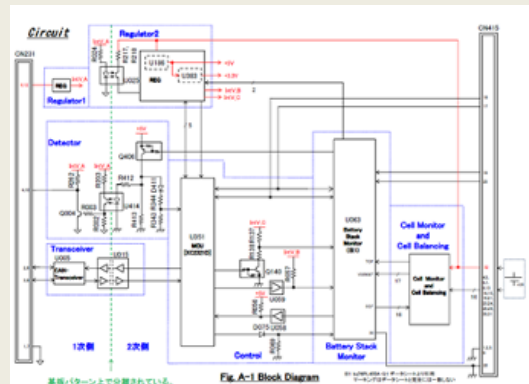


## BMW X5 Li BATTERY MONITOR SYSTEM: CELL SUPERVISORY CIRCUIT (CSC) PCB CIRCUIT ANALYSIS REPORT

**July, 2016.** This forty-four pages report is focusing on the PCB and its detailed circuits analysis. PCB structural details with various dimensions, component list, block diagram, detailed circuit schematic diagram and the comparison with BMWi3 are included.



**CSC Top view**



**Block diagram**

A single CSC board performs monitor and cell balancing functions for 16 Li-ion battery cells. Since the BMW X5 has 96 cells, six PCBs are required. The supervisory system has the following main features:

1. Control functions are performed by an ASIC (Texas Instruments) and a MCU.
2. Wide-gap layout pattern is used to isolate the primary and secondary side. Signal transfer between primary and secondary is performed by two photo-couplers and a digital isolator.
3. External MOS transistors are used for cell balancing .
4. Four-layer PCB is coated with moisture-proofing layer.
5. The system has no daisy chain communication function; therefore, the communication among PCBs is through the following path:  
ASIC ⇔ MCU ⇔ Digital Isolator ⇔ CAN transceiver.

**Priced to sell at \$11,000**

**Note:**

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LTEC Corporation US Representative Office  
No.203 2880 Zanker Road San Jose, CA 95034

Phone: (408) 432-7247  
www.ltecusa.com Contact: info@ltecusa.com