

Enpirion Depreciation Impact

Summary

The Enpirion product line has been the "go to" for our DC/DC converter needs for many years. It was first used in the RCE generation 3 development 10+ years ago because of its low PCB footprint area. After the RCE development, we have been using it for other TID-ID related designs (LCLS-II, LCLS DAQ, LDMX, LSST, etc).

Original Enpirion was originally owned by Altera. Later Altera was bought by Intel. In September 2021, Intel announced that it will depreciate their entire "Enpirion" product line with no replacement OPN. The last time to buy was March 18, 2022.

In September 2021, we did a survey of all TID-ID PCB BOMs to identify which ones were using Enpirion product line. After identifying the PCB designs using this DC/DC converter, we contacted all the PCB designers to inform them about the depreciation. We also asked the PCB designers the following questions:

- Is this an "active" design that they plan to make more of?
- If not, is this an "active" design that they do NOT plan to make more of?
- If not, is this a non-active design?

From that questionnaire we have create tables for those 3 category types below.



What if I don't see my PCB design listed below?

If you do NOT see your PCB design listed in the tables below, then your PCB design does NOT use Enpirion product line and not affected by this depreciation.

Active projects that we **WILL** build more boards of

- These are **active** projects that we need to get the PCB design updated to not use Enpirion
- Requires new schematics and respin of layout

#	Name w/ Hyperlink	Design Engineer	Project Manager	Experiment	New Design	Layout Trello
1	ATCA AMC Carrier Gen1	Larry Ruckman	Thuy Vu	LCLS-II Common platform	PC_379_396_01_C09	https://trello.com/c/tnivWN1E
2	EVR GEN2 PCIe	Larry Ruckman	Matt Weaver	LCLS-II Timing	PC_379_396_50_C00	schematic review
3	PGP GEN4 PCIe Card	Larry Ruckman	Jana Thayer	LCLS DAQ	PC_248_100_24_C01	https://trello.com/c/BnnovDrT
4	CLink-to-PGP Adapter Board	Larry Ruckman	Jana Thayer	LCLS DAQ	PC_248_100_22_C02	https://trello.com/c/9i69MWCU
5	LCLS-II: MPS/Timing RTM	Larry Ruckman	Jeremy Mock	LCLS-II Common platform	PC_379_396_07_C05	https://trello.com/c/C4vmFNno
6	LCLS-II: MPS SFP AMC Card	Larry Ruckman	Jeremy Mock	LCLS-II Common platform	PC_379_393_09_C04	https://trello.com/c/RBfAOtSB
7	WAVE8: SIM DAQ Board	Larry Ruckman	Phil and Tyler	Wave8	PC_261_100_94_C01	https://trello.com/c/EjWKc0pA
8	Epix Quad Digital Board	Dan Sciortino	Angelo Dragone	EPIX		
9	EPIX Digital Board, Generation 2 (Artix-7)	Dan Sciortino	Angelo Dragone	EPIX		
10	EPIX Analog Board, Generation 2	Dan Sciortino	Angelo Dragone	EPIX		
11	ePix HR Analog Board, Gen 1	Dionisio Doering	Angelo Dragone	EPIX	PC_261_100_76_C01	https://trello.com/c/c5KjQK8G/58-dionisio-pc26110122c00-epix10khr-quad-analog-board-txi
12	ePix HR Digital Board, Gen 1	Dionisio Doering	Angelo Dragone	EPIX	PC_261_100_77_C02	

Active Project that we are **MAY** build more boards of (**NEED** Enpirion spares)

- These are **active** projects that we do **NOT** plan on making more of. Need to buy enough Enpirion spares before **March 18, 2022** for "just in case".

#	Name w/ Hyperlink	Design Engineer	Project Manager	Experiment
1	SIM: LaserLocker Digital board	Larry Ruckman	Bo Hong	LCLS-I
2	ATCA AMC Carrier Gen2	Larry Ruckman	SMURF	SMURF
3	LSST: AC Filter Relay Board	Mark Freytag	Gregg Thayer	LSST
4	LSST: Hybrid RTM	Ben Reese	Gregg Thayer	LSST
5	LSST: Hybrid RTM Daughterboard	Ben Reese	Gregg Thayer	LSST
6	LSST: SCI Array Board	Mark Freytag	Gregg Thayer	LSST
7	LSST: DAQ FPGA ATCA-RTM	Gregg Thayer	Gregg Thayer	LSST
8	LSST: DAQ SSD ATCA-RTM	Gregg Thayer	Gregg Thayer	LSST
9	LSST: REB TRANSITION	Mark Freytag	Gregg Thayer	LSST
10	LSST: PROTOTYPE WGREB DCBS	Mark Freytag	Gregg Thayer	LSST
11	LSST: GREB Production Board	Mark Freytag	Gregg Thayer	LSST
12	LSST: WREB Production Board	Mark Freytag	Gregg Thayer	LSST
13	LSST: REB power supply	Leonid Sapozhniko	Gregg Thayer	LSST
14	LSST: RCE: COB	Ryan Herbst	Gregg Thayer	LSST
15	LSST: RCE: DPM	Ryan Herbst	Gregg Thayer	LSST
16	LSST: RCE: DTM	Ryan Herbst	Gregg Thayer	LSST
17	LSST: RCE: GEN3 SFP RTM	Ryan Herbst	Gregg Thayer	LSST
18	LSST: RCE: GEN3 RTM Mezzanine Board	Ryan Herbst	Gregg Thayer	LSST

Inactive Projects that we are **NOT** planning to build more boards of

#	Name w/ Hyperlink	Design Engineer	Experiment
1	PGP GEN3 Card	Larry Ruckman	LCLS DAQ
2	ATLAS: ALTIROC FPGA Board	Larry Ruckman	ATLAS
3	ATLAS: CHESS2 Digital Carrier Board	Larry Ruckman	ATLAS
4	ATLAS: Link Aggregator	Larry Ruckman	ATLAS
5	ATLAS: RD53 FPGA board	Larry Ruckman	ATLAS
6	LBNE RTM	Larry Ruckman	DUNE
7	ATLAS: HSIO_II	Mark Freytag	ATLAS
8	LZ Test Stand Digitizer Board	Larry Ruckman	LZ
9	LZ Test Stand Front End Board	Larry Ruckman	LZ
10	Darkside Front End Development Board	Larry Ruckman	LZ
11	KPIX DESY Tracker DAQ	Ben Reese	KPIX
12	EPIX HR Prototype Analog Board	Dionisio Doering	EPIX
13	ePixM Shingled Concentrator Board	Dionisio Doering	EPIX
14	ePixM Shingled Mother Board	Dionisio Doering	EPIX
15	Scorpius Pulser Transmitter Test Board	Leonid Sapozhniko	Detector R&D
16	LCLS-II: Sub-Booster Trigger Board	Ben Reese	LCLS-II
17	LCLS-II: Copper Linac to Soft (CLTS) RTM	Jeff Olsen	LCLS-II
18	LSST: GREB Engineering Model	Mark Freytag	LSST
19	LSST: WREB Engineering Model	Mark Freytag	LSST

Recommended Part Replacements (not drop-in replacements)

#	Enpirion Part#	Vin(max)	Vout(range)	Iout(max)	Replacment Part#
1	EN5311QI	5.5V	0.6~4.9V	1A	TI LMZ30602
2	EN5322QI			2A	
3	EN6337QI			3A	TI LMZ30604 TI LMZ30606
4	EN6347QI			4A	
5	EN6360QI			8A	TI TPSM5D1806
6	EN63A0QI			12A	
7	EN2340QI	14V	0.75 ~ 5V	4A	
8	EN2390QI			9A	
9	EM2120H01QI	16V	1.325 ~ 5V	20A	TI LMZ31520
10	EM2120L01QI		0.7 ~ 1.325V		
11	EM2130L02QI		1.325 ~ 5V	30A	TI LMZ31530
12	EM2140P01QI		0.7 ~ 1.325V	40A	TBD
13	EM2260P01QI		0.5 ~ 1.3V	60A	TBD
14	EM2280P01QI			80A	TBD