

LCLS SC Linac Master Source/PRL

Displays

IOCs/PVs

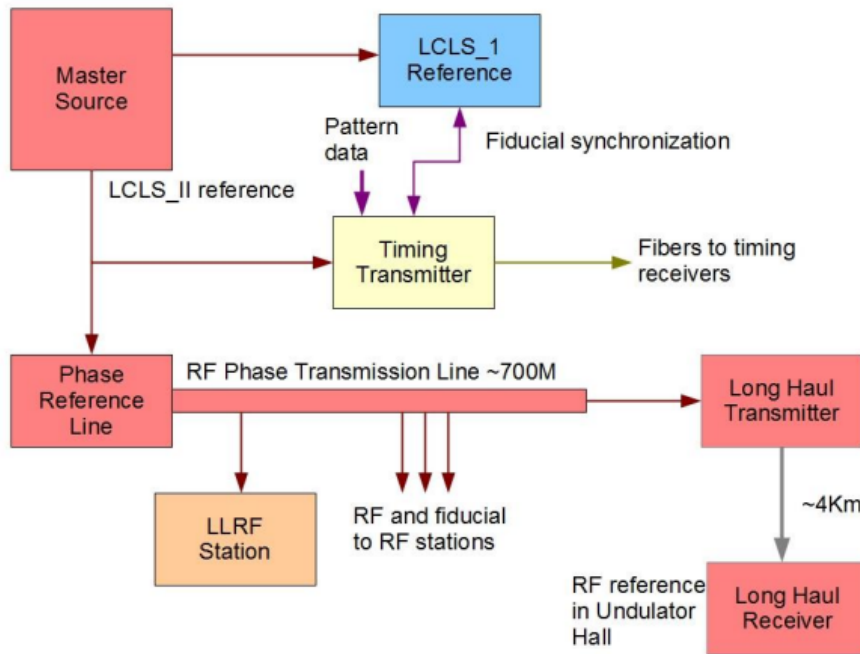
Recovery

Troubleshooting

Docs/Links
Phase Ref PRD (LCLSII-2.7-PR-0213-R1)
2019_1009 rev.4 PCAV Software Design.pdf
2019_0704 Final Version of Master Source Beckhoff Interface.pdf
Beckhoff rail for L2KG02-25 and L2KG04-20.pdf
PRL User Interface-070919.pdf
Beckhoff Control for L2KG02-25-04082020.xlsx
2018_0703 rev.2 RF amplifier interface (002).pdf
0641A012_CA1310BW80-4545R-SL_Block-30W.pdf
0630A014_CA1300BW50-5049R-SL_Block-80W.pdf
kl3222_pt1000_register.png
LCLSII Master Source PRL and LO Distribution System Diagram for Software.pdf
2020_1208 rev.1 master source sim modules and iocs.pdf
FD-Q flow meter (Keyence P/N FD-Q20C) pic
PRL-ActiveEnd-PA-PLL diagram.pdf (attenuator requirements)
DSP Module Record (FPGA MAC-IP mapping)
Weaver_Timing_DR_201704.pdf

Phase Ref. System Overview

- Provide high stability, low noise 1300MHz reference to synchronize RF and Laser systems
- Phase reference line (PRL) runs first 700m of LINAC
- Also provide LO reference (1320MHz, 3920MHz) to LLRF chassis (separate distribution)
- Long haul reference to experimental laser systems 4km away
- Master timing source for LCLS-I (eventually); 476MHz to Main Drive Line (LCLS-I,FACET)
- Lock/resync generated frequencies at 71.43kHz (1300MHz/18200), common subharmonic



Phase reference system block diagram

SIM FPGA MAC-IP mapping

sioc-sys0-ms01	Freq locker	L2KG02-25	16	08:00:56:00:46:86	192.168.1.16
sioc-sys0-ms02	L0-L1 PLL master	L2KG02-24	20	08:00:56:00:46:16	192.168.1.20
sioc-sys0-ms03	L2 PLL master	L2KG02-24	28	08:00:56:00:49:55	192.168.1.28
sioc-sys0-ms05	L0-L1 VCO (slave)	L2CID-04	19	08:00:56:00:46:15	192.168.1.19
sioc-sys0-ms06	L2 VCO (slave)	L2KG04-20	24	08:00:56:00:46:FC	192.168.1.24