

<b>Company</b>	Trenz Electronic GmbH
<b>PCN Number</b>	PCN-20240611
<b>Title</b>	TEBF0808-04A to TEBF0808-05 Hardware Revision Change
<b>Subject</b>	Hardware Revision Change
<b>Issue Date</b>	2024-08-20

## 1 Products Affected

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This change affects all Trenz Electronic TEBF0808 Carrier: TEBF0808-04A\*.

<b>Affected Product</b>	<b>Replacement</b>
TEBF0808-04A	TEBF0808-05

## 2 Changes

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2.1 #1 Restructured input power supply circuit architecture. Power supply can be supplied either via power path ATX connector (J20) (signal "12V\_input\_A") → fuse 0451007.MRL (F1) (signal "12V\_input\_A\_Fused") → protection circuit LTC4365ITS8#TRMPBF (U52) with MOSFET Si7114ADN-T1-GE3 (T2, T3) (signal "12V") or via power path power jack (J25) (signal "12V\_input\_B") → fuse 0451007.MRL (F2) (signal "12V\_input\_B\_Fused") → protection circuit LTC4365ITS8#TRMPBF (U53) with MOSFET Si7114ADN-T1-GE3 (T4, T5) (signal "12V"). Added input power protection circuit with TVS diode SMBJ20CA (D11, D19).

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**Type:** Schematic Change

**Reason:** Improve power supply architecture.

**Impact:** Power supplies are separated. It is not possible to supply the board simultaneously with both connectors (J20, J25) at the same time. It is not possible to supply one connector and draw power from the other connector.

## 2.2 #2 Changed DCDC EN5335QI (U8) to MPM3650CGQW-Z and adapted power circuit.

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**Type:** Schematic Change

**Reason:** EOL of Component.

**Impact:** Power supply selection option 1.25 V removed. Increased output current capability. Minor changes in electrical characteristics.

## 2.3 #3 Changed DCDC EN6347QI (U19) to MPM3650CGQW-Z and adapted power circuit.

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**Type:** Schematic Change

**Reason:** EOL of Component.

**Impact:** None. Increased current output capability. Minor changes in electrical characteristics.

## 2.4 #4 Changed DCDCs 171050601 (U22, U26, U29) to MPM3650CGQW-Z and adapted power circuit.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None. Minor changes in electrical characteristics.

## 2.5 #5 Changed DCDC 171050601 (U18) to MPM3683GMN-10 and adapted power circuit.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None. Increased current output capability. Minor changes in electrical characteristics.

## 2.6 #6 Changed DCDCs EN5311QI (U28, U43) to MP2164GG-Z and adapted power circuit.

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**Type:** Schematic Change

**Reason:** EOL of Component.

**Impact:** None. Increased current output capability. Minor changes in electrical characteristics.

## 2.7 #7 Changed load switch TPS27082LDDCR (Q1, Q2, Q3) to MP5077GG-Z and adapted circuit.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None. Minor changes in electrical characteristics.

## 2.8 #8 Changed battery power supply circuit architecture. Changed LDO (U37) from TPS780180300 to TPS7A0212PDBVR and diode (D16) from SDMG0340LC-7-F to BAS70-05W. Added capacitor (C278), resistor (R269), and assembly option (default: not fitted) resistor (R270).

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**Type:** Schematic Change

**Reason:** Follow AMD recommendation.

**Impact:** Reduced voltage level for signal "PSBATT" from 1.8 V to 1.2 V.

## 2.9 #9 Reordered MGT signal connection at each FireFly connector (J6, J21) separately.

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**Type:** Schematic Change

**Reason:** Improve FireFly handling and harmonize with TEBF0818 series.

**Impact:** FireFly using custom firmware needs to be adapted by customer.

## 2.10 #10 Changed eMMC (U2) from MTFC4GACAJCN-4M IT to SDINBDG4-8G-XI2.

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**Type:** Schematic change

**Reason:** EOL of Component.

**Impact:** Increased eMMC memory density from 4 GByte to 8 GByte.

## 2.11 #11 Restructured PCIe clock system tree. Differential clock (signals "CLK0\_N" and "CLK0\_P") coming from connector (J2) is distributed via new added fanout buffer NB3L202KMN (U56) to PCIe connector (J11) (signals "PCI\_REF\_P" and "PCI\_REF\_N") and B2B connector (J2) (signals "B505\_CLK0\_P" and "B505\_CLK0\_N"). Removed clock oscillator DSC1123CI2-100.0000T (U6).

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**Type:** Schematic Change

**Reason:** Changed PCIe clock to HCSL.

**Impact:** None.

2.12 #12 Changed AC coupling (C93/C94 [REV04A]) to DC coupling (R263/R264 [REV05]) for differential clock signals "CLK0\_N" and "CLK0\_P".  
Removed capacitor (C94).

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**Type:** Schematic Change

**Reason:** Changed PCIe clock to HCSL.

**Impact:** None.

2.13 #13 Changed MEMS oscillator (U10) from SiT8008AI-73-XXS-52.000000E to SiT8008BI-73-XXS-52.000000E.

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**Type:** BOM change

**Reason:** EOL of Component.

**Impact:** None. Clock revision changed.

2.14 #14 Changed power supply for SFP+ connector (J14) from power rail "3.3V\_PCI" to power rail "3.3V\_PER".

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

2.15 #15 Removed pull-up resistor (R107, R108, R117, R118, R124, R127) for SFP+ connector (J14).

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None. Resistors were not fitted on previous revision.

2.16 #16 Changed pull-up resistor voltage for resistor (R18, R21, R86, R87, R113 ... R115, R121 ... R123).

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.17 #17 Inserted level shifter circuit (T7, T8) between CPLD (U39) (signal "PWROK") and ATX connector (J20) (signal "PWR\_OK").

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**Type:** Schematic Change

**Reason:** Fix voltage level for signal "PWROK".

**Impact:** None. Change voltage level between CPLD voltage rail "3V3SB" and ATX connector voltage rail "5VSB" for signal "PWROK".

## 2.18 #18 Inserted MOSFET (T9) circuit for level shifting and logic level inverting between CPLD (U39) (signal "PSON") and ATX connector (J20) (signal "PS\_ON\_N").

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**Type:** Schematic Change

**Reason:** Fix voltage level for signal "PSON".

**Impact:** None. Change voltage level between CPLD voltage rail "3V3SB" and ATX connector voltage rail "5VSB" for signal "PSON". Change logic level for signal "PSON". CPLD firmware reflects it but customer firmware needs to be checked/adapted by customer.

## 2.19 #19 Connected all shield signals for connector (J7) together to net "FGND". Removed shield signals (J7) from net "F2GND". Removed capacitor (C261).

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.20 #20 Renamed shield net to FGND2 for connector (J13) and changed shield components from 0 Ohm resistor (R43, R44 [REV04A]) to 1 MOhm resistor (R143 [REV05]) and 100 pF capacitor (C149 [REV05]). Removed resistor (R44 [REV04A]).

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.21 #21 Inserted FGND3 with resistor (R43 [REV05]) and capacitor (C93 [REV05]) for SFP+ connector (J14) shield.

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**Type:** Schematic Change

**Reason:** Improve ESD protection.

**Impact:** None.

## 2.22 #22 Changed Fan F455B-05LD (M1) to Fan MF40060V2-1000U-A99 (MP1) and updated according mechanical screws, nuts, crimp contacts, and housing (JX1).

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**Type:** BOM change

**Reason:** EOL of Component.

**Impact:** Specified airflow of fan increases from 0.028 m<sup>3</sup>/min to 0.155 m<sup>3</sup>/min. Specified acoustic noise increases from 20 dB(A) to 25.3 dB(A). Increased temperature range from (-10 °C - +60 °C) to (-10 °C - +70 °C).

## 2.23 #23 Added assembly option (default: not fitted) for cooling solution with fan controller LM96163CISD/NOPB (U54), temperature sense MMBT3904 (T12), and AND Gate (U55).

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.24 #24 Connected fan controller LM96163CISD/NOPB (U54) to I2C bus (signals "SC\_SCL" and "SC\_SDA").

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**Type:** Schematic Change

**Reason:** Fan controller handling.

**Impact:** None. Assembled fan controller uses I2C address 0x4C.

## 2.25 #25 Changed pin header (J19) from two pins to four pins.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.26 #26 Used resistor (R164) as pull-up resistor for signal "POK\_1V8".

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**Type:** Schematic Change

**Reason:** Use external pull-up resistor.

**Impact:** None.

## 2.27 #27 Added debounce circuit (R235, C211) for button (S1) and (R236, C213) for button (S2).

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**Type:** Schematic Change

**Reason:** Improve button behaviour.

**Impact:** None.

## 2.28 #28 Added pull-up resistor (R228 ... R234) for signal ("PRSENT1", "PERST", "WAKE", "PRSENT2", "PRSENT3", "PRSENT4", "PRSENT5").

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.29 #29 Added pull-up resistor (R293) for signal "I2C\_RST".

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**Type:** Schematic Change

**Reason:** Use external pull-up resistor.

**Impact:** None.

## 2.30 #30 Added termination resistor assembly option (R134) for differential clock (signals "CLK0\_N" and "CLK0\_P").

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.31 #31 Changed LED (D8, D10) from 150060VS75000 to 19-213/G6C-BM1N2/DT.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None.

## 2.32 #32 Changed 1 $\mu$ H power inductor (L1) from 1.7 A, 20 %, 55 mOhm to 0.7 A, 5 %, 620 mOhm.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

2.33 #33 Changed power inductor (L2, L6, L13, L14) from 1  $\mu$ H, 1.7 A, 55 mOhm to 3.3  $\mu$ H, 1.5 A, 162 mOhm.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

2.34 #34 Changed power inductor (L8, L9, L11, L12) from 1  $\mu$ H, 1.7 A, 55 mOhm to 4.7  $\mu$ H, 1.5 A, 84 mOhm.

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**Type:** Schematic Change

**Reason:** Follow SFP+ recommendation.

**Impact:** None.

2.35 #35 Changed ferrid bead (L16, L17) from BKP0603HS121-T to MPZ0603S121HT000.

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**Type:** BOM Change

**Reason:** EOL of component.

**Impact:** None.

2.36 #36 Changed 33 nF capacitor (C192) from 50 V, 0603 to 25 V, 0402.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None.

2.37 #37 Changed capacitor (C121 ... C124, C179, C182, C185, C221 ... C223) from 100 nF, 6.3 V, X5R to 10 nF, 10 V, X7R.

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**Type:** Schematic Change

**Reason:** Follow AMD recommendation.

**Impact:** None.

2.38 #38 Changed capacitor (C197, C200, C202, C203) from 100 nF, 6.3 V, X5R to 10 nF, 10 V, X7R.

---

**Type:** Schematic Change



**Reason:** Follow SATA recommendation.

**Impact:** None.

2.39 #39 Changed capacitor (C69, C70) from 100 nF, 6.3 V, 0201 to 220 nF, 50 V, 0402.

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**Type:** Schematic Change

**Reason:** Follow PCIe recommendation.

**Impact:** None.

2.40 #40 Changed 220 nF capacitor (C170) from 16 V, X7R to 50 V, X5R.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None.

2.41 #41 Changed capacitor (C47, C50, C52, C57, C60, C62) from 470 nF, 6.3 V, 0402 to 100 nF, 10 V, 0201.

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**Type:** Schematic Change

**Reason:** Follow SFP+ recommendation.

**Impact:** None.

2.42 #42 Changed 470 nF capacitor (C220) from 0201 to 0402.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None.

2.43 #43 Changed capacitor (C39, C82, C207) from 4.7  $\mu$ F, 6.3 V to 10  $\mu$ F, 10 V.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

2.44 #44 Changed capacitor (C49, C51, C59, C61) from 10  $\mu$ F, 6.3 V, 0603 to 22  $\mu$ F, 25 V, 0805.

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**Type:** Schematic Change

**Reason:** Follow SFP+ recommendation.

**Impact:** None.

2.45 #45 Changed capacitor (C48, C58) from 10  $\mu$ F, 6.3 V, 0603 to 100 nF, 10 V, 0201.

---

**Type:** Schematic Change

**Reason:** Follow SFP+ recommendation.

**Impact:** None.

2.46 #46 Changed 10  $\mu$ F capacitor (C11, C12, C13, C15, C18, C20, C34, C63, C136, C204, C239) from 6.3 V to 10 V.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

2.47 #47 Changed capacitor (C42, C67) from 47  $\mu$ F, 6.3 V, 1206 to 22  $\mu$ F, 25 V, 0805.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

2.48 #48 Changed capacitor (C72, C73) from 100  $\mu$ F, 6.3 V, 20 % to 22  $\mu$ F, 25 V, 10 %.

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**Type:** Schematic Change

**Reason:** Increased voltage rating.

**Impact:** None.

2.49 #49 Changed 33 Ohm resistor (R7, R13, R19, R68, R103, R112, R128, R151, R168, R189) from 63 mW, 0402 to 50 mW, 0201.

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**Type:** Schematic Change

**Reason:** Improve signal integrity.

**Impact:** None.

## 2.50 #50 Changed resistor (R101, R102, R104, R105) from 249 Ohm to 240 Ohm.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None.

## 2.51 #51 Changed resistor (R40) from 4.99 kOhm to 0 Ohm.

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**Type:** Schematic Change

**Reason:** Set HDMI Hot Plug level properly.

**Impact:** None.

## 2.52 #52 Changed resistor (R27, R196) from 4.99 kOhm to 100 Ohm.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.53 #53 Changed resistor (R14) from 4.99 kOhm to 2 kOhm.

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**Type:** BOM Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.54 #54 Changed pull-up resistor (R18, R21, R86, R87, R113, R114, R115, R121 ... R123) from 4.99 kOhm to 7.5 kOhm.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.55 #55 Changed resistor (R41) from 4.99 kOhm to 200 kOhm.

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**Type:** Schematic Change

**Reason:** Set HDMI Hot Plug level properly.

**Impact:** None.

## 2.56 #56 Changed resistor (R65) from 8.06 kOhm to 1 kOhm.

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**Type:** Schematic Change

**Reason:** Enable OTG capability.

**Impact:** None.

## 2.57 #57 Added ferrid bead (L25) for fan power supply.

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**Type:** Schematic Change

**Reason:** Improve power quality.

**Impact:** None.

## 2.58 #58 Added additional decoupling capacitor (C244, C254, C262, C263, C281 ... C287).

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**Type:** Schematic Change

**Reason:** Improve power supply.

**Impact:** None.

## 2.59 #59 Added termination resistor (R277 ... R292).

---

**Type:** Schematic Change

**Reason:** Improve signal integrity for FireFly connector (J6, J21).

**Impact:** None.

## 2.60 #60 Set LDO TPS79901DRV (U47) and LDO related components, ferrid bead (L20), capacitor (C127) and resistor (R181) to not fitted.

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**Type:** Schematic Change

**Reason:** BOM Optimization.

**Impact:** None.

## 2.61 #61 Set capacitor (C16, C17) to not fitted.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.62 #62 Set resistor (R98, R198) to not fitted.

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.63 #63 Changed net name (IN2\_P → IN2\_CLK\_P and IN2\_N → IN2\_CLK\_N).

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.64 #64 Changed net name from "5VSBIN" to "5VSB".

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.65 #65 Changed net name from "3.3V\_MOD" to "VCC\_MOD".

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**Type:** Schematic Change

**Reason:** Harmonize with TEBF0818 series.

**Impact:** None.

## 2.66 #66 Added testpoint (TP14, TP16, TP17, TP20 ... TP25).

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**Type:** Schematic Change

**Reason:** Signal monitoring improvement.

**Impact:** None.

## 2.67 #67 Changed impedance controlled routing for differential PCIe signals (TX/RX) to 90 Ohm differential impedance.

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**Type:** PCB Change

**Reason:** Follow PCIe recommendation.

**Impact:** None.

## 2.68 #68 Routed signals which are marked in schematics as "D100" with 100 Ohm differential impedance.

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**Type:** PCB Change

**Reason:** Improve signal integrity.

**Impact:** None.

## 2.69 #69 Changed CAN bus signal net names (CAN\_H → CAN\_P, CAN\_L → CAN\_N) to route them with 120 Ohm differential impedance.

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**Type:** PCB Change

**Reason:** Improve signal integrity.

**Impact:** None.

## 2.70 #70 Updated PCB rules, PCB layout, and PCB layerstack.

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**Type:** PCB Change

**Reason:** Improve board quality.

**Impact:** None.

## 2.71 #71 Added module orientation mark in silkscreen top side.

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**Type:** PCB change

**Reason:** Improve module insertion process.

**Impact:** None.

## 2.72 #72 Added UKCA logo.

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**Type:** PCB Change

**Reason:** Required for export to UK.

**Impact:** None.

## 2.73 #73 Changed fiducials to standard fiducial type.

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**Type:** Schematic Change

**Reason:** Use standard fiducials.

**Impact:** None.

## 2.74 #74 Updated schematic sheets from template.

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**Type:** Documentation Update

**Reason:** Documentation improvement.

**Impact:** None.

## 2.75 #75 Added legal notices, power overview, I2C address table, and power voltage range table. Updated block diagram and revision history. Updated page count and order.

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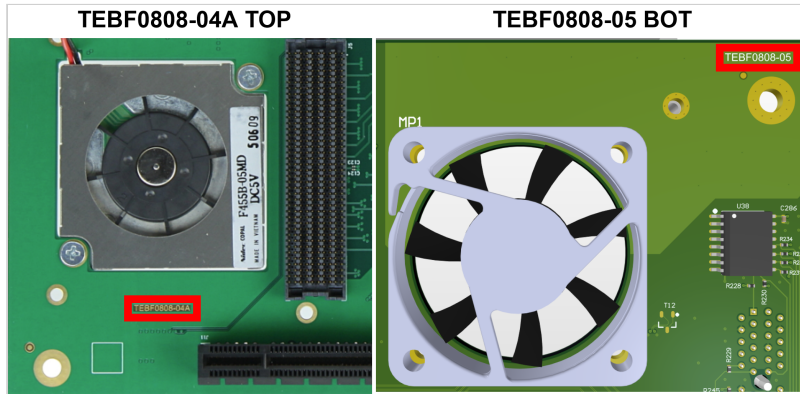
**Type:** Documentation Update

**Reason:** Documentation improvement.

**Impact:** None.

## 3 Method of Identification

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## 4 Production Shipment Schedule

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With immediate effect this change takes place. If the new revision is not suitable for your application and still the former revision of the board is needed, please contact us.

## 5 Contact Information

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If you have any questions related to this PCN, please contact Trenz Electronics Technical Support at

- [forum.trenz-electronic.de](http://forum.trenz-electronic.de)<sup>1</sup>
- [wiki.trenz-electronic.de](http://wiki.trenz-electronic.de)<sup>2</sup>
- [support@trenz-electronic.de](mailto:support@trenz-electronic.de)<sup>3</sup> (subject = PCN-20240611)
- phone
  - national calls: 05741 3200-0
  - international calls: 0049 5741 3200-0

## 6 Disclaimer

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Any projected dates in this PCN are based on the most current product information at the time this PCN is being issued, but they may change due to unforeseen circumstances. For the latest schedule and any other information, please contact your local Trenz Electronic sales office, technical support or local distributor.

This PCN follows JEDEC Standard J-STD-046.

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<sup>1</sup> <http://forum.trenz-electronic.de/>

<sup>2</sup> <http://wiki.trenz-electronic.de/>

<sup>3</sup> <mailto:support@trenz-electronic.de?subject=PCN-20240611>