



For ES: Install R43,
Omit R47, JU10 1-2
For ISO2: Install R47,
Omit R43, JU10 2-3

COORDINATION OF THE REGULATOR BOARD AND THE FIRING BOARD ENABLE/INHIBIT CIRCUITS

ENABLE:

- Manual latch output U5-10 goes low, DN1A blocks, Q1 turns off, NOT(I2) goes high, pulled up by 1.5 K on FCOG6100.
- 12V bias is removed from VEA reset resistor R21.
- Firing board enables about 50 ms after NOT(I2) goes high. The L signal from the firing board goes low and NOT(L) from Q2 goes high, allowing soft-start capacitor C14 to charge toward 12 V.
- Ramp voltage ERAMP at U11-5 is initially clamped to about 0 V by turned-on Q2 (NOT(L) = 0) acting through D11 and R6.
- U11B/D7 ramp clamp circuit, acting through voltage divider R3/R29, clamps the initial voltage command ECMD to less than .4 V.
- When L goes low, Q2 blocks and the ramp clamp allows ECMD to ramp up to the voltage command setpoint established by external command voltage EL1 or by the VOLTAGE LIMIT pot setting if EL1 is a fixed voltage.
- The actual load voltage tracks ECMD with zero steady-state error.

INHIBIT:

- Opening the external STOP switch sets latch U5C which turns on Q1 and applies 12 V through DN1B and R21 to the inverting input of U7B.
- Q1 clamps NOT(I2) low.
- Q1 discharges the soft-start capacitor C14 through R31 and DN10.
- 12 V applied to R21 causes U7B output to ramp to zero V at a rate of $12/(R21 \cdot C10) = 12/(200 \cdot .68) = .088 \text{ V/ms}$
- The ramp-clamp pulls ECMD down to about .4 V.
- The firing board is inhibited after a period determined by its soft-stop circuit.
(with an inductive load, the firing board should inhibit after the load current has decayed to zero).

AUTO RESET: (JU8 is installed to connect R25 and DN1G to the inverting input of U9B)

- An over-current or over-voltage fault causes the output of U5A or U5B to go to 12 V.
- DN1E or DN1F conduct to place 12V across R18.
- DN1C conducts to apply 12 V to VEA reset resistor R21
- DN1D conducts to turn on Q1, clamping NOT(I2) low.
- The firing circuit inhibits after a period determined by its soft-stop circuit
- R25 conducts into R24, applying 6V to the inverting input of U9B.
- U9B output goes low, resetting the over-current or the over-voltage latch output to 0 V.
- DN1E or DN1F cease to conduct, removing voltage from R18.
- DN1C ceases to conduct, removing voltage from the VEA reset resistor R21.
- DN1D ceases to conduct, removing voltage from the gate of NOT(I2) clamp transistor Q1.
- NOT(I2) goes high and the firing board enables after about 50 ms.

NOTES:

1. Install 249 ohm burden resistors R28 and R30 when applying 4-20 mA voltage or current command signals.
2. Install JU2 and JU4 for on-board voltage and current commands.
3. For parallel voltage and current regulation loops:
 - a. Install JU1, JU6, omit JU3
 - b. Apply voltage command to J4-1 and current command to J4-2 (see Note 2).
4. For outer voltage regulation loop and inner current regulation loop:
 - a. omit JU1 and C19, install JU3 and JU9.
 - b. Apply voltage command to J4-1 and apply current limit reference to J4-2. The current limit reference must be current sinking with impedance of less than 2 kohm.
5. To use the ISOVLCL-4 board as a slave current regulator with its current command taken from the current signal at J4-2 of the master current regulator ISOVLCL-4 board:
 - a. on the master regulator board:
 - Configure parallel voltage and current regulation loops by installing JU1 and omitting JU3.
 - Adjust the voltage command to obtain the desired load voltage with the current command at 100%, or adjust the current command to obtain the desired load current with the voltage command at 100%.
 - b. On the slave regulator board:
 - Remove JU5 and JU6
 - Remove Current Limit Amplifier proportional gain resistor R27.
 - Set the voltage command to 100%.
6. For automatic latch reset: install JU8
7. Install R46 to STOP the firing board by closing a contact to ground.
Install R45 to STOP the firing board by closing a contact to +12VDC

RN60 RESISTORS (KOhms)			
R11	31.6	R28	0.249
R12	31.6	R29	2.00
R13	19.1	R30	0.249
R14	1.00	R31	100
R15	1.00	R32	22.1
R16	475	R33	20.0
R17	10.0	R34	6.19
R18	10.0	R35	22.1
R19	0.174	R36	24.9
R20	22.1	R37	10.0
R21	200	R38	0.301
R22	100	R39	20.0
R23	174	R40	1.00
R24	115	R41	0.249
R25	100	R42	100
R26	OMIT	R43	3.32
R27	100	R44	3.32

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