Working Draft

Typical for each Cavity (8 per CM)

Flange A
(FNAL Ref. #:F100226559)
(Component-Vacuum Side) (Cable/Connector-Atmosphere Side)

			Primary User	Secondary User
(Piezo Actuator) FastTuner-1-1 (Piezo Actuator) FastTuner-1-2 (Piezo Actuator) FastTuner-1-3 (Piezo Actuator) FastTuner-1-4 (Piezo Actuator) Interlock-1	nA-01	(4PR2405) DT02H-14-12PN MS3126F14-12S	LLRF Systems L2KGnn-0425-1	
RTD_StepperMotor-1 RTD_MainCoupler1a-12o'clockRTD_MainCouplerb-10o'clockSpare	nA-02	(6PR2405) DT02H-14-19PN MS3126F19-12S	LLRF Systems L2KGnn-0425-1	
RTD_HeVessel-1 Top RTD_HeVessel-1 BottomRTD_HOM_Coupler_Side-1-2 Copper Clamp RTD_HOM_Tuner_Side-1-4 Copper Clamp	nA-03	DT02H-14-19PN MS3126F14-19S	CRYO Systems	
RTD_HOM_Coupler_Side-1-1 RTD_HOM_Tuner_Side-1-3RTD_Beam Tube-1 Coupler_SideRTD_BeamTube-1 Tuner_Side	nA-04	Not Used for Production Units DT02H-14-19PN MS3126F14-19S	LLRF Systems	CRYO Systems

Typical for each Cavity (8 per CM)

Flange B
(FNAL Ref. #:F100226657)
(Component-Vacuum Side) (Cable/Connector-Atmosphere Side)

			Primary User	Secondary User
(Stepper Motor) SlowTuner-1 Tuner limit Switch-1-1 Tuner limit Switch-1-2	nB-01	(4PR2005) DT02H-16-8PN MS3126F16-8S	LLRF Systems L2KGnn-0425-J1	
Cn_Pt (PTrans)	nB-02	(Heliax) 34 N-50-0-3/133NE Type N	LLRF Systems L2KGnn-0405-TBD	
Cn_H1 (PTrans_HOM-1)	nB-03	(Heliax) 34 N-50-0-3/133NE Type N	LLRF Systems	
Cn_H2 (PTrans_HOM-2)	nB-04	(Heliax) 34 N-50-0-3/133NE Type N	LLRF Systems	
Cav_n_e-Cy (EPickup_Cavity)	nB-05	(TFEX-402) 34 SMA-50-0-3/111NE SMA	LLRF Systems L2KGnn-0477-TBD	
Cav_n_e-WG (EPickup_Waveguide)	nB-06	(TFEX-402) 34 SMA-50-0-3/111NE SMA	LLRF Systems L2KGnn-0477-TBD	
StrpHtr-HeVessel-1	nB-07	BL 8673-14B-4PN-SP-M136 MS24266R14B4SN	CRYO Systems	LLRF Systems

Flange C
(FNAL Ref. #:F100226657)
(Component-Vacuum Side) (Cable/Connector-Atmosphere Side)

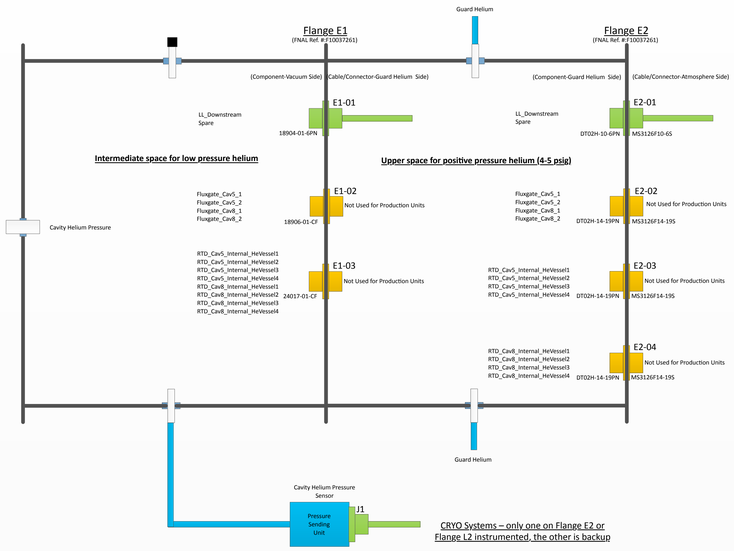
			Primary User	Secondary User
Vertical Dipole VT_VD-1 (Whole_Coil-VT1) Vertical Dipole VT_VD-4 (Whole_Coil-VT2) Horizontal Dipole VT_HD-1 (Whole_Coil-VT1) Horizontal Dipole VT_HD-4 (Whole_Coil-VT2) Quadrupole VT_QP-1 (Whole_Coil-VT1) Quadrupole VT_QP-4 (Whole_Coil-VT2) Spare Spare	C-01	DT02H-16-8PN MS3126F16-8S	CRYO Systems	
Vertical Dipole VT_VD-1 (PosHalf_Coil-VT1) Vertical Dipole VT_VD-2 (PosHalf_Coil-VT2) Vertical Dipole VT_VD-3 (NegHalf_Coil-VT1) Vertical Dipole VT_VD-4 (NegHalf_Coil-VT2) Horizontal Dipole VT_HD-1 (PosHalf_Coil-VT1) Horizontal Dipole VT_HD-2 (PosHalf_Coil-VT2) Horizontal Dipole VT_HD-3 (NegHalf_Coil-VT1) Horizontal Dipole VT_HD-4 (NegHalf_Coil-VT2)	C-02	Not Used for Production Units DT02H-16-8PN MS3126F16-8S		
Quadrupole VT_QP-1 (PosHalf_Coil-VT1) Quadrupole VT_QP-2 (PosHalf_Coil-VT2) Quadrupole VT_QP-3 (NegHalf_Coil-VT1) Quadrupole VT_QP-4 (NegHalf_Coil-VT2) Spare Spare Spare Spare	C-03	Not Used for Production Units DT02H-16-8PN MS3126F16-8S		
SplitQuadCorrCoilPerCurHtr SQ_MAG_HTR	C-04	BL 8673-14B-4PN-SP-M136 MS24266R14B5N	CRYO Systems	
Spare Spare Spare Spare Spare Spare Spare Spare Spare	C-05	Not Used for Production Units DT02H-16-8PN MS3126F16-8S		
Spare Spare Spare Spare Spare Spare Spare Spare	C-06	Not Used for Production Units DT02H-16-8PN MS3126F16-8S		
Spare Spare Spare Spare Spare Spare Spare Spare	C-07	Not Used for Production Units DT02H-16-8PN MS3126F16-8S		

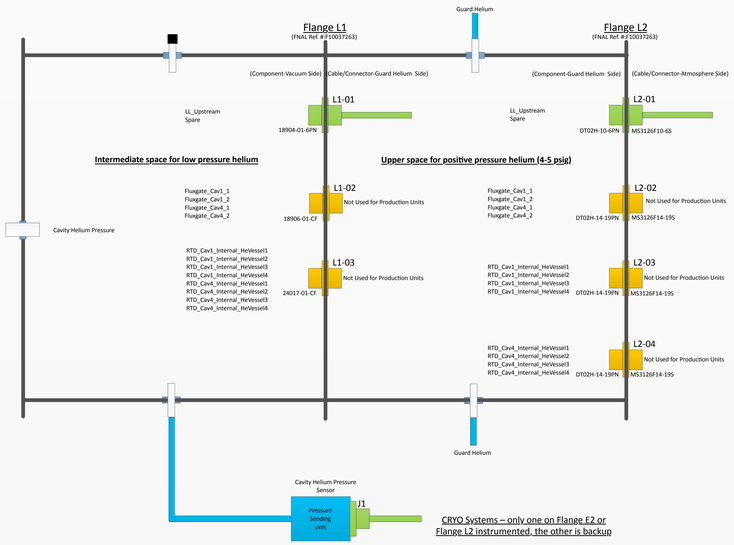
Flange CL
(FNAL Ref. #:F100226642)
(Component-Vacuum Side) (Cable/Connector-Atmosphere Side)

		Primary User	Secondary User
Magnet Current Lead	1	DC Systems	
Magnet Current Lead	2	DC Systems	
Magnet Current Lead	3	DC Systems	
Magnet Current Lead	4	DC Systems	
Magnet Current Lead	5	DC Systems	
Magnet Current Lead	6	DC Systems	

Flange D
(FNAL Ref. #:F10036970)
(Component-Vacuum Side) (Cable/Connector-Atmosphere Side)

			Primary User	Secondary User
BPM-Top	D-01	Coax 34 N-50-0-3/133NE Type N	MPS Systems	
BPM-Right	D-02	Coax 34 N-50-0-3/133NE Type N	MPS Systems	
BPM-Bot	D-03	Coax 34 N-50-0-3/133NE Type N	MPS Systems	
BPM-Left	D-04	Coax 34 N-50-0-3/133NE Type N	MPS Systems	
Fluxgate_Cav1 Fluxgate_Cav2 Fluxgate_Cav4 spare	D-05	DT02H-14-19PN MS3126F14-19S	CRYO Systems	
Fluxgate_Cav7 Fluxgate_Cav8 Spare spare	D-06	DT02H-14-19PN MS3126F14-19S ????	CRYO Systems	
CoolDownHtr-1 CoolDownHtr-2	D-07	BL 8673-14B-4PN-SP-M136 MS24266R14B5N	CRYO Systems	
CoolDownHtr-3 Heater in Downstream Level Can	D-08	BL 8673-14B-4PN-SP-M136 MS24266R14B5N	CRYO Systems	
RTD_MagShield-1 Inner RTD_MagShield-2 Outer RTD_MagShield-3 Inner RTD_MagShield-4 Outer RTD_MagShield-5 Inner RTD_MagShield-6 Outer	D-09	Not Used for Production Units DT02H-16-26PN MS3126F16-26S	DC PS Systems	CRYO Systems
RTD_MagShield-7 Inner RTD_MagShield-8 Outer RTD_Coupler SK-1 RTD_Coupler SK-2 RTD_Coupler SK-3 RTD_Coupler SK-4	D-10	Not Used for Production Units DT02H-16-26PN MS3126F16-26S	DC PS Systems	CRYO Systems
RTD_Coupler SK-5 RTD_Coupler SK-6 RTD_Coupler SK-7 RTD_Coupler SK-8 RTD_Faraday Window 1 RTD_Faraday Window 2	D-11	Not Used for Production Units DT02H-16-26PN MS3126F16-26S	DC PS Systems	CRYO Systems





Flange F
(FNAL Ref. #:F100370775)
(Component-Vacuum Side) (Cable/Connector-Atmosphere Side)

			Primary User	Secondary User
RTD_MP_1 RTD_MP_2 RTD_MP_3 RTD_MP_4	F-01	DT02H-14-19PN MS3126F14-19S	CRYO Systems	
RTD_50K_LeadThermintcp RTD_5K_LeadThermintcp RTD_2K_LeadThermintcp_1 RTD_2K_QuadLead **(PROTOTYPE ONLY)** RTD_2K_LeadThermintcp_2 **(PRODUCTION)**	F-02	DT02H-14-19PN MS3126F14-19S	CRYO Systems	
RTD_5K_QuadLead RTD_50K_QuadLead RTD_2K_HorzLead RTD_5K_HorzLead	F-03	Not Used for Production Units DT02H-14-19PN MS3126F14-19S		
RTD_50K_HorzLead RTD_2K_VertLead RTD_5K_VertLead RTD_50K_VertLead	F-04	Not Used for Production Units DT02H-14-19PN MS3126F14-19S		

Flange K
(FNAL Ref. #:F100370777)
(Component-Vacuum Side) (Cable/Connector-Atmosphere Side)

			Primary User	Secondary User
RTD_Line_A1 RTD_Line_B1 RTD_Line_B2 RTD_Line_C1	K-01	DT02H-14-19PN MS3126F14-19S	CRYO Systems	
RTD_Line_D1 RTD_Line_E1 RTD_Line_F1 RTD_Shield_1	K-02	DT02H-14-19PN MS3126F14-19S	CRYO Systems	
RTD_Cooldown_1 RTD_Cooldown_2 RTD_MagShield-1 Outer RTD_Shield_2	K-03	DT02H-14-19PN MS3126F14-19S	CRYO Systems	
Heater in Upstream Level Can	K-04	BL 8673-14B-4PN-SP-M136 MS24266R14B5N	CRYO Systems	
RTD_Line_B3 RTD_Line_B4 RTD_Line_B5 RTD_Line_B6	K-05	Not Used for Production Units DT02H-14-19PN MS3126F14-19S		

Reference Documents:

1) FNAL file: "p2863v12_20160307_V2.4_LCLS-II_1.3GHzProto_FNALInstrument_Pt_to_Pt_wiring", TiWeb sourced, 5/3/2016. POC J. Kaluzny.

2) LCLS2 file: "1.3 GHz Cryomodule Interlock Requirements", Functional Requirements Specification Document, LCLSII-4.5-FR-0638-R0, 4/11/2016. POC Andrew Burrill.

3) LCLS2 file: "1.3 GHz Cryomodule Mechanical Design", Fermilab Engineering Document, LCLS-II 1.3GHZ Cryomodule Mechanical Design, ED0004361, Rev.-_-, 4/22/2016. POC Yun He.

Symbol/Color Legend

This Flange Connector is used for the production CM installation. Cable is either multi-conductor or DC single conductor.

This Flange Connector is used for the production CM installation. Cable coaxial and runs directly (not patched) to Gallery termination point.

This Flange Connector is NOT used for the production CM installation. No airside cable installed.

VCR plumbing fitting. Used for the connection of Guard Helium gas supply and pressure monitoring sensor.

Working Draft

LCLS2 Cryomodule (CM)

Flange & Connector (w/Device/Signal Names) Assignment Sketch

R. Fuller – 5/13/16