

LOI RF SYSTEM
- CONTROL AND CABLE CONNECTIONS -

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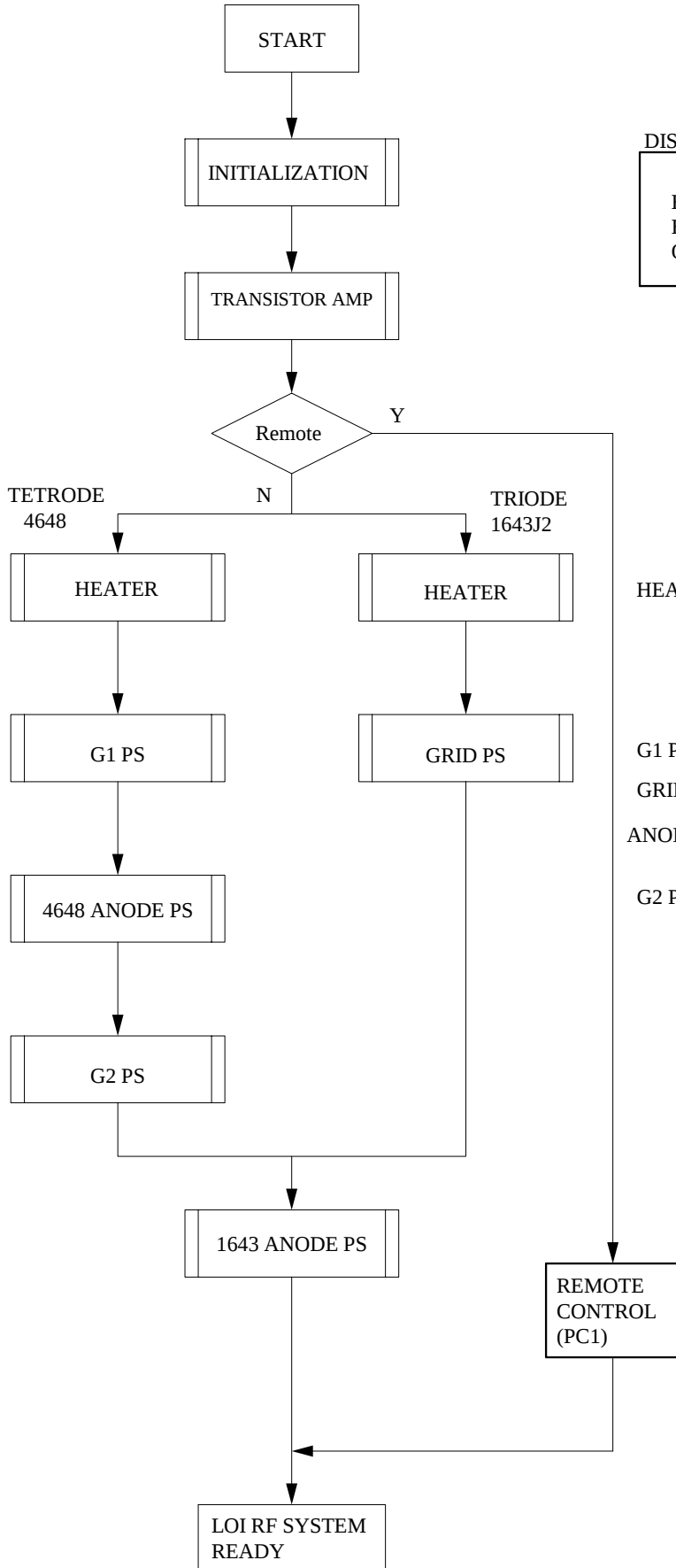
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ATTACHED:

Fig. 1 LOI CABLE CONNECTIONS

KEK
S. TAKANO

LOI RF SYSTEM CONTROL FLOW



DISPLAY

ISIS info:
BIAS PS ON/OFF
BEAM ON/OFF
OPERATION MODE

initial values

	4648	1643J2
HEATER	1650A (1636A)	555A (520A)
up	380sec.	up 380sec.
down	200sec.	down 480sec.
G1 PS	-180V	
GRID PS		-300V
ANODE PS	8KV	7.5KV
G2 PS	1.2KV	

final parameters tested at KEK

4648	1643J2
-115V	
	-225V
5.8KV (18A)	12.9KV (15A)
1.2KV	

LIST (1)

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PS	SIGNAL	CABLE TYPE	OUTER DIAM	LENGTH	NO. OF CABLES	CONNECTION	REF PAGE	NOTE
4648 G1 PS (-350V,10A)	AC200V 1P	CV-5.5-3	14.5mm	m	1	AC LINE---G1 PS	TAZ76001-2/16	
	CONTROL	MVVS-0.75-12	12.3		1	CTRL CHASSIS---G1 PS	-2/16	
	UP-DOWN SIG.	OTSCVB-0.5-1P	5.5		1	CTRL CHASSIS---G1 PS	-2/16	
	OUTPUT	RG8U	10.3		1	LOI RF AMP---G1 PS	-2/16 (to SP8)	
	MONITOR	3D-2V	5.5		2	CTRL CHASSIS---G1 PS	-11/16 V, I	
4648 G2 PS (8KV,10A)	AC200 3P	CV-22-4	23.0		1	AC LINE---G2 PS	-3/16 to VARIAC(3P)	
	CONTROL (1)	MVVS-0.75-12	12.3		1	CTRL CHASSIS---G2 PS	-3/16	
	CONTROL (2)	MVVS-0.75-6	9.5		1	CTRL CHASSIS---G2 PS	-3/16	
	OUTPUT	RG8U	10.3		1	LOI RF AMP---G2 PS	-3/16 (to SP8)	
	MONITOR	3D-2V	5.5		2	CTRL CHASSIS---G2 PS	-11/16 V, I	
4648 ANODE PS (8KV,40A)	AC400V 3P	CV-200-3	54.0		1	AC LINE---ANODE PS(4648)	-4/16	
	AC200V 1P	VCT-2-3	11.0		1	AC LINE---ANODE PS(4648)	-4/16	
	CONTROL (1)	MVVS-0.75-12	12.3		1	CTRL CHASSIS---ANODE PS(4648)	-4/16	
	CONTROL (2)	MVVS-0.75-12	12.3		1	CTRL CHASSIS---ANODE PS(4648)	-4/16	
	INTERLOCK	VCT-2-2	10.5		1	CTRL CHASSIS---ANODE PS(4648)	-4/16	
BW1643J2 G PS (-650V,5A)	OUTPUT	12.4/6 COAXIAL	18.4		1	LOI RF AMP---ANODE PS(4648)	-4/16 (to SP8), 100m purchased	
	MONITOR	3D-2V	5.5		2	CTRL CHASSIS---ANODE PS(4648)	-11/16 V, I	
	AC200V 1P	VCT-2-3	11.0		1	AC LINE---G PS	-5/16	
	CONTROL (1)	MVVS-0.75-12	12.3		1	CTRL CHASSIS---G PS	-5/16	
	CONTROL (2)	MVVS-0.75-6	9.5		1	CTRL CHASSIS---G PS	-5/16	
UP-DOWN SIG.	UP-DOWN SIG.	OTSCVB-0.5-1P	5.5		1	CTRL CHASSIS---G PS	-5/16	
	OUTPUT	RG8U	10.3		1	LOI RF AMP---G PS	-5/16 (to SP8)	
	MONITOR	3D-2V	5.5		2	CTRL CHASSIS---G PS	-11/16 V, I	
	AC400V 3P	WL1-200	28.5		3	AC LINE---1643J2 STEP/START	-6/16	
	AC400V 3P	WL1-200	28.5		3	STEP/START---T/R SET	-6/16	
ANODE PS (20KV,25A)	AC115V 1P	VCTF-3-2	8.5		1	AC LINE---BUCK REGULATOR	-6/16	
	GROUND	WL1-22	10.1		1	GROUND---1643J2 ANODE PS	-6/16	
	CONTROL (1)	SKVV-0.5-6	8.3		1	STEP/START---T/R SET	-6/16	
	CONTROL (2)	SKVV-0.5-4	7.2		1	BUCK REGULATOR---1643J2 STEP/START	-6/16	
	CONTROL (3)	SKVV-0.5-6	8.3		1	CTRL CHASSIS---1643J2 STEP/START	-6/16	
CONTROL (4)	CONTROL (4)	MVVS-0.75-1	4.6		1	CTRL CHASSIS---1643J2 STEP/START	-6/16 lamp	
	OUTPUT	RG218U	22.1		1	RF AMP---1643J2 BUCK REGULATOR	-6/16 (to SP8)	
	MONITOR	3D-2V	5.5		2	CTRL SHASSIS---1643J2 BUCK REGULATOR	-11/16 V, I	

LIST (2)

PS	SIGNAL	CABLE TYPE	OUTER DIAM	LENGTH	NO. OF CABLES	CONNECTION	REF PAGE	NOTE
HEATER PS 4648 (4V,1650A)	AC200V 1P	MLFC-22	10.3 mm	m	2	AC LINE---HEATER VARIAC	TAZ76001-8/16	
	CONTROL (1)	VCT-1.25-12	17.0		1	CTRL CHASSIS---HEATER VARIAC	-8/16	
	CONTROL (2)	MVVS-0.75-12	12.3		1	CTRL CHASSIS---HEATER VARIAC	-8/16	
	AC OUTPUT	MLFC-22	10.3		2	HEATER VARIAC---HEATER TRANSFORMER	-8/16 (to SP8)	
HEATER PS 1643J2 (14V,555A)	AC200V 1P	MLFC-22	10.3		2	AC LINE---HEATER VARIAC	-8/16	
	CONTROL (1)							uses same line with 4648 HEATER PS
	CONTROL (2)							uses same line with 4648 HEATER PS
	AC OUTPUT	MLFC-22	10.3		2	HEATER VARIAC---HEATER TRANSFORMER	-8/16 (to SP8)	
G1,G,HEATER PS CHASSIS	AC200V 3P	VCT-2-3	11.0		1	AC LINE---G1,G,HEATER PS CHASSIS	-7/16	
	GROUND	CV-5.5	8.7		1	GROUND---G1,G,HEATER PS CHASSIS	-7/16	
	BLOWER	VCT-2-3	11.0		1	LOI RF AMP---G1,G,HEATER PS CHASSIS	-7/16 (to SP8)	
	FAN (F1--F4)	VCT-1.25-4	11.4		1	LOI RF AMP---G1,G,HEATER PS CHASSIS	-7/16 (to SP8)	
COOLING SYSTEM	CONTROL	VCT-1.25-4	11.4		1	CTRL CHASSIS---G1,G,HEATER PS CHASSIS	-7/16	
	TEMP	TYPE K	7.0	100	10	CTRL CHASSIS---COOLING SYSTEM	-9/16 (to SP8), 100m x10 purchased	
	FLOW	MVVS-0.75-12	12.3	100	1	CTRL CHASSIS---COOLING SYSTEM	-9/16 (to SP8)	
	CONTROL (1)	MVVS-0.75-12	12.3		1	CTRL CHASSIS---LOI RF AMP	-10/16 (to SP8), DOOR	
LOI RF AMP	CONTROL (2)	MVVS-0.75-12	12.3		1	CTRL CHASSIS---LOI RF AMP	-10/16 (to SP8), DOOR,FAN,BLOWER	
	MONITOR					CTRL CHASSIS---LOI RF AMP	(to SP8)	
	GAP VOLTAGE	3D-2V	5.5		1		(to SP8)	
	CAVITY INPUT CURRENT	3D-2V	5.5		1		(to SP8)	
	4648 ANODE VOLTAGE	3D-2V	5.5		1		(to SP8)	
	4648 G1 VOLTAGE	3D-2V	5.5		1		(to SP8)	
	4648 G2 VOLTAGE	3D-2V	5.5		1		(to SP8)	
	4648 HEATER PS	3D-2V	5.5		1		-11/16 (to SP8), I	
	1643J2 ANODE VOLTAGE	3D-2V	5.5		1		(to SP8)	
	1643J2 G VOLTAGE	3D-2V	5.5		1		(to SP8)	
	1643J2 HEATER PS	3D-2V	5.5		1		-12/16 (to SP8), I	
	SPARE	3D-2V	5.5		3		(to SP8)	
	AC200V 1P	CV-2-4	12.0		1	AC LINE---300W TRANSISTOR AMP	-13/16	
	CONTROL	MVVS-0.75-12	12.3		1	CTRL CHASSIS---TRANSISTOR AMP	-13/16	
	INPUT(RF SIGNAL)	10D-SFA	13.0		1			
	OUTPUT(RF SIGNAL)	10D-SFA	13.0		1	LOI RF AMP---300W TRANSISTOR AMP	(to SP8)	

LIST (3)

PS, OTHERS	SIGNAL	CABLE TYPE	OUTER DIAM	LENGTH	NO. OF CABLES	CONNECTION	REF PAGE	NOTE
LOI CONTROL CHASSIS (CTRL CHASSIS)	AC100V 1P	CV-2-3	11.0 mm	m	1	AC LINE---CTRL CHASSIS	TAZ76001-16/16 -16/16	
	AC200V 1P	CV-2-3	11.0		1	AC LINE---CTRL CHASSIS		
	CAVITY INPUT CURRENT	3D-2V	5.5		1	DIAGNOSTIC ROOM---MICE HALL		
	GRID VOLTAGE	3D-2V	5.5		1	DIAGNOSTIC ROOM---MICE HALL		
	EMERGENCY,ALARM RESET	} MVVS-0.75-6				CTRL CHASSIS---MCR		
	LOI ALARM					CTRL CHASSIS---MCR		
	ISIS OPERATION MODE	} MVVS-0.75-6	9.5		1	MCR---CTRL CHASSIS		
	ISIS BEAM ON/OFF					MCR---CTRL CHASSIS		
	ISIS RF READY					MCR---CTRL CHASSIS		
	BIAS ON/OFF		8.3		1	HALL2---CTRL CHASSIS		
PC 1	BIAS WAVEFORM	3D-2V	5.5		1	HALL2---CTRL CHASSIS		
	BIAS DC VOLTAGE	3D-2V	5.5		1	HALL2---CTRL CHASSIS		
	BIAS DC CURRENT	3D-2V	5.5		1	HALL2---CTRL CHASSIS		
	GAP VOLTAGE	3D-2V	5.5		1	MCR---CTRL CHASSIS		
	AC100V 1P	VCTF-3-2	8.5		1	AC LINE---PC 1		AC 100V plug
HUB	PLC CONTROL(1)	LAN CABLE	7.0		1	HUB---PC 1		90m, purchased
	PLC CONTROL(2)	LAN CABLE	7.0		1	HUB---CTRL CHASSIS		90m, purchased
PC 2	AC100V 1P	VCTF-3-2	8.5		1	AC LINE---HUB		AC100V plug
	AC100V 1P	VCTF-3-2	8.5		1	AC LINE---PC 2		AC100V plug
	RS-232C	RS-2324	6.0	10	1	CTRL CHASSIS---PC 2		10m, purchased

MICE to SP8

NAME	LENGTH, m	TYPE	NUMBER	NOTE
OUTPUT (4648 G1 PS)		RG8U	1	
OUTPUT(4648 G2 PS)		RG8U	1	
OUTPUT(4648 ANODE PS)		12.4/6 coaxial	1	
OUTPUT(1643J2 G PS)		RG8U	1	
OUTPUT(1643J2 ANODE PS)		RG218U	1	
OUTPUT(RF SIGNAL)		10D-SFA	1	to RF AMP
AC OUTPUT		MLFC22	2	HEATER VARIAC(4648)
AC OUTPUT		MLFC22	2	HEATER VARIAC(1643J2)
BLOWER		VCT-2-3	1	
FAN		VCT-1.25-4	1	
TEMP		TYPE-K	10	COOLING SYSTEM
FLOW		MVVS-0.75-12	1	COOLING SYSTEM
CONTROL(1)		MVVS-0.75-12	1	LOI RF AMP(DOOR)
CONTROL(2)		MVVS-0.75-12	1	LOI RF AMP(FAN(F1-F4))
MONITOR		3D-2V	12	

total no. of cables 37

MICE to DIAGNOSTIC ROOM

NAME	LENGTH, m	TYPE	NUMBER	NOTE
INPUT(RF SIGNAL)		10D-SFA	1	from ISIS
CAVITY INPUT CURRENT		3D-2V	1	to ISIS
GRID VOLTAGE		3D-2V	1	to ISIS

total no. of cables 3

MICE to MCR

NAME	LENGTH, m	TYPE	NUMBER	NOTE
EMERGENCY,ALARM RESET		} MVVS-0.75-6		to ISIS
LOI ALARM				to ISIS
ISIS OPERATION MODE			1	from ISIS
ISIS BEAM ON/OFF				from ISIS
ISIS RF READY				from ISIS
GAP VOLTAGE		3D-2V	1	from ISIS
PLC CONTROL(1)	~90(?)	LAN CABLE	1	PLC < -- > HUB
PLC CONTROL(2)	~90(?)	LAN CABLE	1	HUB < -- > PC 1

total no. of cables 4

MICE to HALL 2

NAME	LENGTH, m	TYPE	NUMBER	NOTE
BIAS ON/OFF		MVVS-0.75-4	1	from ISIS
BIAS WAVEFORM		3D-2V	1	from ISIS
BIAS DC VOLTAGE		3D-2V	1	from ISIS
BIAS DC CURRENT		3D-2V	1	from ISIS

total no. of cables 4

(1) DC HIGH VOLTAGE

NAME	TYPE	NUMBER	DIAM., mm	NOTE
OUTPUT(4648 anode ps DC8KV)	12.4/6 coaxial	1	18.4	
OUTPUT(4648 g1 ps DC -350V)	RG8U	1	10.3	
OUTPUT(4648 g2 ps DC8KV)	RG8U	1	10.3	operation at 1.4KVmax
OUTPUT(1643J2 anode ps DC20KV)	RG218U	1	22.1	operation at 16KVmax
OUTPUT(1643J2 g ps DC-650V)	RG8U	1	10.3	

total no. of cables 5

(2) AC LINE CABLES

NAME	TYPE	NUMBER	DIAM., mm	NOTE
AC OUTPUT (4648 heater)	MLFC-22	2	10.3	
AC OUTPUT (1643J2 heater)	MLFC-22	2	10.3	
BLOWER	VCT-2-3	1	11.0	
FAN	VCT-1.25-4	1	11.4	

total no. of cables 6

(3) MONITOR, RF SIGNAL,
INTERLOCK

NAME	TYPE	NUMBER	DIAM., mm	NOTE
OUTPUT(RF SIGNAL)	10D-SFA	1	13.0	
INTERLOCK				
TEMP	TYPE-K	10	7.0	
FLOW	MVVS-0.75-12	1	12.3	
CONTROL (1)	MVVS-0.75-12	1	12.3	
CONTROL (2)	MVVS-0.75-12	1	12.3	
MONITOR				
GAP VOLTAGE	3D-2V	1	5.5	
CAVITY INPUT CURRENT	3D-2V	1	5.5	
4648 ANODE VOLTAGE	3D-2V	1	5.5	
4648 G1 VOLTAGE	3D-2V	1	5.5	
4648 G2 VOLTAGE	3D-2V	1	5.5	
4648 HEATER PS	3D-2V	1	5.5	
1643J2 ANODE VOLTAGE	3D-2V	1	5.5	
1643J2 G VOLTAGE	3D-2V	1	5.5	
1643J2 HEATER PS	3D-2V	1	5.5	
SPARE	3D-2V	3	5.5	

total no. of cables 26

CONDUCTOR

TYPE	CONDUCTOR		NO. OF CONDUCTORS	NO. OF COND. PAIRS	VOLTAGE RATING	SHIELD	INSULATION	NOTE
	SIZE (mm ²)	STRAND(mmφ)						
MLFC-22	22		4		1500 V	NON	polyflex	
WL1-22	22		1		600 V	NON	poly-olefin	
OTSCVB-0.75-1P	0.75	30/0.18		1	300 V	TC BRAID	polyvinyl chloride(pvc)	
MVVS-0.5-12	0.5	20/0.18		12	1000 V	TC BRAID	polyvinyl chloride(pvc)	
SKVV-0.5-4	0.5	19/0.12		4	300 V	TC+AB	polyvinyl chloride(pvc)	
CVT2-2	2.0	37/0.26		2	600 V	NON	crosslinked polyethylene	
VCT2-2	2.0	37/0.26		2	600 V	NON	polyvinyl chloride(pvc)	
CV-5.5-2	5.5	70/0.32		2	600 V	NON	crosslinked polyethylene	

COAXIAL CABLES

TYPE	INNER CONDUCTOR			SHIELD	JACKET MATERIAL	OUTER DIAM. (mm)	CAPACITANCE (pF/m)	VOLTAGE RATING	IMPEDANCE	NOTE
	STRAND(mmφ)	DIAM (mm)	MATERIAL							
12.4/6	19/1.2	6	BC	BC BRAID	poly-olefin	18.4	13	15.0KV	27	purchased (200m)
3D-2V	7/0.32		BC	BC BRAID	pvc	5.5	100	1000V	50	
10D-SFA		3.9	BC	BC BRAID	pvc	13.0	83	5.6KV	50	purchased (100m)

BC----->Bare copper
TC----->Tinned copper
AB----->Aluminum braid

