



OPEN
Compute Project



OCP U.S. SUMMIT 2017

Santa Clara, CA



OCP Debug Card With LCD

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OPEN HARDWARE.



OPEN SOFTWARE.



OPEN FUTURE.



Agenda

1 Overview

2 Block Diagram

3 Baseboard/Debug Card HW

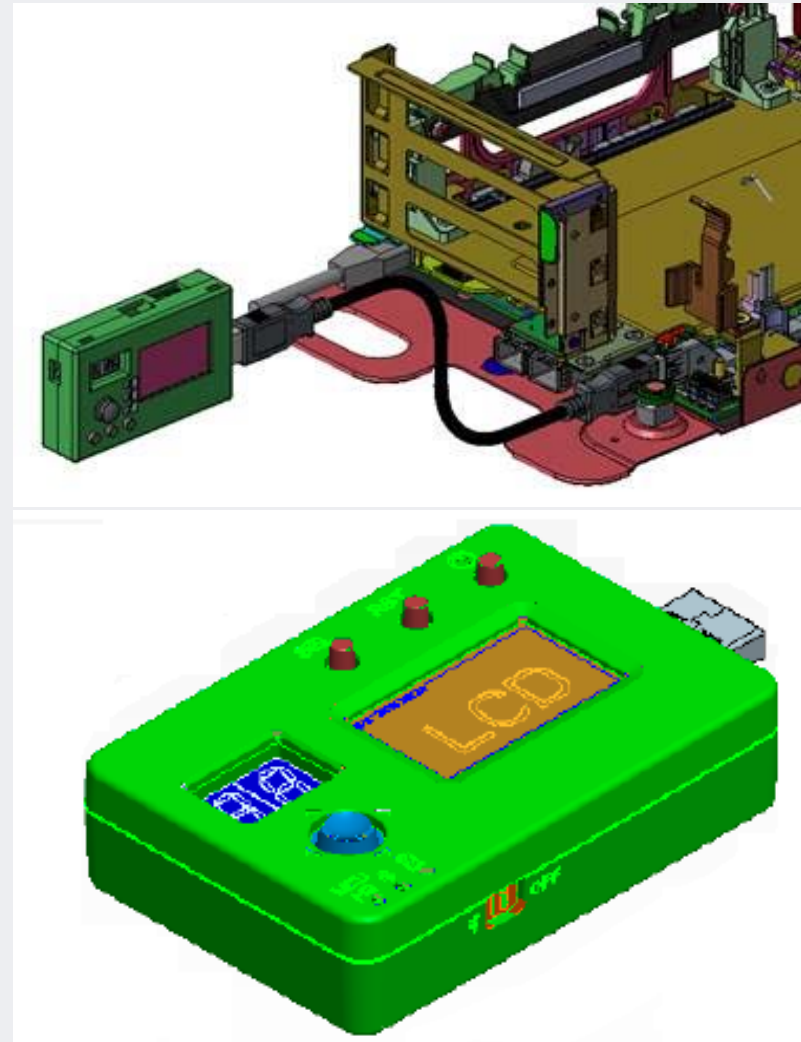
4 FW design and Interface

5 Questions

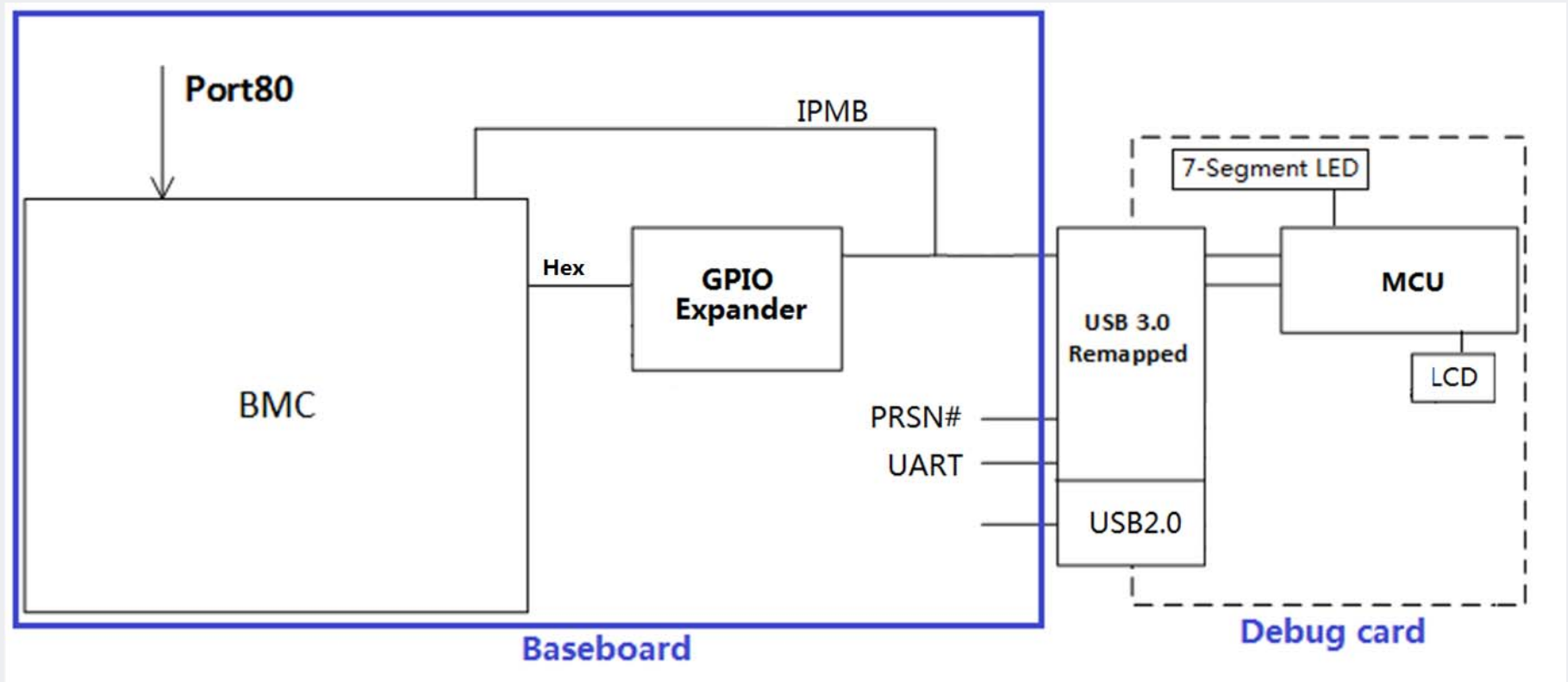
Overview

OCP Debug Card w/ LCD

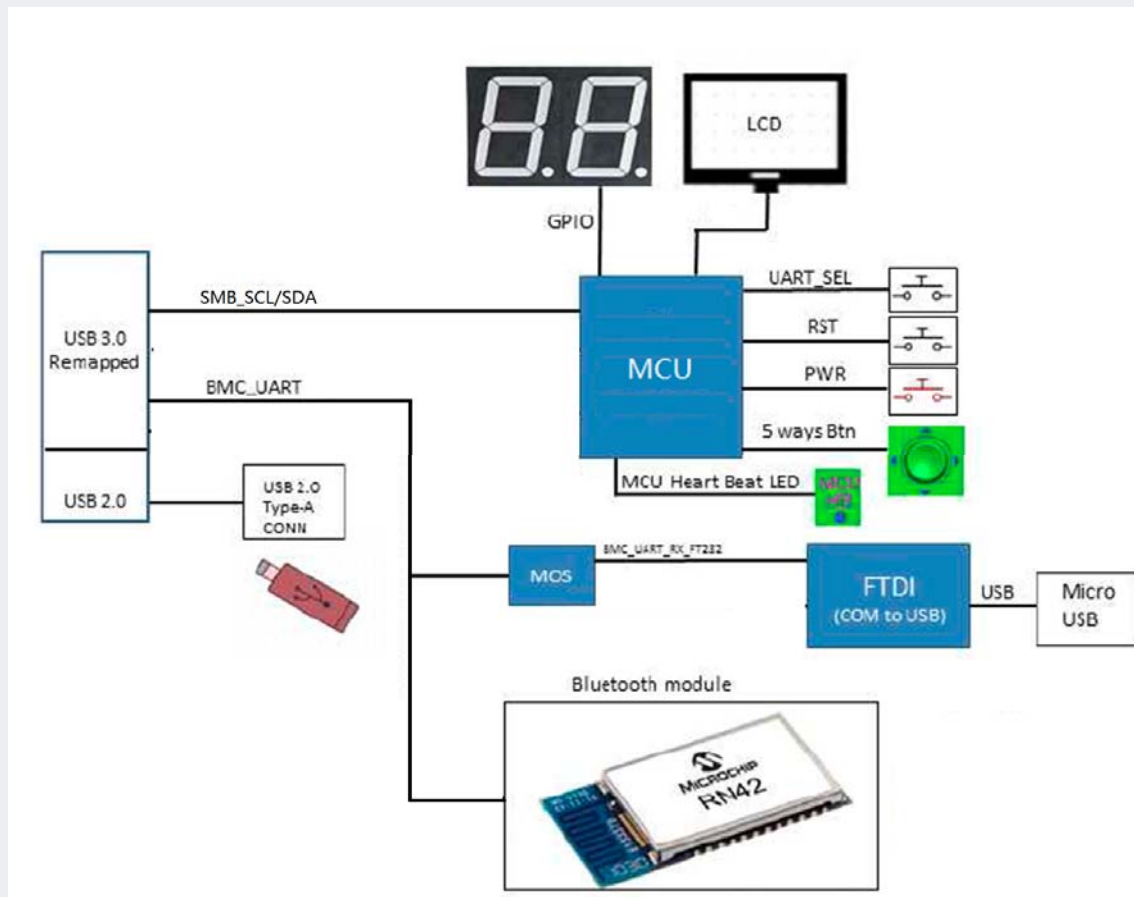
- Remapped USB3.0
- Console(Wired/Wireless)
- 7 segment Post code
- LCD Content
- Save I/O space
- User friendly
- Allow customize BMC to show debug message by needs



Block Diagram - System



Block Diagram – Debug Card



HW Design Interface

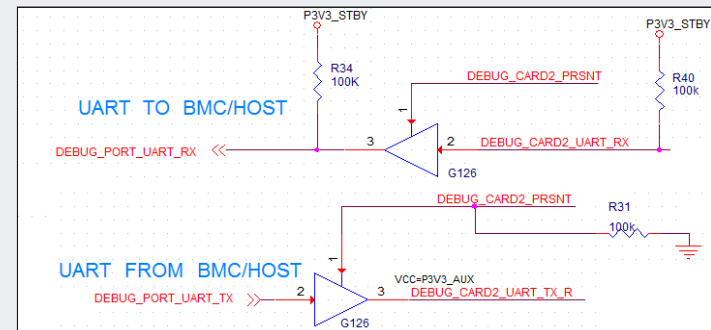
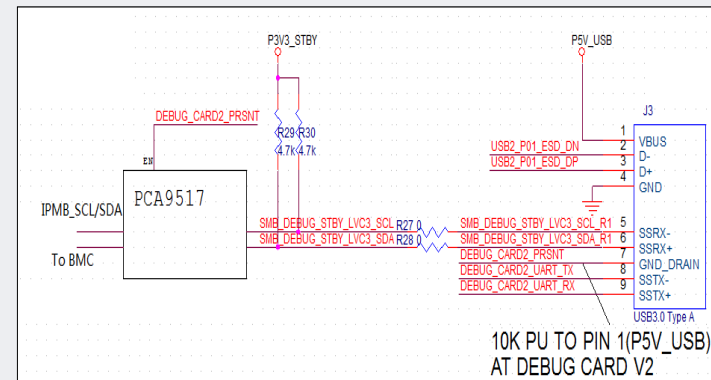
- Remapped USB3.0 pins

Pin Number	Signal Name	New remapped pin
1	VBUS	VBUS
2	D-	D-
3	D+	D+
4	GND	Ground for power return
5	StdA_SSRX-	SCL
6	StdA_SSRX+	SDA
7	GND_DRAIN	PRSENT
8	StdA_SSTX-	UART TX
9	StdA_SSTX+	UART RX

- Present Pin

Present pin Status	Device plugged to baseboard	Implementation on device side
0	USB3	GND
1	LCD Debug Card	PU to 10K
0	USB2 or None	Weak PD on baseboard side

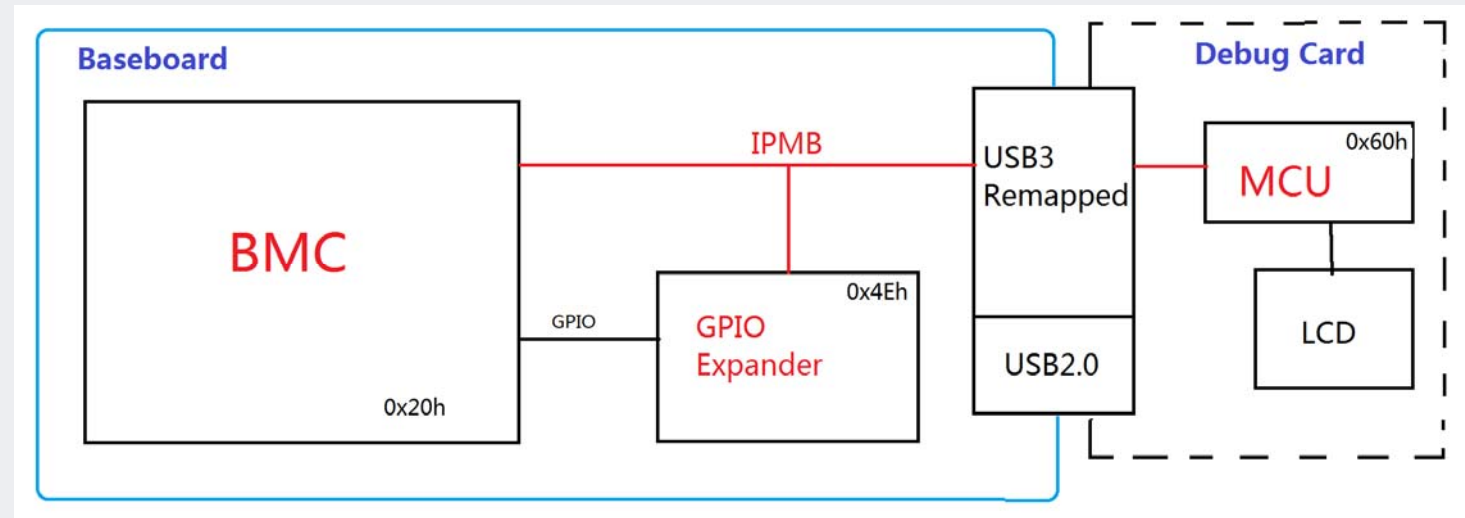
- Isolation



FW Design and Interface

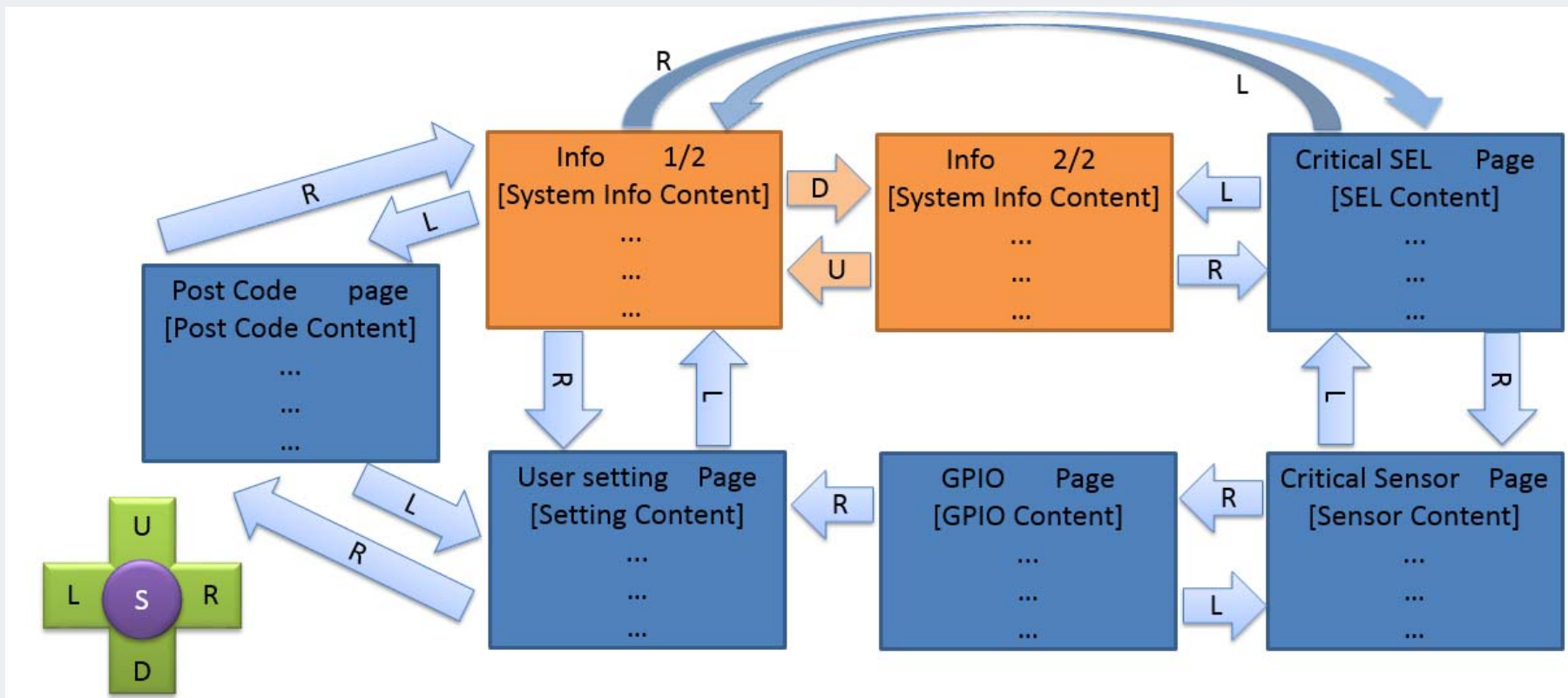
Roles

- BMC
- GPIO expander
- MCU



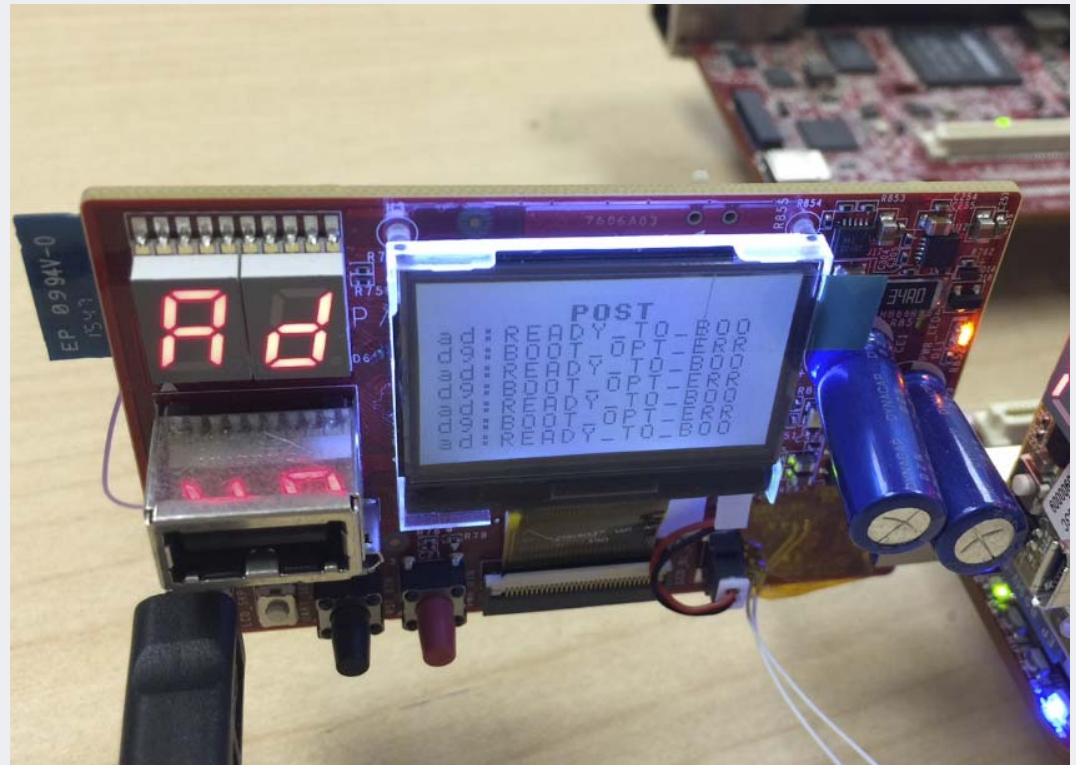
FW Design and Interface

LCD Panel Content and Display



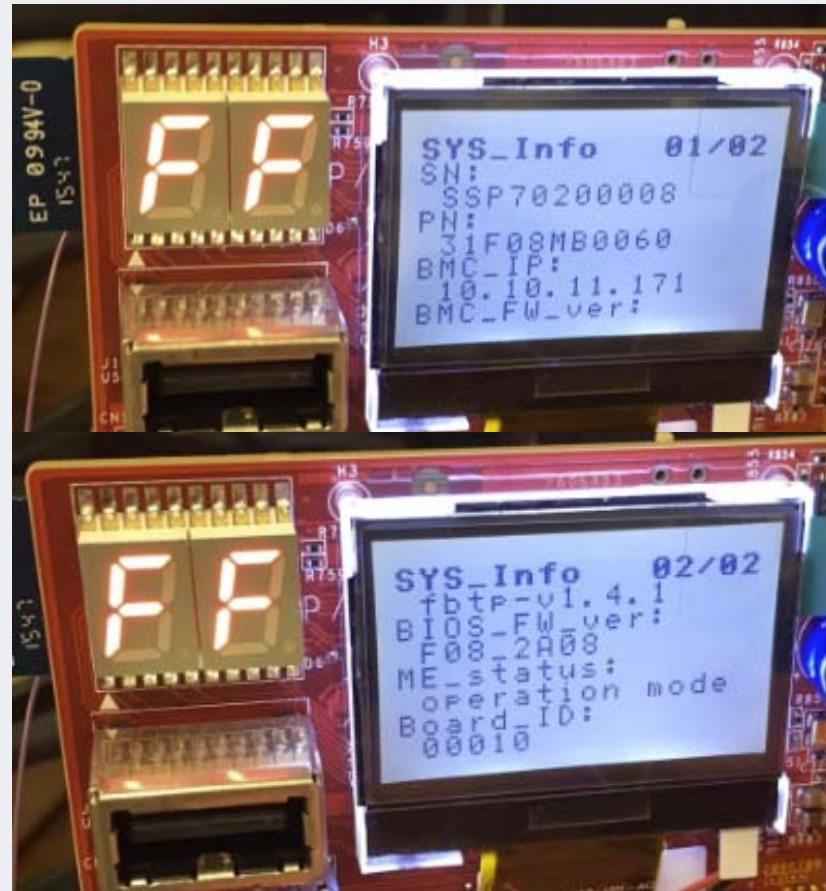
Post Code Frame

- synchronized Post code description
- Allow page down/up to check history



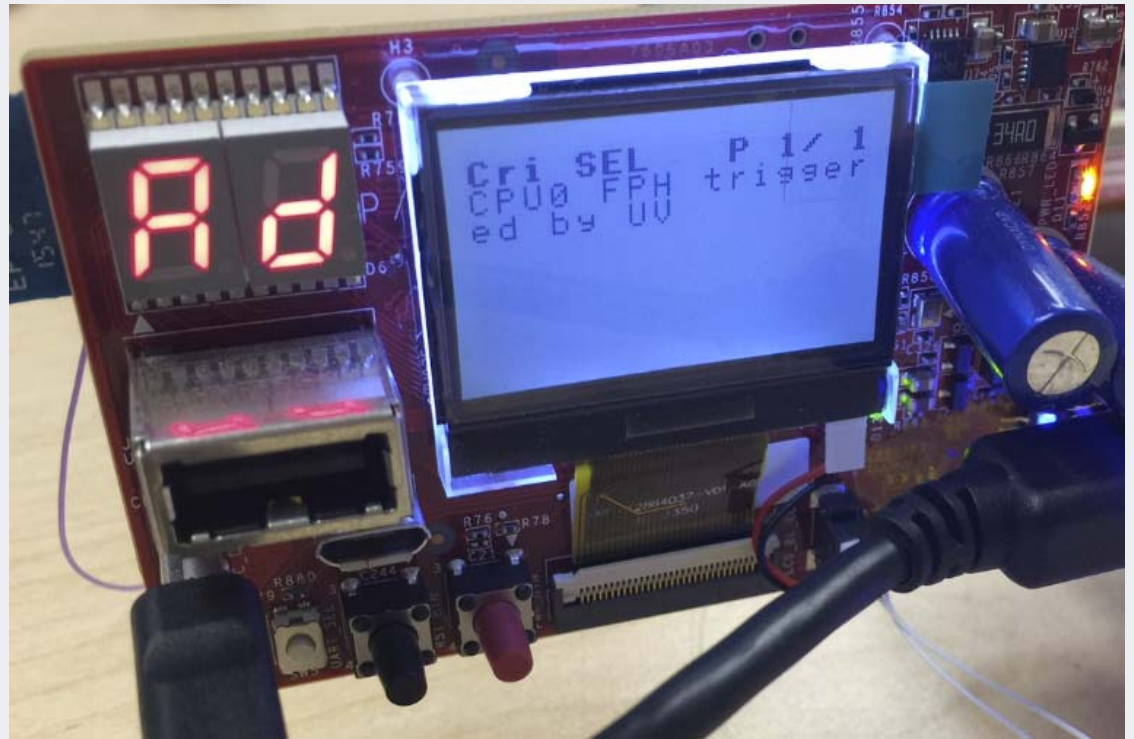
System Information Frame

- MB SN/PN
- BMC IP
- BMC FW Ver.
- BIOS FW Ver.
- Board ID
- ME status
- Sys. Conf. Info



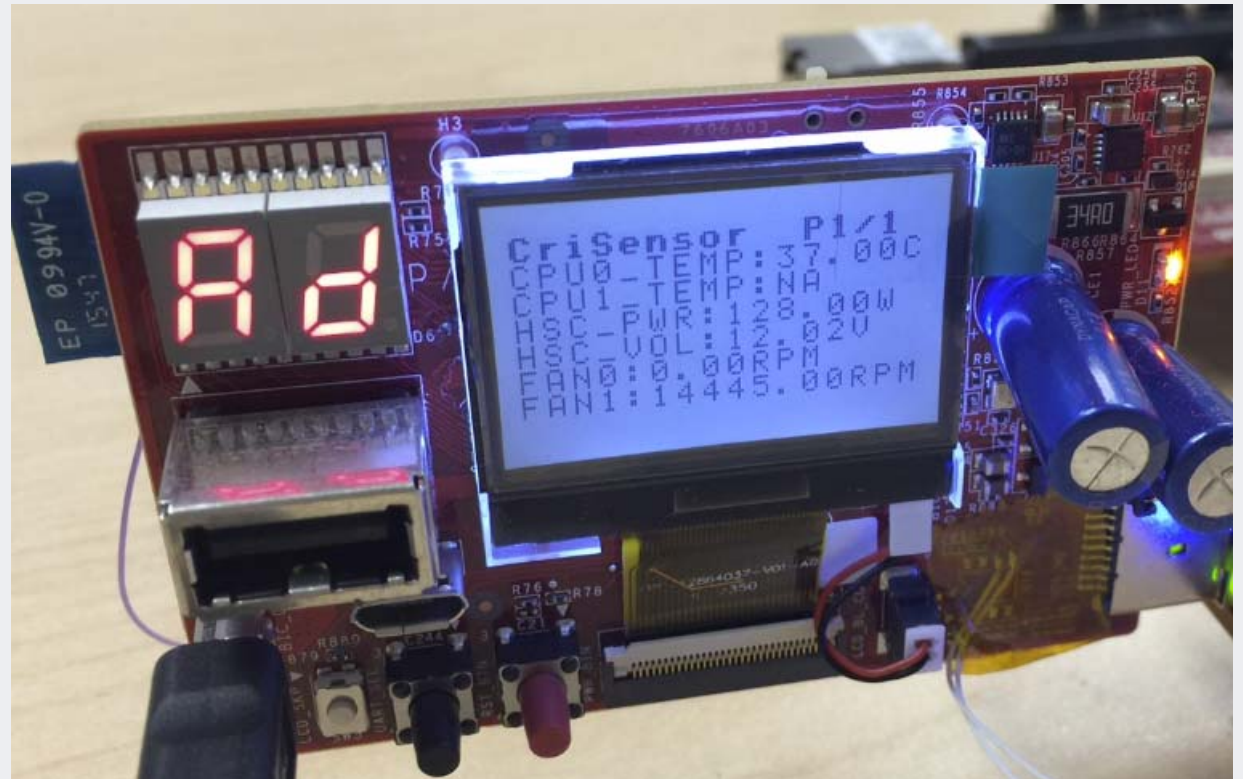
Critical SEL Frame

- Pre-defined BMC critical SEL
- UCT with actual value
- Event w/ trigger source
- Error w/ which Device
- Power Fail



Critical Sensor Frame

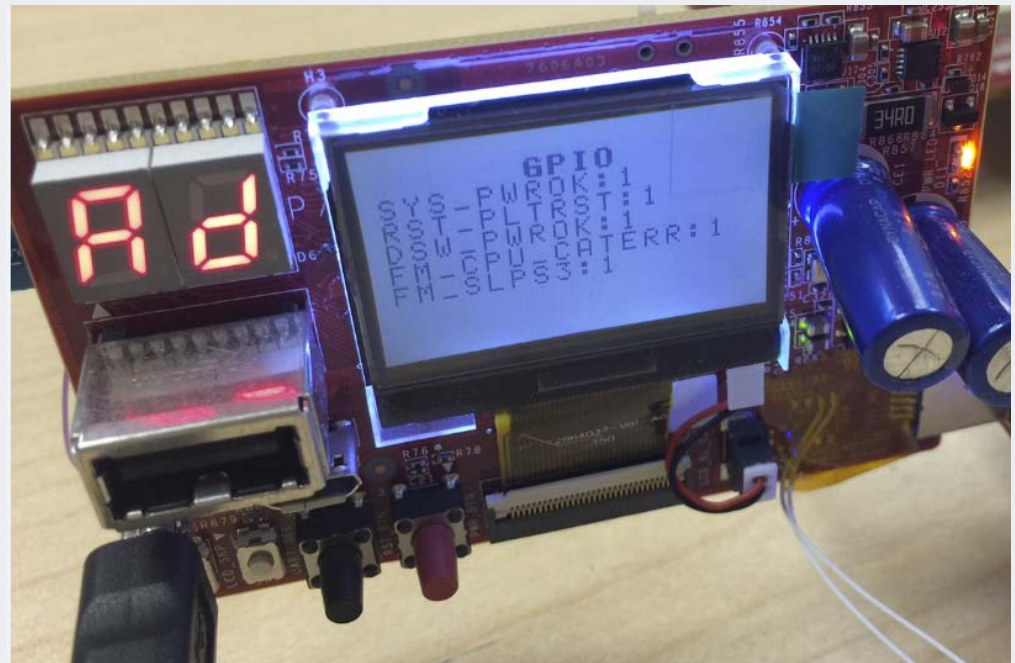
- CPU Temp.
- HSC Power
- HSC Voltage
- Fan Speed
- Inlet Temp.
- CPU VR PIN
- DIMM Temp.



GPIO Status Frame

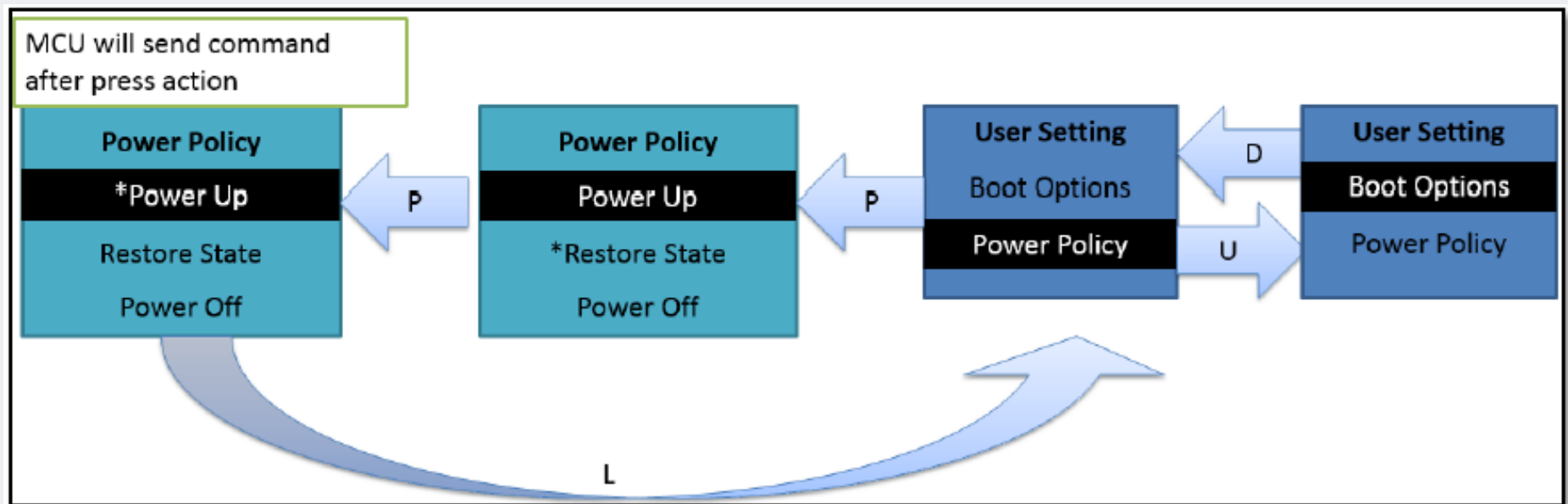
- GPIO expander GPIO status

Bit	Usage
IO1_2	PWRGD_SYS_PWROK
IO1_3	RST_PLTRST_N
IO1_4	PWRGD_DSW_PWROK
IO1_5	FM_CPU_CATERR_MSMI_LVT3_N
IO1_6	FM_SLPS3_N



User Setting Frame

- Power Policy
- Boot Order



OEM Commands

- Initial Handshake
- Get Post Code package
- Get Frame info
- Get GPIO description
- Get Frame info update

Net Function = 3Ch LUN = 00b			
Code	Command	Request, Response Data	Description
01h	Get Frame Information	Request: Byte [0:2] – IANA ID Response: Byte 0 - completion code Byte [1:3] – IANA ID Byte 1 – Number of Frames	
02h	Get update Frame status	Request: Byte [0:2] – IANA ID Response: Byte 0 - Completion Code Byte [1:3] – IANA ID Byte 4 – 00h : no update 01h: the total number of updated frames Byte 5:N – updated frame number(s)	

Questions?



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