

Brick v.6.5 modifications for version 6.5.1.

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Summary: This document describes the component changes on LVPS brick (3.3V, 5V, or 15V versions) from produced version 6.5 into version 6.5.1. All mentioned component names and values are referring to the scheme components designed by Ivan Hruska of version 6.5 (or 6.4 as seen in this document on page 3).

OverVoltageProtection (OVP) on brick board:

1. Cutting PCB wires:
 - between T15 and pin 1 of U13
 - between GND pins R71 and C80
 - “Butterfly” on top and bottom side.
2. Providing two wired short cuts:
 - connecting the Divider R17, R18 to the output filter.(30 mm piece of wire with isolation)
 - between pins 7,6 and 2 of the U13 to provide reference for the comparator.
3. Unsoldering R19, R24, C81 and C66
4. Changing the value of the resistor R18 by table 1:

Brick type	R18(new value)
3.3V	1.1k
5.0V	1.8k
15.0V	5.1k

5. Changing the value of the resistor R57 by table 2:

Brick type	R57(new value)
3.3V	1.0k
5.0V	1.3k
15.0V	1.8k

6. Soldering one 620 ohm resistor between U13 (pin 1) and R71. (to provide comparator function through the current feedback.)
7. Unsoldering C47 (to speedup the OVP reaction.)

Changes for reason of safety, stability and reliability:

8. Remove TRANSIL from output of the Brick.
9. Unsoldering and removing C59.
10. Changing the value of the resistor R11 = 62kOhm (switching frequency 300 kHz) to 100kOhm (switching frequency = 215 kHz).
11. Changing the value of the resistors R56, R59 = 100Ohm to 10kOhm. (Protects feedback gain from influence of ELMB power cycles.)
12. Unsoldering R26 = 1kOhm (undervoltage = 190V). Soldering R26 = 1.5kOhm (undervoltage = 135V).
13. Cut trace from pin 11 of J2 connector. (Disconnect ELMB from LT 1681's Thermal Shutdown pin 3, by removing one Temperature measurement. Thermal shutdown will still function)
14. Cut line between R33 and OVLO pin 2 (LT 1681), then this point through 330k resistor connects to +200VDC. And change C22 to R = 1.8k (Additional 200V divider for V input measurement.)
15. Unsoldering C78 = 100nF. Soldering C78 = 10nF. (Speedup of feedback.)

16. To start Bricks in sequence it is necessary to change C9 by table 3:

Brick type	Value of C9*	Starts in group
-5V MB	1.2uF	1
+5V MB	10uF (not changed)	2
+15V MB	25uF	3
+3.3V DIG	1.2uF	2
+5V DIG	10uF (not changed)	3
-15V HV	1.2uF	1
+15V HV	10uF (not changed)	2
+5V HV	25uF	3

*-available nominal values of capacitors; to be changed. Sequence will be revised.

17. Soldering sense-resistors (instead of “Butterfly”) by table 4:

Brick type	Value of sense-resistor	OCP
-5V MB	2x5mOhm	16A
+15V MB	5mOhm	8A
+5V MB	1.5mOhm (1mOhm)	20A
+3.3V DIG	2x5mOhm	16A
+5V DIG	2x5mOhm	16A
-15V HV	5mOhm	8A
+15V HV	5mOhm	8A
+5V HV	5mOhm	8A

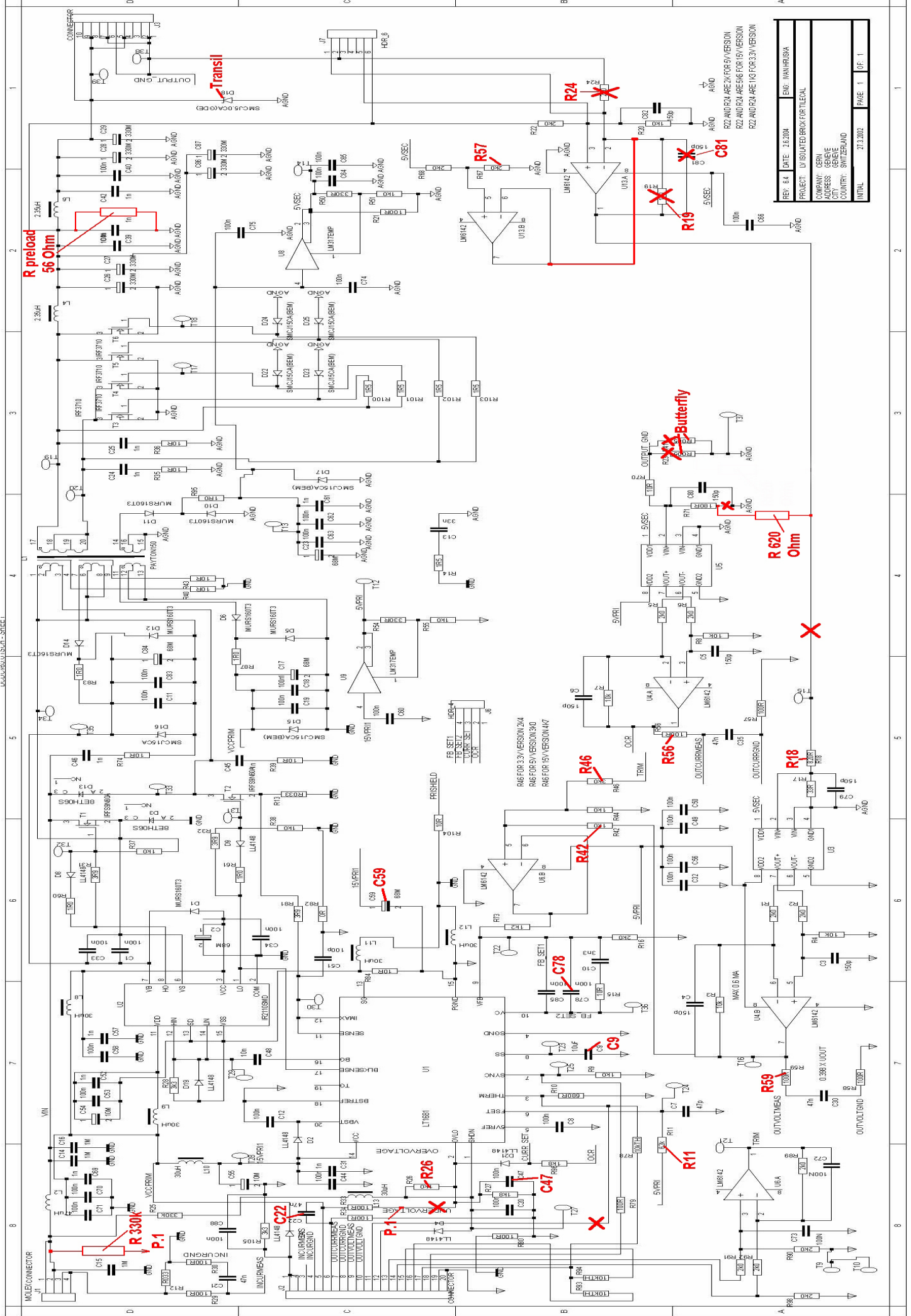
18. Adjust feedback gain:

- Brick starts at minimum trimming: measure V_{out}
- By formulas in Excel calculate additive (parallel) resistor for R42:
- $R_n = 2 * (V_{theor} / V_{out}) - 1$;
- $R_{add} = R_n / (1 - R_n)$;
- Take nearest nominal in row E24(1%)

Type of Brick	Vmin, V	Vmax, V	OVP, V
3V	3.20±50mV	3.85±50mV	4.0±50mV
5V	5.0±50mV	5.9±50mV	6.1±50mV
15V	14.4±100mV	15.65±100mV	16.0±100mV

19. Additional modifications for 15V bricks:

- Replace R45: from 4.7k to 7.5k (to reduce trimming range)
- Put preload resistor: 56 ohm



REV: 6.4	DATE: 28.2004	ENG: WANHRUSKA
PROJECT: U/I ISOLATED BRICK FOR PILEAL		
COMPANY: GERIN		
ADDRESS: GENÈVE		
CITY: GENÈVE		
COUNTRY: SWITZERLAND		
INITIAL: _____	DATE: 27.2.2002	PAGE: 1 OF 1

~~Butterfly~~

R 620 Ohm

R18

R18

R59

R11

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