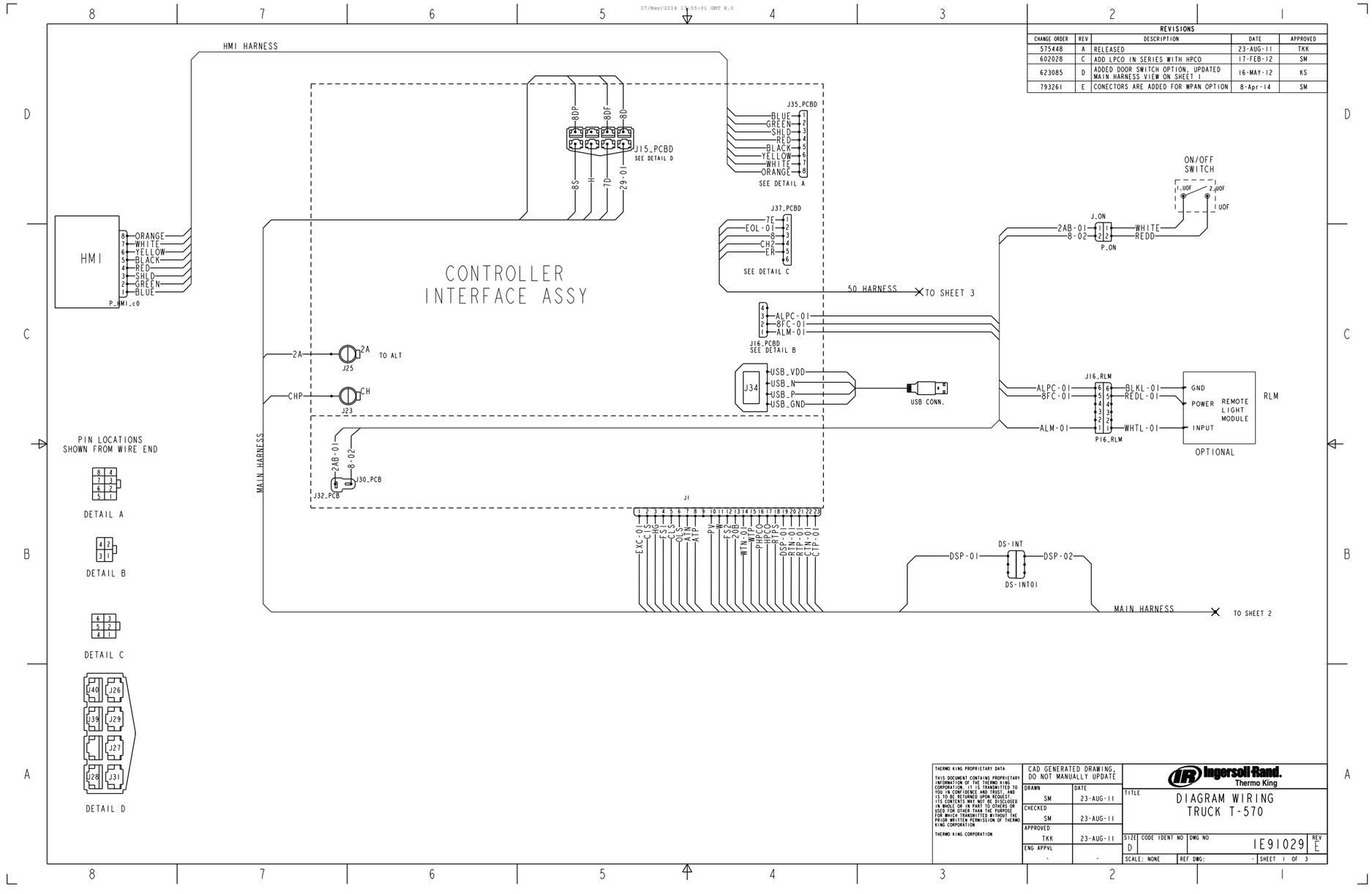

| Drawing No. | Title | Page |
|---|---|---|
| 1E91028 | T-580R Schematic Diagram | Figure 1, p. 5 |
| 1E91029 | T-580R Wiring Diagram | Figure 2, p. 7 to Figure 4, p. 11 |
| 2E24812 | T-680R, T-680S, T-880R, T-880S, T-1080R, and T-1080S Schematic Diagram | Figure 5, p. 13 to Figure 6, p. 15 |
| 2E24811 | T-680R, T-680S, T-880R, T-880S, T-1080R, and T-1080S Wiring Diagram | Figure 7, p. 17 to Figure 11, p. 25 |
| 1E28188 | T-1080S SPECTRUM and T-1280R SPECTRUM Schematic Diagram | Figure 12, p. 27 to Figure 14, p. 31 |
| 1E28189 | T-1080S SPECTRUM and T-1280R SPECTRUM Wiring Diagram | Figure 15, p. 33 to Figure 22, p. 47 |
| 1E59997 | UT-1280 Schematic Diagram | Figure 23, p. 49 to Figure 24, p. 51 |
| 3E10135 | UT-1280 Wiring Diagram | Figure 25, p. 53 to Figure 29, p. 61 |

**Figure 1. T-580R 1E91028 (Sheet 1 of 1)**



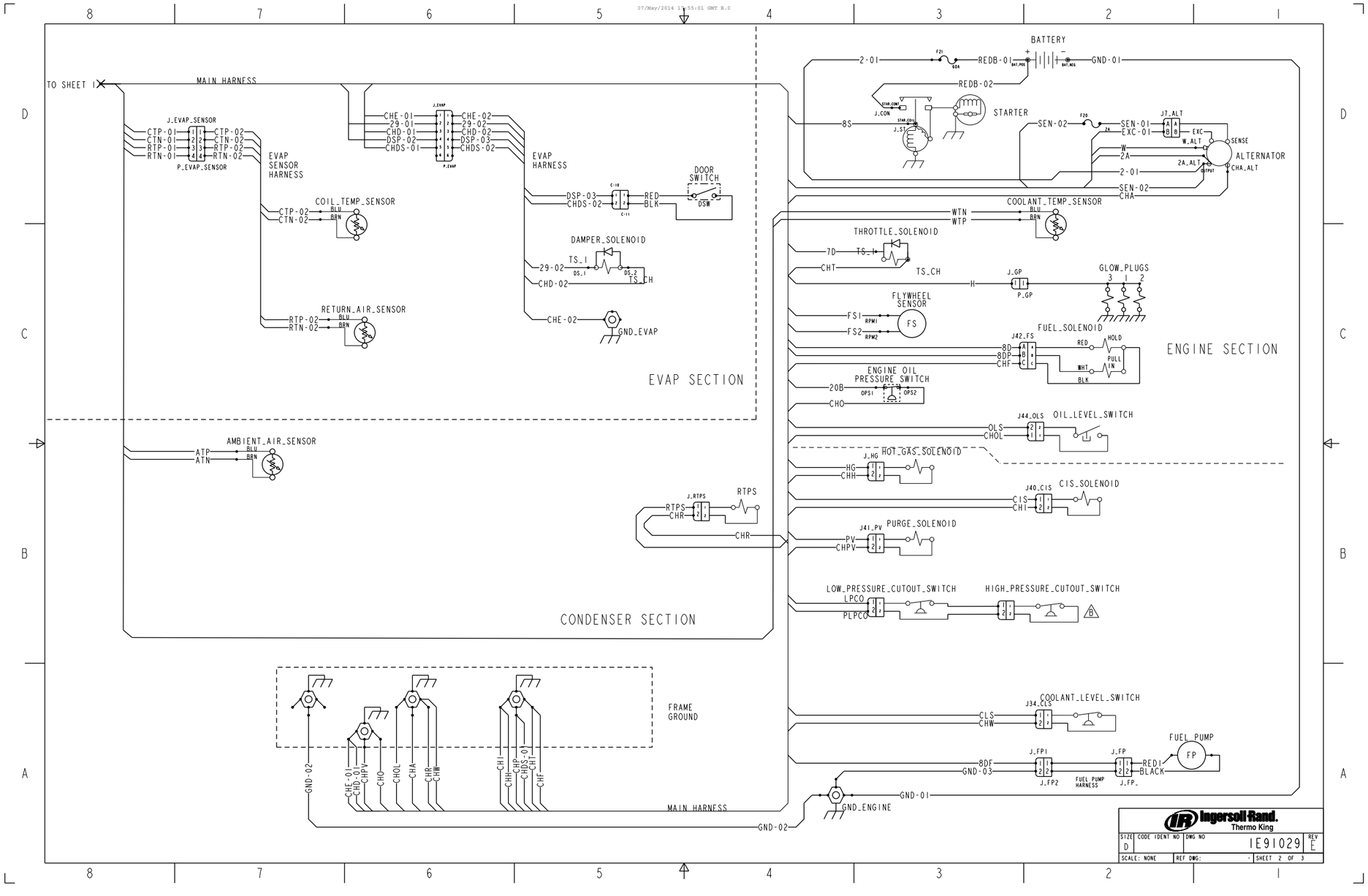
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**Figure 2. T-580R 1E91029 (Sheet 1 of 3)**



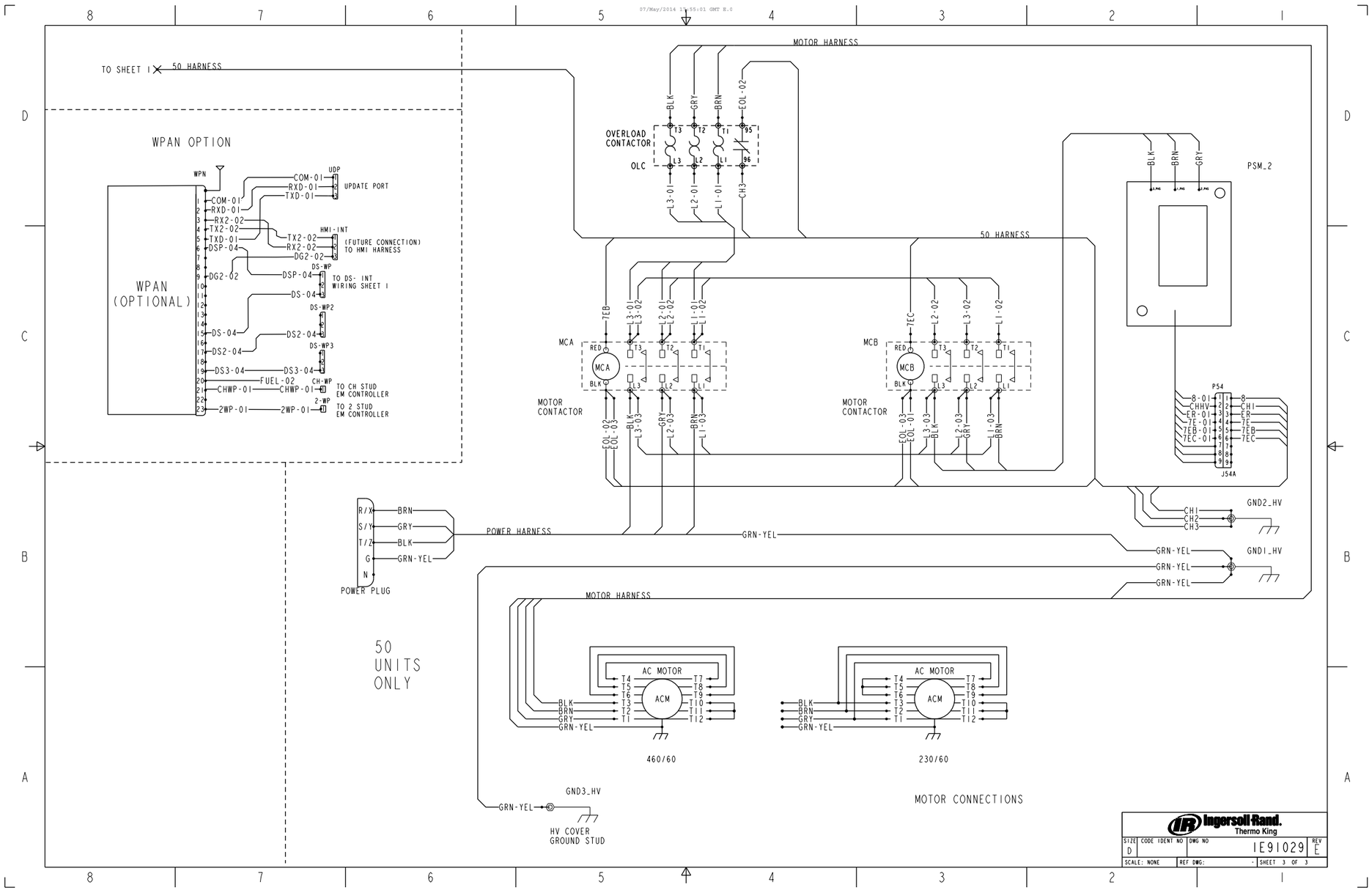
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**Figure 3. T-580R 1E91029 (Sheet 2 of 3)**



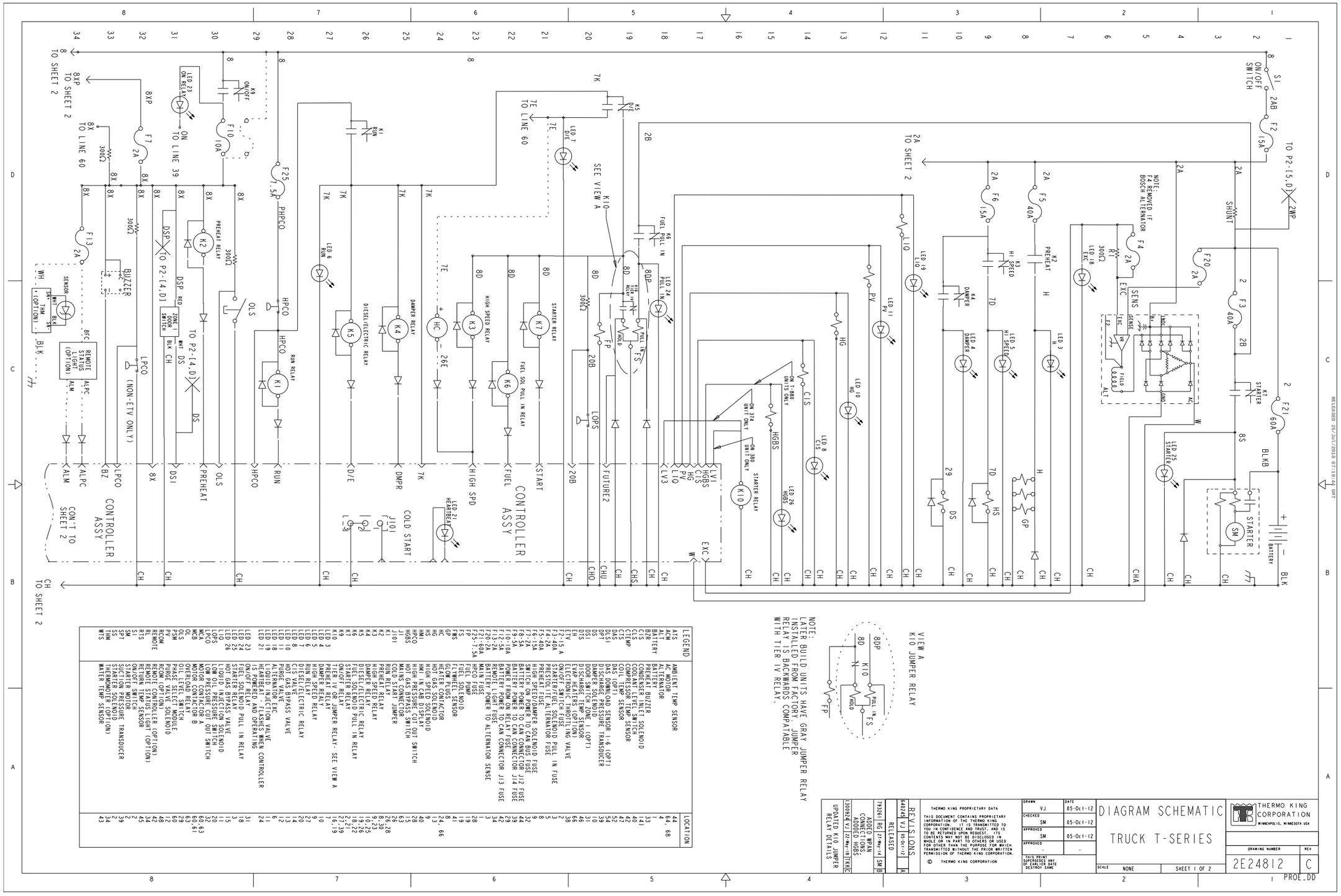
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**Figure 4. T-580R 1E91029 (Sheet 3 of 3)**



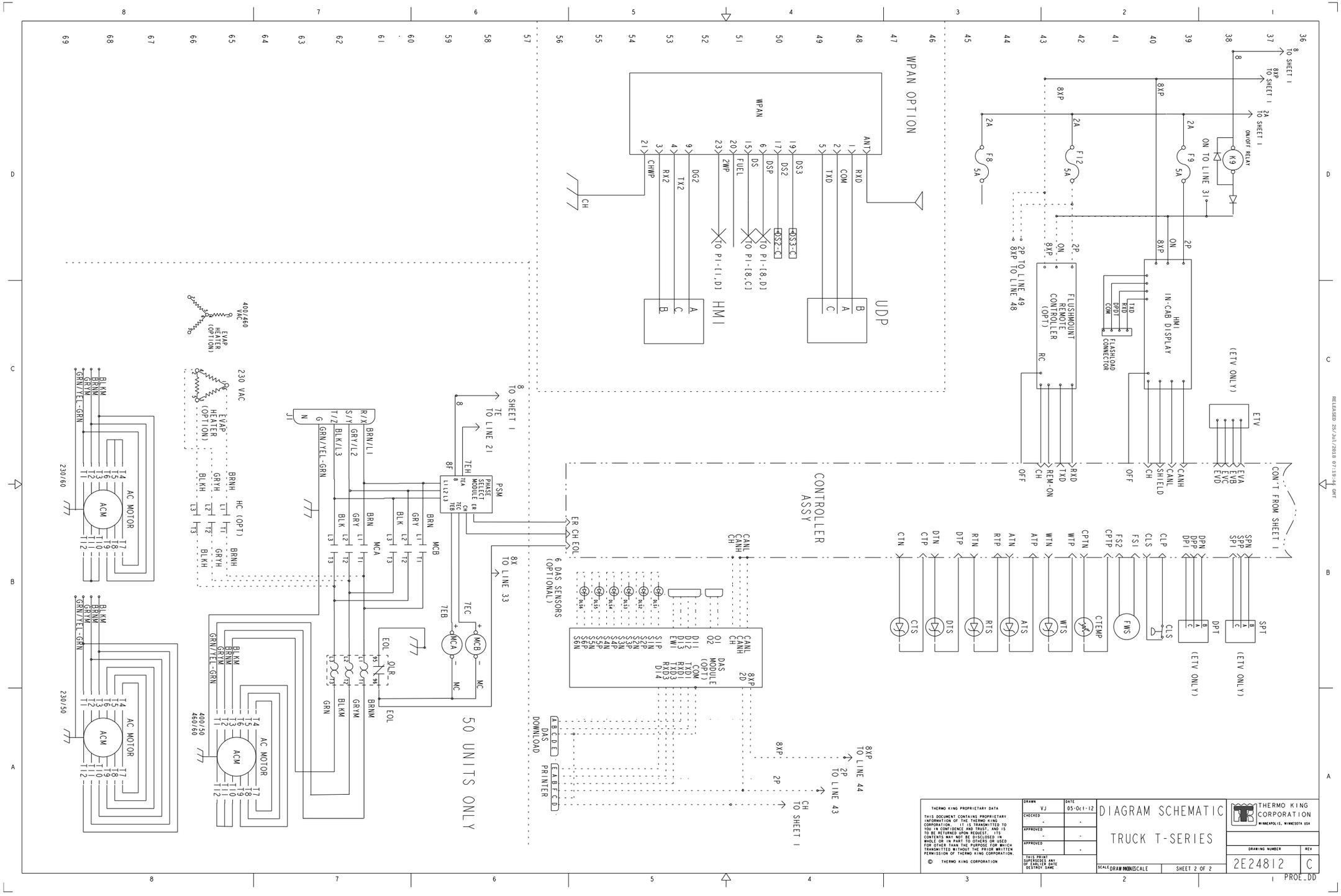
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**Figure 5. T-680R, T-680S, T-880R, T-880S, T-1080R, T-1080S 2E24812 (Sheet 1 of 2)**



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**Figure 6. T-680R, T-680S, T-880R, T-880S, T-1080R, T-1080S 2E24812 (Sheet 2 of 2)**



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**Figure 7. T-680R, T-680S, T-880R, T-880S, T-1080R, T-1080S 2E24811 (Sheet 1 of 5)**

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| REVISIONS | | | | |
|---|---|---|---|---|
| CHANGE NOTICE | REV | DESCRIPTION | DATE | APPROVED |
| 640245 | A | RELEASED | 05-Oct-12 | SM |
| 793261 | B | CONECTORS ARE ADDED FOR WPAN OPTION | 8-Apr-14 | SM |
| 1300924 | C | UPDATED K10 JUMPER RELAY DETAILS AND TIER IV RELAY PIN NO AND FUEL SOLENOID WIRE CODE. | 18-Jul-18 | TKK |

CONTROLLER DOWNLOAD CABLE — TO SHEET 3
COMMS HARNESS — TO SHEET 4
COMMS HARNESS — TO SHEET 3
TO SHEET 4 — HMI HARNESS

J14_PCBD: CANL-BLUE, CANH-GREEN, SHLD-01, ON-RED, 2A-BLACK, 8XP-YELLOW, OFF-WHITE, CH-ORANGE — SEE DETAIL A

J13_PCBD: CANL-BLACK, CANH-RED1, SHLD2, ON-ORN, 2A-BLU2, 8XP-BLUE, OFF-YEL, CH-GRN2 — SEE DETAIL A

J12_PCBD — SEE DETAIL A

J8_PCBD: ALPC-01, 8FC-01, ALM-01 — SEE DETAIL B

J6_PCBD: 7E-01, EOL-01, 8-01, CH2, ER-01, 26E — SEE DETAIL B

50 HARNESS — TO SHEET 3

J27

J15_PCBD: 29-01, 7D-01, 8DF-01, 8S-01, 8D-01, 8DP-01 — SEE DETAIL D

J9_PCBD: RXD-RED, TXD-BLACK, COM-GRN, DPD-BLUE — SEE DETAIL B

J10_PCBD: RXD-BLACK, TXD-RED, REM-ON-BROWN — SEE DETAIL B

J102 J103 J101

CH — TO GND PLATE

CHP-01

K10 JUMPER RELAY: 87, 30, 86, 85

NOTE: LATER BUILD UNITS HAVE GRAY JUMPER RELAY INSTALLED FROM FACTORY. JUMPER RELAY IS BACKWARDS COMPATIBLE WITH TIER IV RELAY.

2-01 — 2 — TO F21

8-02 — 2AB-01 — J4_PCB

2A-01 — 2A — TO ALT

H — TO GLOW PLUGS

# CONTROLLER INTERFACE ASSY

TIER IV MOTOR K10 RELAY — J_K10

P_K10: 87 — 8DS-01; 30 — FUTURE2-01; 86 — 8D-01; 85 — LV1-01 OR LV3; CHS-01

NOTE: THE LV1 WIRE WILL BE CONNECTED ON THE 380 MODEL AND THE LV3 WIRE WILL BE CONNECTED ON THE 374 MODEL

MAIN HARNESS

J7_PCBD — TO BE USED IN T-880 UNITS

LLS1-01, SENSE-01, CIS-01, HGBS-01, HG-01, PV-01, LV1-01, LV3-01, LIQ-01, EVC-01, EVD-01, SPP-02, DPP-02, CLP-01, CLS-01, PHPCO-01, HPCO-01, LPCO-01, DSP-01, DS-01, EVB-01, EVA-01, SPN-02, DPN-02, 20B-01, OLS-01, FUTURE2-01, EXC-01, W-01, FS1-01, FS2-01

H-01

J3_PCBD_SENSOR

RTP-01, RTN-01, ATP-01, ATN-01, DPI-01, SPI-01, CTEMPN-01, DTN-01, CTN-01, WTN-01, DTP-01, CTP-01, WTP-01, CTEMP-01

J_MAIN: SPN-01, SPP-01, DPN-01, DPP-01 — SPN-02, SPP-02, DPN-02, DPP-02 — P_MAIN

DS-INT: DSP-01 — DSP-02; DS-01 — DS-02 — DS-INT01

MAIN HARNESS — TO SHEET 2

SENSOR HARNESS — TO SHEET 2

2-01 — TO SHEET 2

PIN LOCATIONS SHOWN FROM WIRE END

DETAIL A

DETAIL B

DETAIL C

DETAIL D

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| CHECKED | SM | 05-Oct-12 |
| APPROVED | SM | 05-Oct-12 |
| ENG APPVL | - | - |

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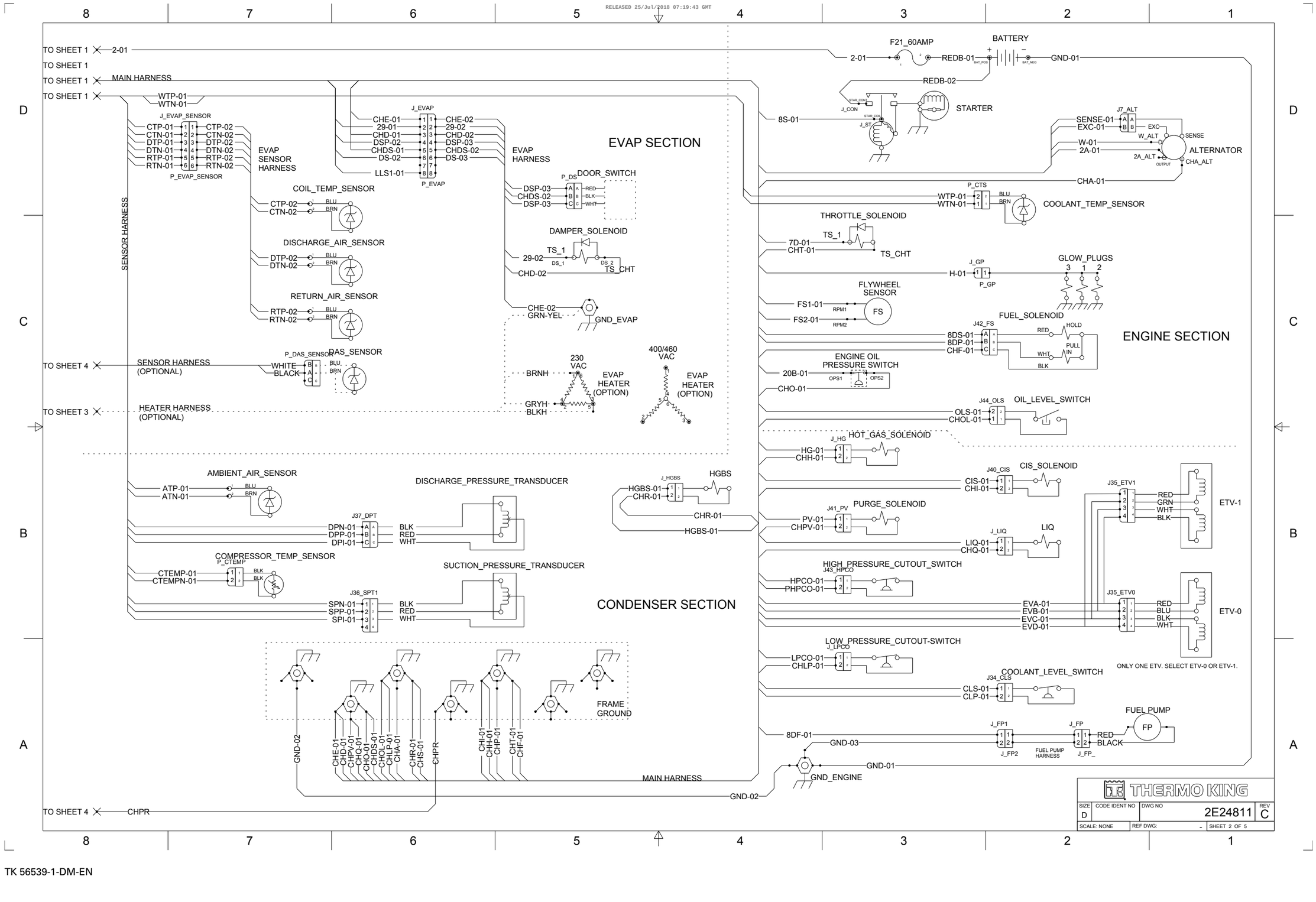
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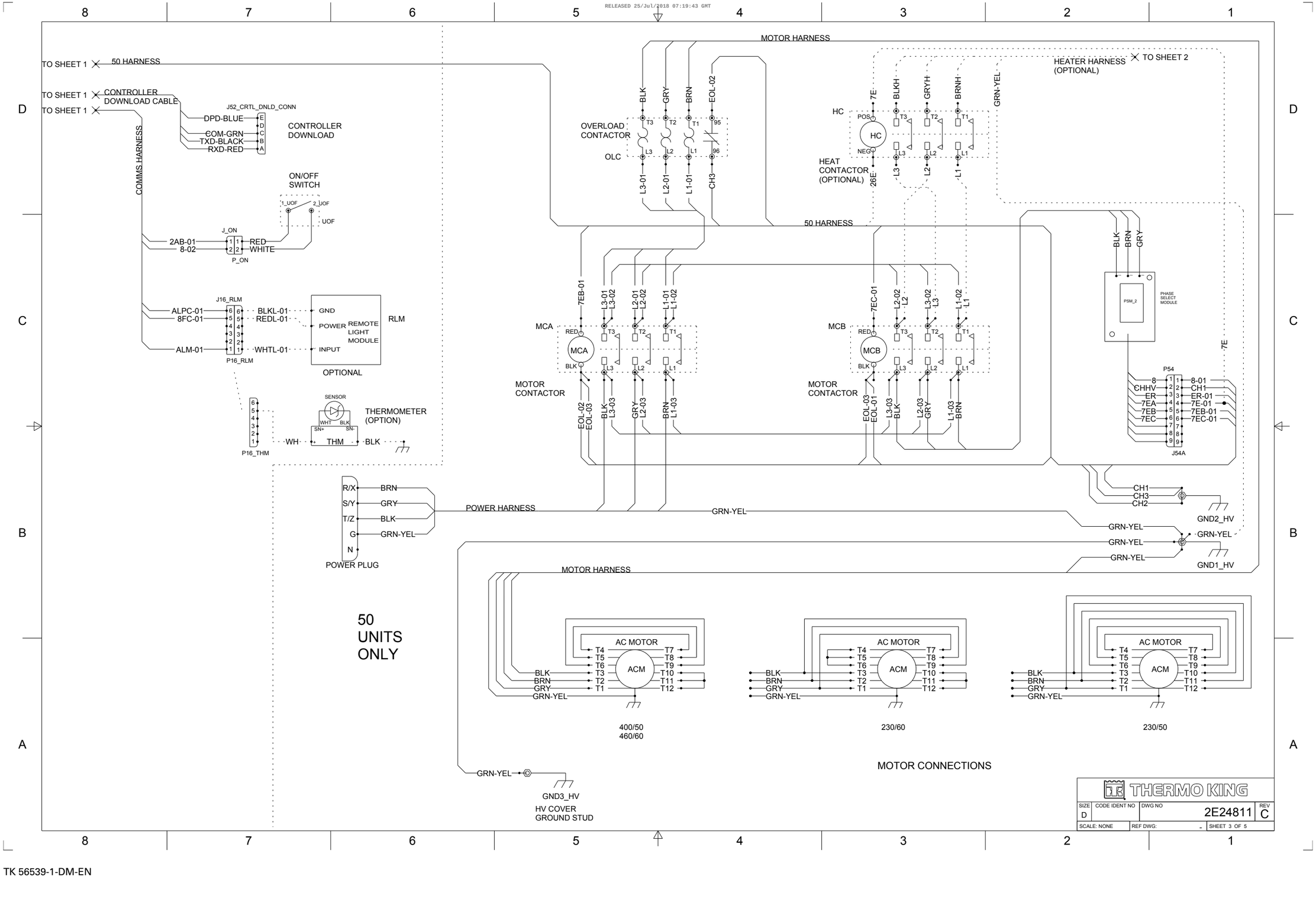
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**Figure 8. T-680R, T-680S, T-880R, T-880S, T-1080R, T-1080S 2E24811 (Sheet 2 of 5)**



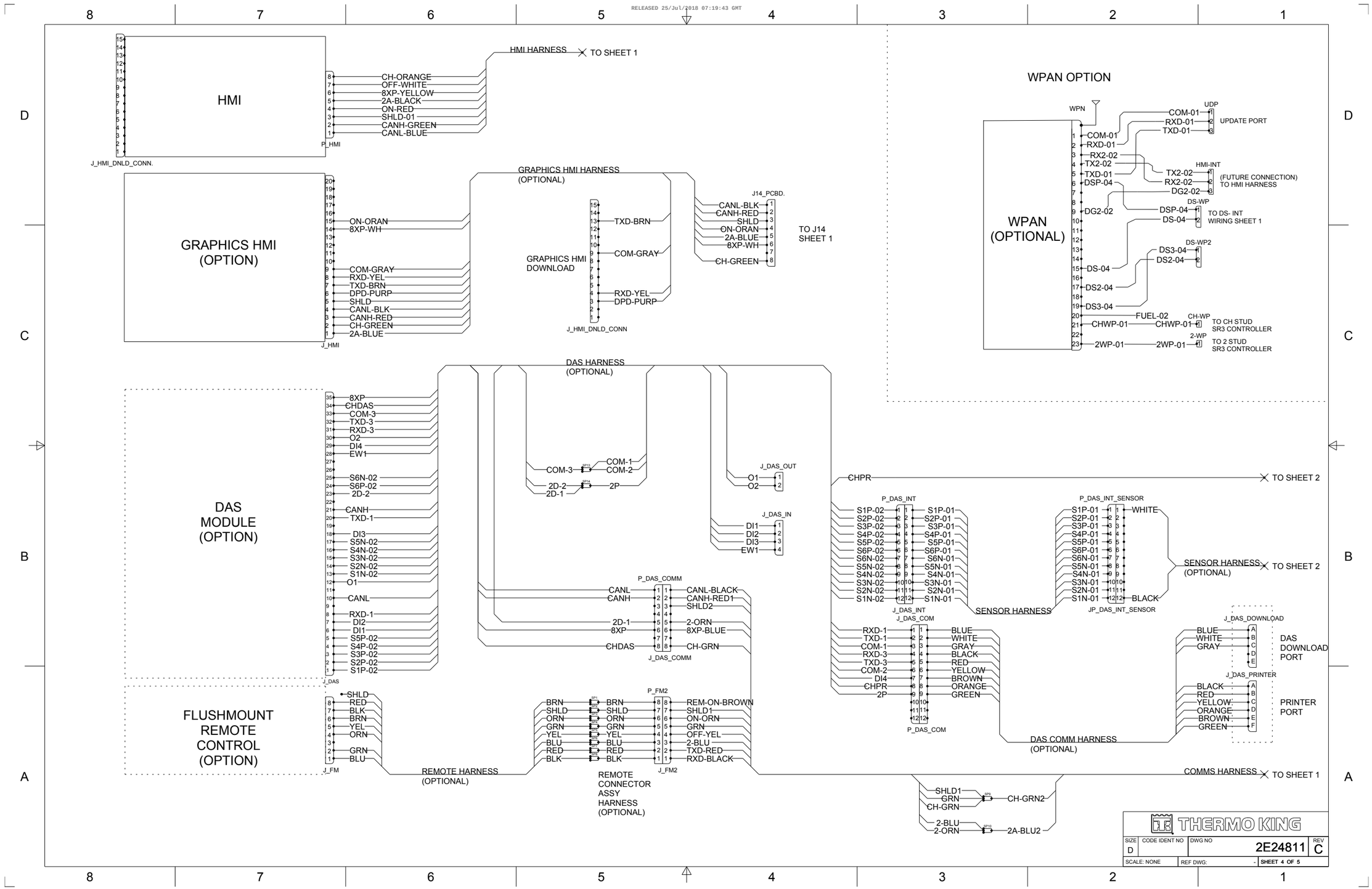
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**Figure 9. T-680R, T-680S, T-880R, T-880S, T-1080R, T-1080S 2E24811 (Sheet 3 of 5)**



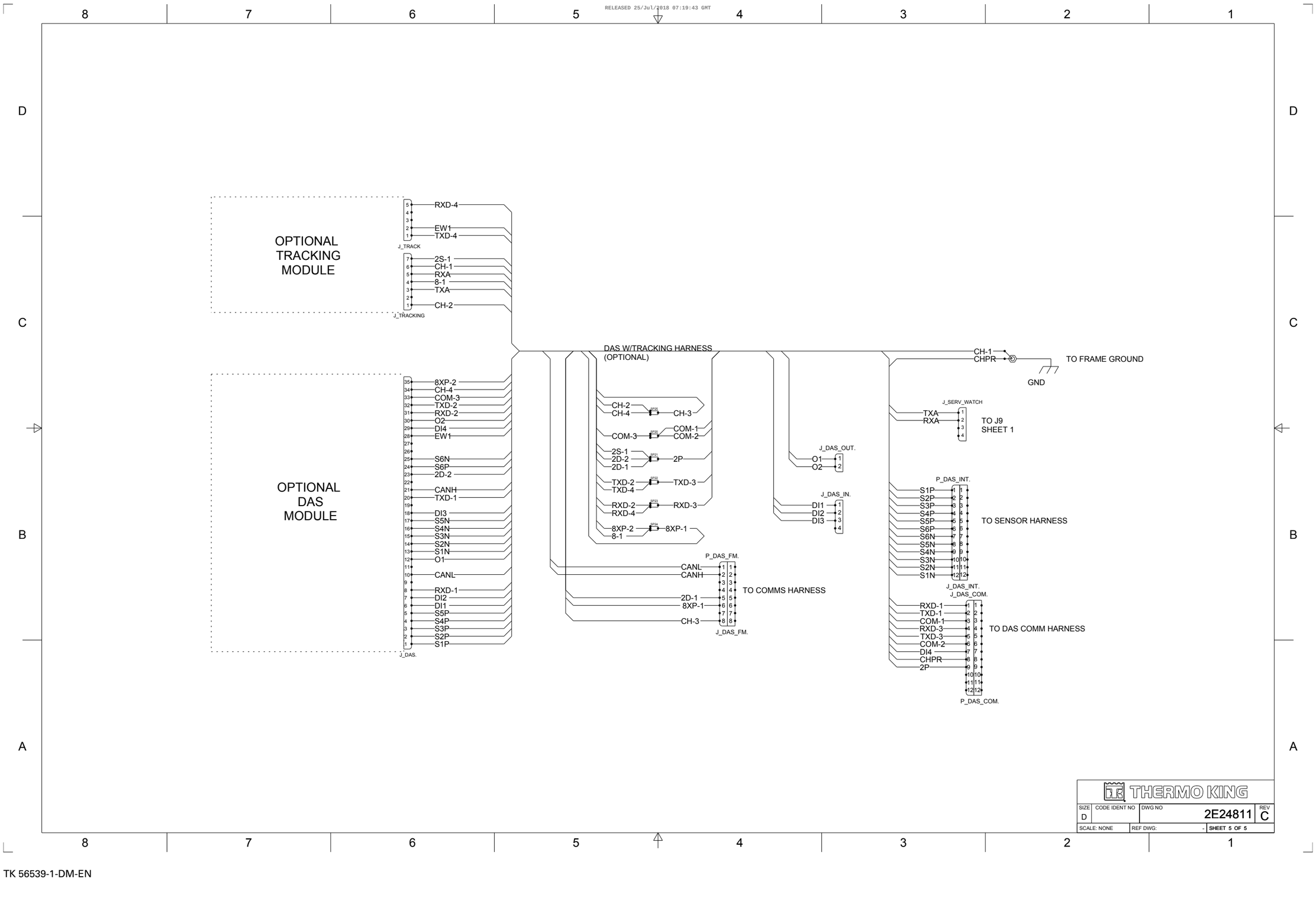
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**Figure 10. T-680R, T-680S, T-880R, T-880S, T-1080R, T-1080S 2E24811 (Sheet 4 of 5)**



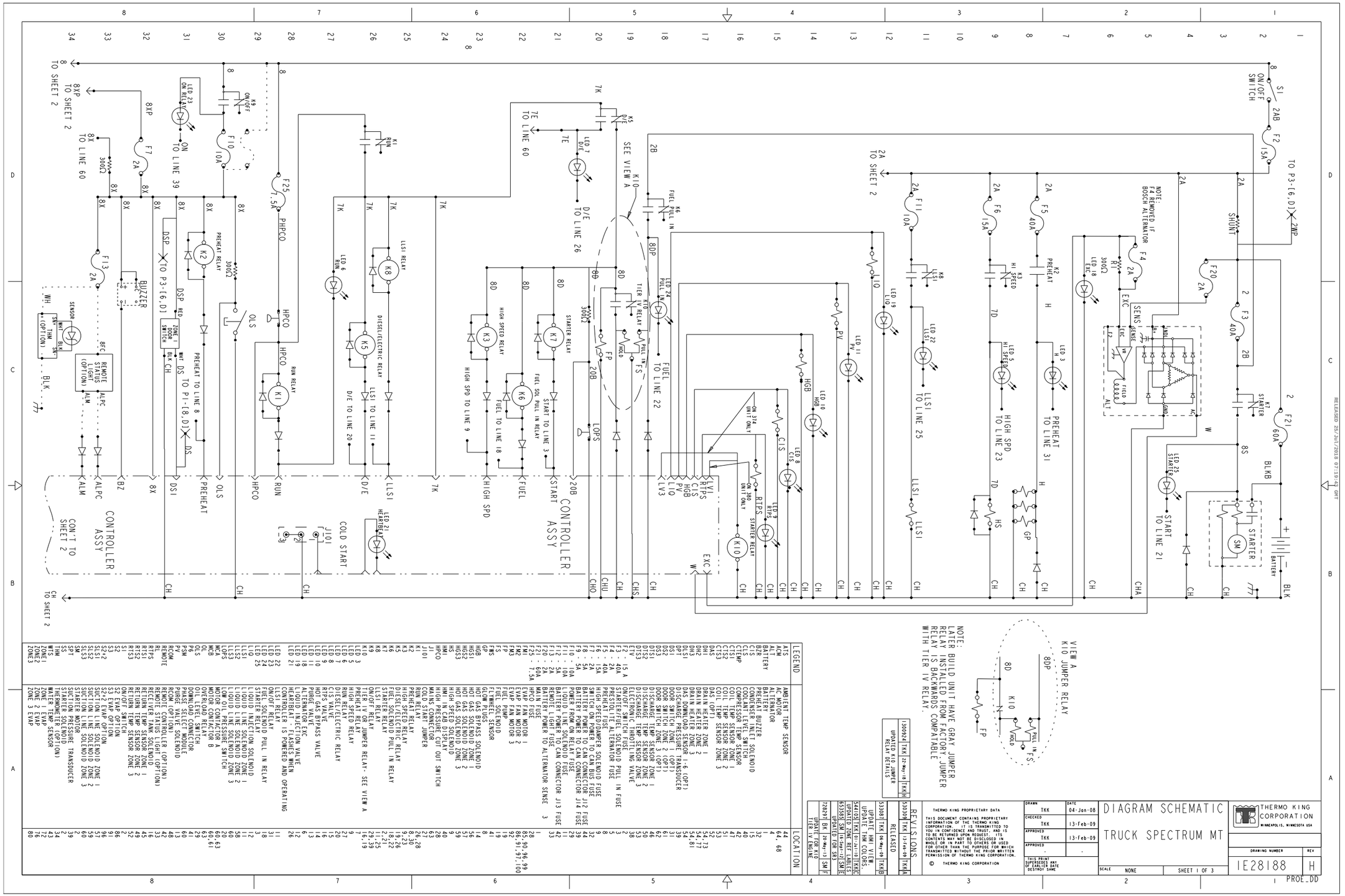
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**Figure 11. T-680R, T-680S, T-880R, T-880S, T-1080R, T-1080S 2E24811 (Sheet 5 of 5)**



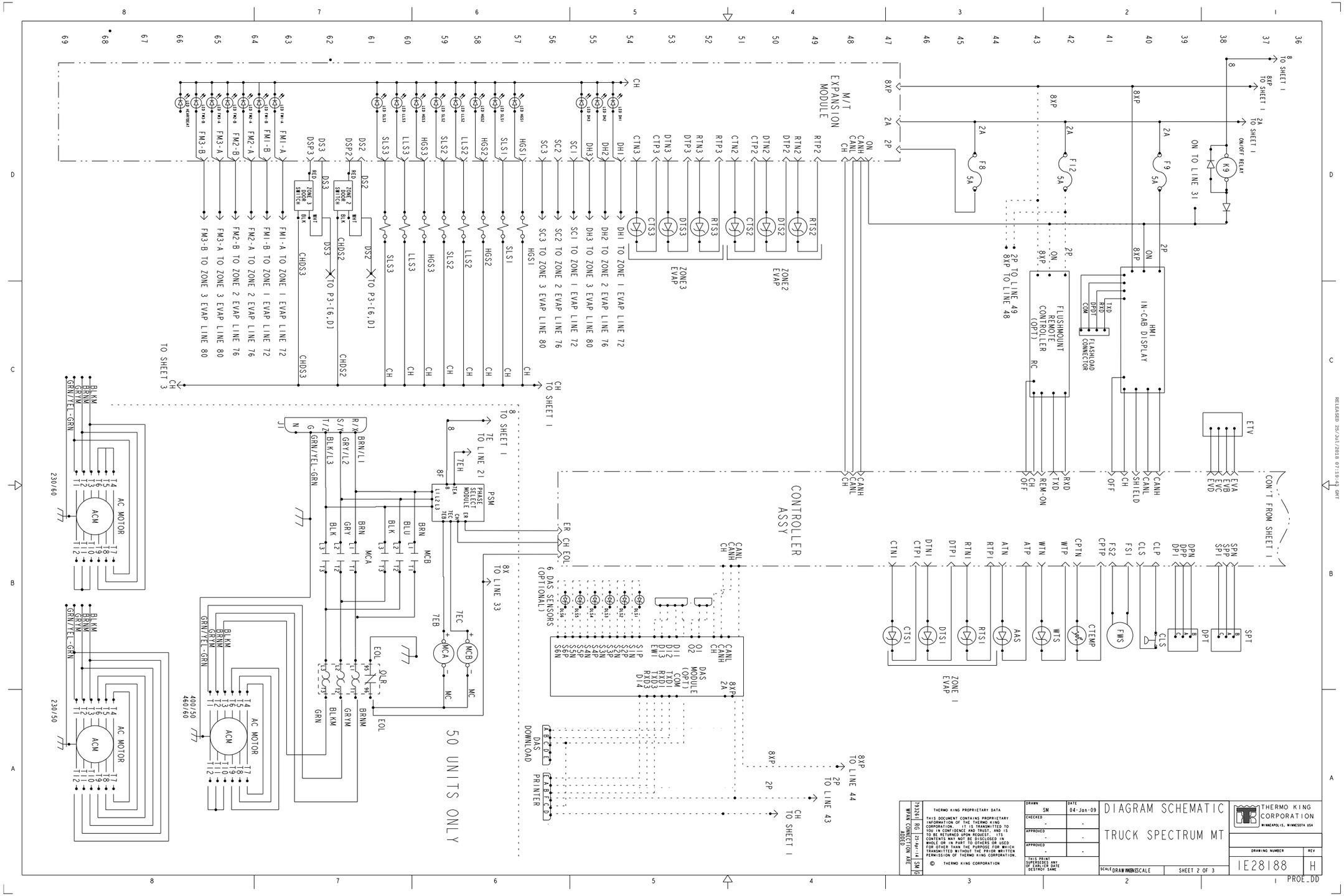
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**Figure 12. T-1080S Spectrum, T-1280R Spectrum 1E28188 (Sheet 1 of 3)**



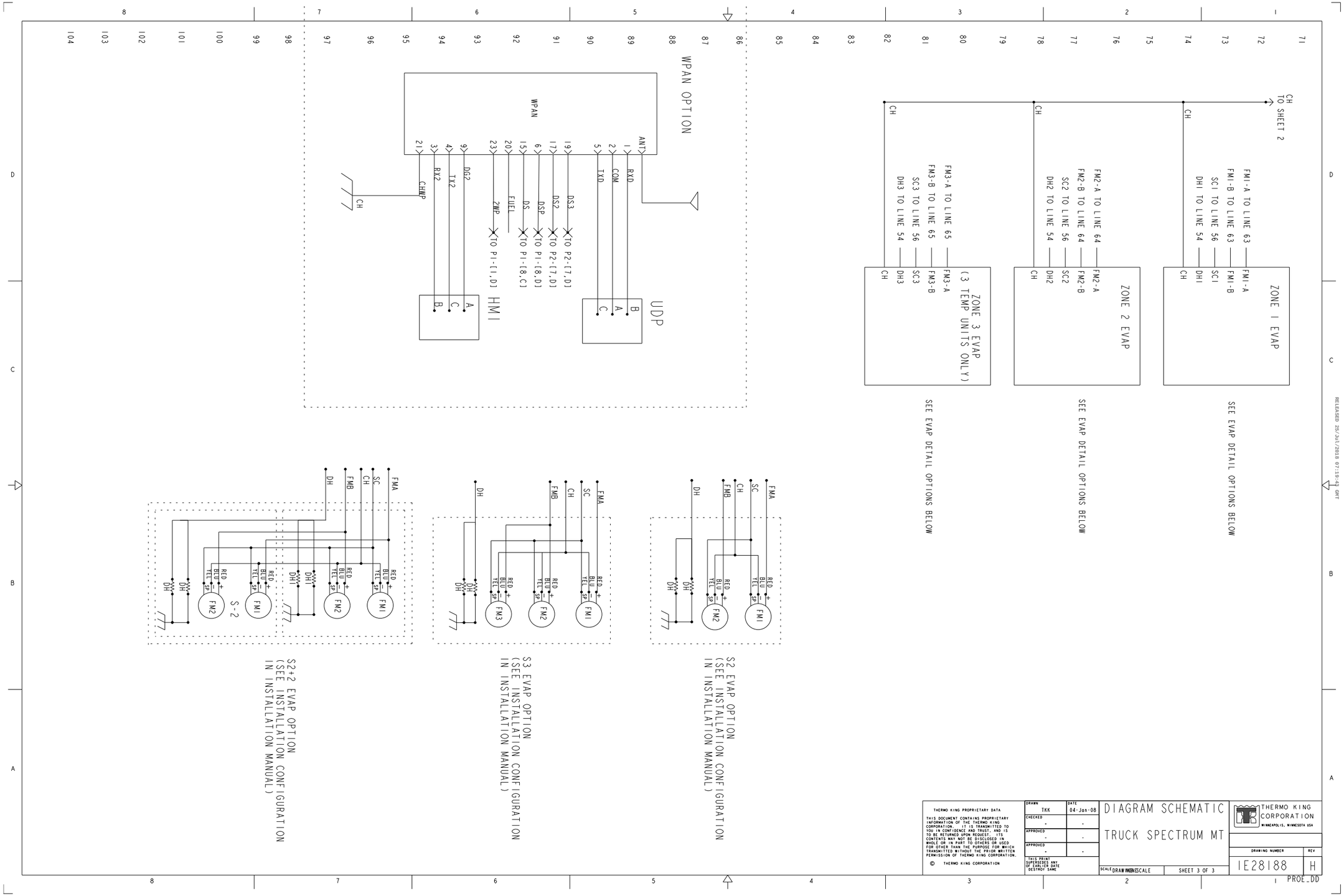
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**Figure 13. T-1080S Spectrum, T-1280R Spectrum 1E28188 (Sheet 2 of 3)**



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**Figure 14. T-1080S Spectrum, T-1280R Spectrum 1E28188 (Sheet 3 of 3)**

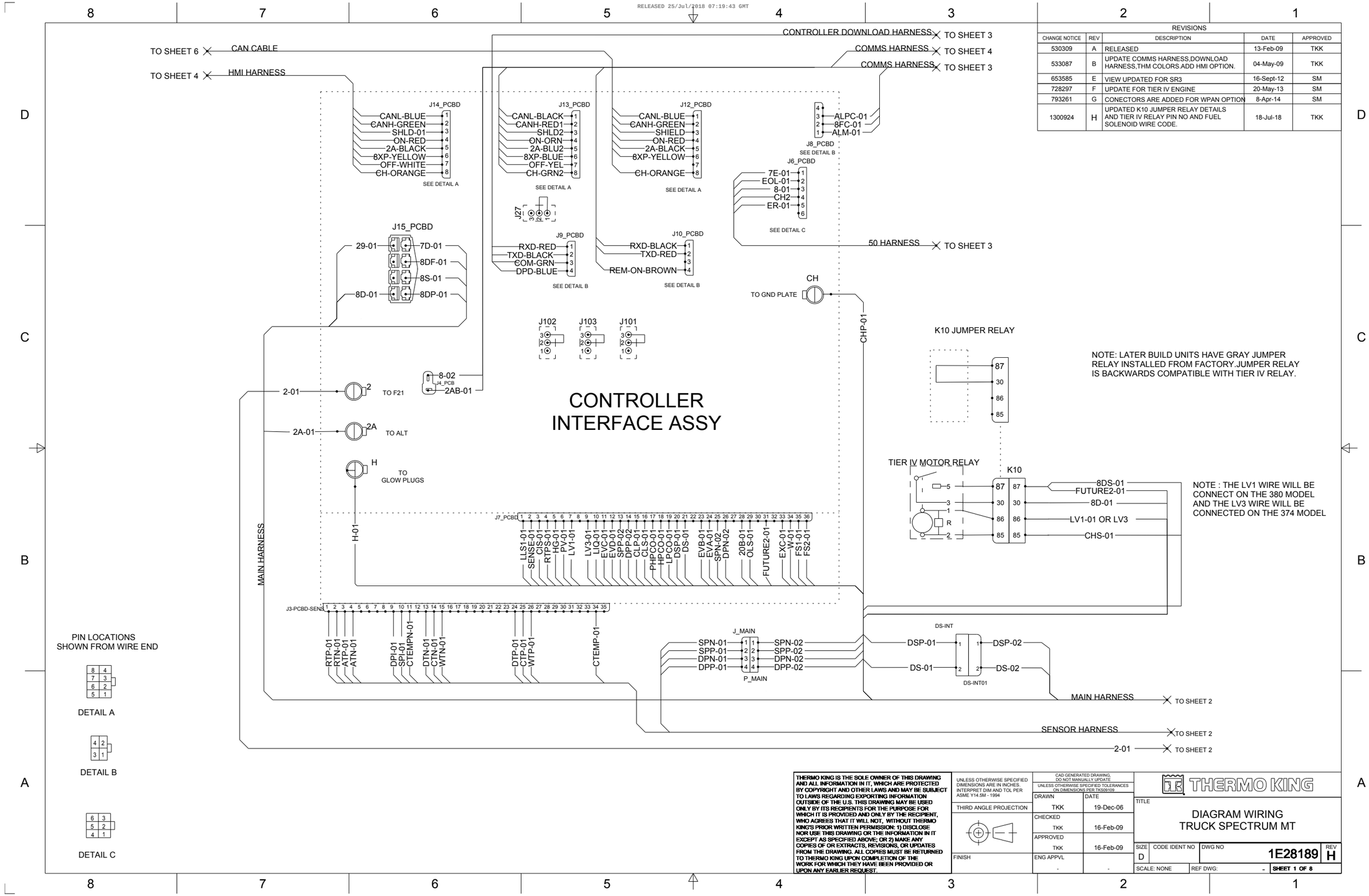


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**Figure 15. T-1080S Spectrum, T-1280R Spectrum 1E28189 (Sheet 1 of 8)**

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| 530309 | A | RELEASED | 13-Feb-09 | TKK |
| 533087 | B | UPDATE COMMS HARNESS,DOWNLOAD HARNESS,THM COLORS.ADD HMI OPTION. | 04-May-09 | TKK |
| 653585 | E | VIEW UPDATED FOR SR3 | 16-Sept-12 | SM |
| 728297 | F | UPDATE FOR TIER IV ENGINE | 20-May-13 | SM |
| 793261 | G | CONECTORS ARE ADDED FOR WPAN OPTION | 8-Apr-14 | SM |
| 1300924 | H | UPDATED K10 JUMPER RELAY DETAILS AND TIER IV RELAY PIN NO AND FUEL SOLENOID WIRE CODE. | 18-Jul-18 | TKK |




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| APPROVED | TKK | 16-Feb-09 |
| ENG APPVL | - | - |

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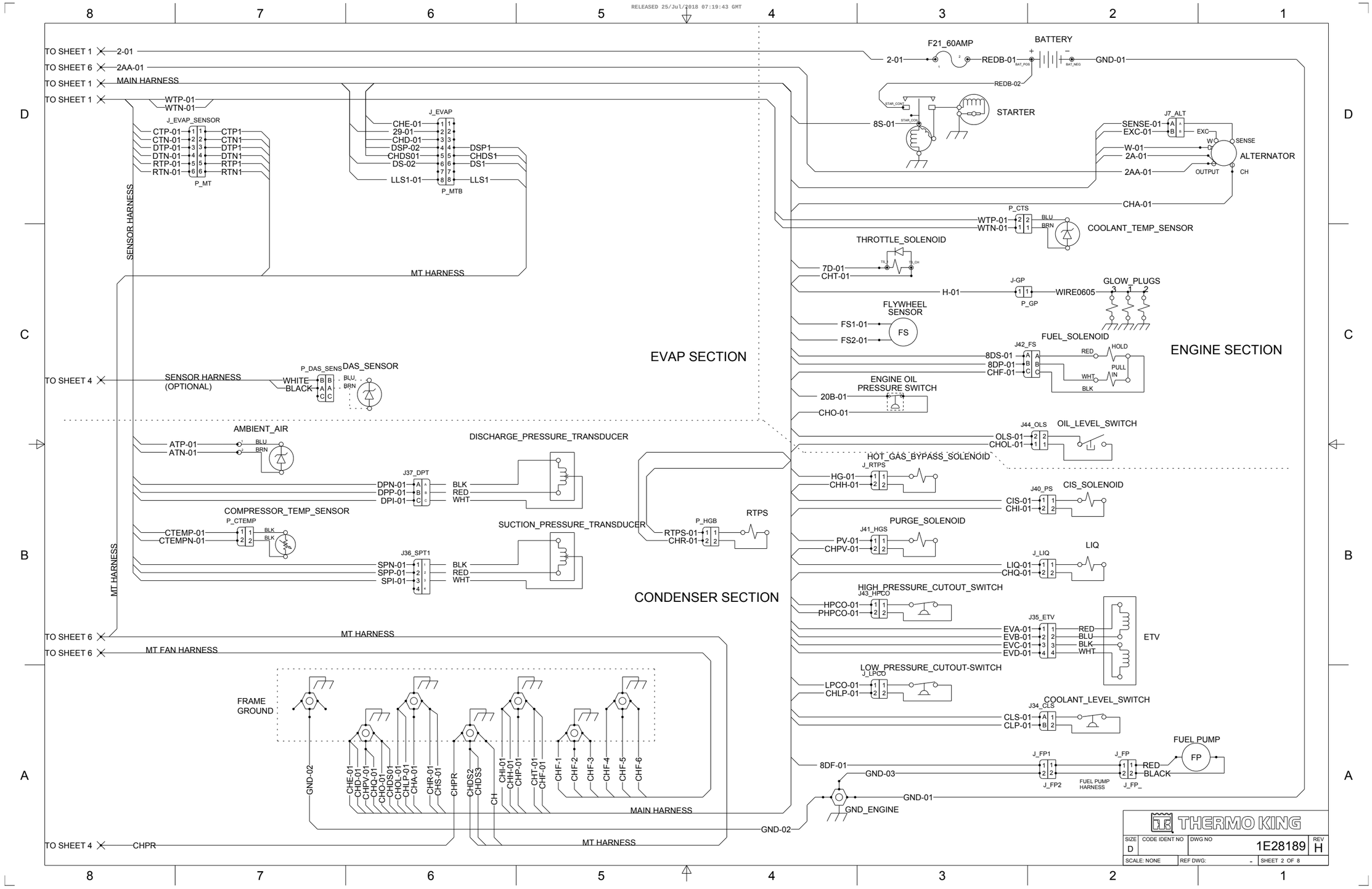
DIAGRAM WIRING
TRUCK SPECTRUM MT

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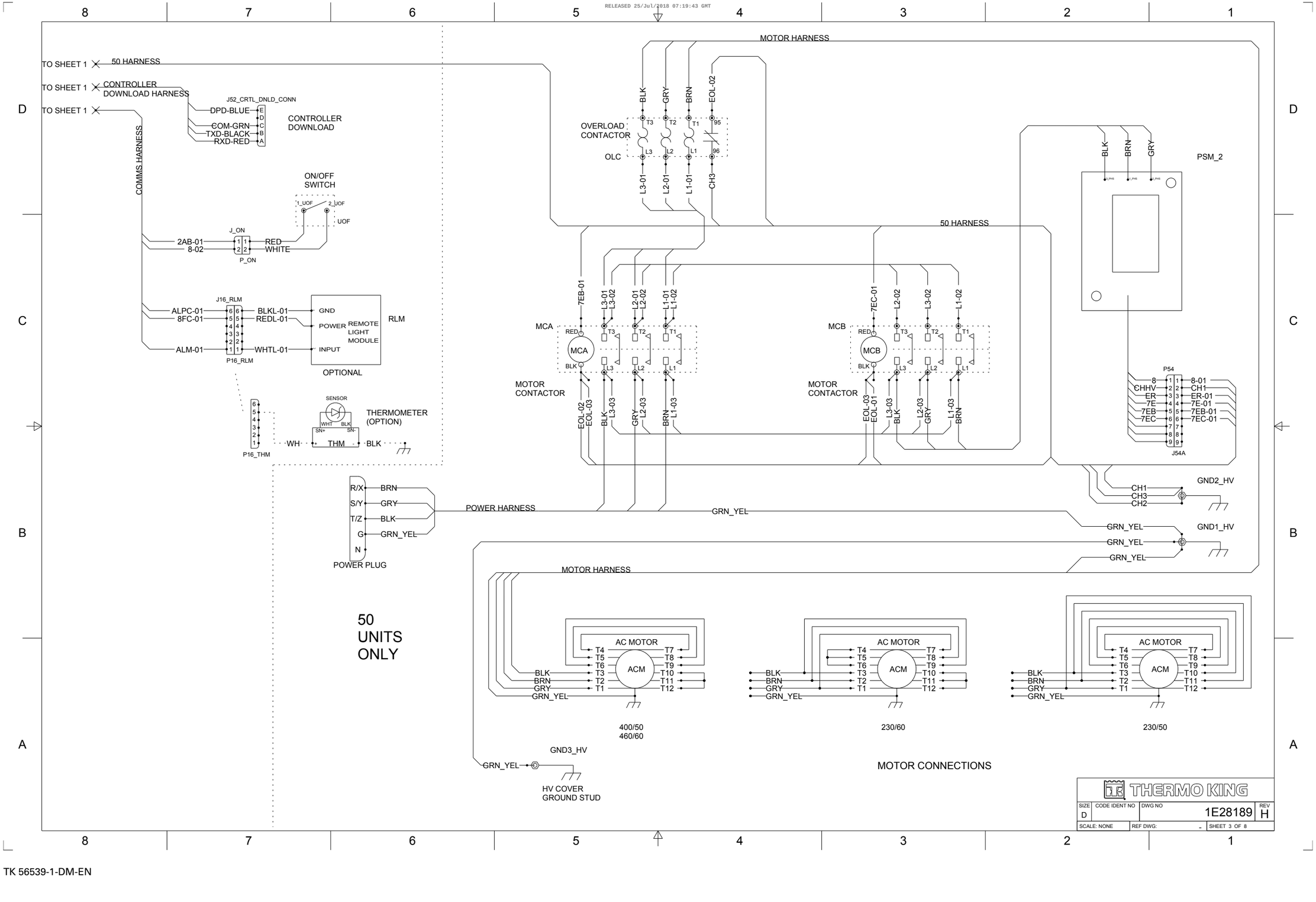
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**Figure 16. T-1080S Spectrum, T-1280R Spectrum 1E28189 (Sheet 2 of 8)**



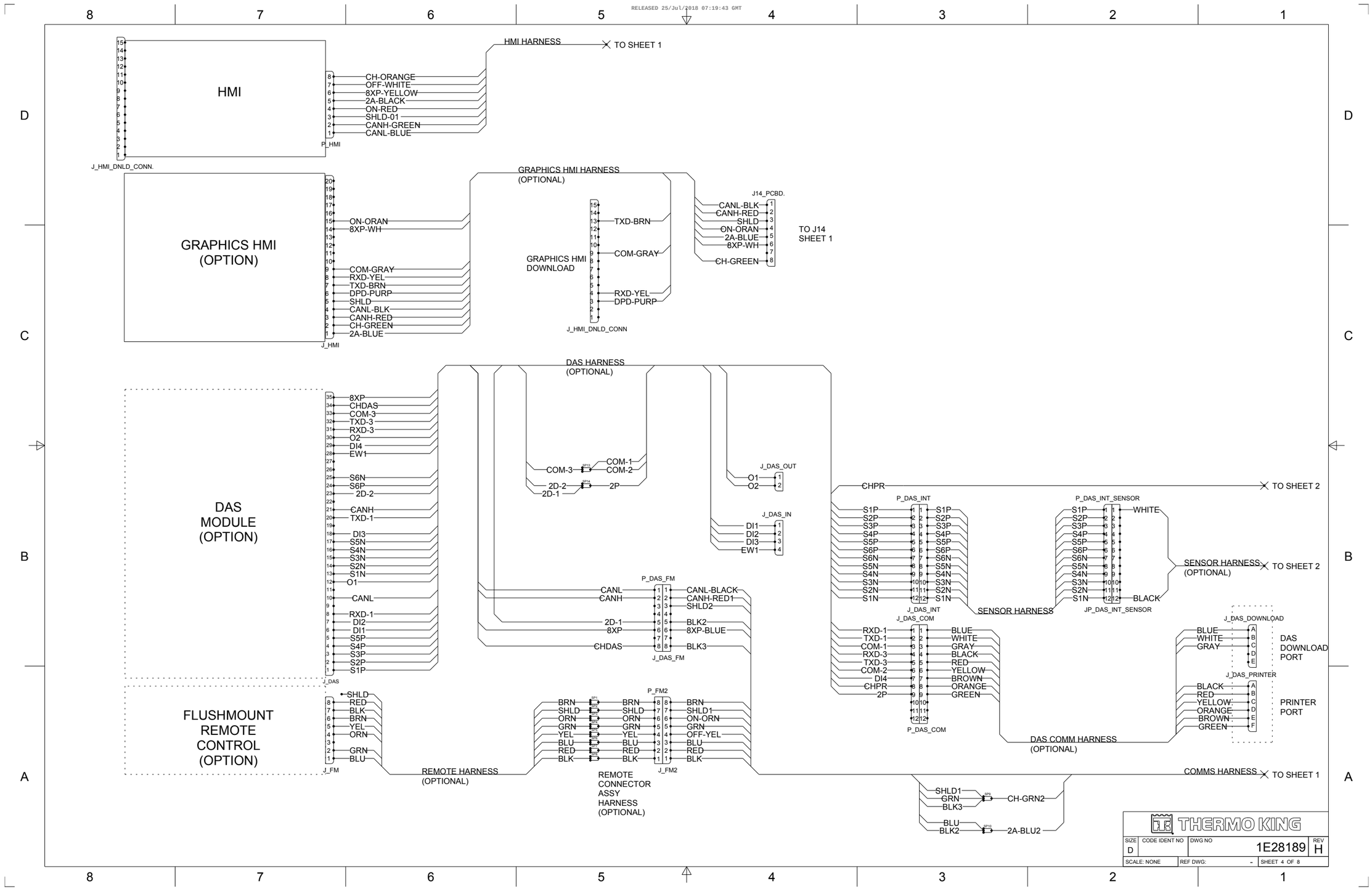
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**Figure 17. T-1080S Spectrum, T-1280R Spectrum 1E28189 (Sheet 3 of 8)**



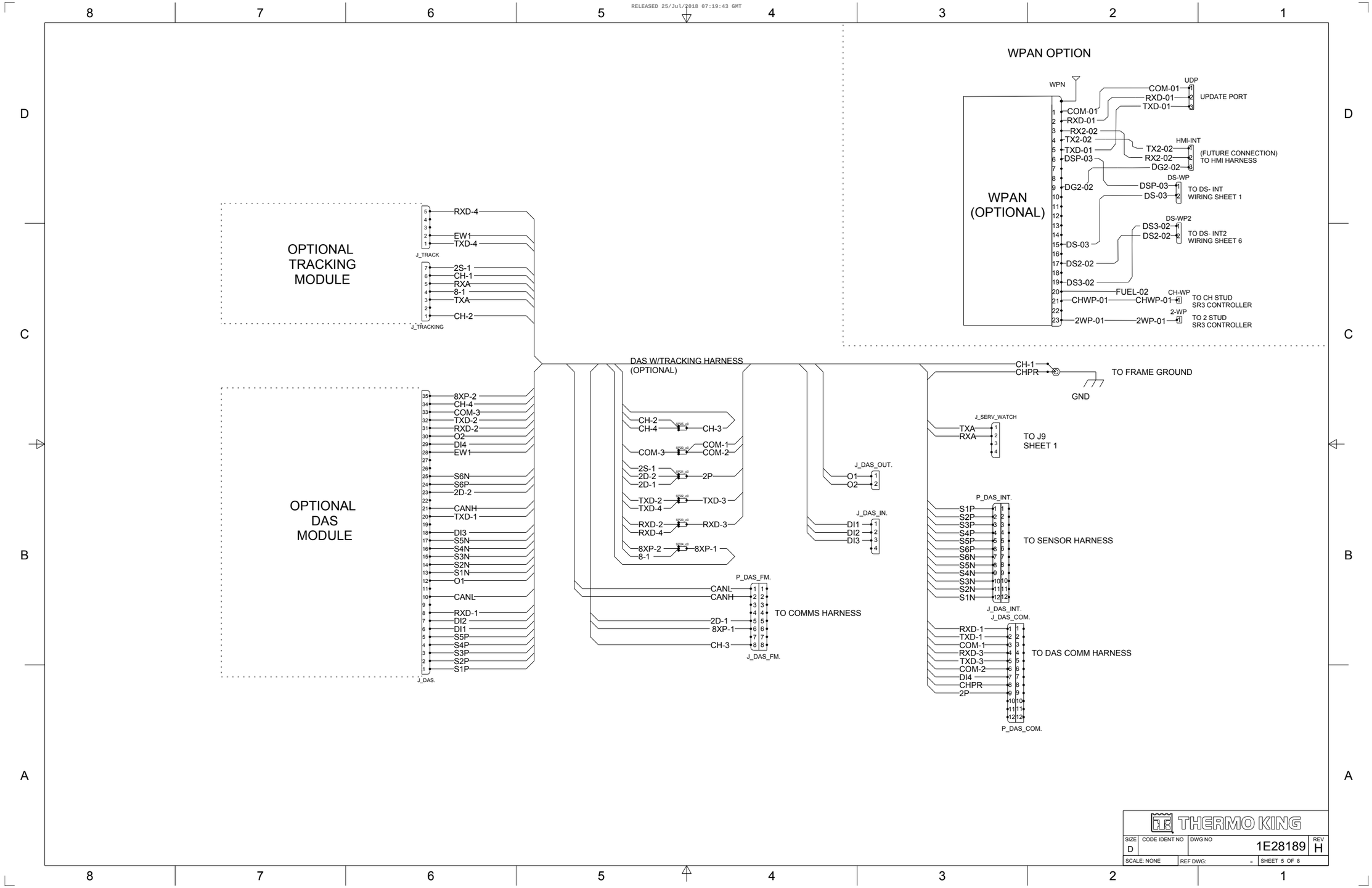
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**Figure 18. T-1080S Spectrum, T-1280R Spectrum 1E28189 (Sheet 4 of 8)**



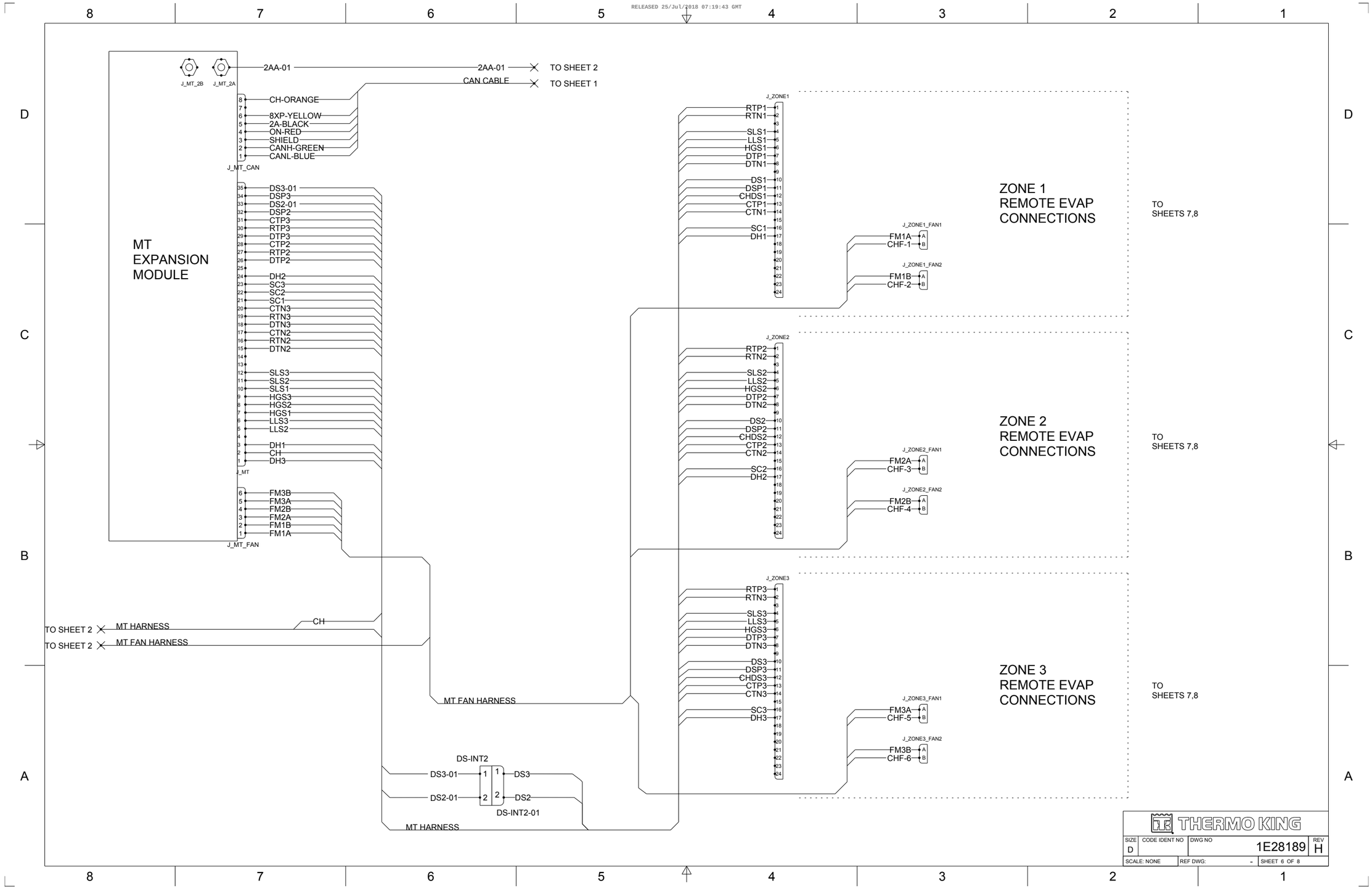
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**Figure 19. T-1080S Spectrum, T-1280R Spectrum 1E28189 (Sheet 5 of 8)**



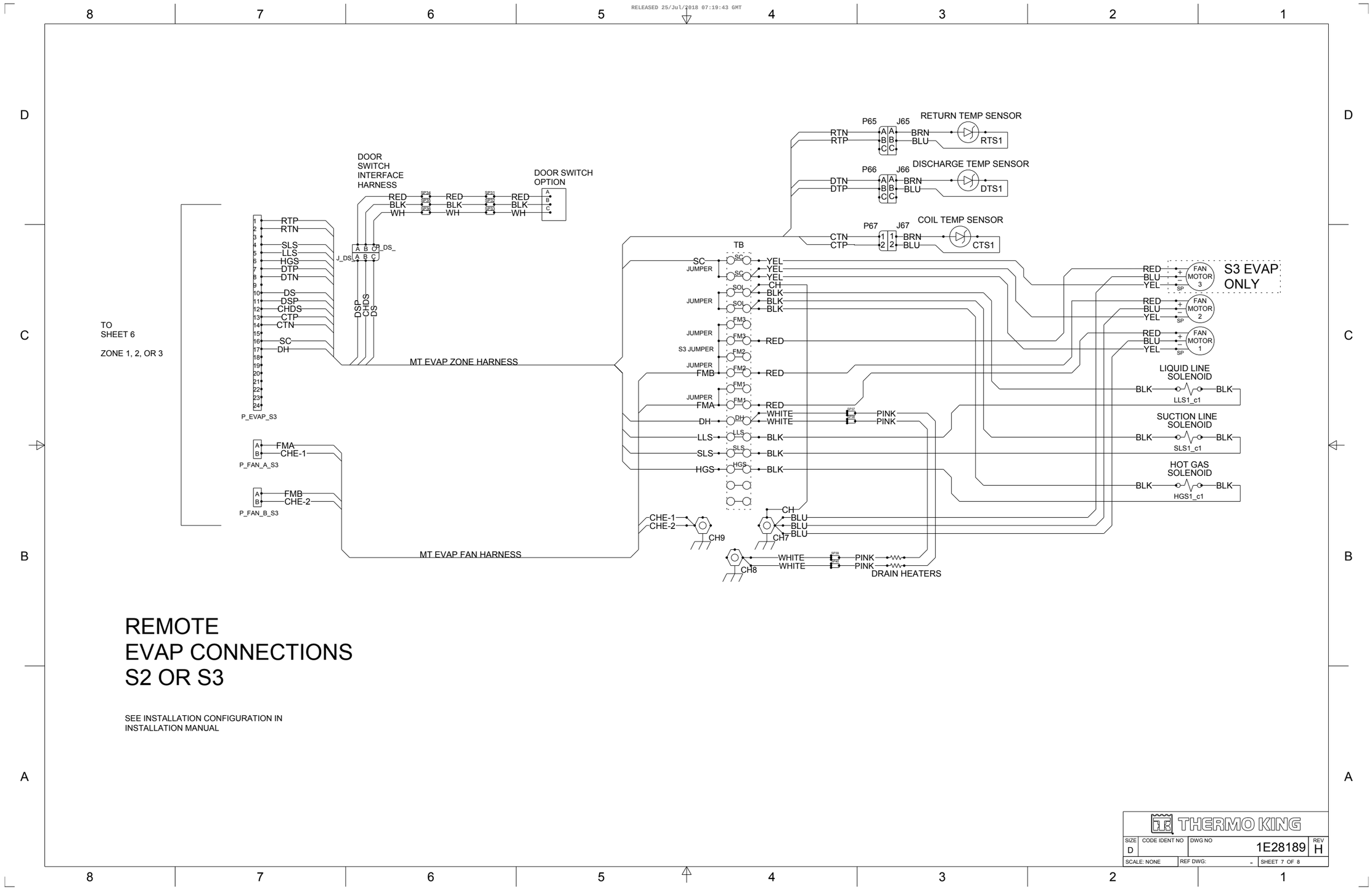
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**Figure 20. T-1080S Spectrum, T-1280R Spectrum 1E28189 (Sheet 6 of 8)**



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**Figure 21. T-1080S Spectrum, T-1280R Spectrum 1E28189 (Sheet 7 of 8)**



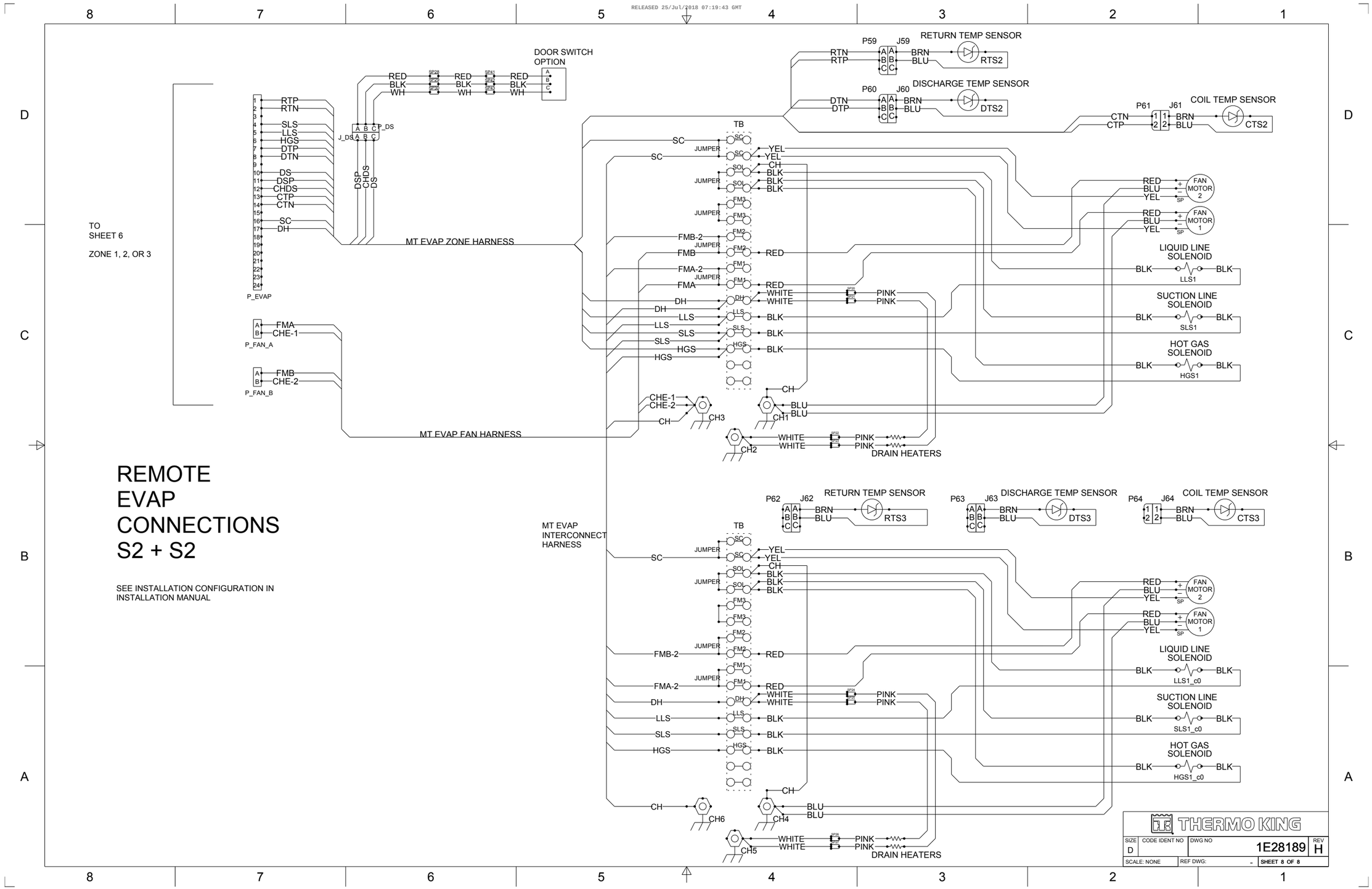

# REMOTE
# EVAP CONNECTIONS
# S2 OR S3

SEE INSTALLATION CONFIGURATION IN
INSTALLATION MANUAL

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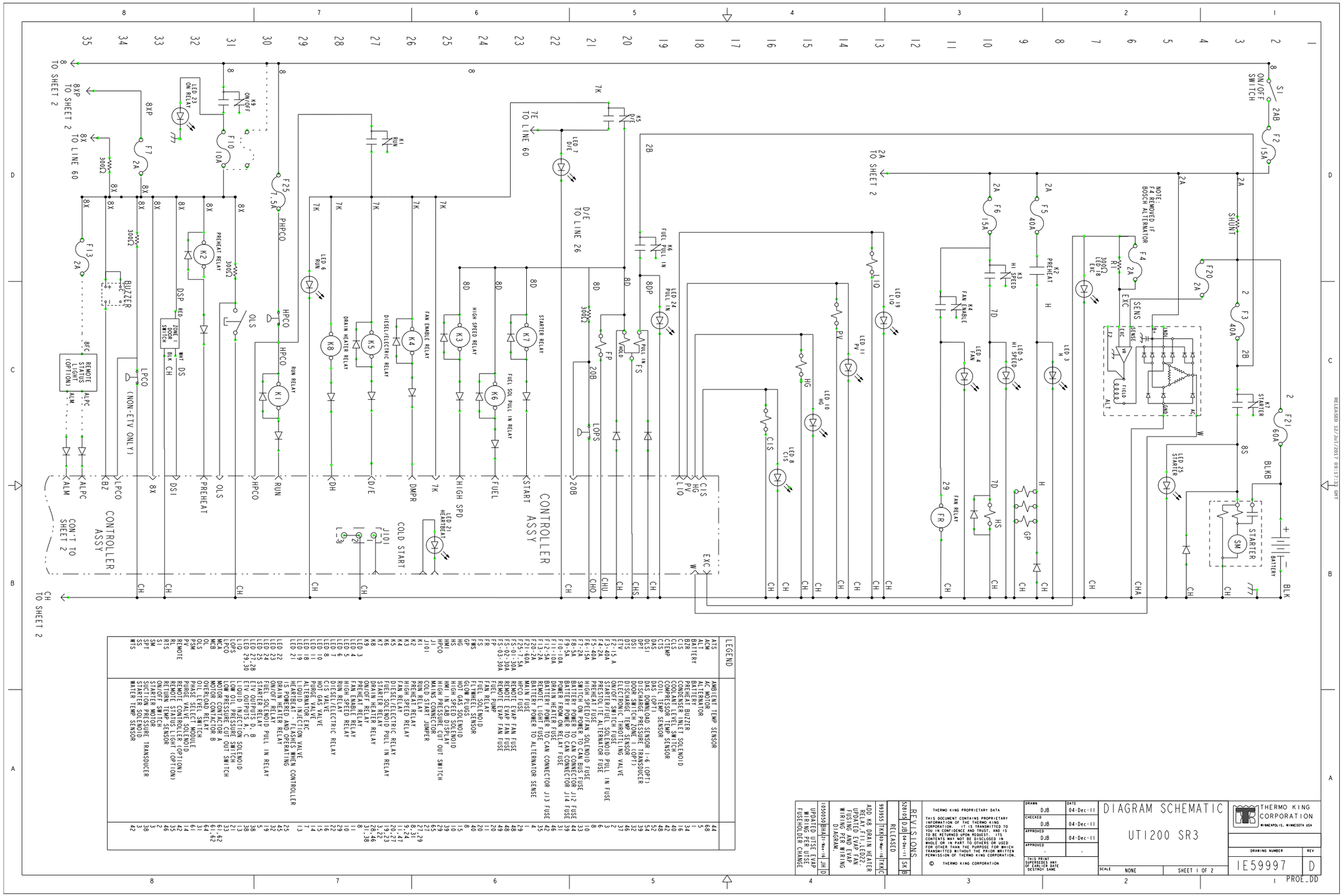
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**Figure 22. T-1080S Spectrum, T-1280R Spectrum 1E28189 (Sheet 8 of 8)**



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**Figure 23. UT-1280 1E59997 (Sheet 1 of 2)**




| LEGEND | | |
|---|---|---|
| ATS | AMBIENT TEMP SENSOR | 44 |
| ACM | AC MOTOR | 68 |
| ALT | ALTERNATOR | 1 |
| BATTERY | BATTERY | 34 |
| BZR | PREHEAT BUZZER | 1 |
| CND | CONDENSER | 16 |
| CIS | CONDENSER INLET SOLENOID | 40 |
| CISTMP | COMPRESSOR TEMP SWITCH | 48 |
| CTS | COIL TEMP SENSOR | 54 |
| DAS | DAS (OPT) | 52 |
| DDS | DAS DOWNLOAD SENSOR 1-6 (OPT) | 54 |
| DLS | DAS DOWNLOAD TRANSDUCER | 54 |
| DSI | DOOR SWITCH ZONE 1 (OPT) | 32 |
| DTS | DISCHARGE TEMP SENSOR | 46 |
| ETV | ELECTRONIC THROTTLING VALVE | 37 |
| F3 - 40A | ALTERNATOR FUSE | 3 |
| F4 - 2A | STARTER/FUEL SOLENOID PULL IN FUSE | 6 |
| F5 - 40A | PRESTOLITE ALTERNATOR FUSE | 8 |
| F6 - 15A | PREHEAT FUSE | 10 |
| F7 - 2A | HIGH SPEED SOLENOID FUSE | 39 |
| F8 - 5A | BATTERY POWER TO CAN FUSE | 31 |
| F9 - 5A | BATTERY POWER TO CAN CONNECTOR J12 FUSE | 44 |
| F10 - 10A | BATTERY POWER TO CAN CONNECTOR J14 FUSE | 39 |
| F11 - 5A | POWER FROM ON RELAY FUSE | 31 |
| F12 - 5A | BATTERY POWER TO CAN CONNECTOR J13 FUSE | 42 |
| F13 - 2A | REMOTE LIGHT FUSE | 35 |
| F20 - 2A | BATTERY POWER TO ALTERNATOR SENSE | 4 |
| F21 - 60A | MAIN FUSE | 29 |
| F25 - 7.5A | HPCO FUSE | 48 |
| FS - 01 - 30A | REMOTE EVAP FAN FUSE | 48 |
| FS - 02 - 30A | REMOTE EVAP FAN FUSE | 48 |
| FS - 03 - 30A | REMOTE EVAP FAN FUSE | 48 |
| FP | FUEL PUMP | 20 |
| FR | FAN RELAY | 29 |
| FS | FUEL SOLENOID | 11 |
| GPWS | GROUNDSPEED SENSOR | 20 |
| HG | HOT GAS SOLENOID | 20 |
| HS | HIGH SPEED SOLENOID | 8 |
| HMI | HMI IN CAB DISPLAY | 15 |
| HPCO | HIGH PRESSURE CUT OUT SWITCH | 39 |
| J1 | MAINS CONNECTOR | 65 |
| J101 | COLD START JUMPER | 27 |
| K1 | RUN RELAY | 27,29 |
| K2 | PREHEAT RELAY | 9,34 |
| K3 | HIGH SPEED RELAY | 8,34 |
| K4 | FAN ENABLE RELAY | 11,47 |
| K5 | DIESEL/ELECTRIC RELAY | 20,27 |
| K6 | FUEL SOLENOID PULL IN RELAY | 3,23 |
| K7 | STARTER RELAY | 28,46 |
| K8 | DRAIN HEATER RELAY | 31,38 |
| K9 | ON/OFF RELAY | 10 |
| L1 | PREHEAT RELAY | 9 |
| LED 2 | HIGH SPEED RELAY | 8 |
| LED 3 | RUN RELAY | 29 |
| LED 5 | DIESELELECTRIC RELAY | 20 |
| LED 6 | HOT GAS VALVE | 15 |
| LED 7 | PURGE VALVE | 16 |
| LED 10 | ALTERNATOR EXC | 4 |
| LED 11 | HEATER INJECTION VALVE | 13 |
| LED 18 | HEARTBEAT FLASHES WHEN CONTROLLER IS POWERED AND OPERATING | 25 |
| LED 21 | DRAIN HEATER RELAY | 45 |
| LED 22 | ON/OFF SOLENOID | 42 |
| LED 23 | STARTER RELAY | 28 |
| LED 25 | ETV OUTPUTS D, B | 38 |
| LED 27,28 | ETV OUTPUTS A, C | 38 |
| LED 29,30 | LOW OIL PRESSURE CUT OUT SWITCH | 39 |
| LOPS | LOW OIL PRESSURE SWITCH | 21 |
| LPCO | MOTOR CONTACTOR A | 61,62 |
| MCA | MOTOR CONTACTOR B | 61,62 |
| MCB | OVERLOAD RELAY | 64 |
| OLS | OIL LEVEL SWITCH | 31 |
| PSM | PHASE SELECT MODULE | 61 |
| RCVR | REMOTE CONTROL RECEIVER (OPTION) | 14 |
| REMOTE | REMOTE STATUS LIGHT (OPTION) | 35 |
| RLT | RETURN TEMP SENSOR | 46 |
| SW | ON/OFF SWITCH | 2 |
| SNR | SUCTION PRESSURE TRANSDUCER | 38 |
| SS | STARTER SOLENOID | 3 |
| WTS | WATER TEMP SENSOR | 42 |

| REVISIONS | | | |
|---|---|---|---|
| 520104 | DJB 04-Dec-11 | SK | B |
| RELEASED | | | |
| 993955 | TKK 10-Mar-11 | TKK | C |
| ADD K8 DRAIN HEATER RELAY, F11, LED22. UPDATED EVAP FAN WIRING PER WIRING DIAGRAM. | | | |
| 105096 | BHJ 7-Nov-11 | JHD | D |
| UPDATED DIESEL EVAP FUSEHOLDER CHANGE | | | |

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| | | |
|---|---|---|
| DRAWN | DJB | 04-Dec-11 |
| CHECKED | DJB | 04-Dec-11 |
| APPROVED | DJB | 04-Dec-11 |
| APPROVED | - | - |

THIS PRINT SUPERSEDES ANY OF EARLIER DATE DESTROY SAME

DIAGRAM SCHEMATIC

UT1200 SR3

SCALE NONE | SHEET 1 OF 2

THERMO KING CORPORATION
MINNEAPOLIS, MINNESOTA USA

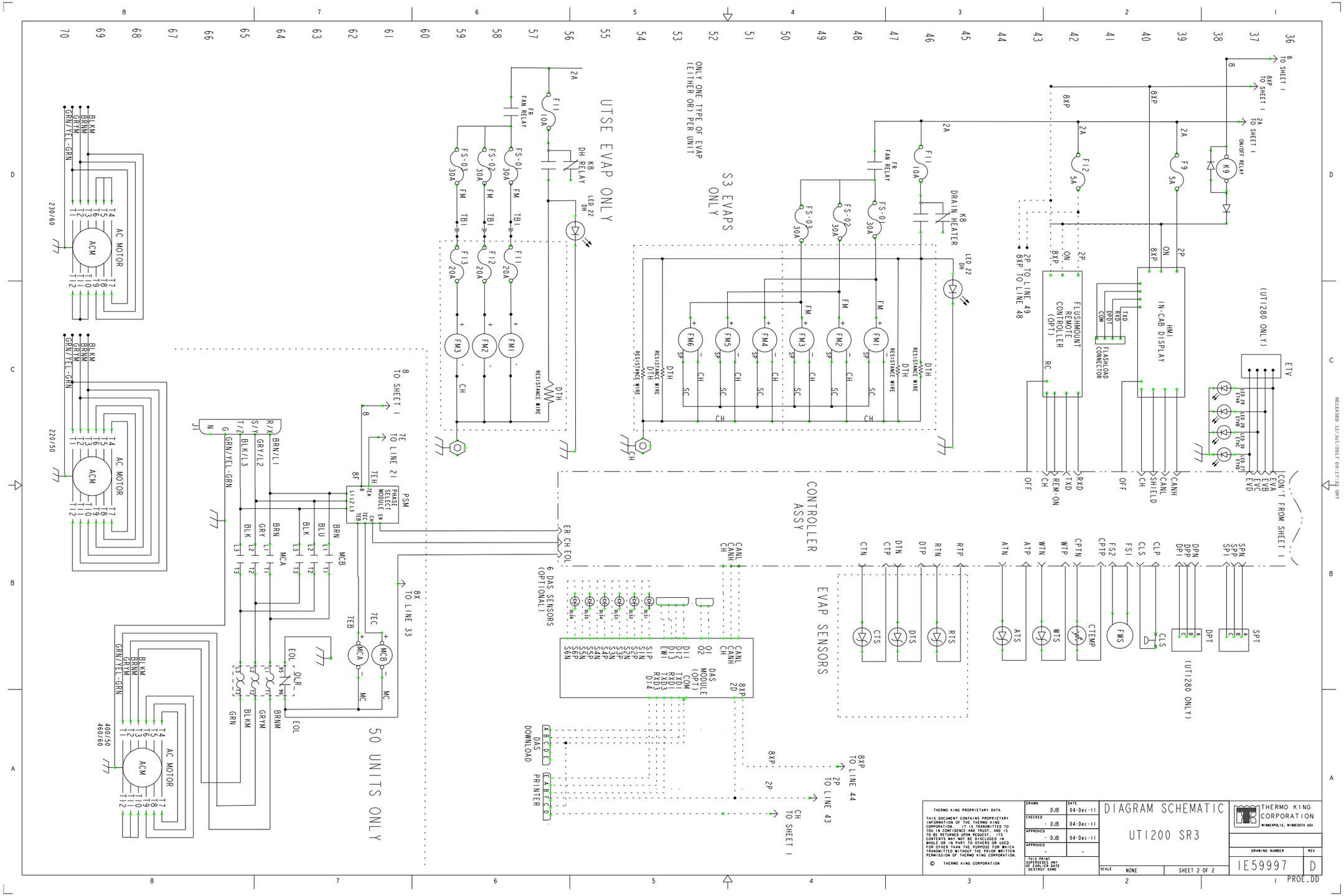
DRAWING NUMBER 1E59997 | REV D

PROE_DD

RELEASED 12-JUL-2017 09:17:32 GMT

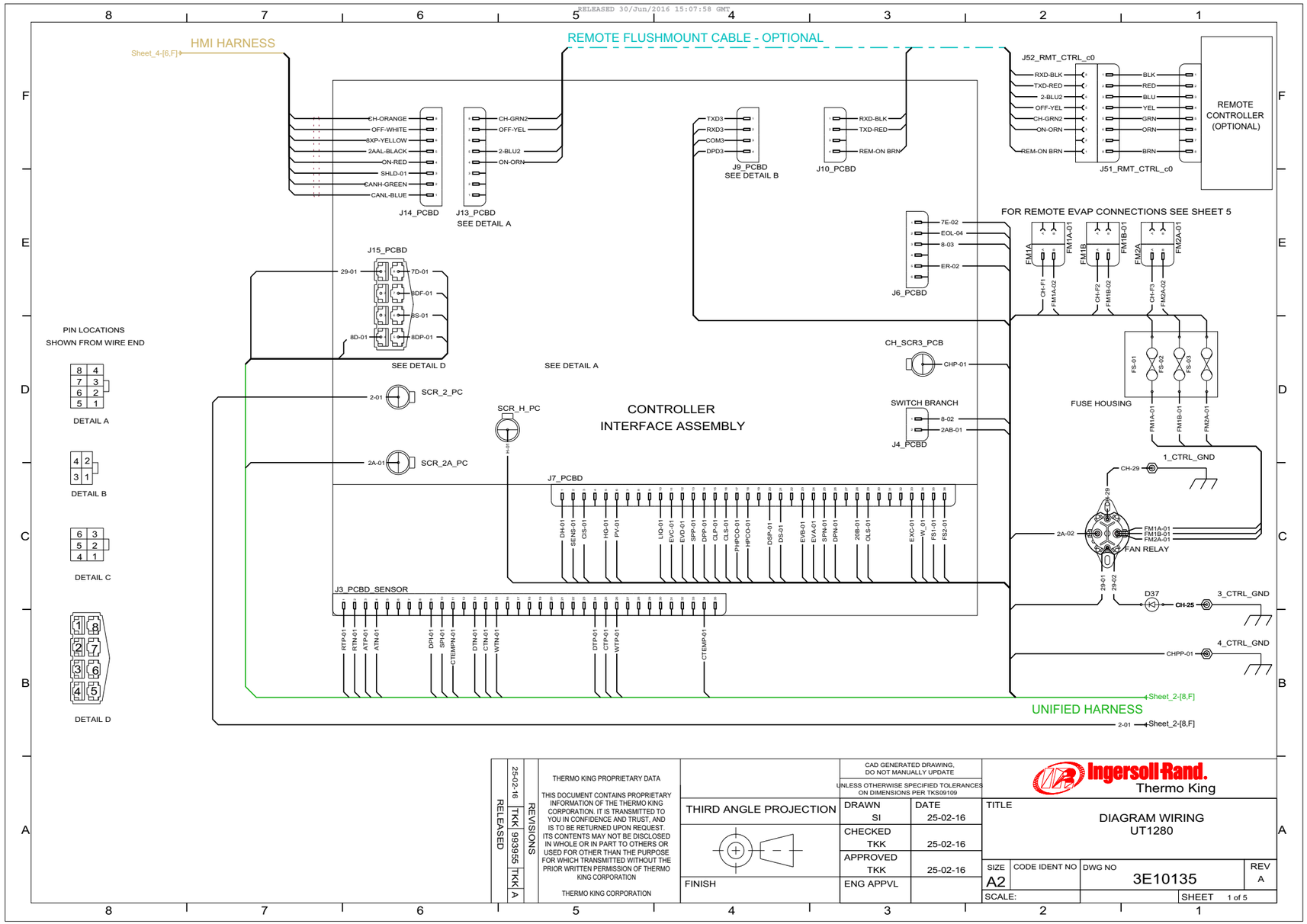
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**Figure 24. UT-1280 1E59997 (Sheet 2 of 2)**



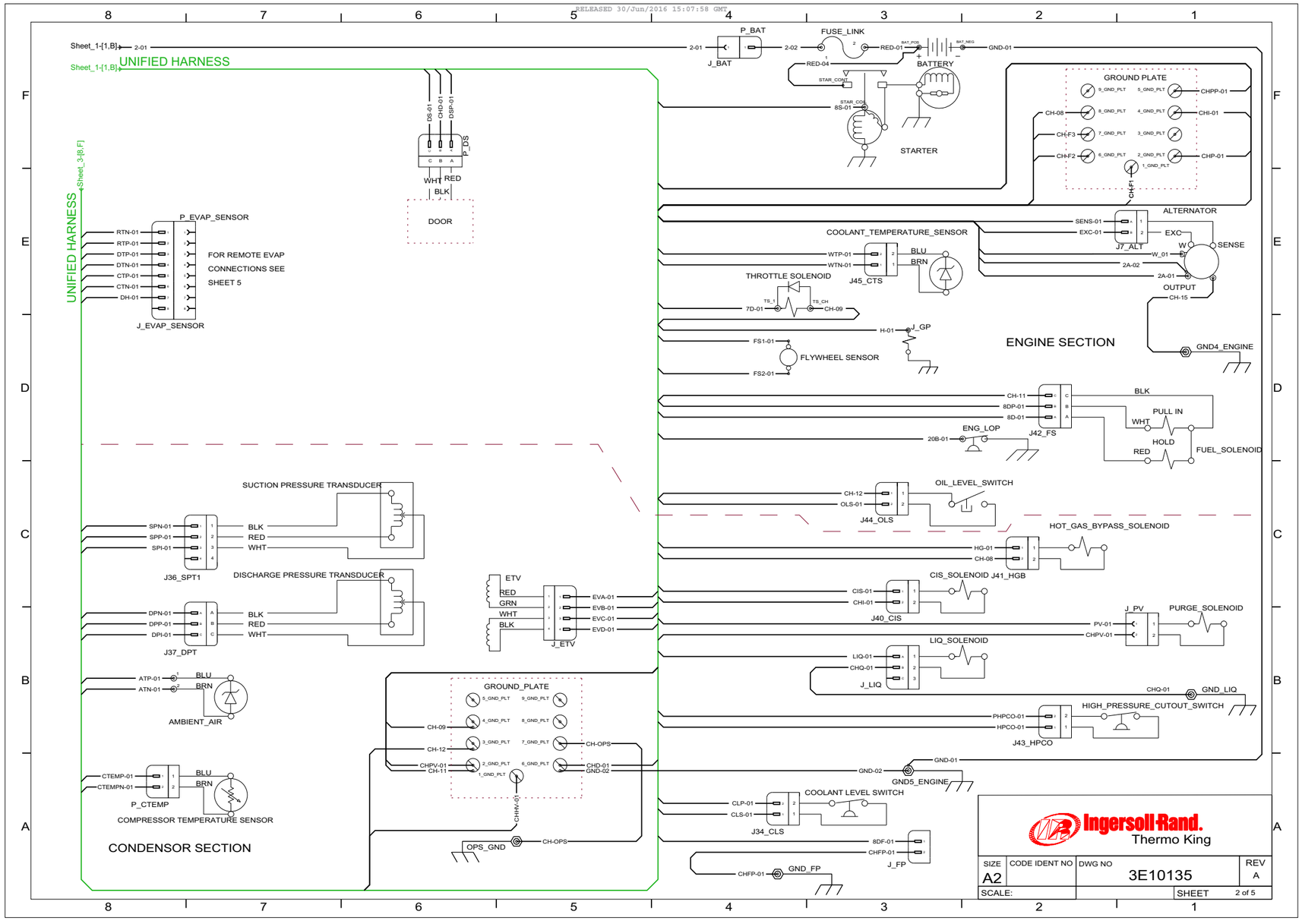
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**Figure 25. UT-1280 3E10135 (Sheet 1 of 5)**



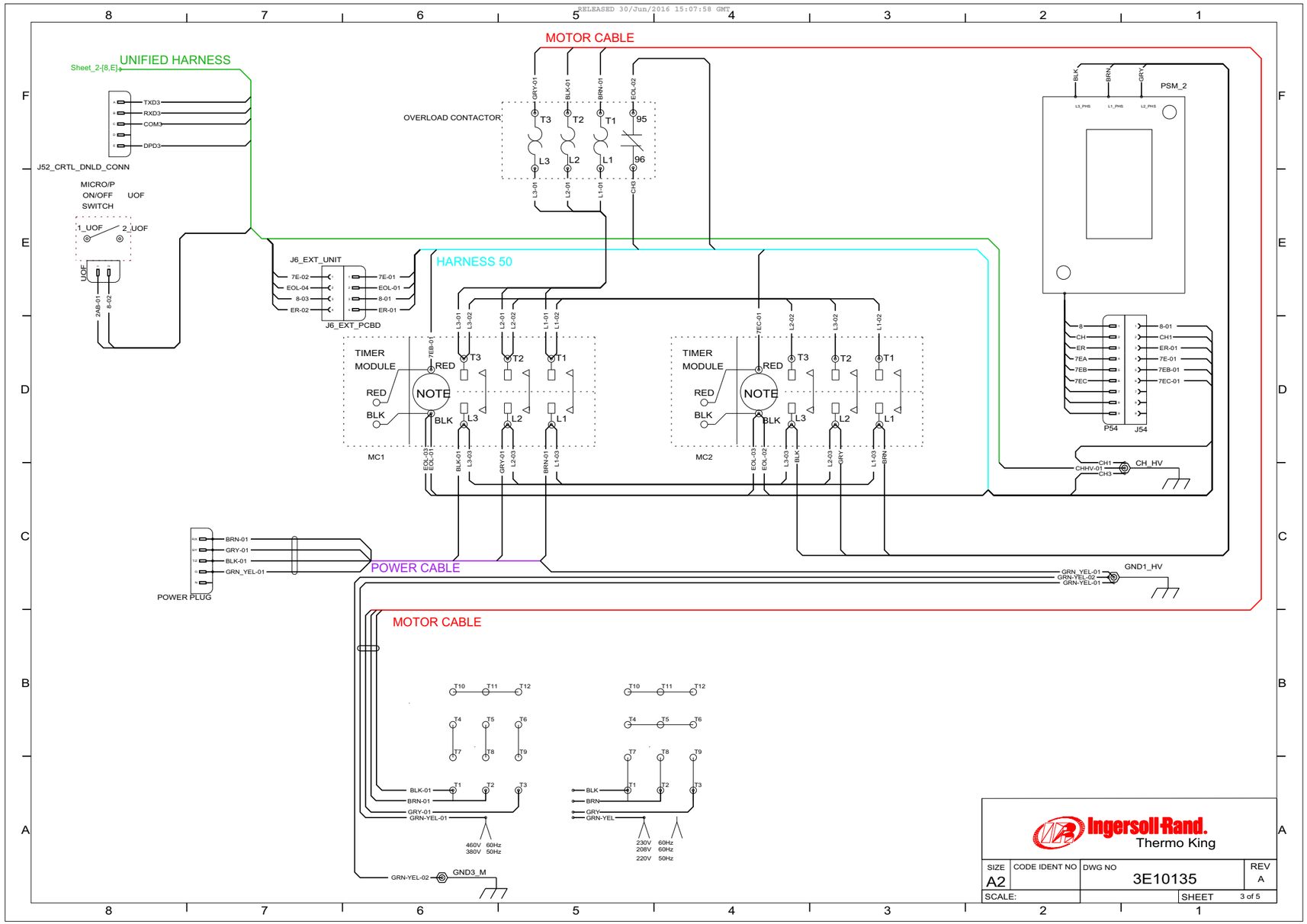
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**Figure 26. UT-1280 3E10135 (Sheet 2 of 5)**



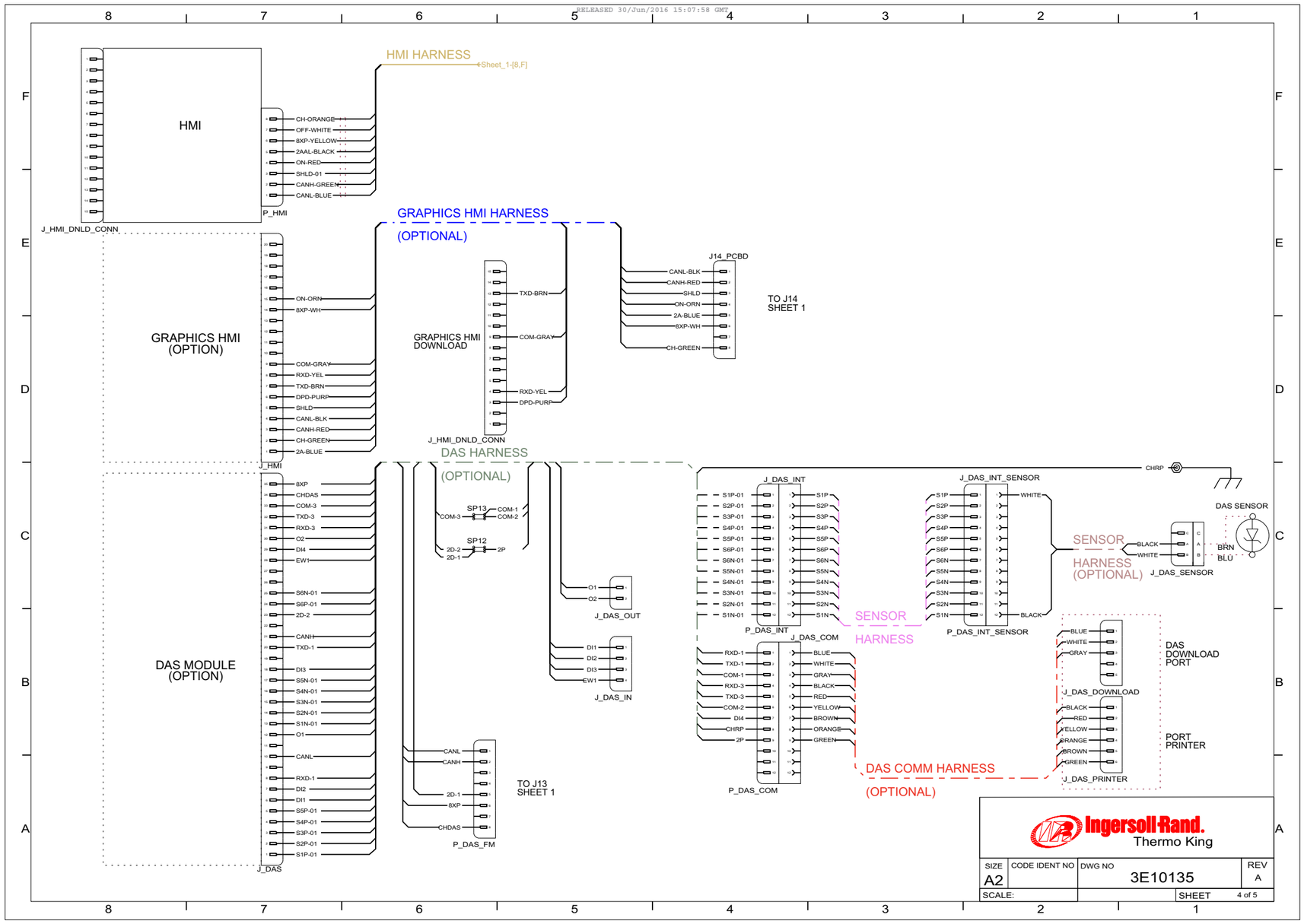
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**Figure 27. UT-1280 3E10135 (Sheet 3 of 5)**



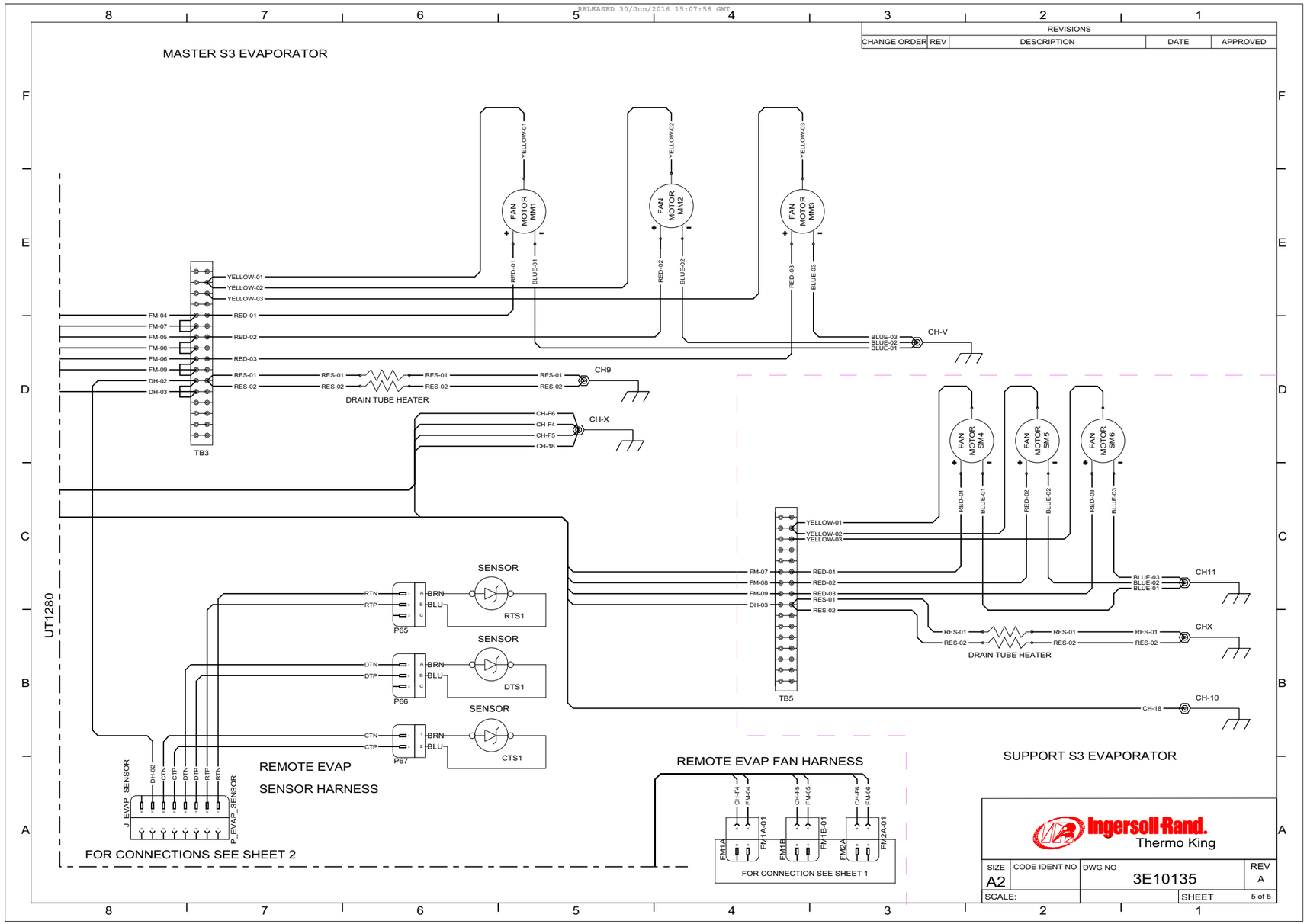
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**Figure 28. UT-1280 3E10135 (Sheet 4 of 5)**



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**Figure 29. UT-1280 3E10135 (Sheet 5 of 5)**



## Notes

## Notes



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TK 56539-1-DM-EN 01 Feb 2019
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