



PHILIPS
Digital Probe Multimeter
870556

Three-gauge meter with three analog displays and control knobs.

Power supply unit with a digital display and control knobs.

ANALOG ELEC
870549

Small electronic meter or power supply unit.

3 PHASE 415/240V SUPPLY

VARIAC OUTPUT ONLY
0-280V
SPEEDY CIRCUIT
240V MAIN SWITCH

REGULATED POWER SUPPLY
130-2C

Digital multimeter on a stand showing 4.549.

Breadboard with electronic components and connecting wires.

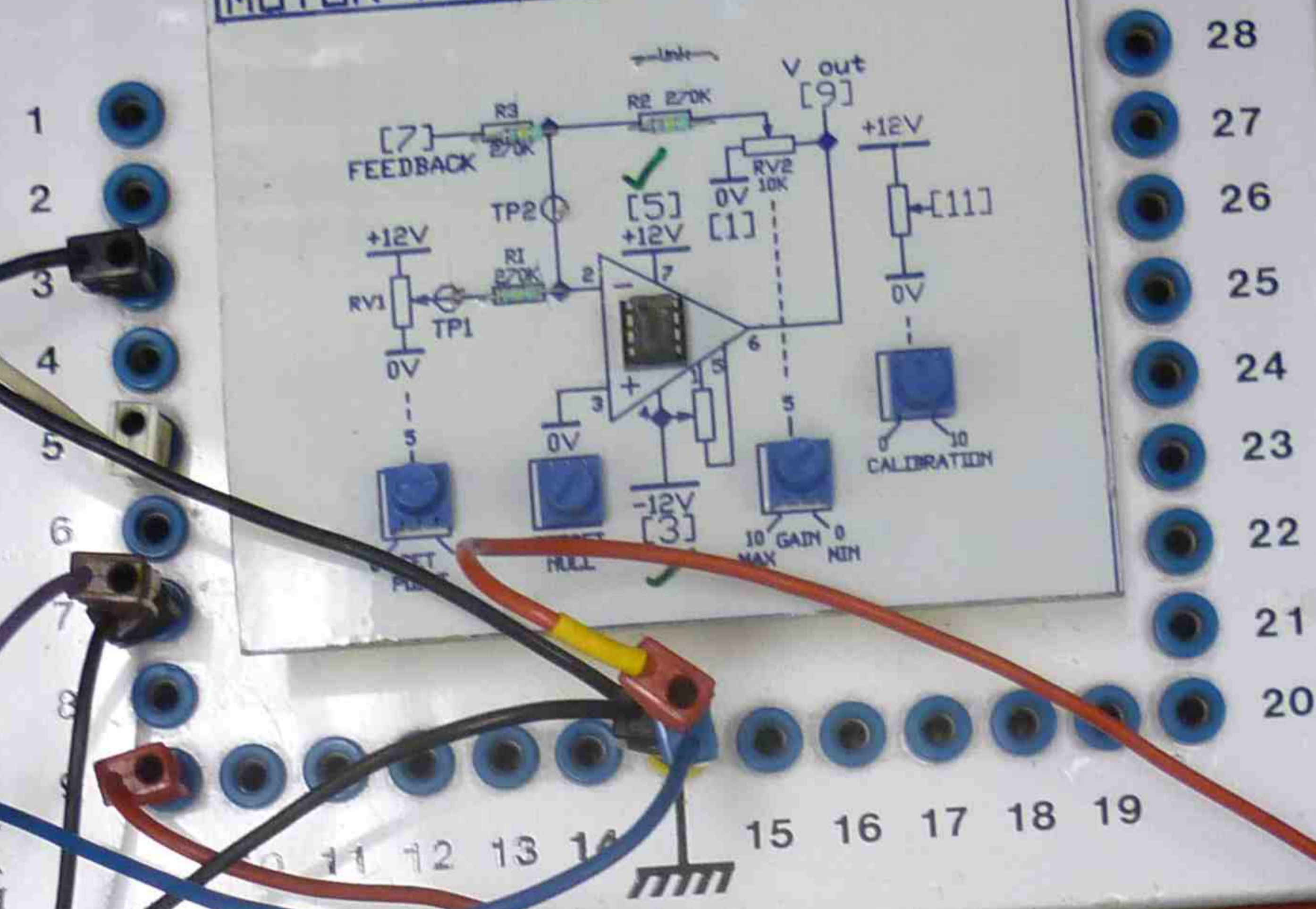
Digital multimeter on a stand showing -1.70.

Cupboard No. 5

Handwritten notes or diagrams on a piece of paper.

SYSTEMAC S6 PROGRAM

SYDNEY INSTITUTE OF TECHNOLOGY
ELECTROTECHNOLOGY
MOTOR PROPORTIONAL CONTROL



PM 2526 digital rms multimeter



RANGING START
UP DOWN AUT MAN AUT EXT MAN

POWER ON OFF PROBE 0 V-Ω PROBE HF ΩC V V V Ω

LABORATORY DC POWER SUPPLY

GW DUAL TRACKING WITH 5V FIXED MODEL: GPC-3030



CURRENT VOLTAGE INDEP. SERIES PARALLEL CURRENT VOLTAGE OVERLOAD 5V5A
C.C. C.V. PAR. SLAVE TRACKING MASTER 5V FIXED 5A



EMERGENCY STOP
OPERATION OF THIS BUTTON
WILL ISOLATE ALL POWER
IN THIS AREA







H.T. STANDBY

H.T. RESET

INDICATOR ON

250V D.C.

OFF

6.3V A.C.

0-280V
VARIAC OUTPUT ONLY

0-280V
VARIAC OUTPUT ONLY

6.3V A.C.

H.T. STANDBY

& TRIP

RESET H.T.

ON INDICATOR

250V D.C.

240V MAIN SWITCH

SPEECH CIRCUIT

SWITCH

240V G.P.D.

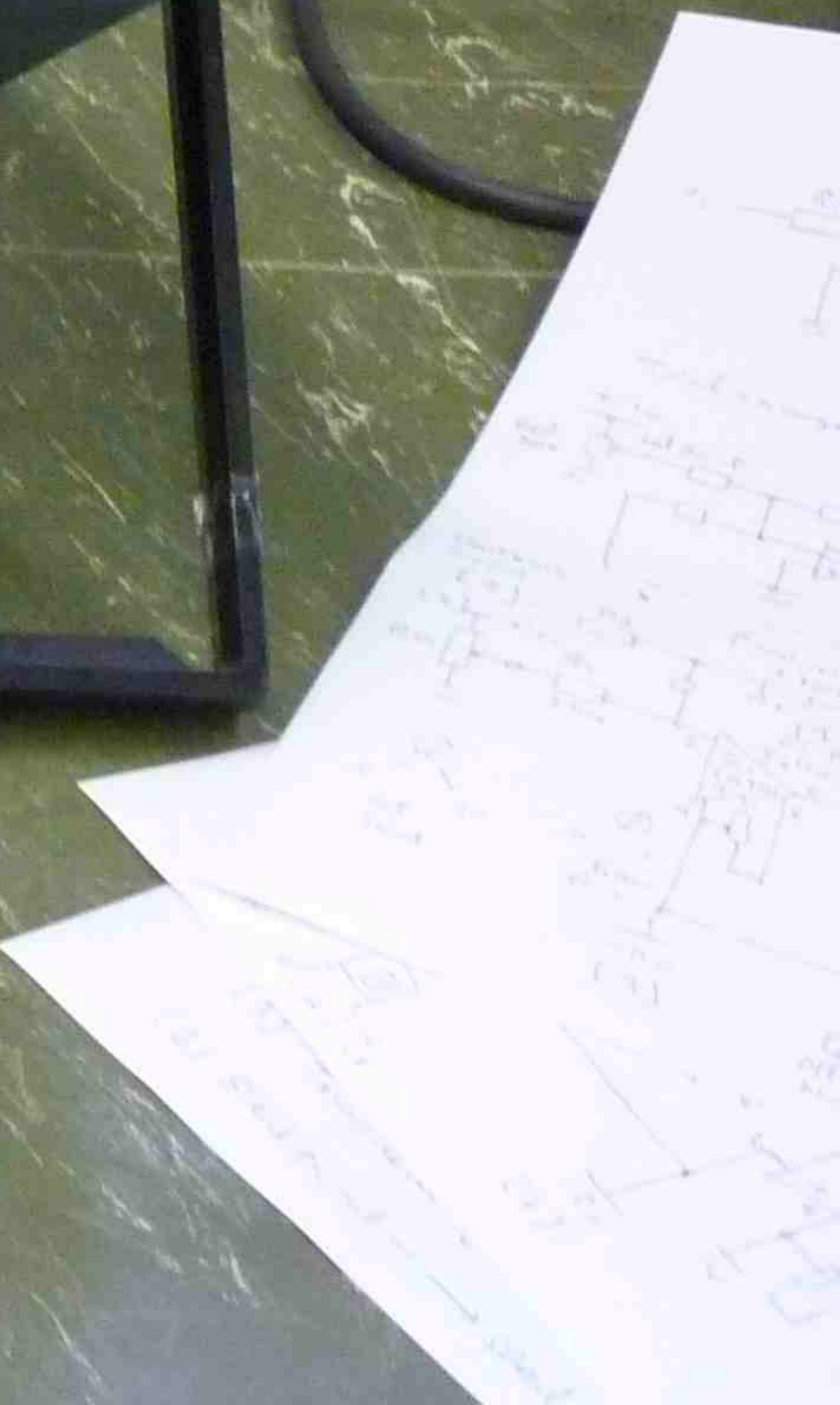
- 1.66

KORSA DIGITAL MULTIMETER

INDICATOR & TRIP & TRIP RESET H.T. ON 250V D.C.

ADDITIONAL CONTROLS

10 11 12 13 14 15 16 17 18 19 20





0-200V DIGITAL VOLT METER

070549

0-200V ANALOG METER

0-200V DIGITAL VOLT METER

3 PHASE VARIAC SUPPLY

250V AC REGULATED

OFF ON 10V AC 250V 0-250V VARIAC OUTPUT ONLY

OFF ON 0-250V VARIAC OUTPUT ONLY

0-250V VARIAC OUTPUT ONLY

0-250V VARIAC OUTPUT ONLY

REGULATED POWER SUPPLY

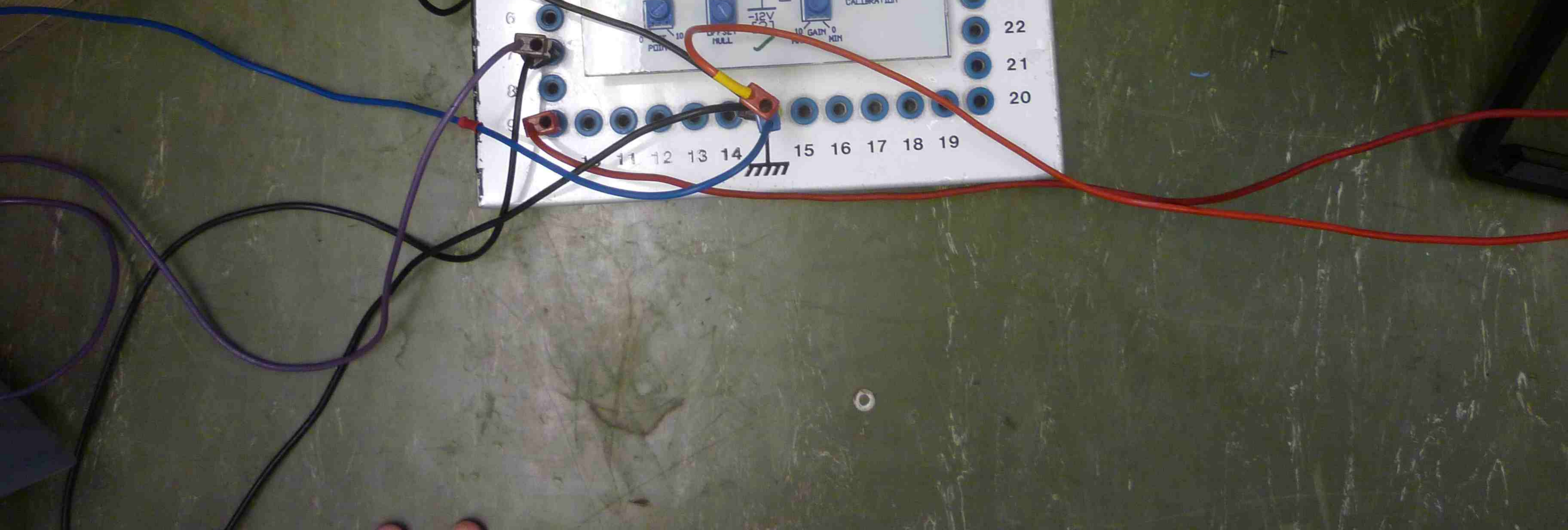
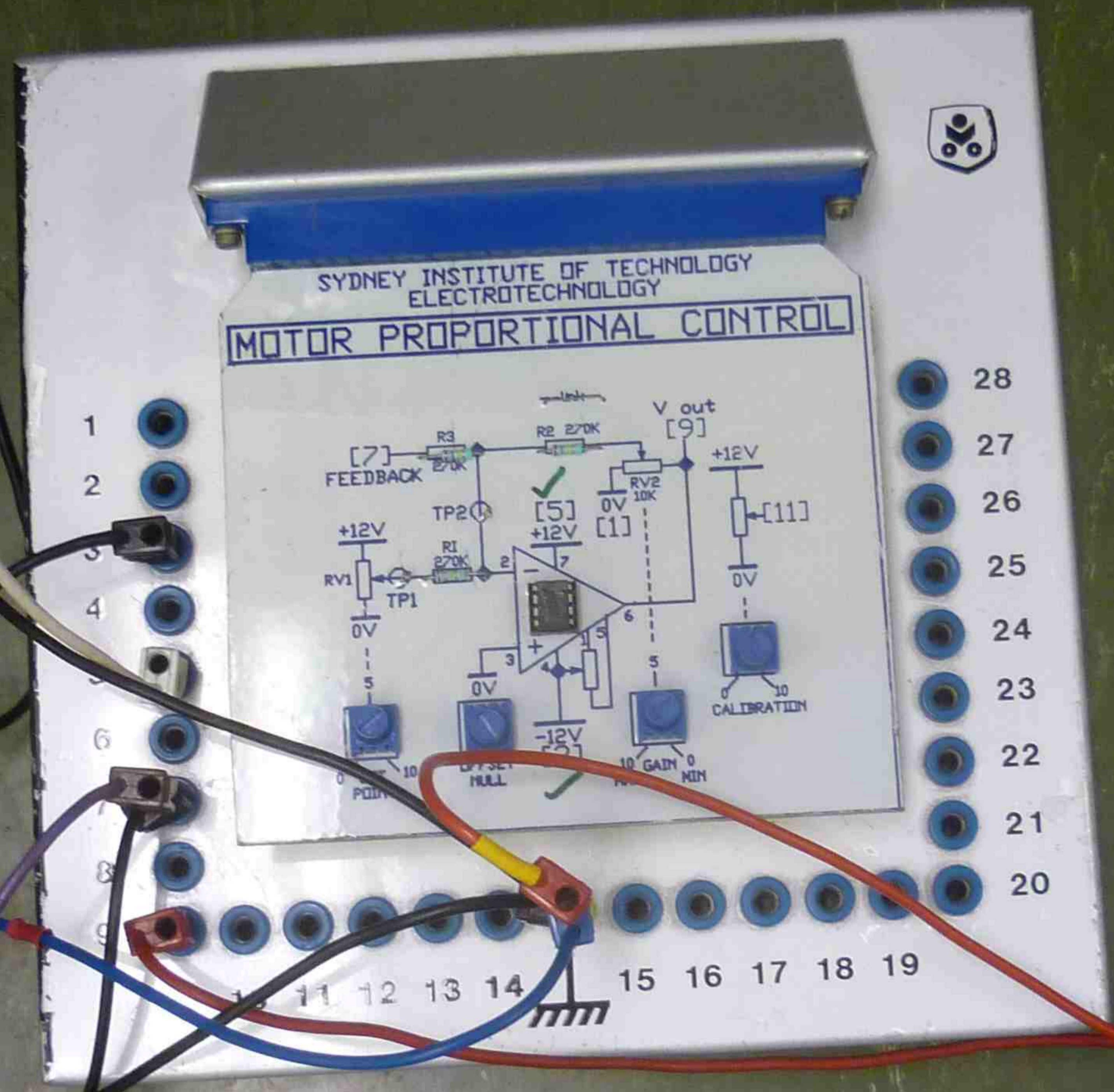
1.78

Breadboard circuit with components and jumper wires.

1.67

SYSMAC S6 PROGRAM

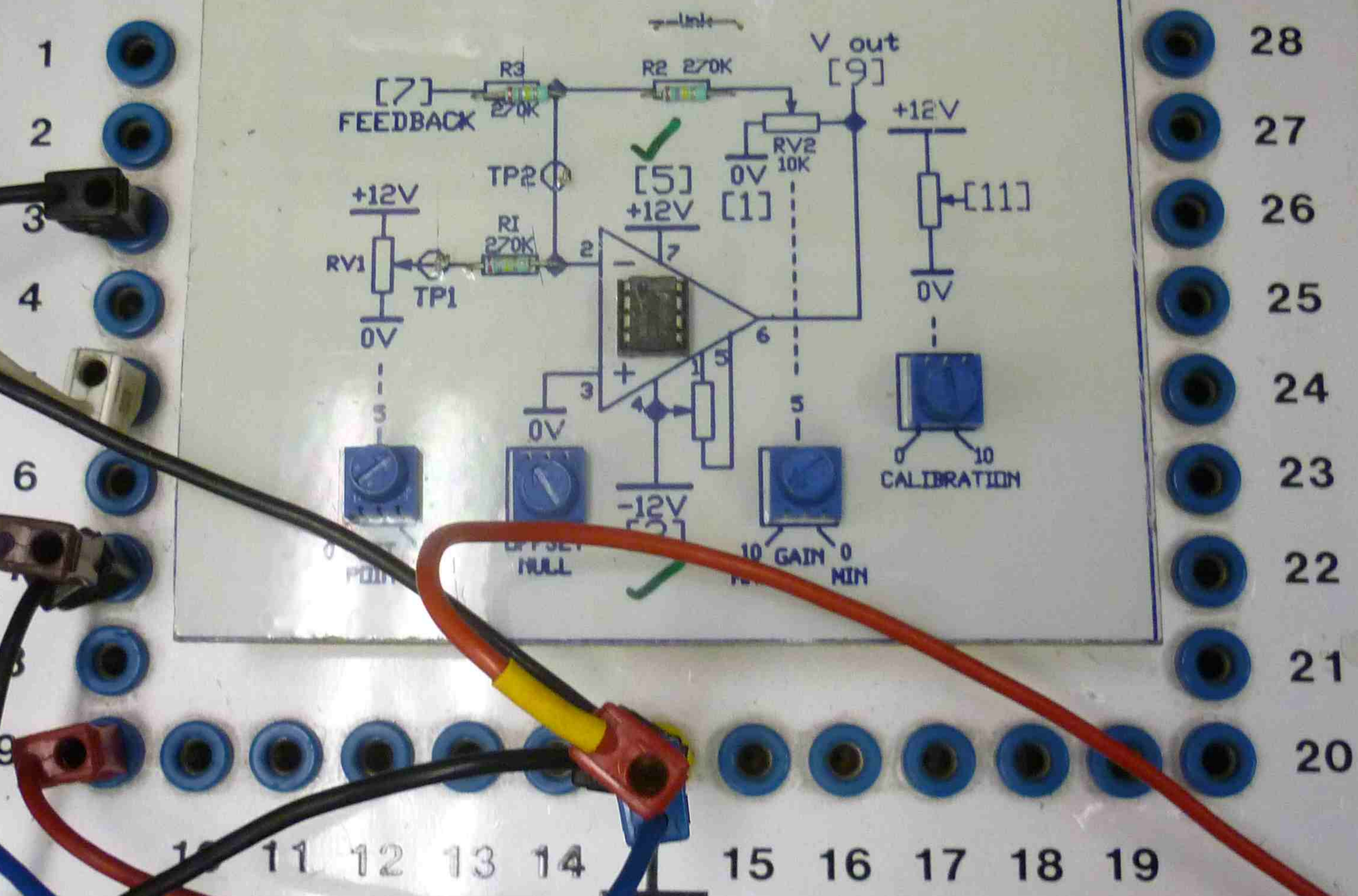
FORCLUM ELECTRICS PTY LTD
PO BOX 9198 ADELAIDE
SA 5012 24 389
TEL: 08 8402 4098

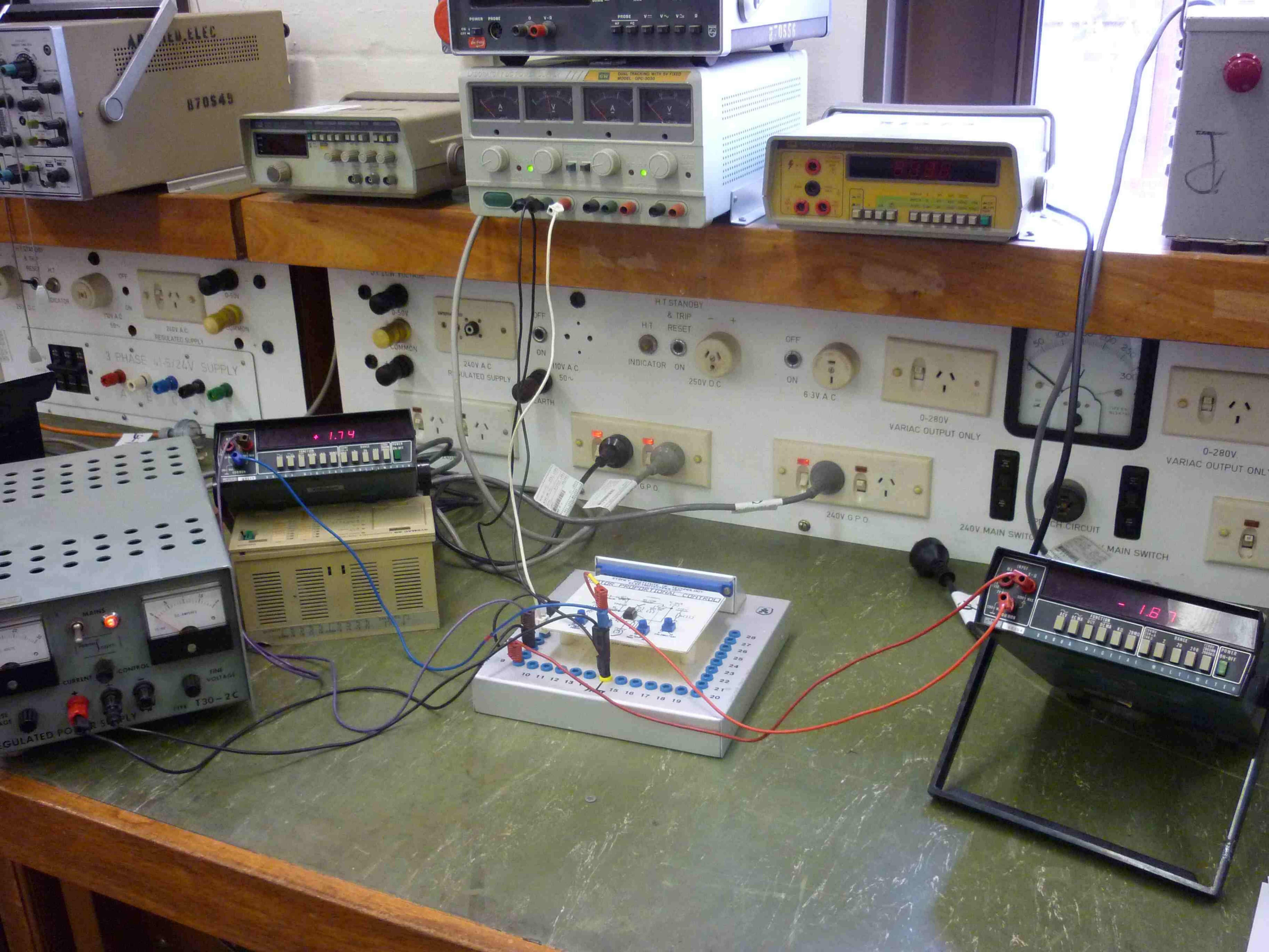




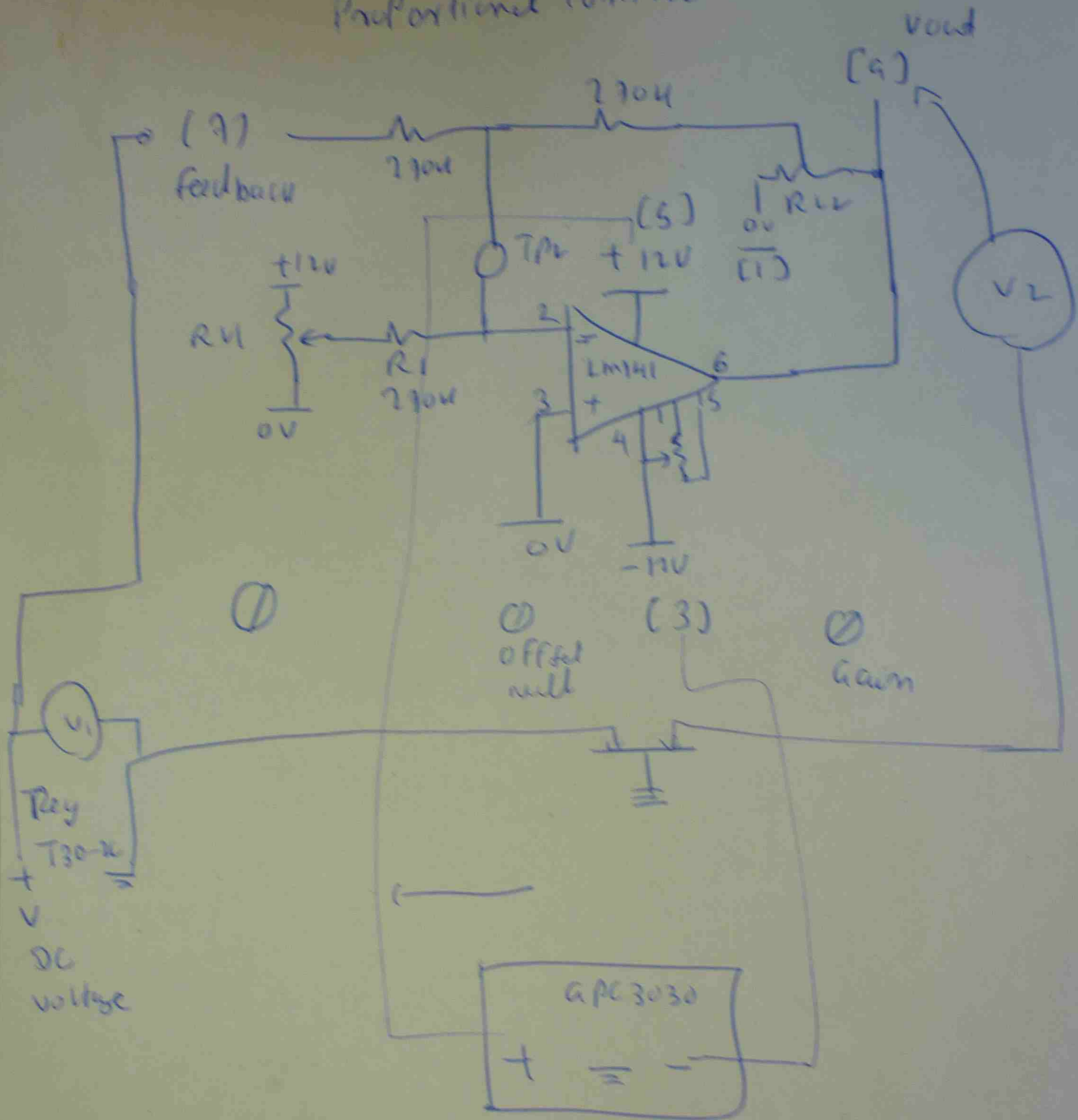
SYDNEY INSTITUTE OF TECHNOLOGY
ELECTROTECHNOLOGY

MOTOR PROPORTIONAL CONTROL





Proportional control

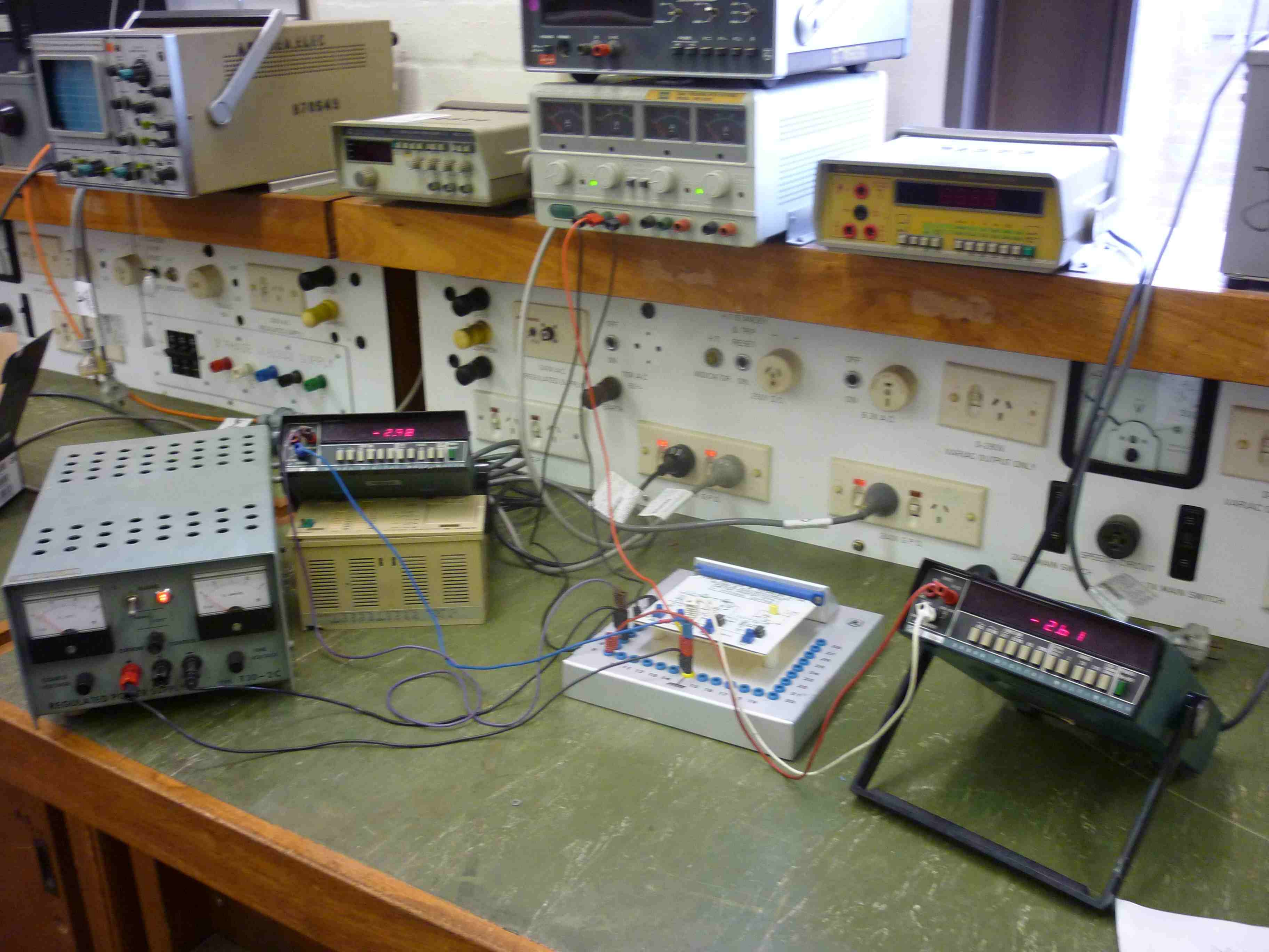


T30-2C - 0V

APC3030 = 12V

(9) feedback
 Input = +1.55
 V2 } offset = -1.30
 set point 1.24

	1st	2nd
ZIP	1.74	1.34
2	1.9	1.34
	1.82	1.34
ZIP chose → o/p = 1.24		





COARSE VOLTAGE

CURRENT

CONTROL

FINE VOLTAGE

REGULATED POWER SUPPLY

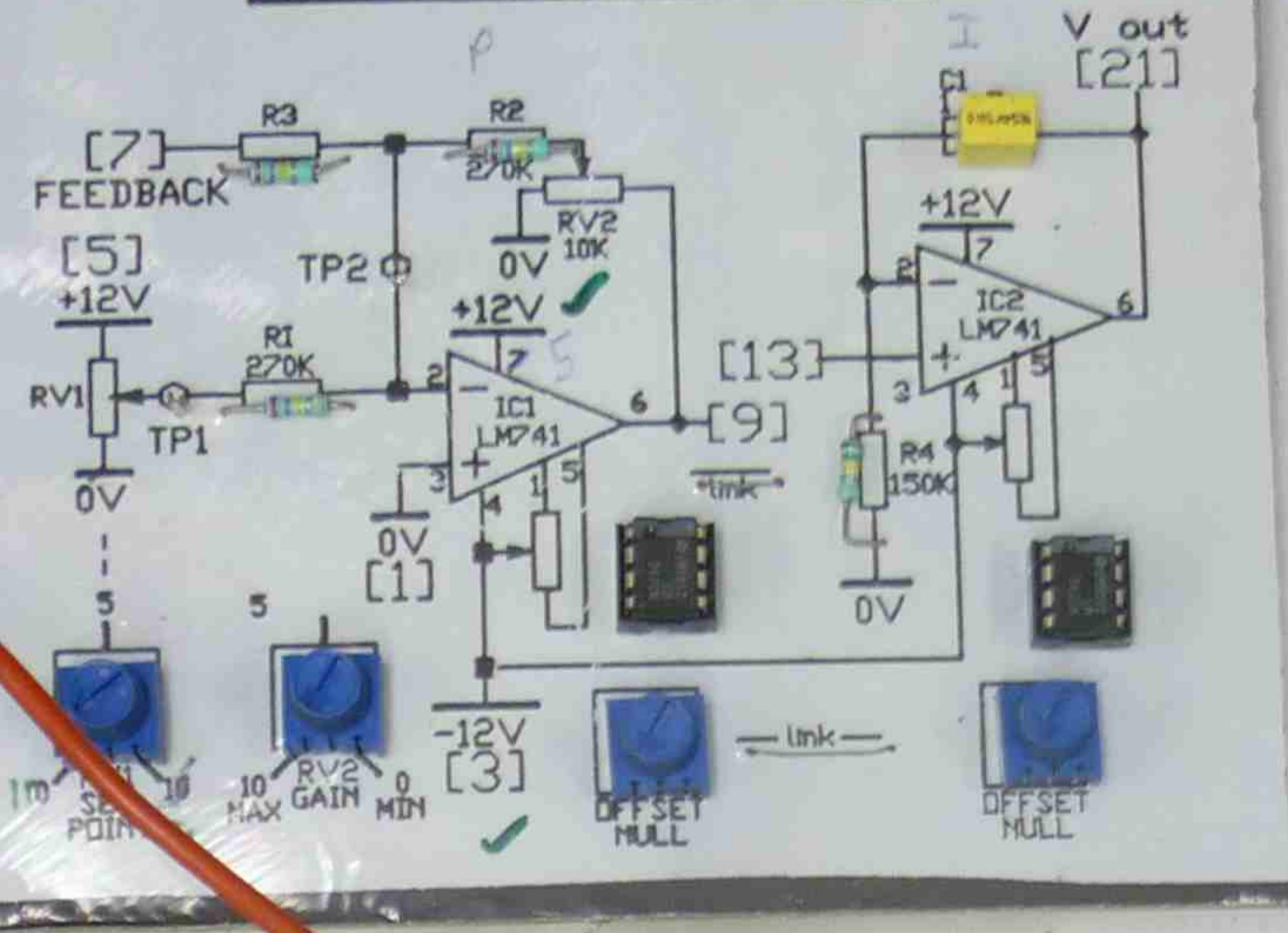
TYPE T30-2C

MAINS

PERINI & COTT

SYDNEY INSTITUTE OF TECHNOLOGY, ULTIMO
SECTION OF ELECTROTECHNOLOGY

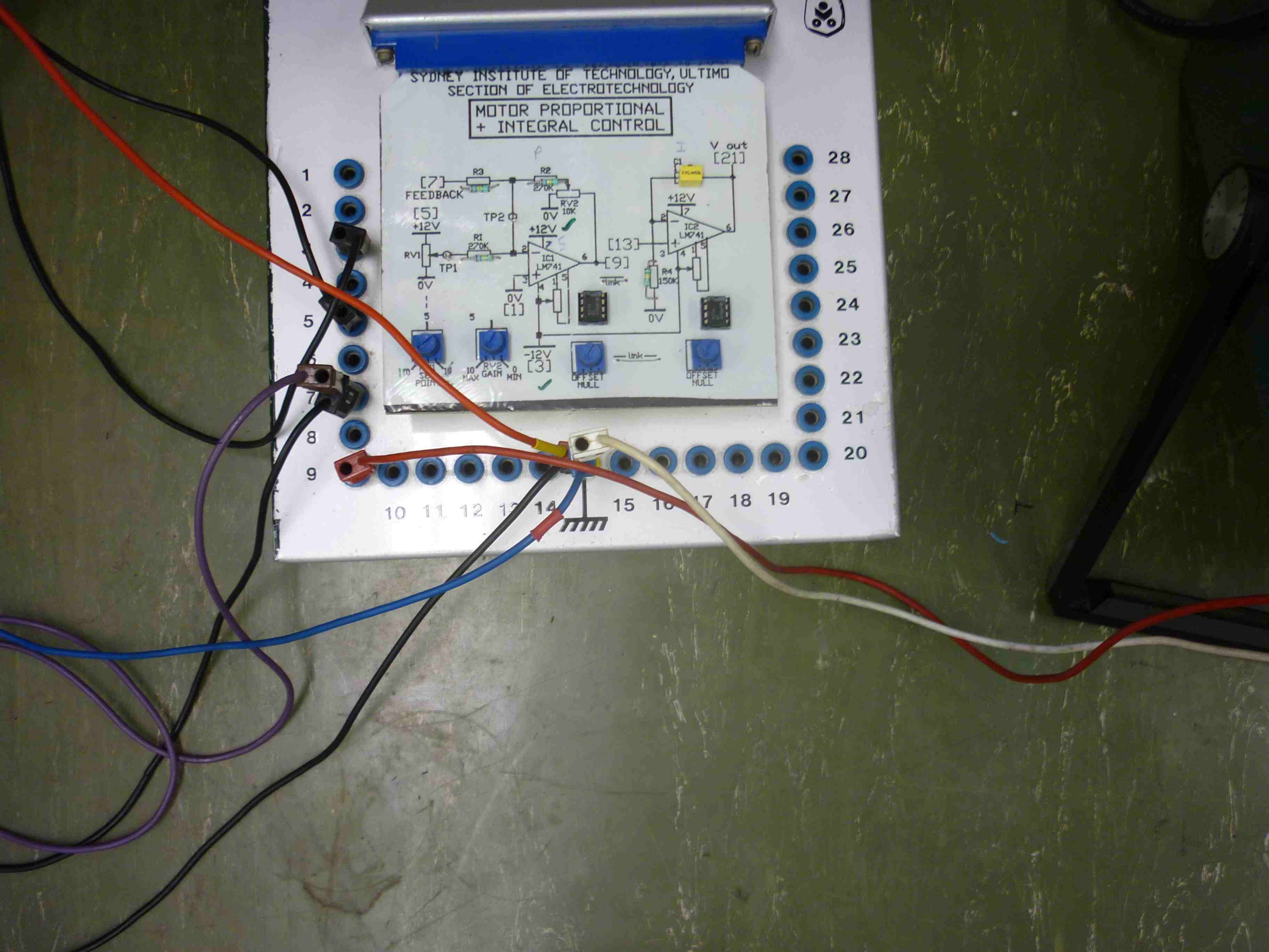
MOTOR PROPORTIONAL
+ INTEGRAL CONTROL



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REGULATED SUPPLY
3 PHASE 41-5/24V SUPPLY

A B C N E

COMMON

240V.A.C. REGULATED SUPPLY

75 Ω

INPUT MA V, Ω

2A FUSE

1200V MAX

FUNCTION

ACV ACMA DCV DCMA KΩ 20MΩ

RANGE 200MV 200μA 200Ω 2 20 200 1200V 2000MA 2000KΩ

POWER ON-OFF

8000A DIGITAL MULTIMETER

STOP

CPU ERR

CHECK SUM ERR

MEMORY ERR

I/O ERR

BANK 0

BANK 1

15

16

17

18

19



0-280V
VARIAC OUTPUT ONLY

0-280V
VARIAC OUTPUT ONLY

240V MAIN SWITCH

SPEED CIRCUIT

240V IN SWITCH

240V G.P.O.

240V G.P.O.

INPUT
MA V-R

1200V MAX

2000V MAX

COMMON

FUNCTION

ACV	AC MA	DCV	DC MA	K Ω	20M Ω	200mV 200 μ A 200 Ω	RANGE	2	20	200	1200V 2000ms 2000ns	POWER ON-OFF
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

8000A DIGITAL MULTIMETER

- 2.61

26

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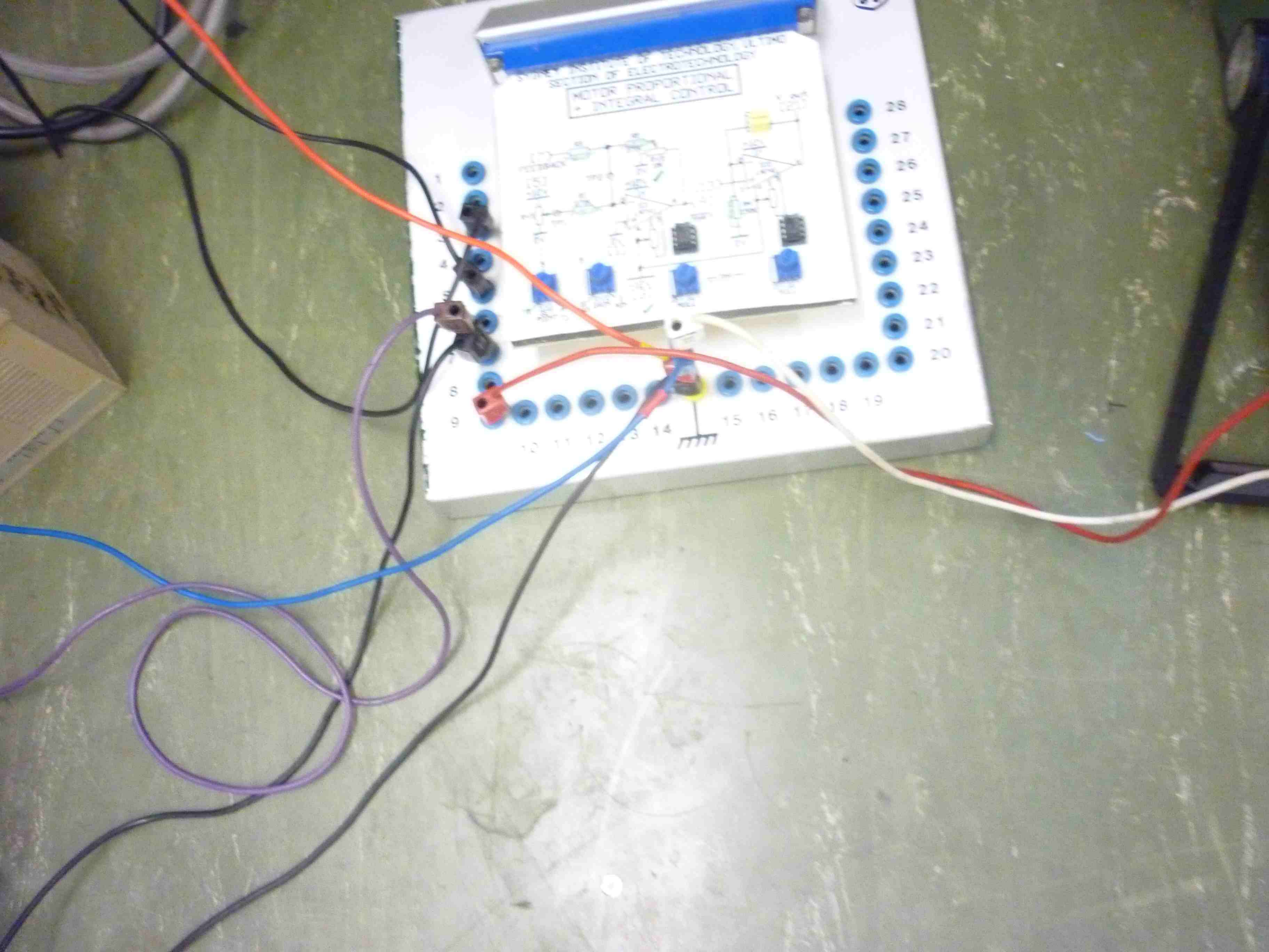
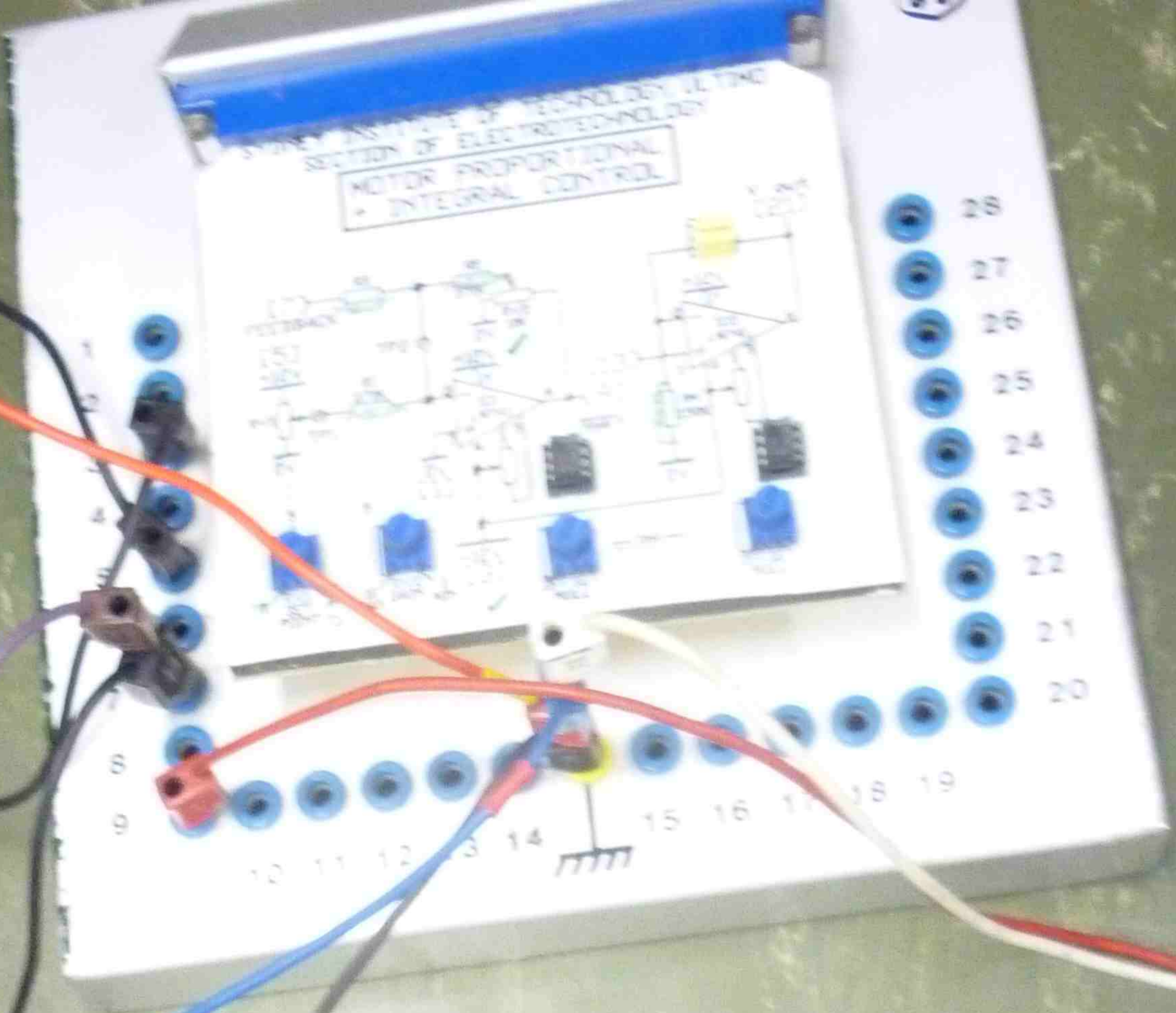
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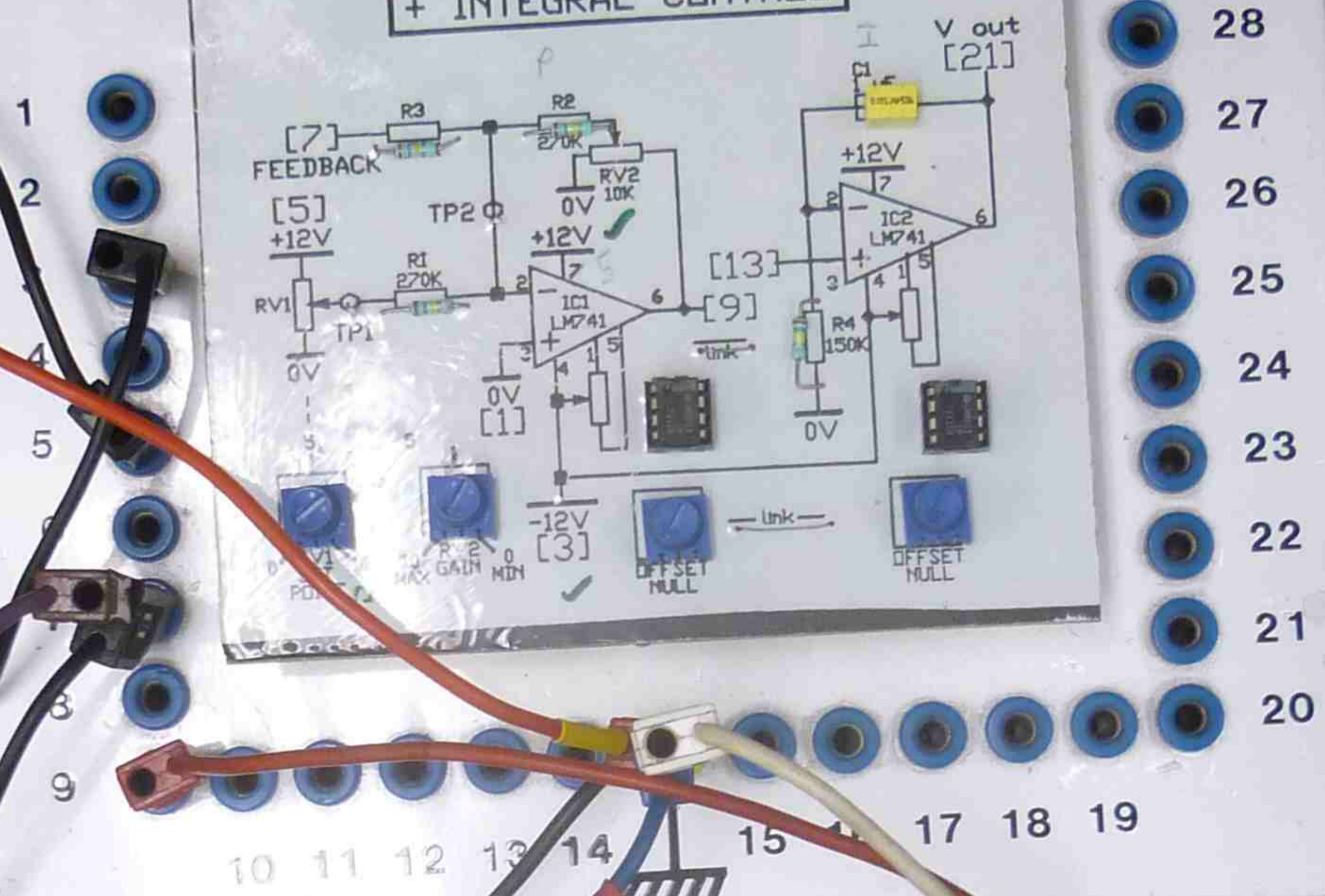
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SECTION OF ELECTROTECHNOLOGY

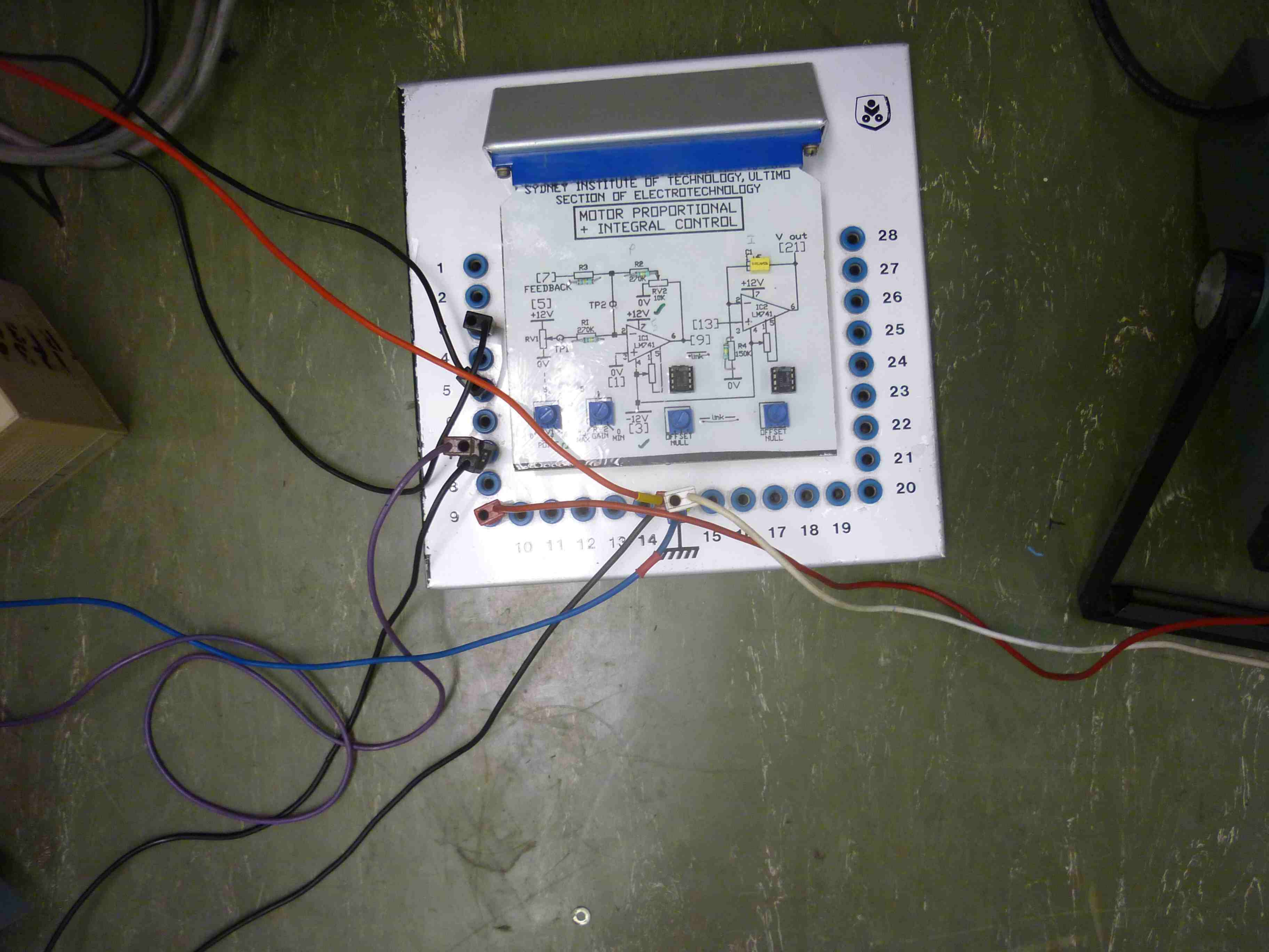
**MOTOR PROPORTIONAL
+ INTEGRAL CONTROL**



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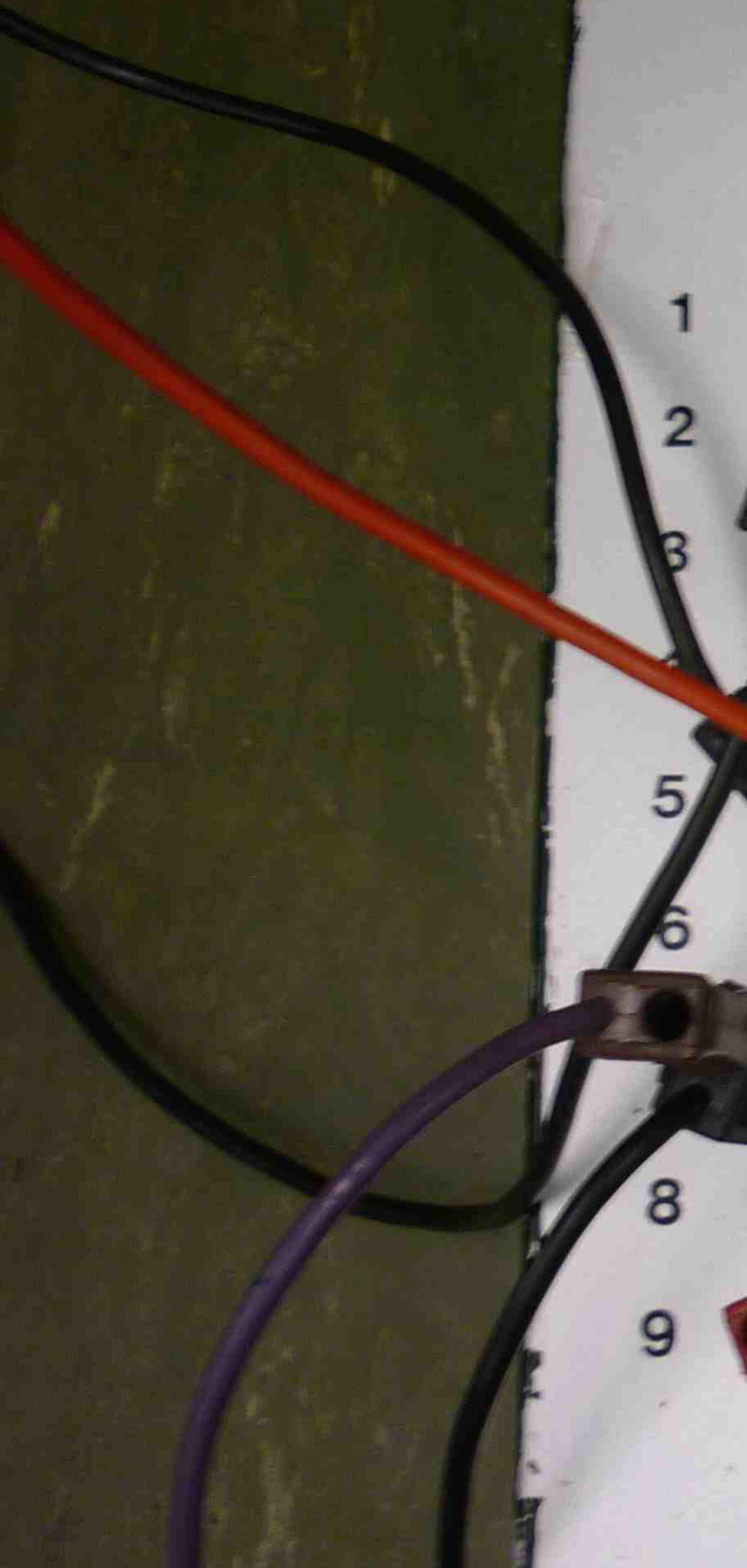
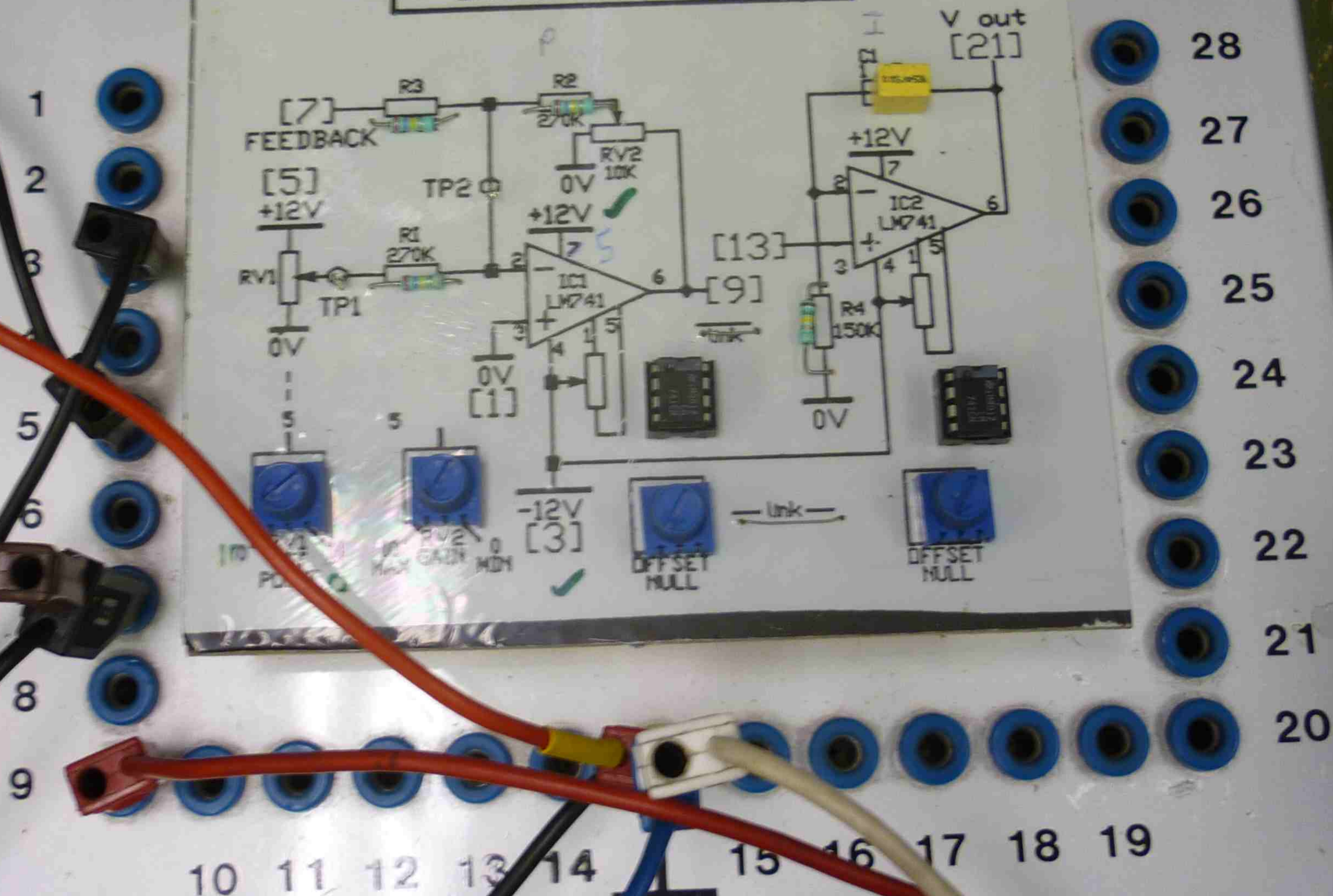
10 11 12 13 14 15 16 17 18 19





SYDNEY INSTITUTE OF TECHNOLOGY, ULTIMO
SECTION OF ELECTROTECHNOLOGY

MOTOR PROPORTIONAL
+ INTEGRAL CONTROL



PERINI AND SCOTT (A/ASIA) PTY. LTD.



MAINS

PERINI SCOTT



CURRENT CONTROL

COARSE VOLTAGE

+

+

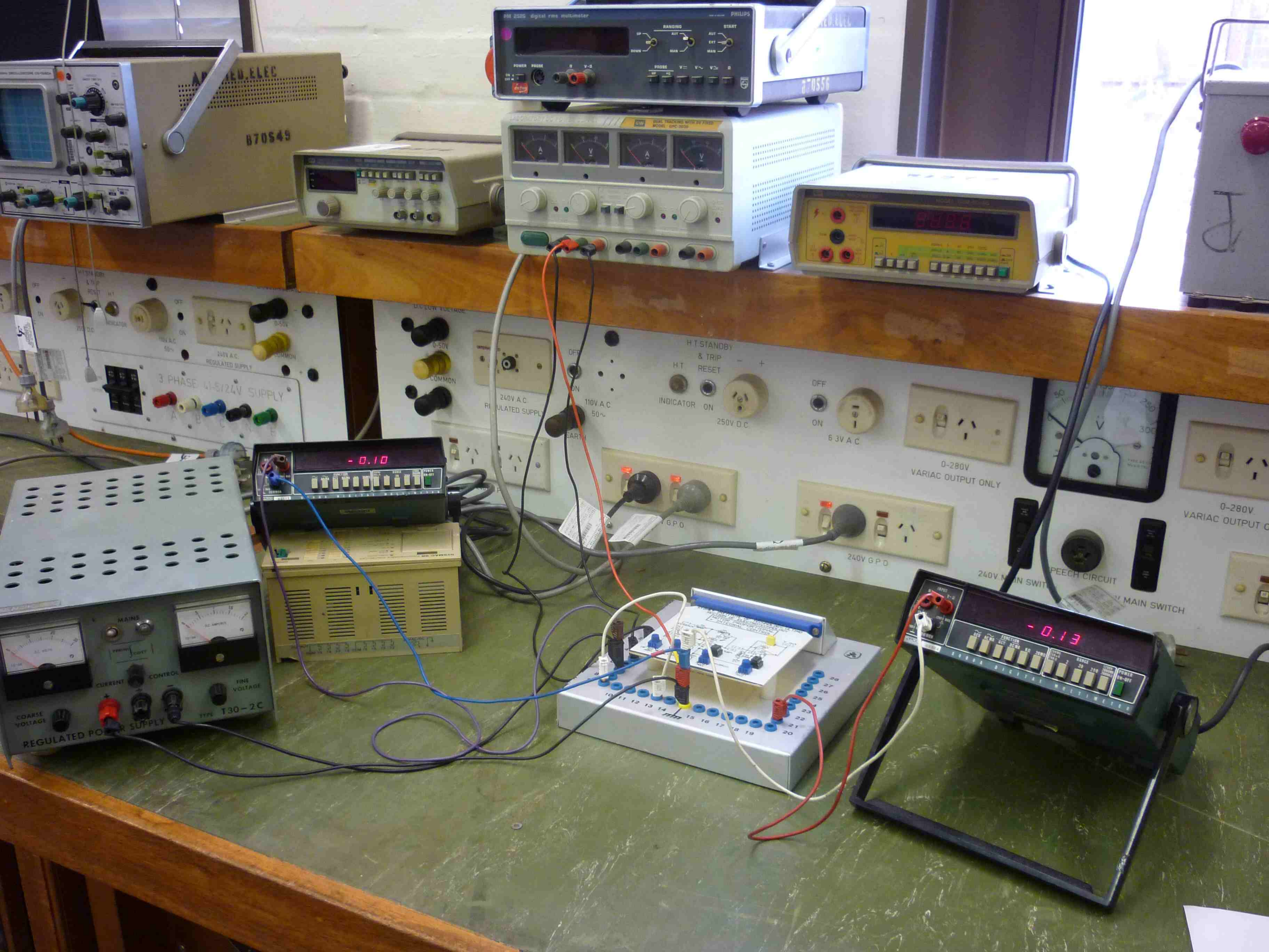
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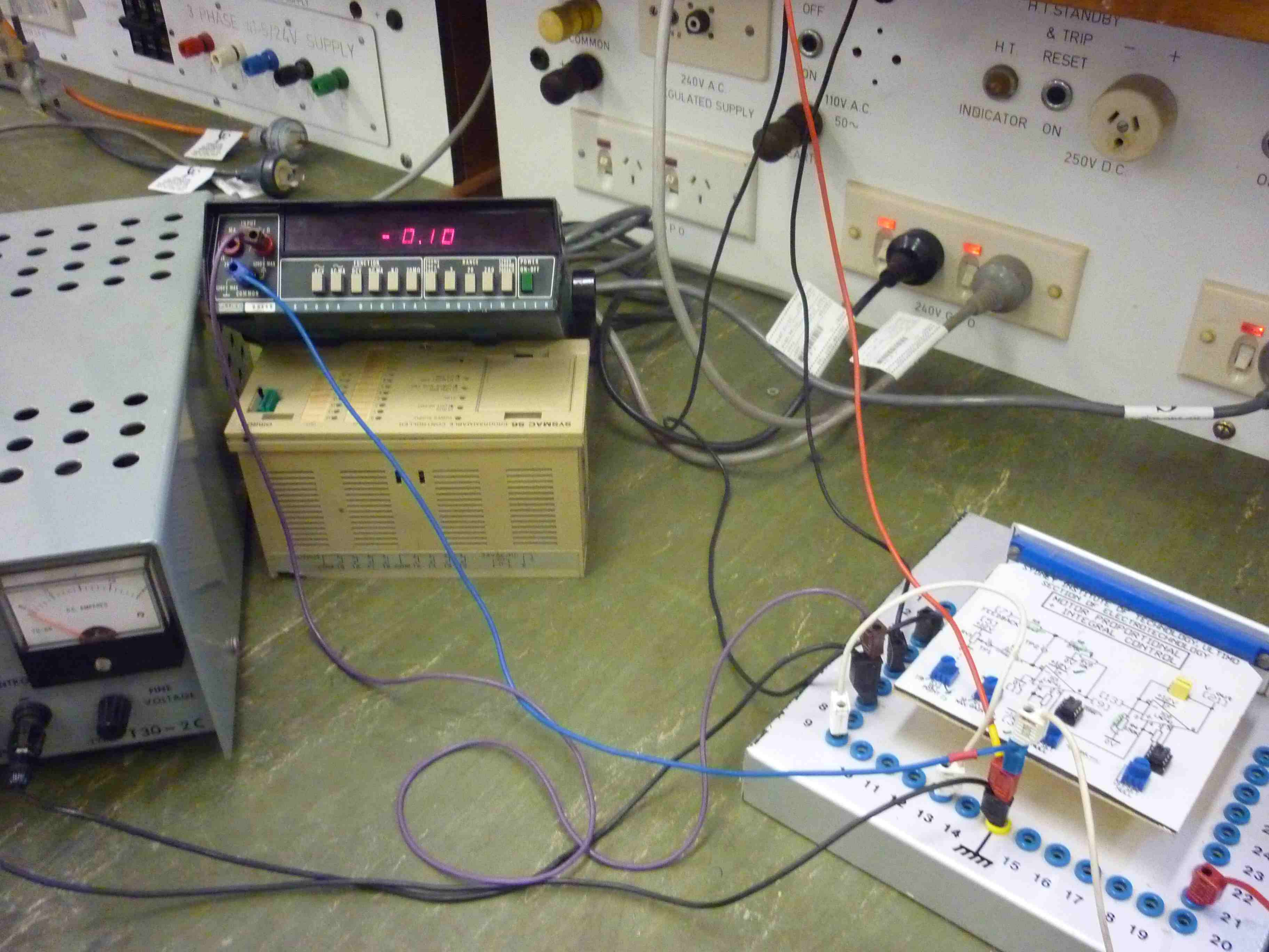
FINE VOLTAGE

REGULATED POWER SUPPLY

TYPE T30-2C







3-PHASE 480V/240V SUPPLY

240V A.C. REGULATED SUPPLY

110V A.C. 50~

INDICATOR ON

250V D.C.

-0.10

INPUT
FUNCTION
RANGE
MODE
POWER

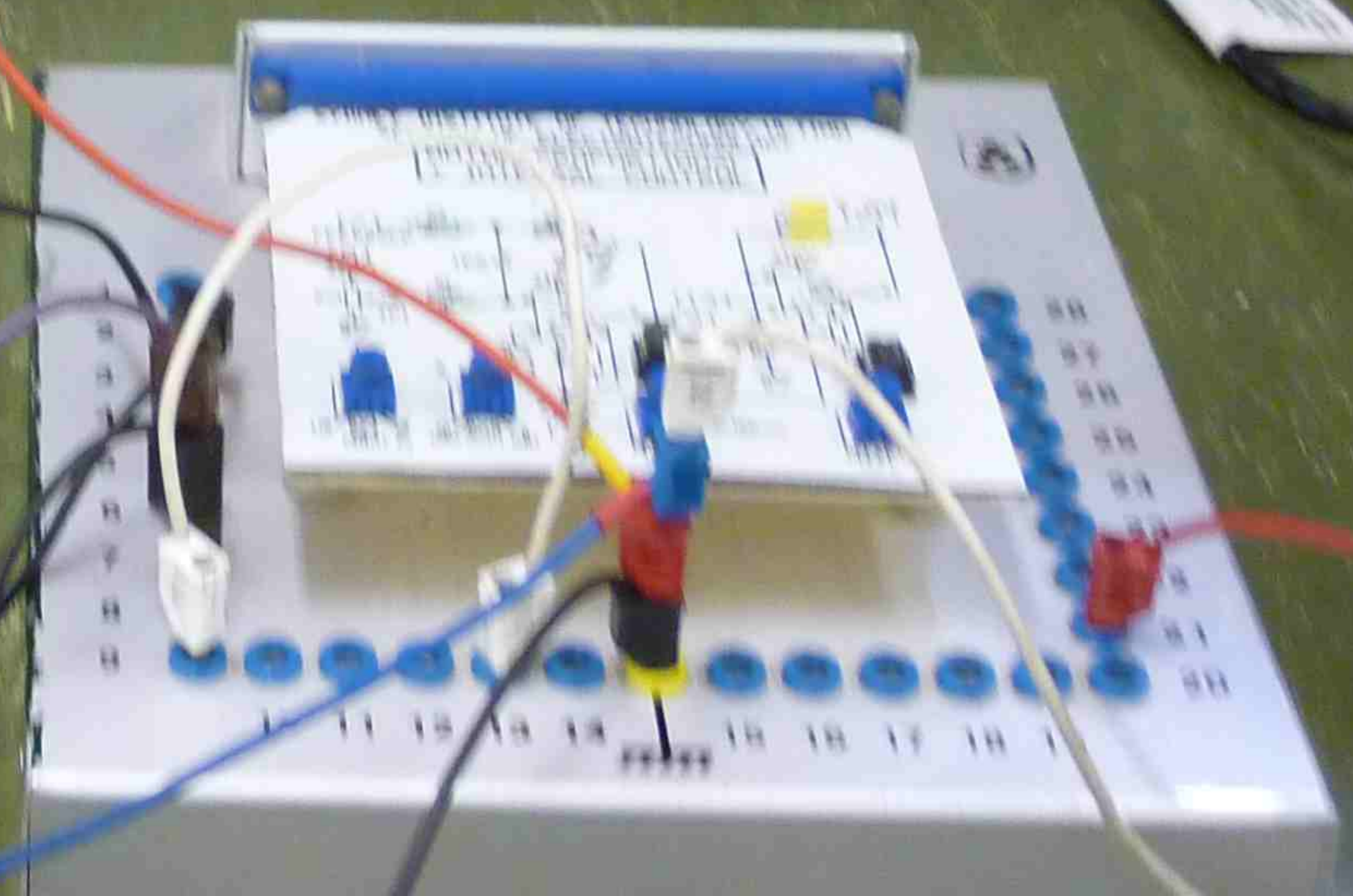
SYMAC 88 UNIVERSAL CONTROL

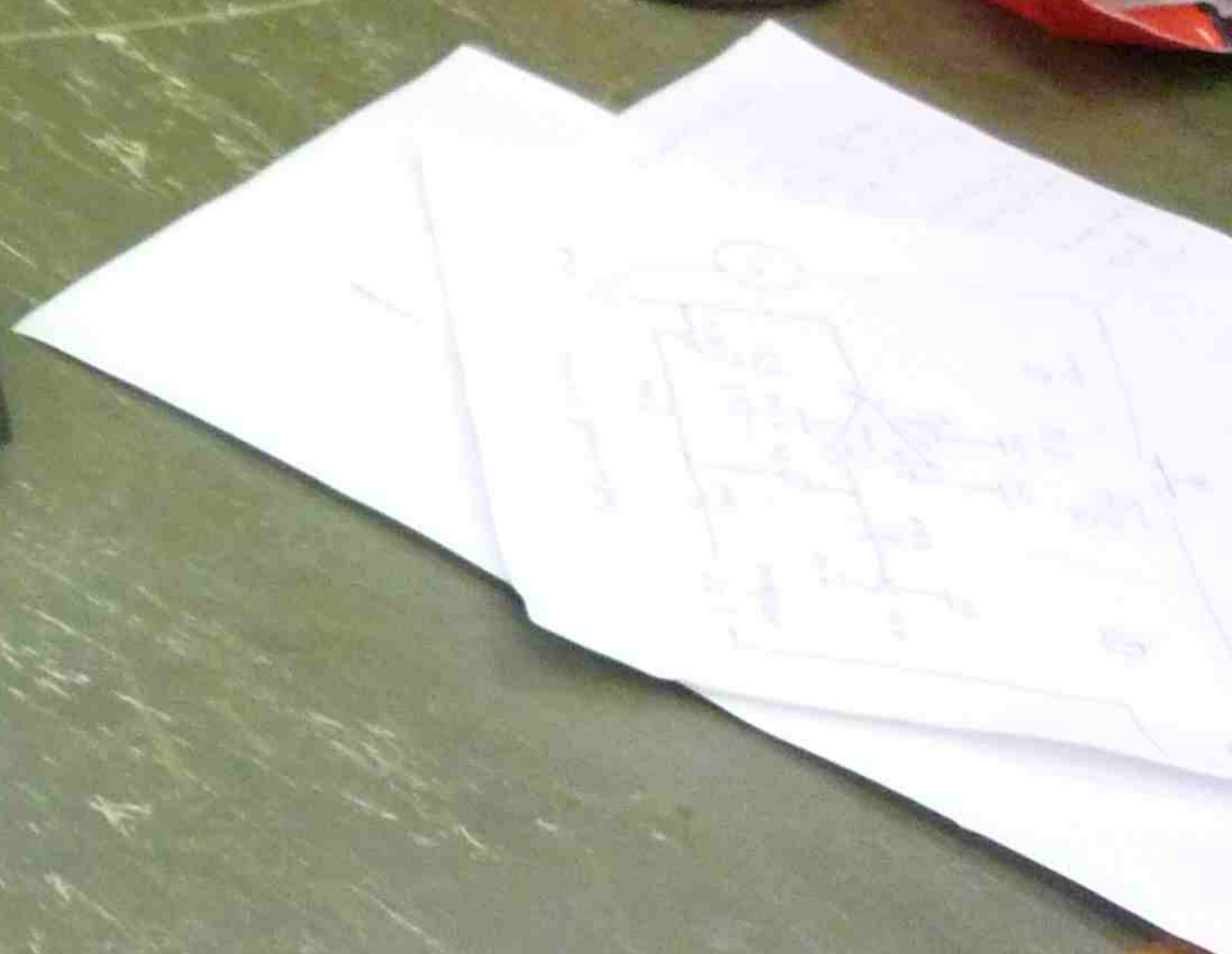
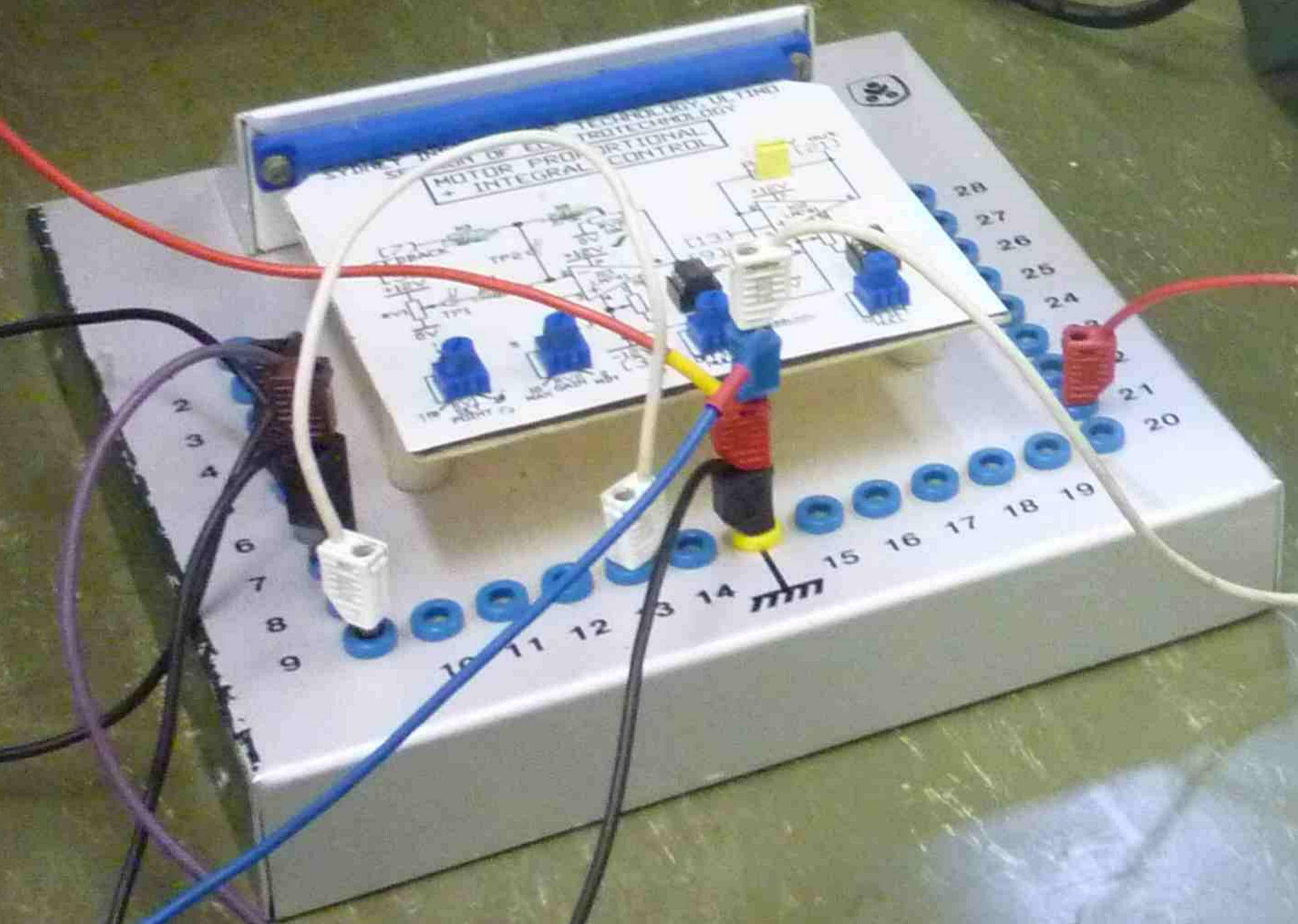
DC AMPERE

PIZZA
VOSTAGE
T30-2C

SECTION OF ELECTROTECHNOLOGY, UET INDIA
MOTOR OF PROPORTIONAL INTEGRAL CONTROL

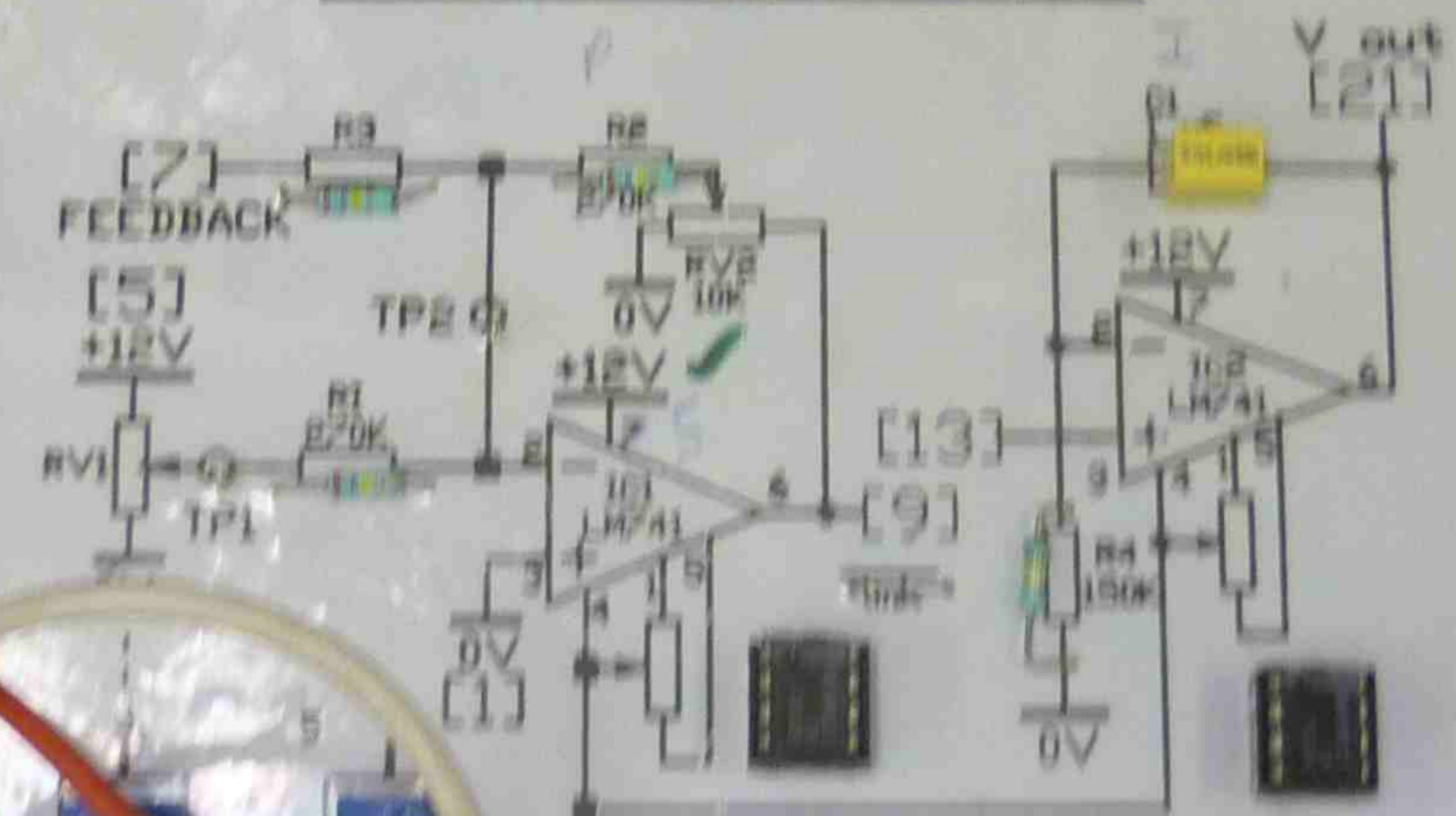
9 11 13 14 15 16 17 19 20 21 22 23 24





SYDNEY INSTITUTE OF TECHNOLOGY, ULTIMO
SECTION OF ELECTROTECHNOLOGY

MOTOR PROPORTIONAL
+ INTEGRAL CONTROL



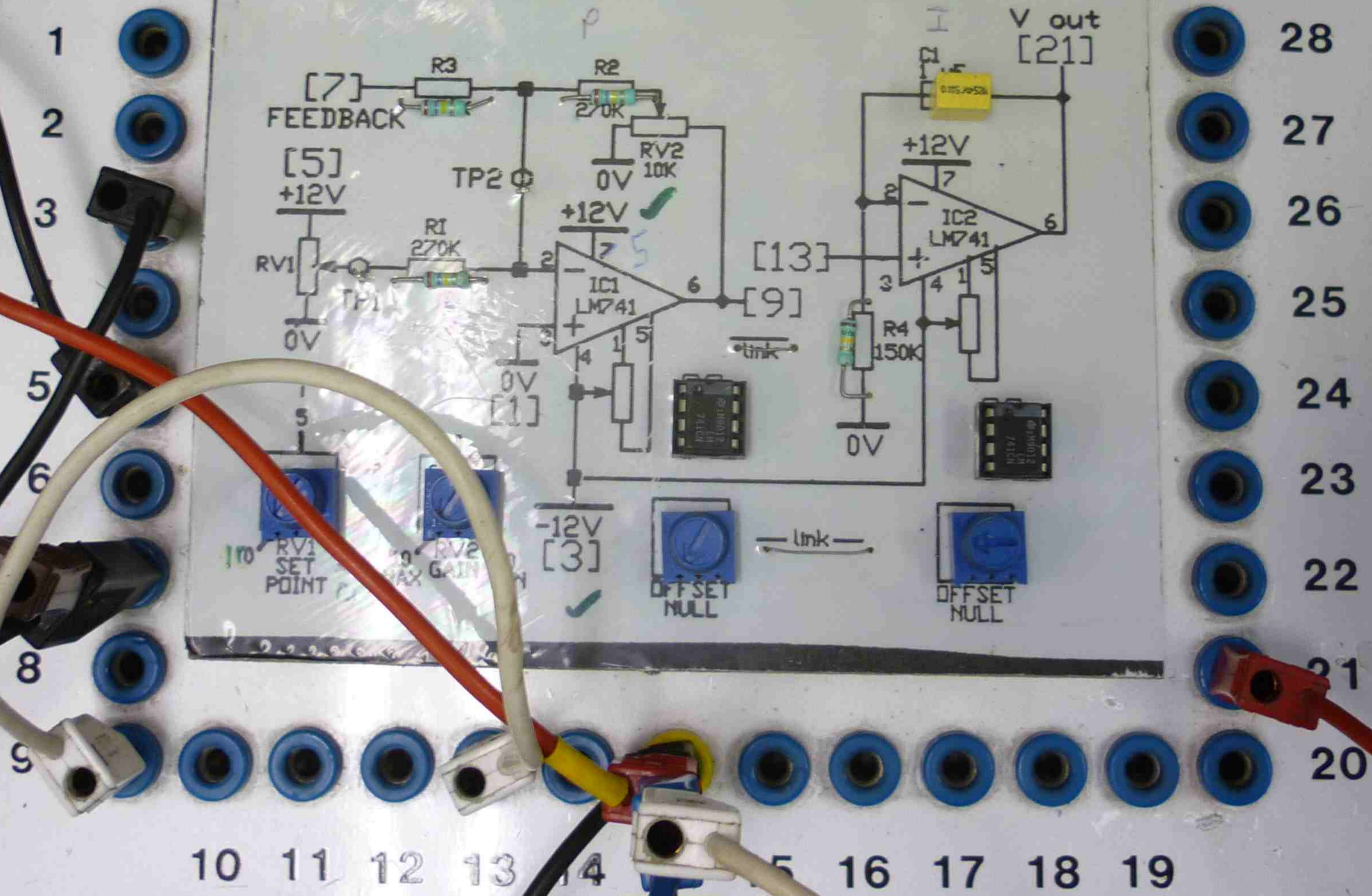
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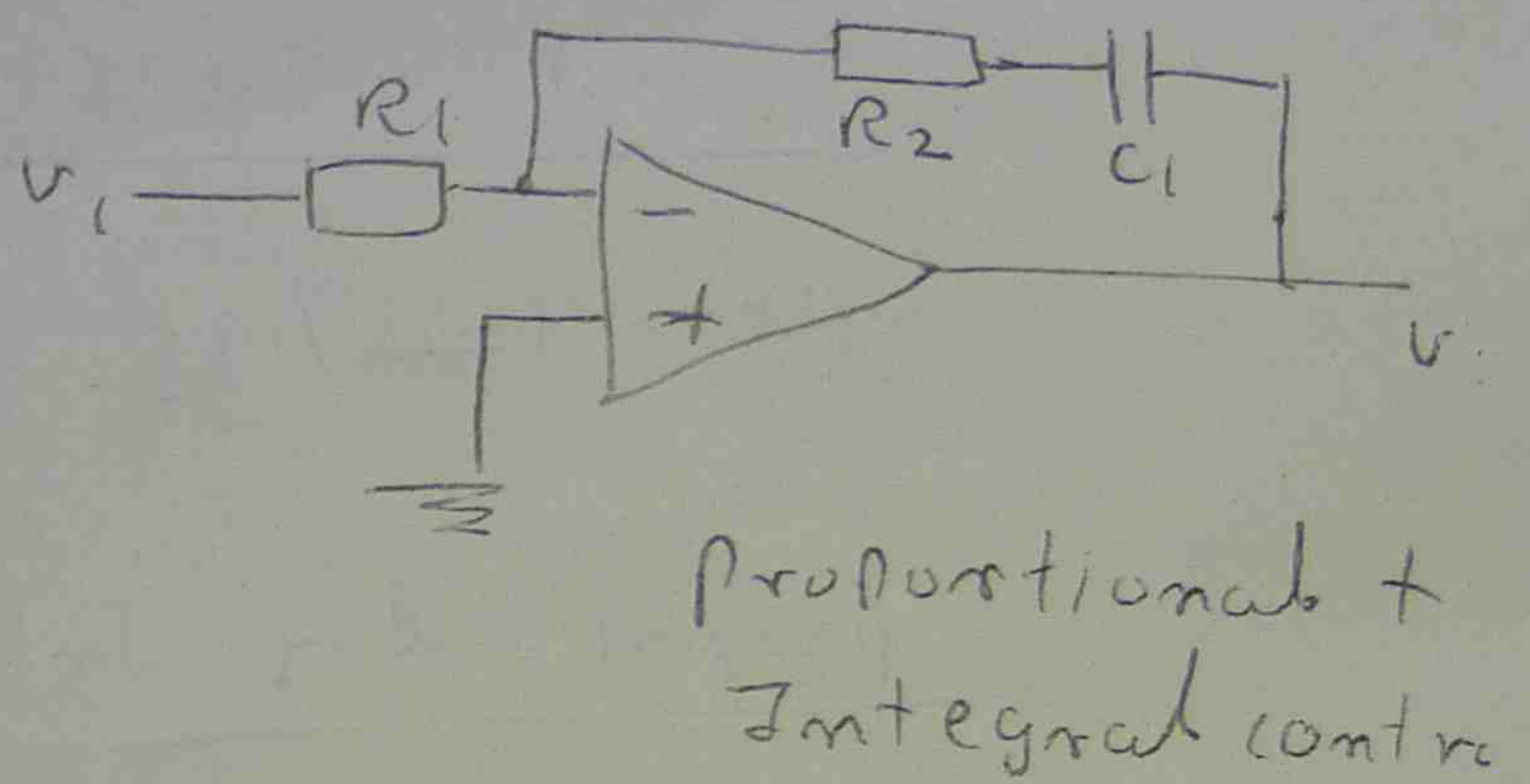
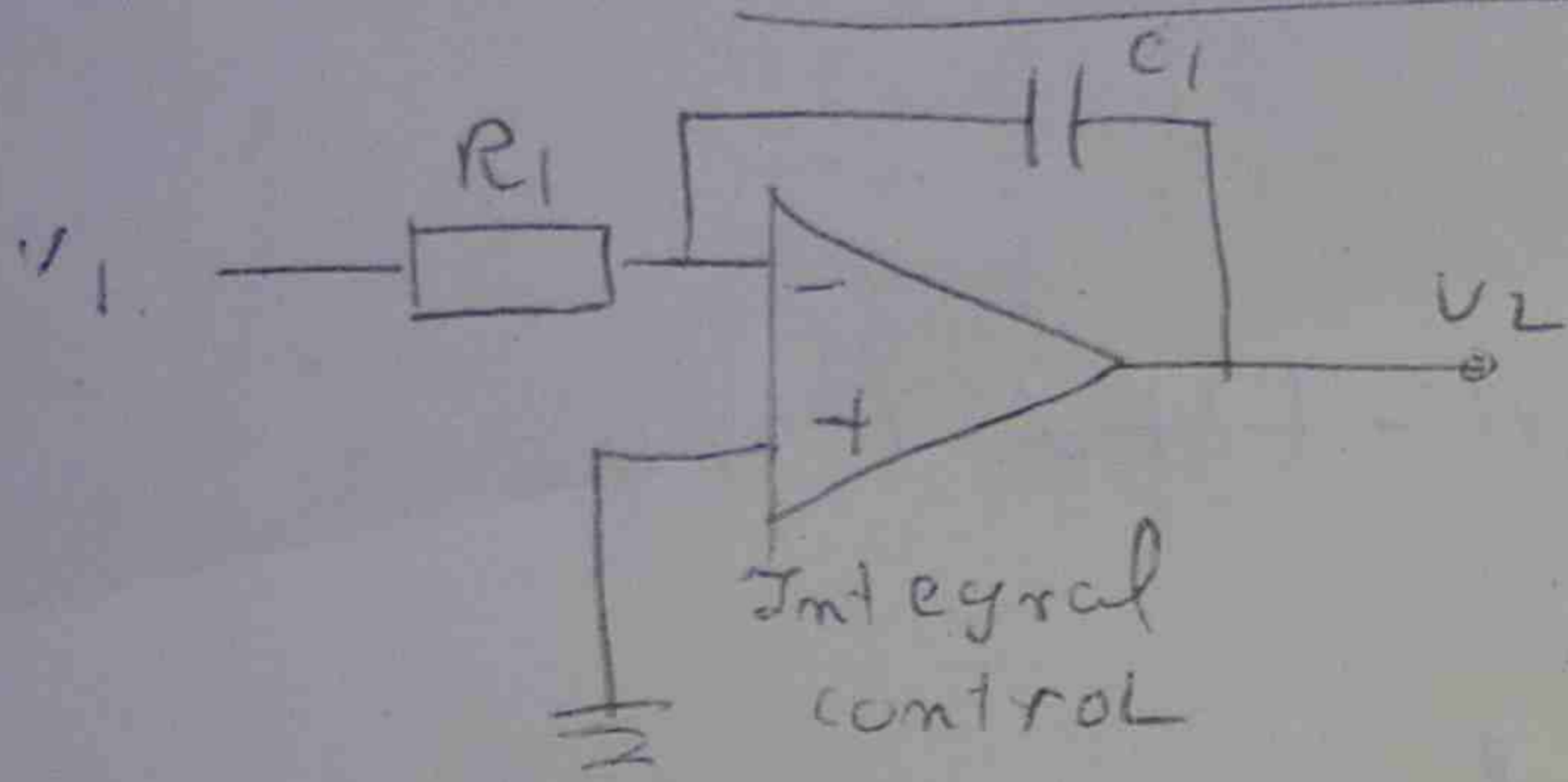


SYDNEY INSTITUTE OF TECHNOLOGY, ULTIMO
SECTION OF ELECTROTECHNOLOGY

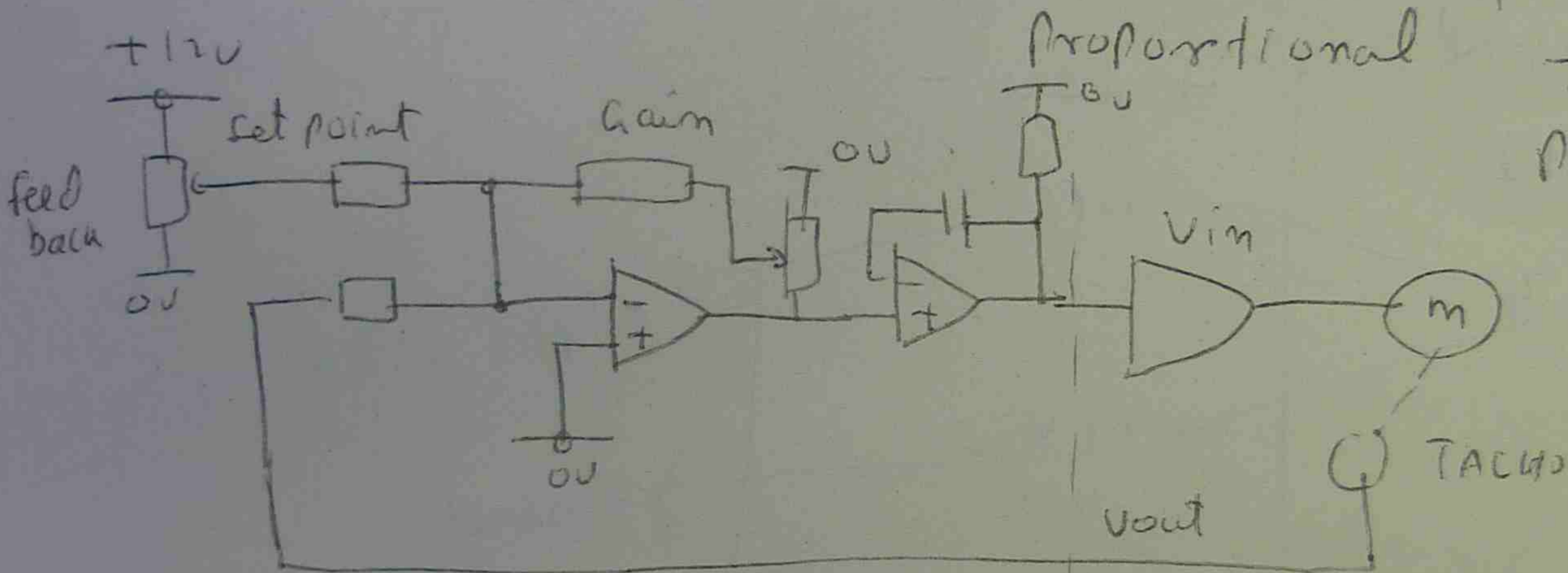
MOTOR PROPORTIONAL
+ INTEGRAL CONTROL



motor proportional + Integral control

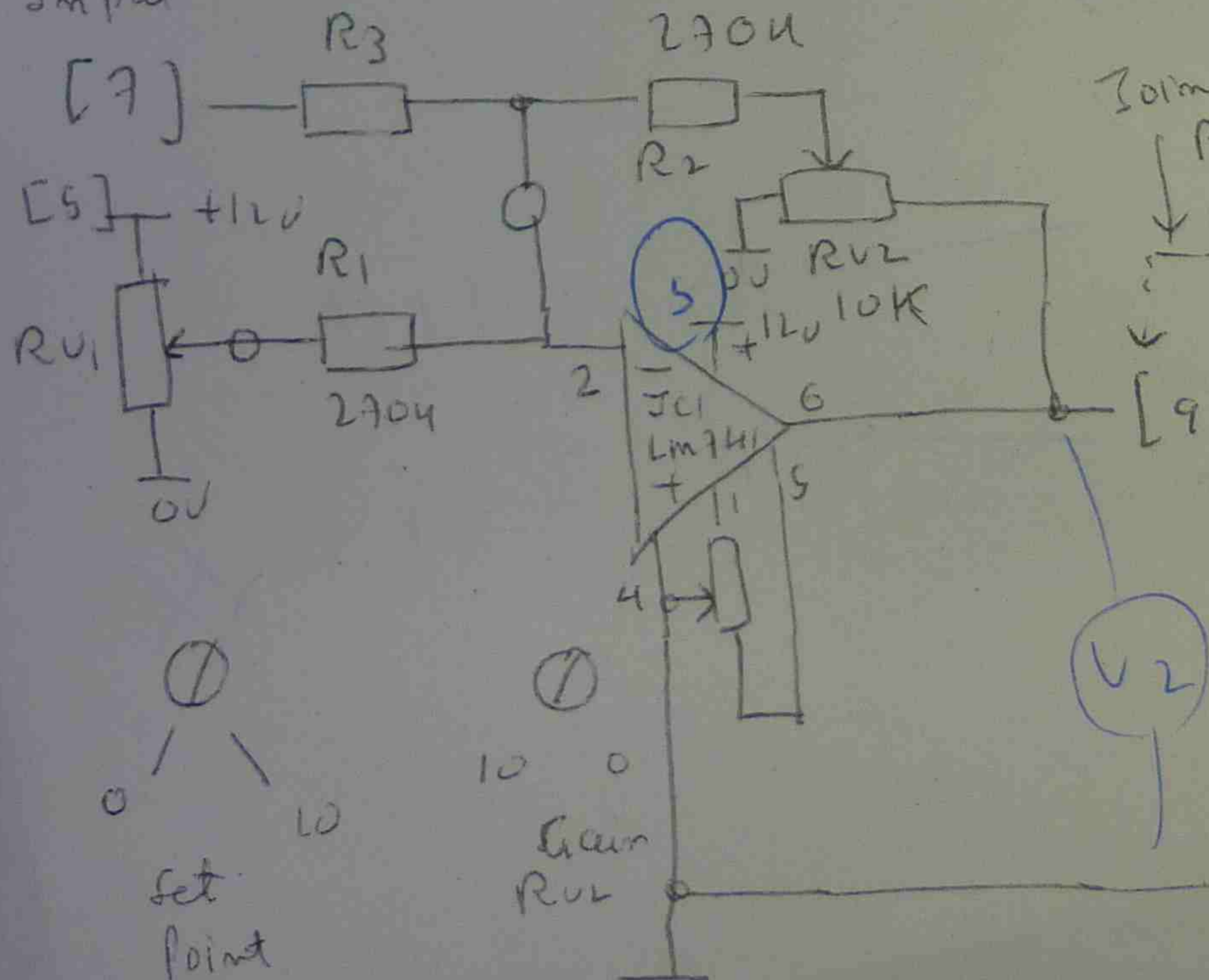


Total change in output = change due to Proportional + change due to Integral Proportion.



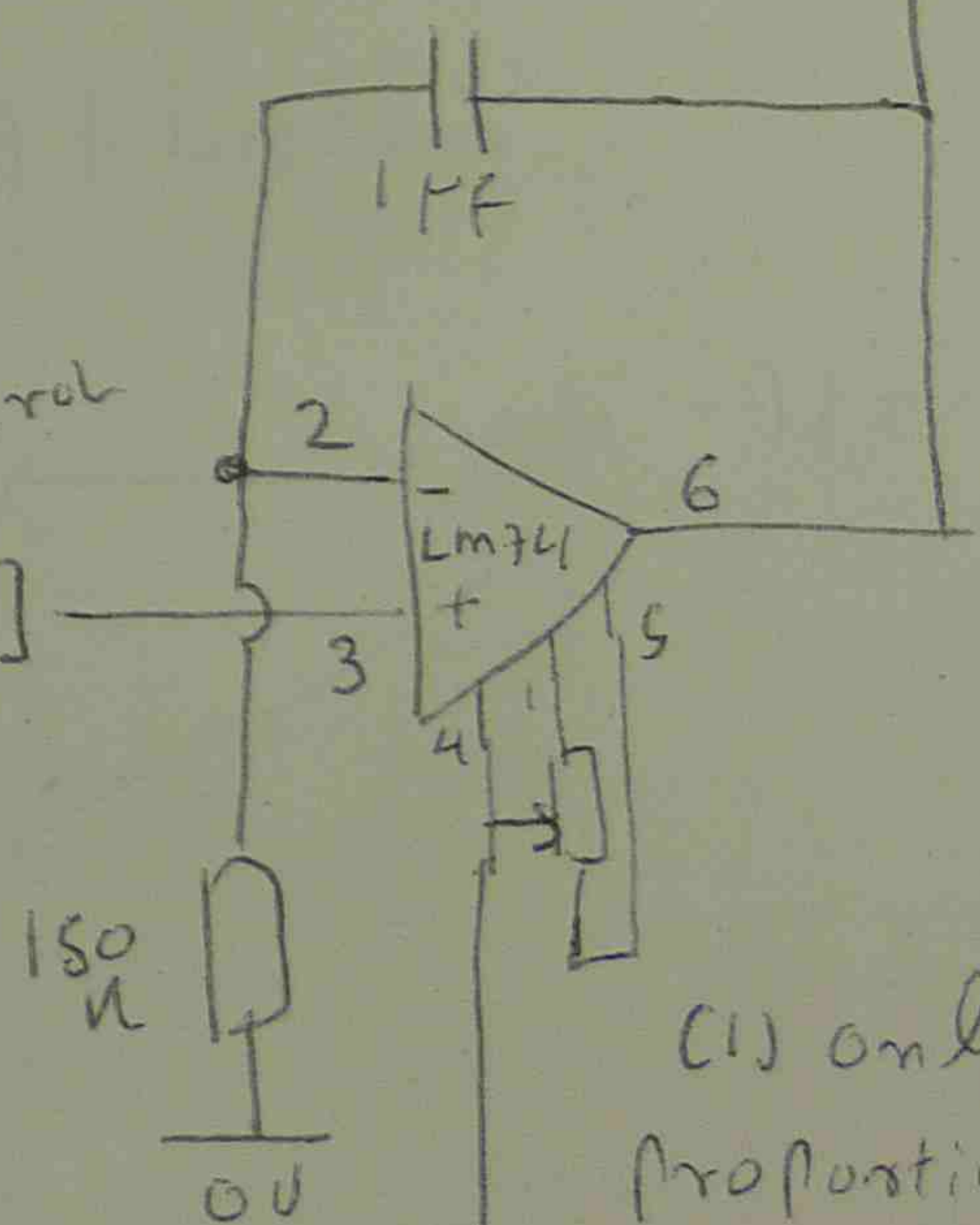
feedback input

Proportional



100nF for P+I control

Integral (21)



(1) only Proportional note the gain
(2) Proportional + Integral note the gain

$7 - \frac{1}{2} = T30-20 (V1)$
+12V -12V

(5) (3) APC3030

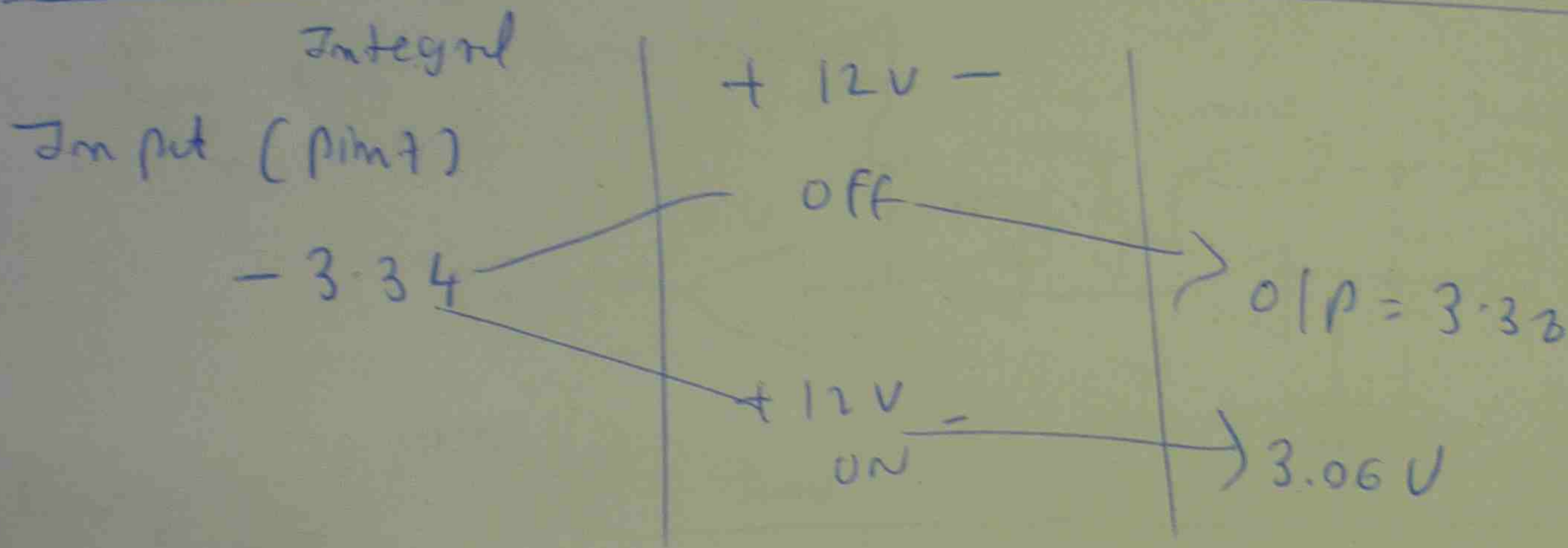
⓪ Off set null

⓪ Off set null

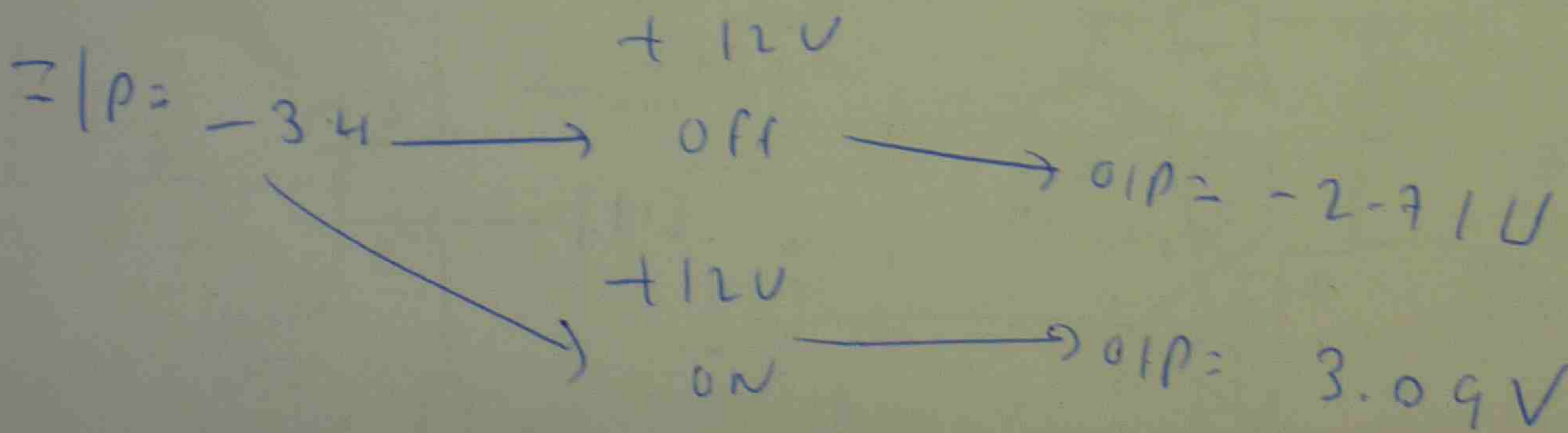
Only Proportional

Input -1.75 O/P = ~~1.11~~ 1.44

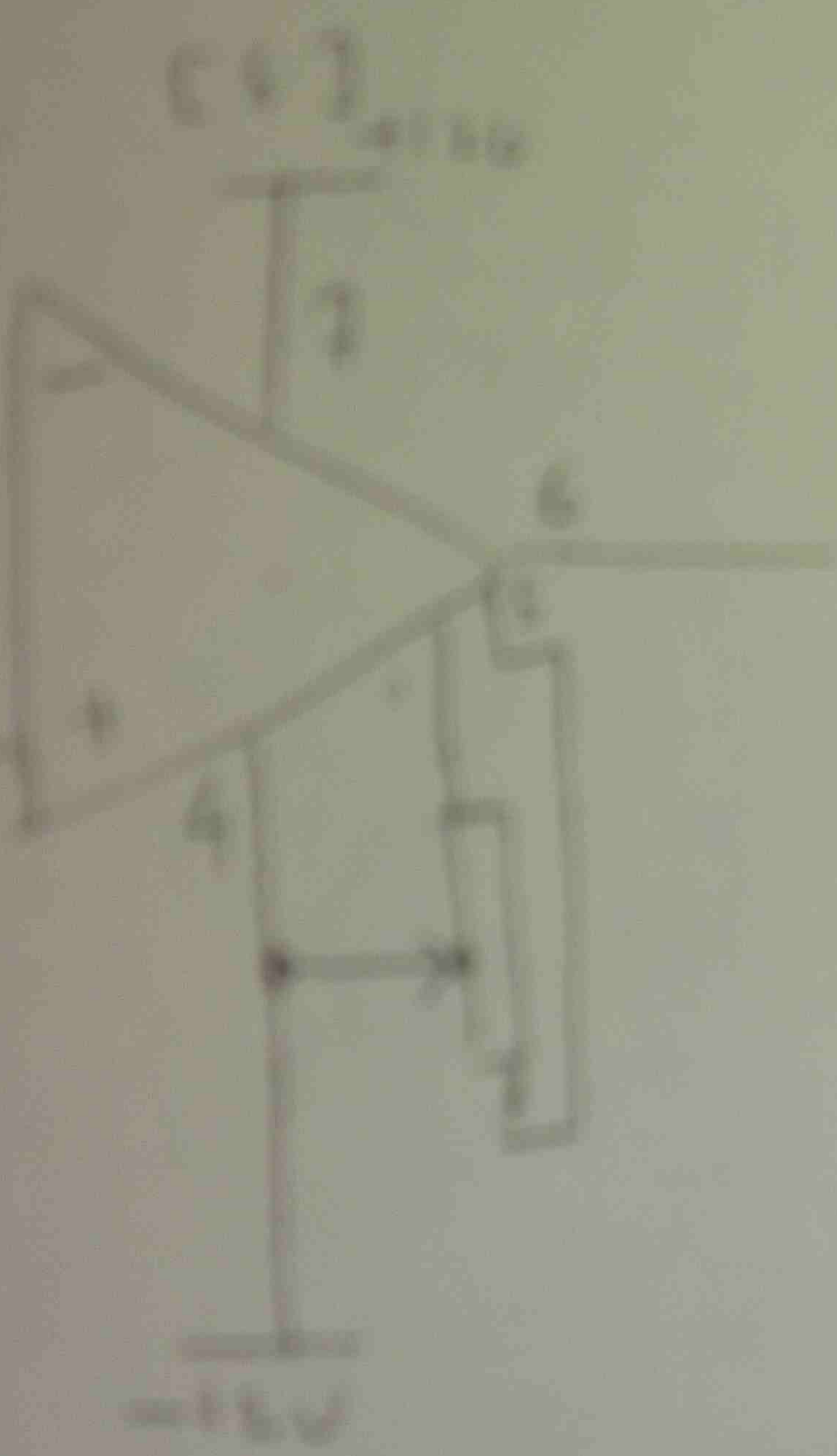
Proportional + Integral.



Integral + Proportional



#



3-0V

5V

Proposed

off

on

off

on

3-9

4-4

5-2

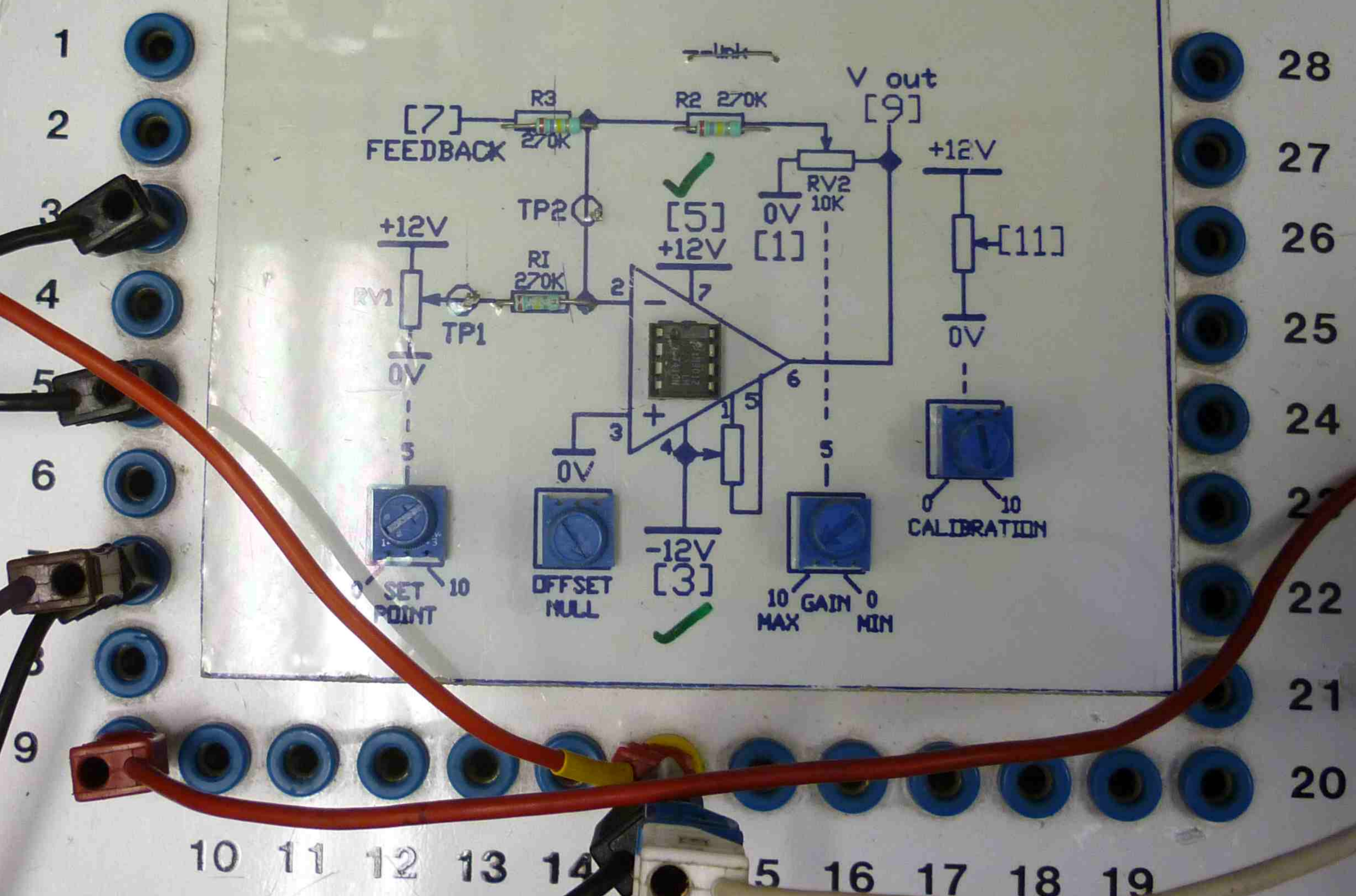
6-34V

without



SYDNEY INSTITUTE OF TECHNOLOGY
ELECTROTECHNOLOGY

MOTOR PROPORTIONAL CONTROL





APPLIED ELEC
B70549

STANDBY & TRIP
RESET
240V A.C.
240V A.C. REGULATED SUPPLY

0-50V
COMMON
240V A.C. REGULATED SUPPLY

POWER PROBE
V-D
V-V
V-V
D

DUAL TRACKING WITH 4V RATED
MODEL: DPC-3030

8.833

REGULATED POWER SUPPLY
T30-C

COARSE VOLTAGE
FINE VOLTAGE
CURRENT
CONTROL

AC AMPERE

+0.12

D-280V
VARIAC OUTPUT ONLY

240V G.P.O.

240V MAIN SWITCH

6.3V A.C.

110V A.C. 50~

240V A.C. REGULATED SUPPLY

0-50V COMMON

3 PHASE 415/240V SUPPLY

3 PHASE 415/240V SUPPLY

INDICATOR ON

HT STANDBY & TRIP
RESET

HT

OFF

ON

240V G.P.O.

240V MAIN SWITCH

SPEECH CIRCUIT

MAIN SWITCH

BREADBOARD CIRCUIT

+0.12

DC VOLTAGE

AC VOLTAGE

RESISTANCE

TEMPERATURE

POWER ON-OFF

REGULATED POWER SUPPLY TYPE T30-2C

DC VOLTS: 0 10 20 30

DC AMPERES: 0 5 15 2

COARSE VOLTAGE

FINE VOLTAGE

CURRENT CONTROL

PERINI COTT

MAINS

DIGITAL METER

+ 0.10

FUNCTION: OFF, VOLT, CURR, TEMP, FREQ

RANGE: 20, 200, 2000

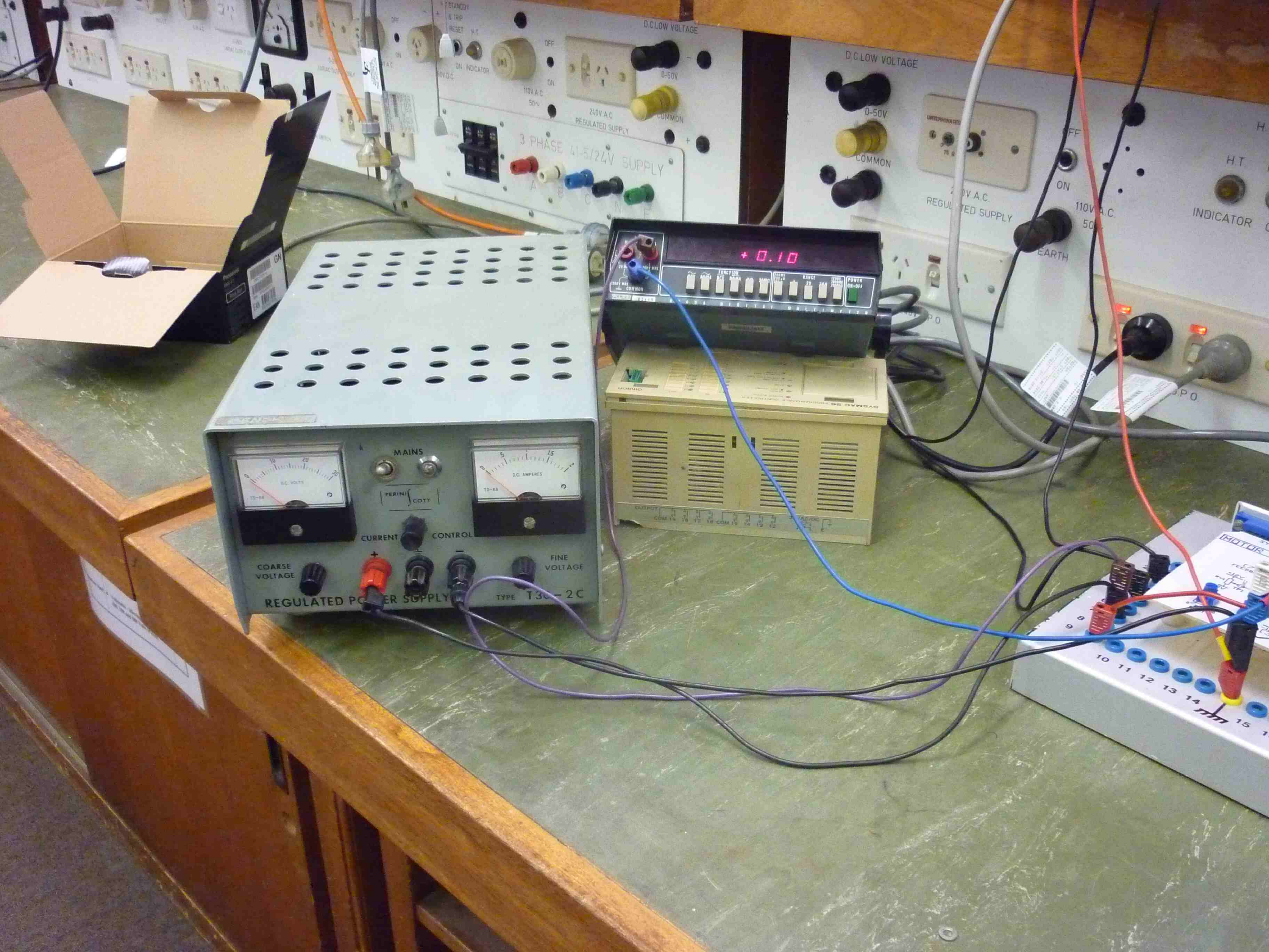
POWER ON-OFF

SYSTEM 80

OUTPUT COM 19 18 17 16 COM 15 14 13 12

MOTOR

10 11 12 13 14 15



0-50V
COMMON
240V A.C. REGULATED SUPPLY
110V A.C. 50~
3 PHASE 415/240V SUPPLY
A B C N E

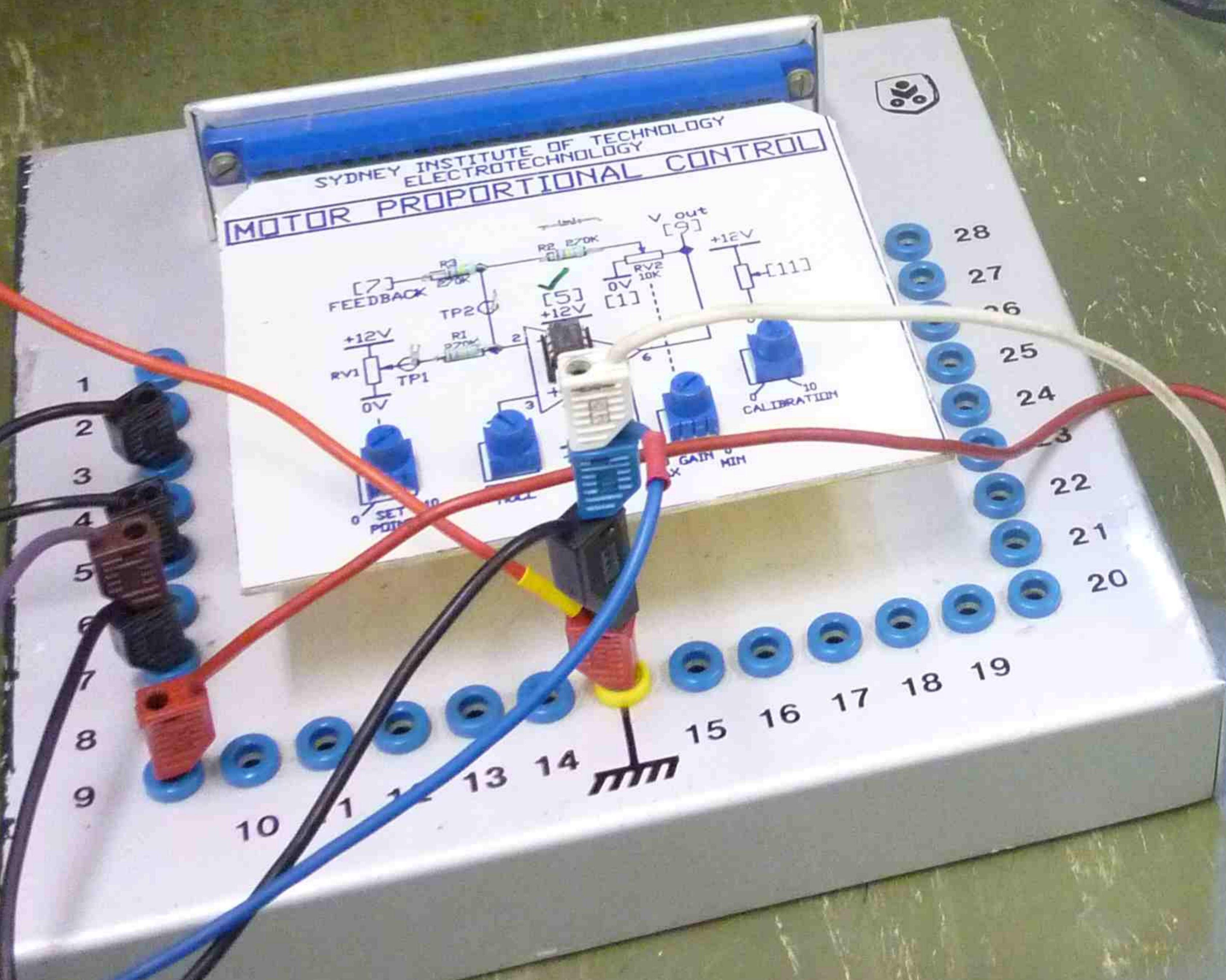
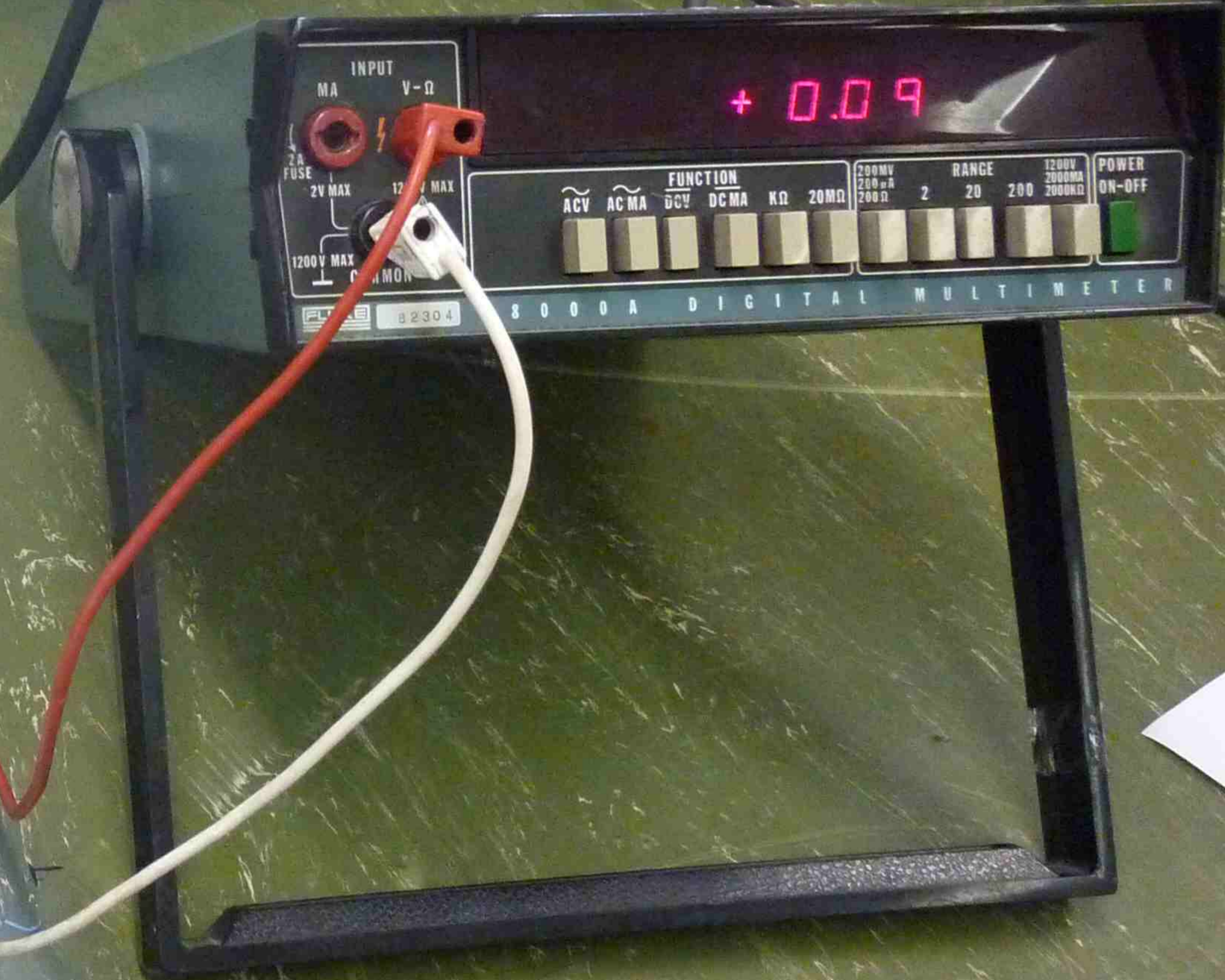
0-50V
COMMON
240V A.C. REGULATED SUPPLY
110V A.C. 50~
OFF ON
ARTH

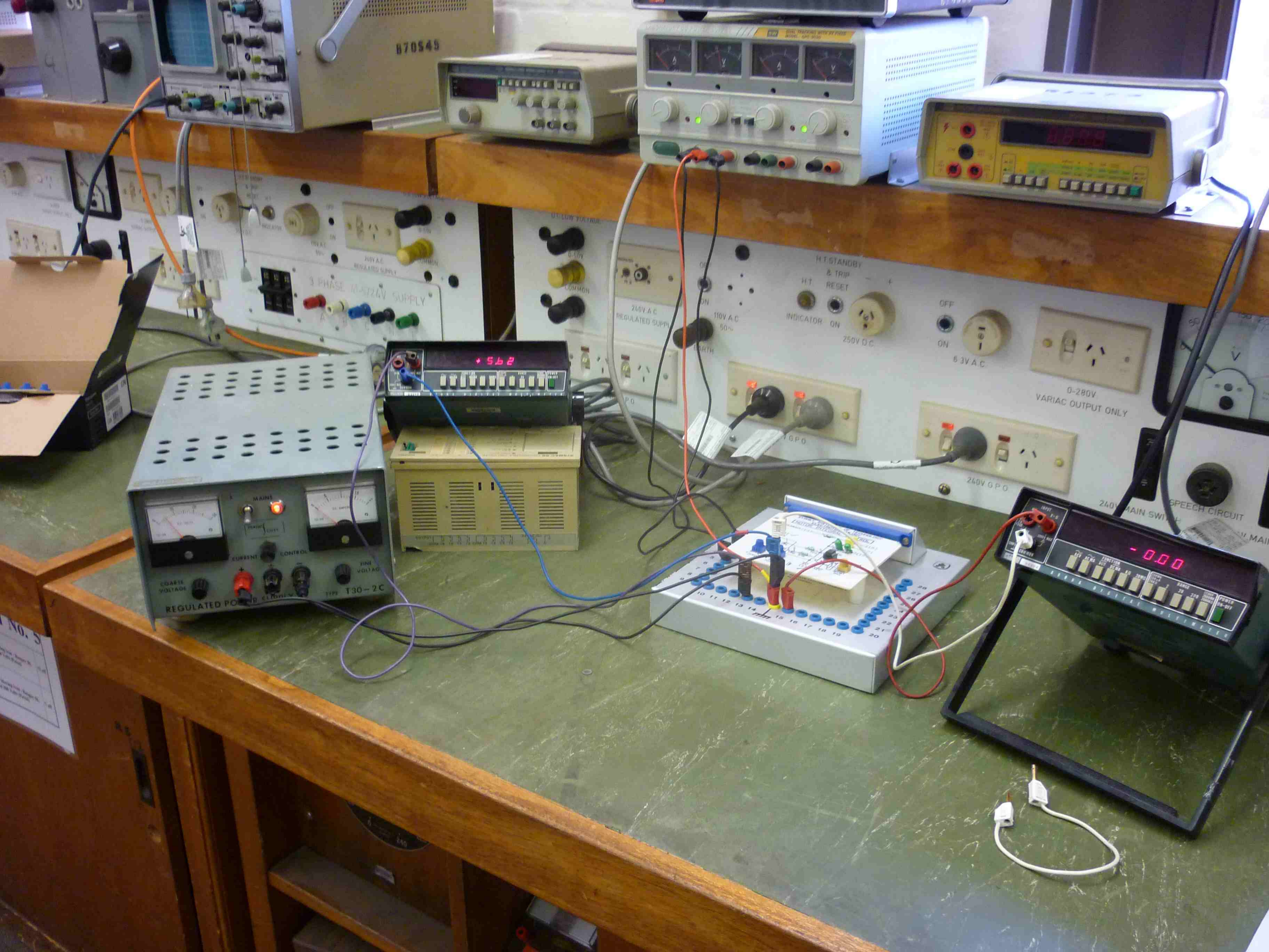
H.T. STANDBY & TRIP
H.T. RESET
INDICATOR ON
250V D.C.

83448
DIGITAL MULTIMETER
FUNCTION: ACV, ACMA, DCV, DCMA, NO, 20MΩ
RANGE: 200, 20, 2000, 20000, 200000
POWER ON-OFF
SYSMAC S6 PROGRAMMABLE CONTROLLER
OMRON

DC AMPERES
FINE ADJUSTMENT

SYDNEY INSTITUTE OF ELECTROTECHNOLOGY
MOTOR PROPORTIONAL
[7] FEEDBACK
+12V
TP2
TP1
0V
[5] +12V





870549

3 PHASE 115/220V SUPPLY

240V A.C. REGULATED SUPPLY

HT STANDBY & TRIP

HT RESET

INDICATOR ON

250V D.C.

OFF

ON

6.3V A.C.

0-280V VARIAC OUTPUT ONLY

240V G.P.O.

240V MAIN SWITCH

SPEECH CIRCUIT

MAIN

REGULATED POWER SUPPLY TYPE T30-2C

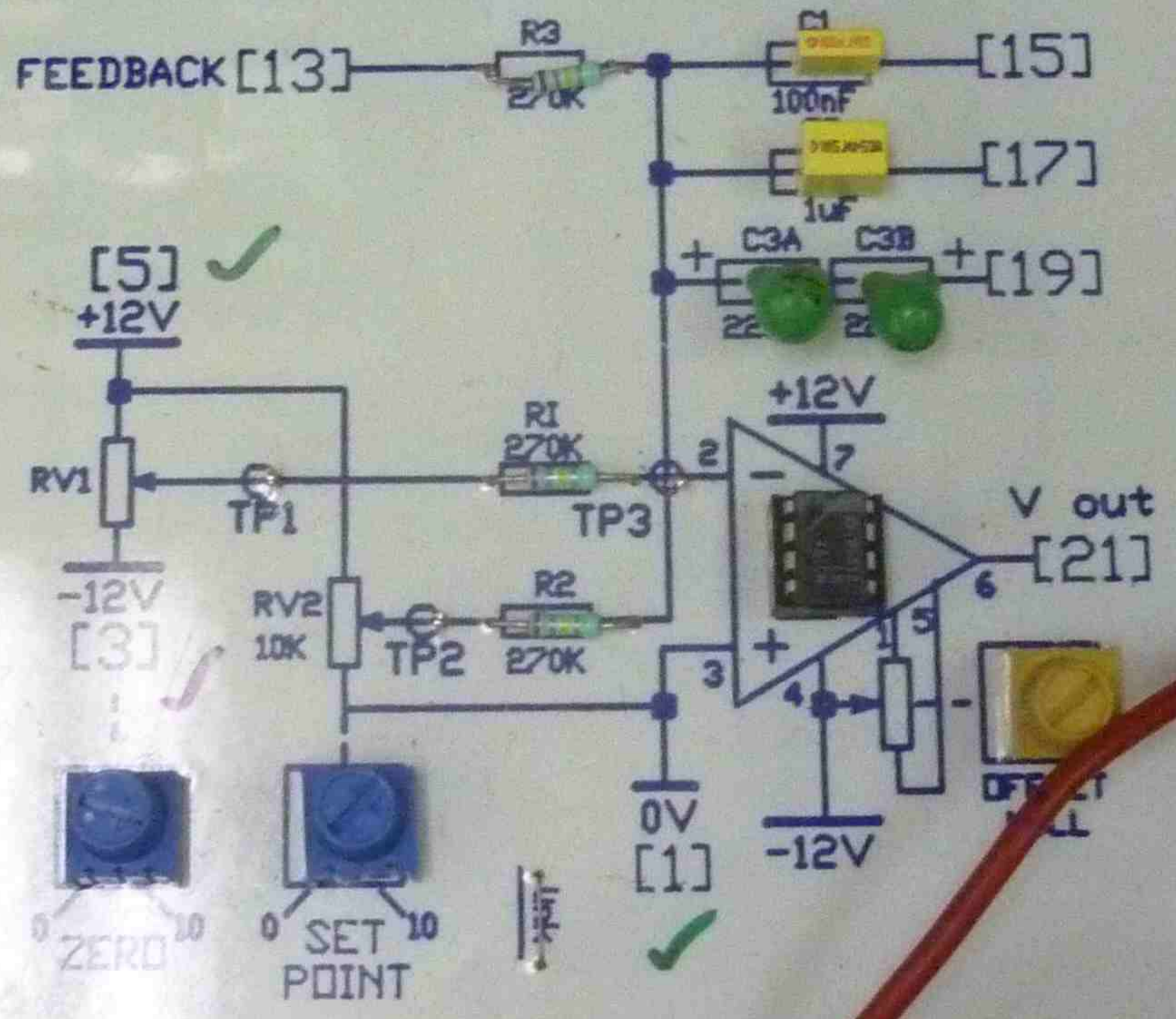
-0.00

NO. 5



SYDNEY INSTITUTE OF TECHNOLOGY
ELECTROTECHNOLOGY

MOTOR INTEGRAL CONTROL



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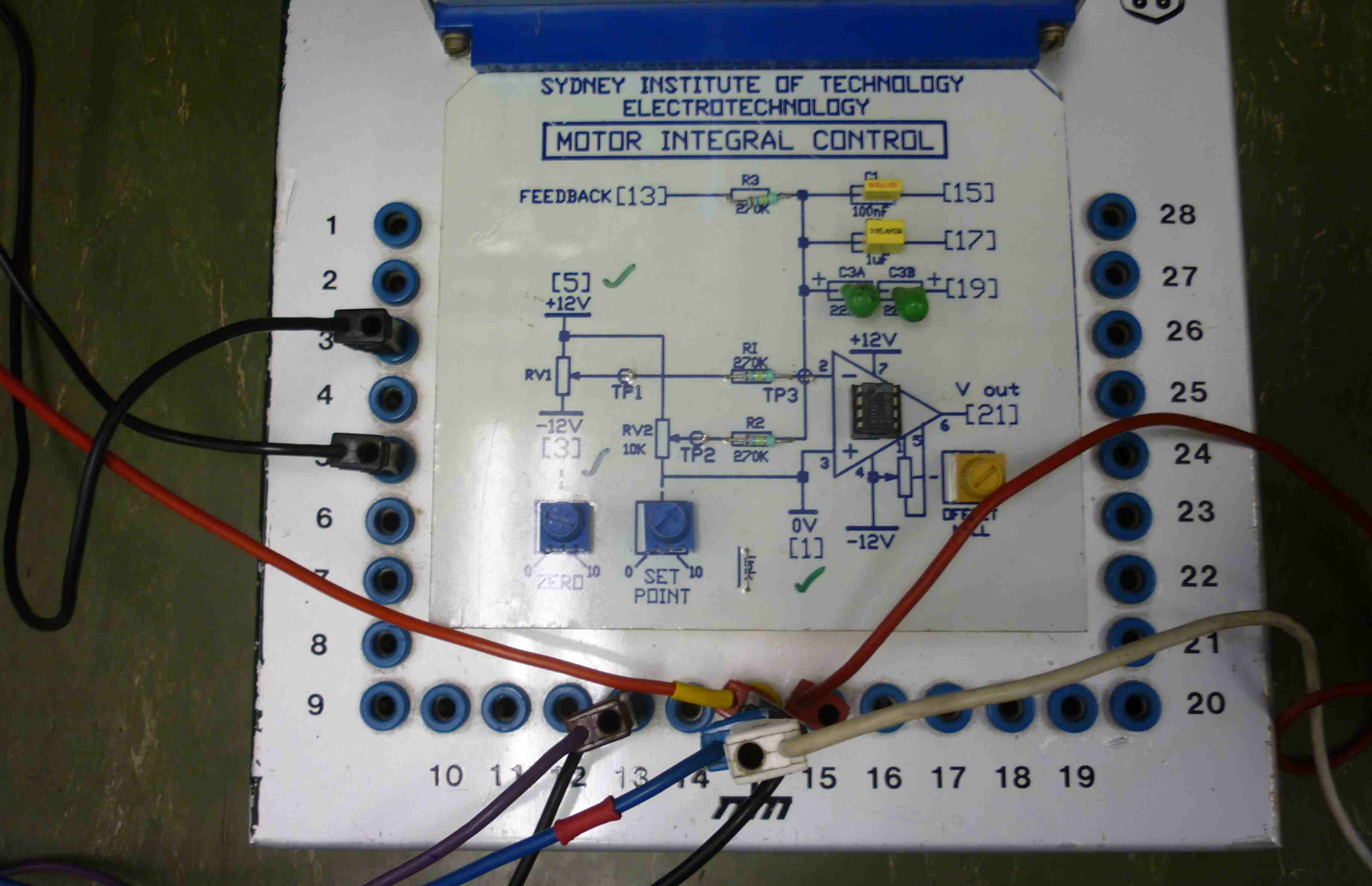
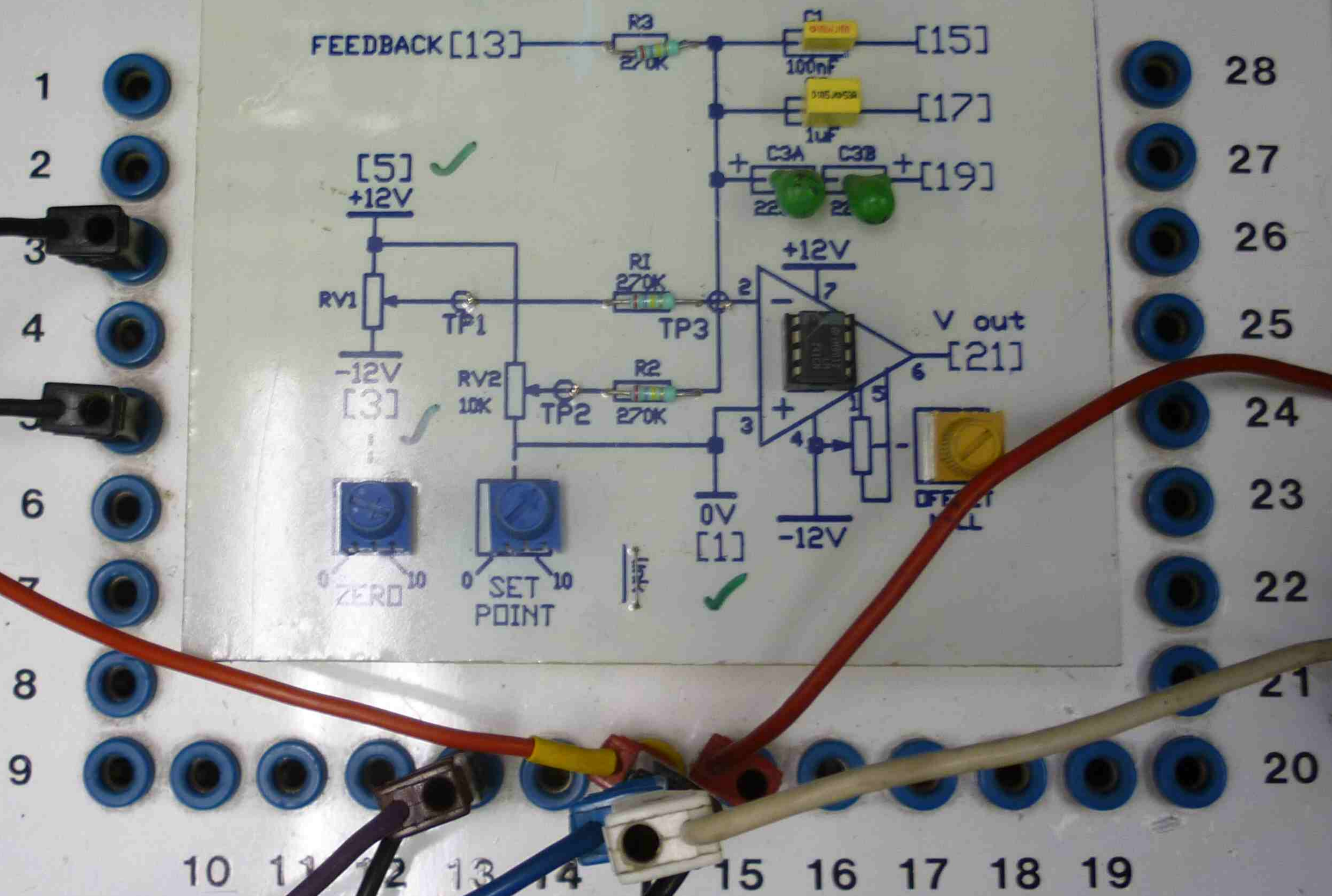
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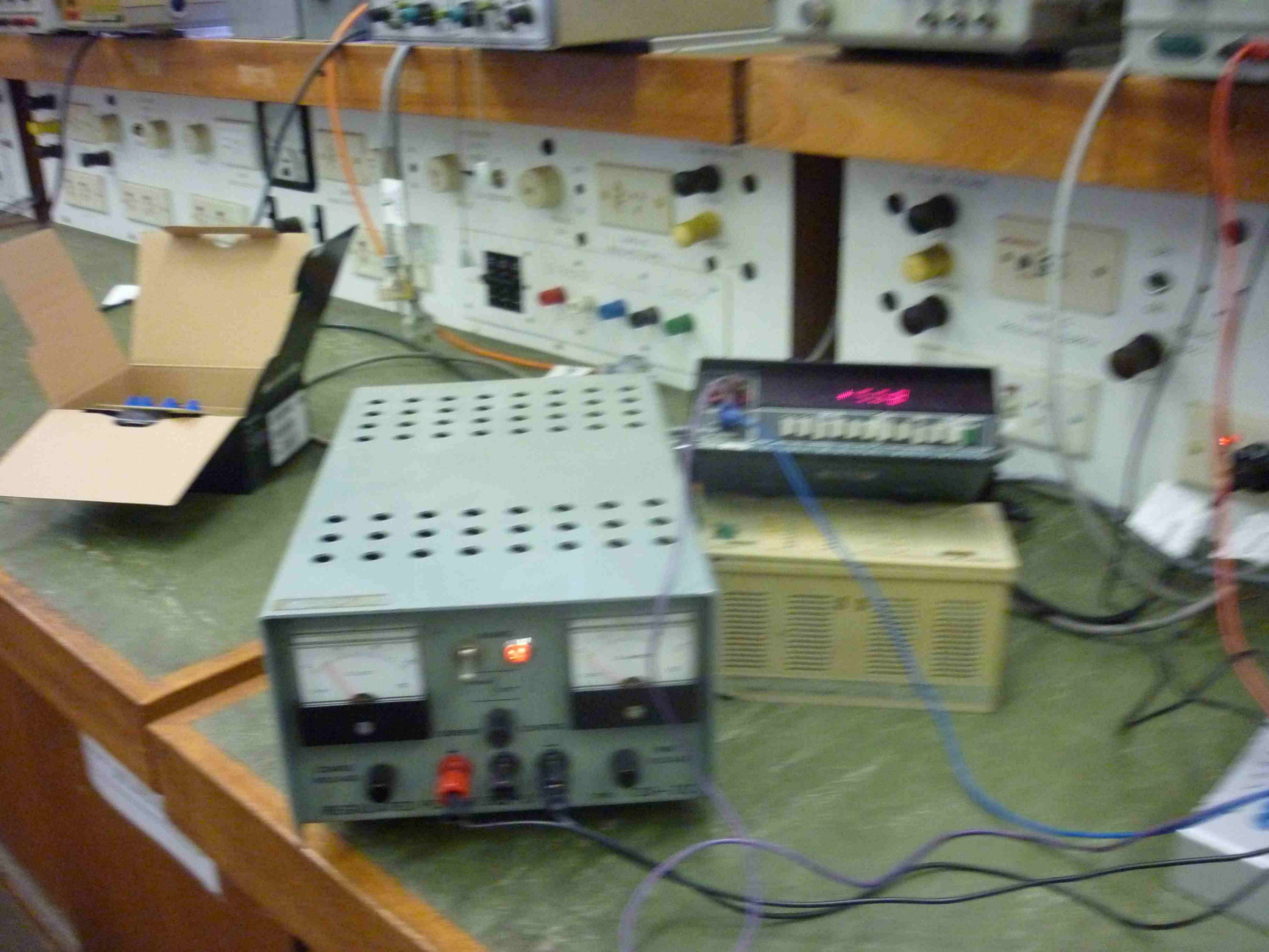




SYDNEY INSTITUTE OF TECHNOLOGY
ELECTROTECHNOLOGY

MOTOR INTEGRAL CONTROL





Signal generator with two meters and a red indicator light.

Network switch with a red waveform on its display.

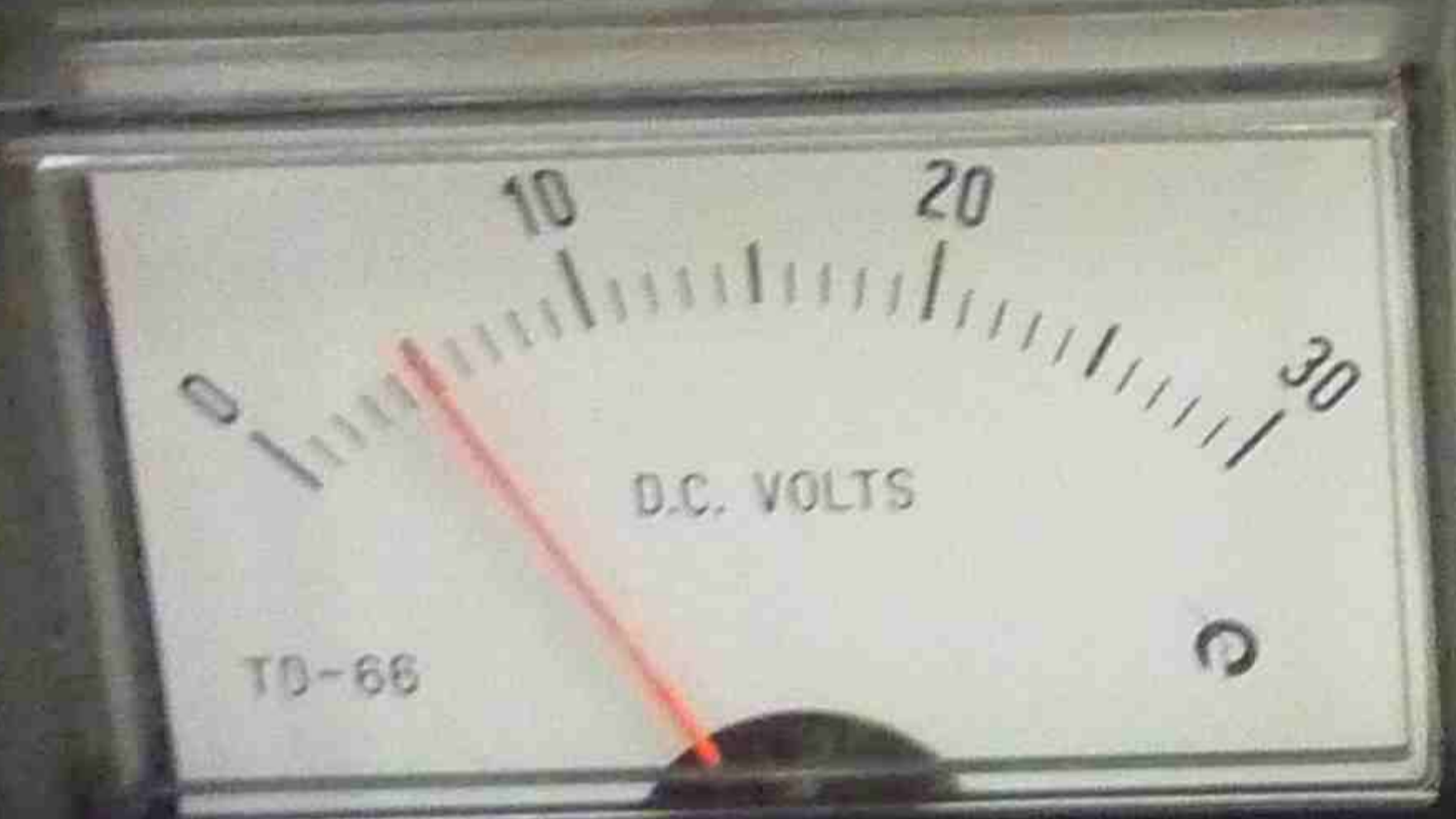
Yellow power supply unit.

Open cardboard box containing blue components.

Rack of various electronic instruments in the background.



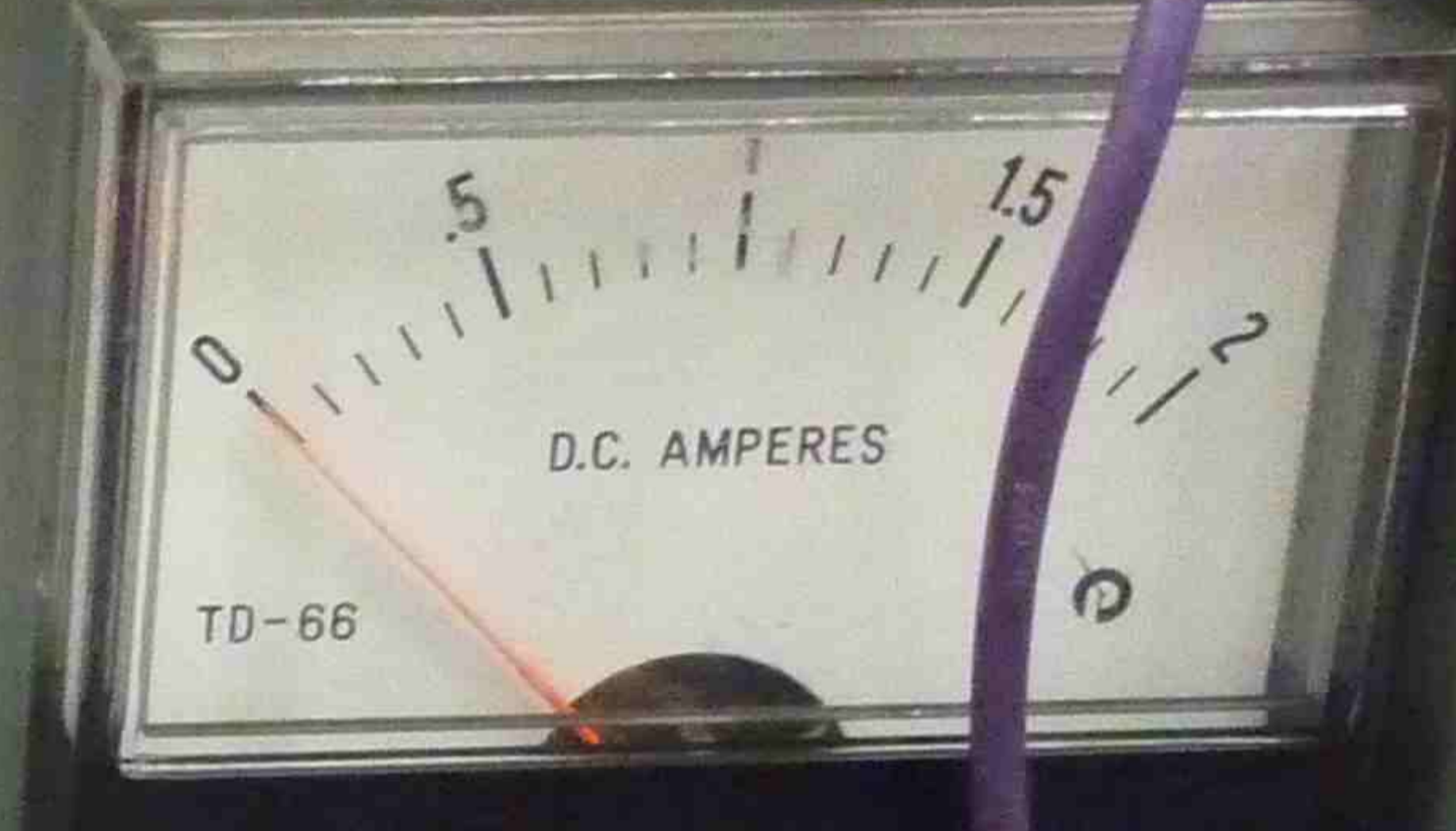
PERINI AND SCOTT (A/ASIA) PVT. LTD.



MAINS

PERINI SCOTT

A toggle switch is positioned to the left of a glowing orange indicator light. Below the switch and light, the brand name 'PERINI SCOTT' is printed in a stylized font.



CURRENT CONTROL

A black rotary knob with a textured surface, used for adjusting the current output of the power supply.

COARSE VOLTAGE

A black rotary knob with a textured surface, used for adjusting the coarse voltage output.

+

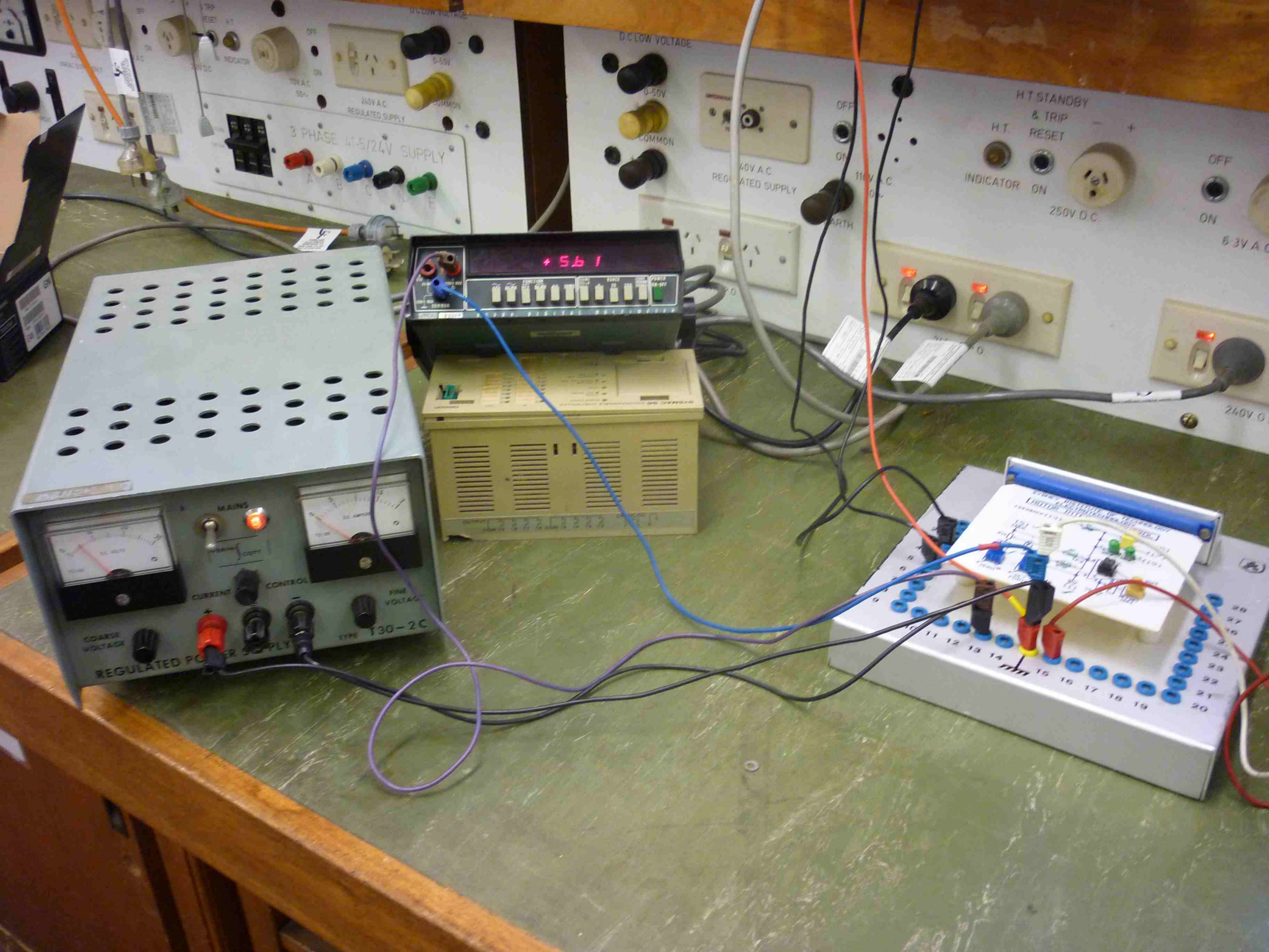
-

Two output terminals are shown: a red terminal with a '+' sign and a black terminal with a '-' sign. A blue cable is plugged into the red terminal, and a purple cable is plugged into the black terminal.

FINE VOLTAGE

A black rotary knob with a textured surface, used for fine-tuning the voltage output.

REGULATED POWER SUPPLY TYPE T30-2C



REGULATED POWER SUPPLY
TYPE T30-2C

+5.61

11 12 13 14 15 16 17 18 19 20

3 PHASE 415/240V SUPPLY

D.C. LOW VOLTAGE
0-50V
COMMON

40V A.C.
REGULATED SUPPLY

HT STANDBY & TRIP
& TRIP
H.T. RESET
INDICATOR ON
250V D.C.

OFF
ON
8.3V A.C.

240V G

LIBSON ELECTRONICS PTY LTD
DUAL TRACKING WITH 5V FIXED
MODEL: GPC-3030

Four analog dials for current (A) and voltage (V) measurements. Control knobs for range and function selection. Two green LEDs are illuminated.

Digital multimeter with a red LED display showing '0.000'. Includes various input ports and control buttons.

Large piece of electronic equipment with a prominent red knob and a black knob on the top right. A handwritten 'J' is visible on the front panel.

HT STANDBY & TRIP - +
HT RESET
INDICATOR ON

240V A.C. REGULATED SUPPLY
110V A.C. 50~
EARTH

250V D.C.
6.3V A.C.
0-280V VARIAC OUTPUT ONLY

0-280V VARIAC OUTPUT ONLY
6.3V A.C.
250V D.C.

240V G.P.O.
240V MAIN SWITCH
240V MAIN SWITCH
240V G.P.O.

SPEECH CIRCUIT

Front panel of a power supply unit featuring multiple outlets (240V A.C. REGULATED SUPPLY, 110V A.C. 50~, 250V D.C., 6.3V A.C., 0-280V VARIAC OUTPUT ONLY), switches (HT STANDBY & TRIP, HT RESET, INDICATOR ON, 240V MAIN SWITCH), and a meter (SPEECH CIRCUIT).

Digital multimeter with a red LED display showing '5.55'. Includes a 'POWER ON-OFF' switch and various function buttons.

SYDNEY INSTITUTE OF TECHNOLOGY
ELECTROTECHNOLOGY
MOTOR INTEGRAL CONTROL

Circuit board on a breadboard with various components including resistors, capacitors, and integrated circuits. Wires are connected to the breadboard's terminals. A schematic diagram is visible on the board.

Digital multimeter with a red LED display showing '-0.01'. Includes a 'POWER ON-OFF' switch and various function buttons.

without
+12V

pin 15 - 100 ~~pf~~ mF

~~IIP~~ ~~0~~ → 9V
 OIP 0.01V → 0V

with
+12V

IIP @ V

OIP
0

- 1 output go back too
- 2 0.02 → 0
- 3 ————— 0
- 4 —————→ 0
- 5 —————→ 0

pin 17 - 1PF
Integ

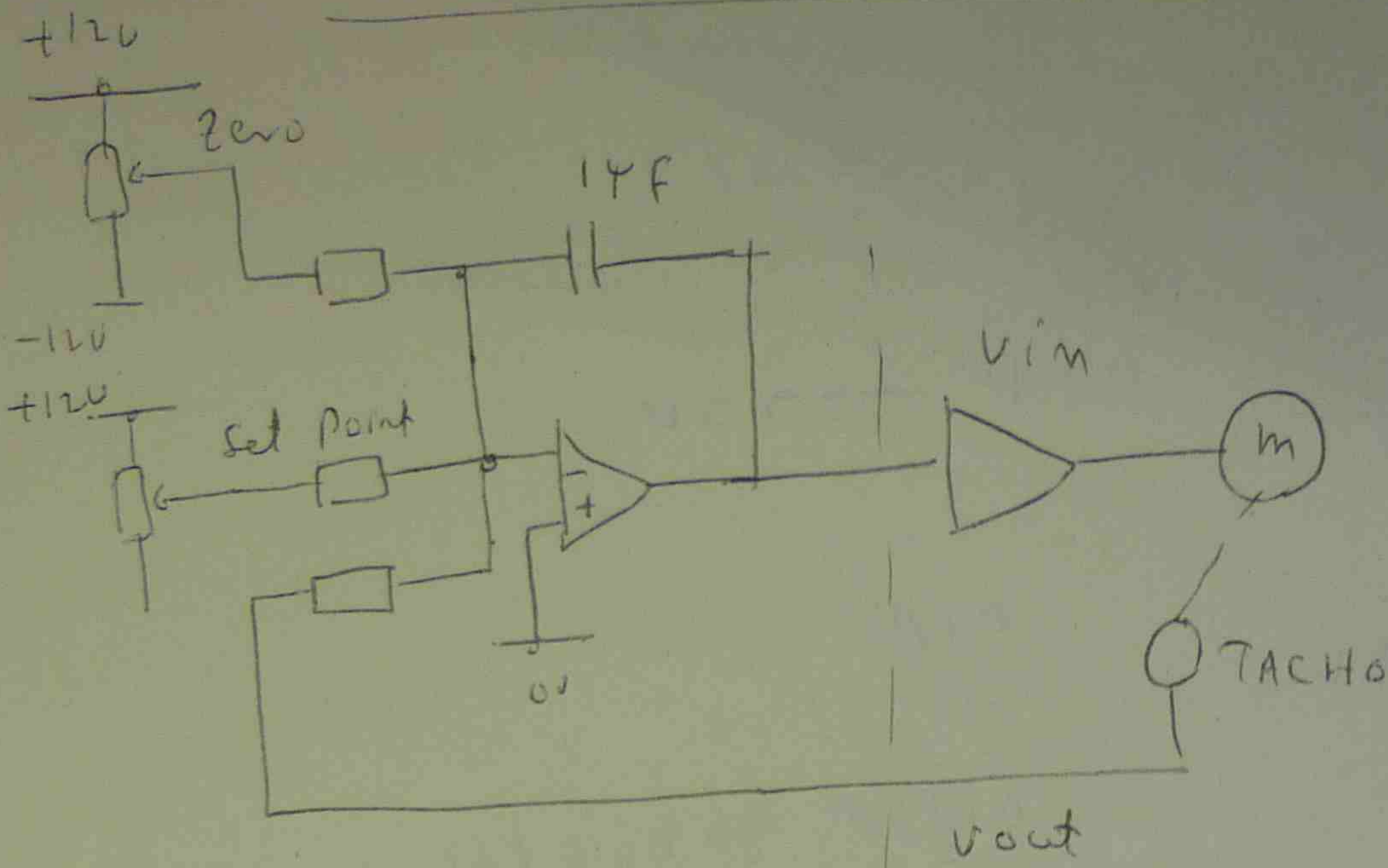
IIP = 5 ——— OIP 1.22 → 0

pin 19 44PF

IIP 5.65 — OIP ~~5.6~~ 5-6
gradually
back to zero.

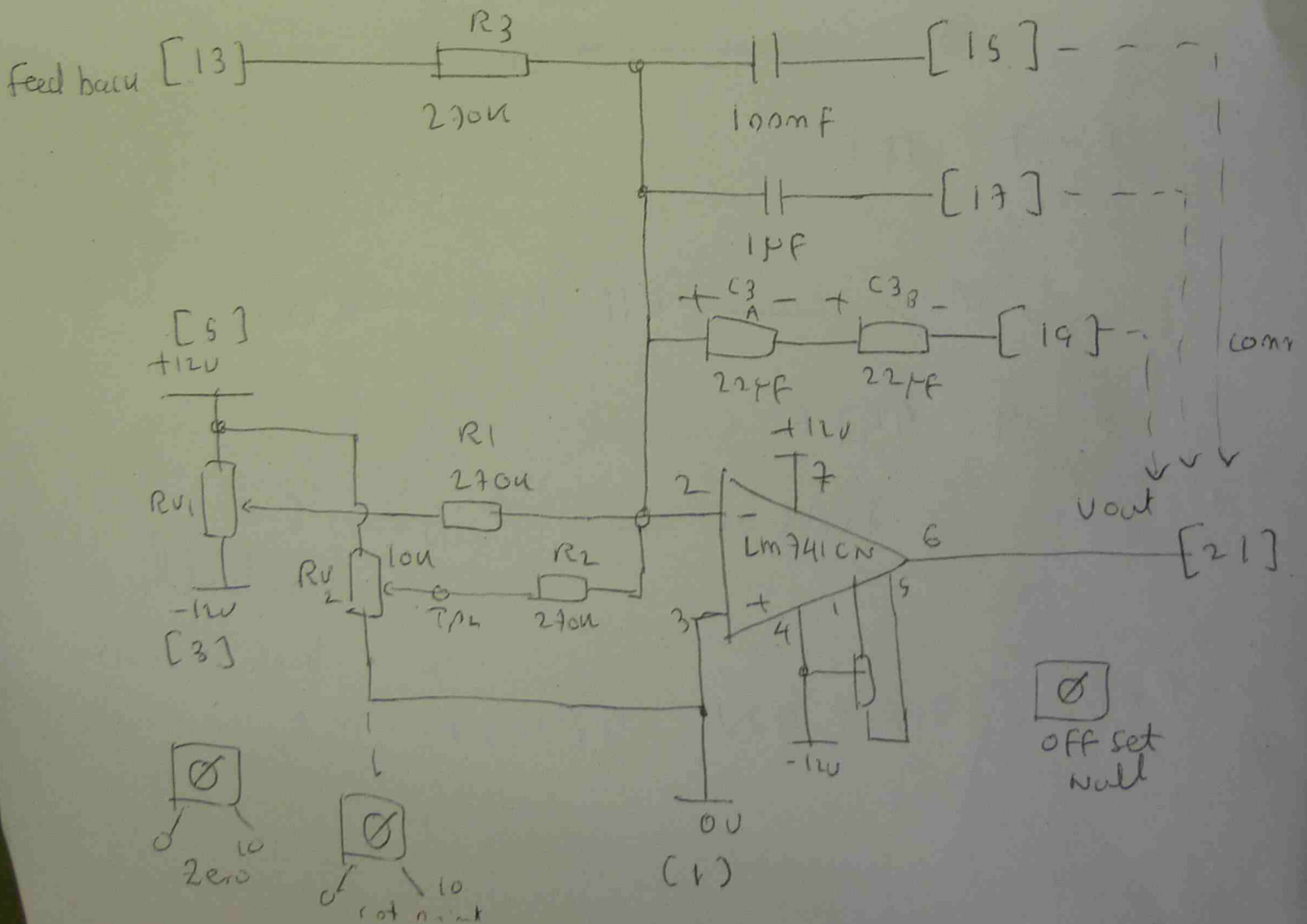
pin 18 IIP 2.0N OIP ~~5.0~~ 5.0V

Motor Integral control

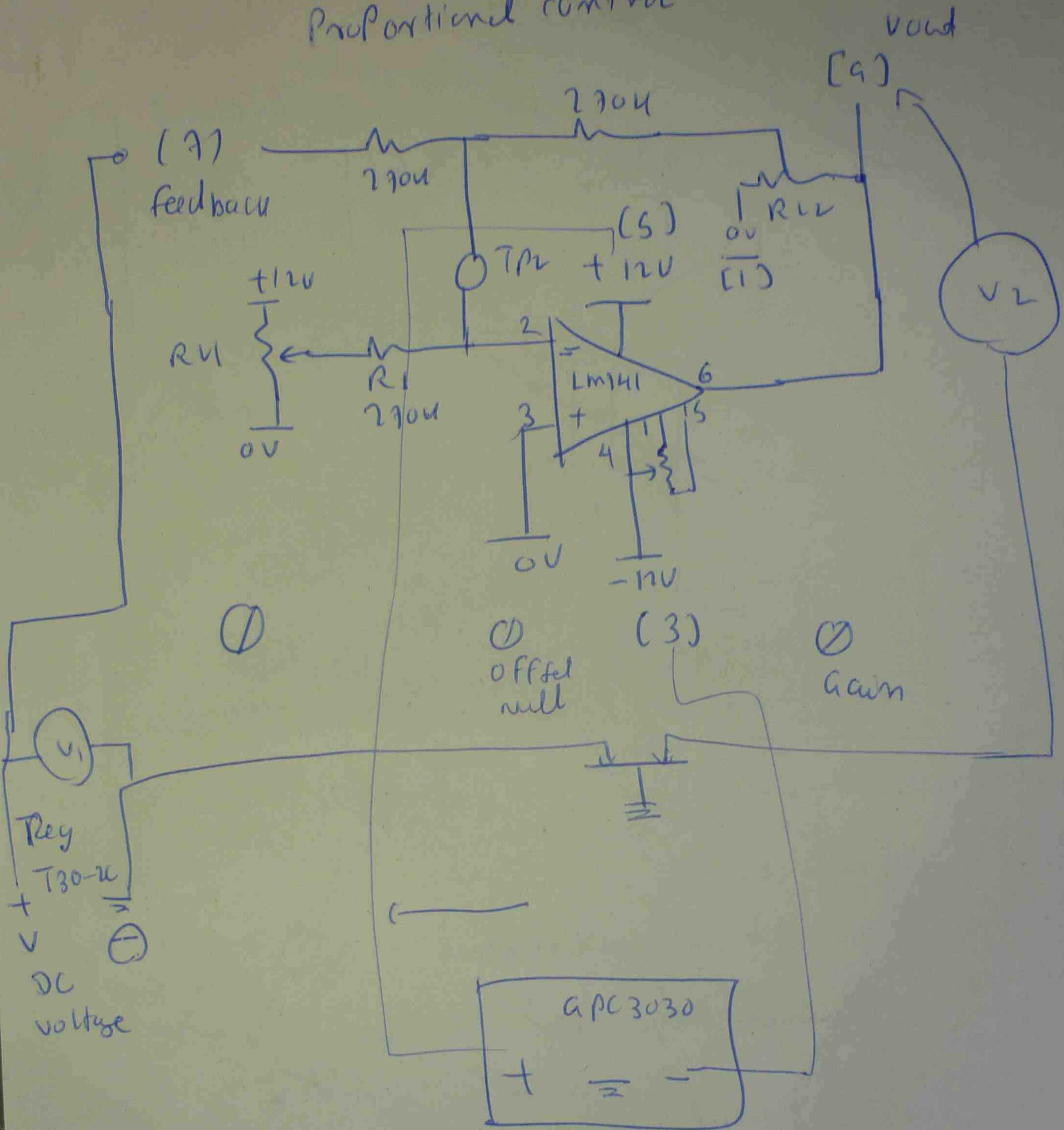


set the speed. provide feed back
~~note~~ - observe output

change capacitor - provide feed back - observe output



Proportional control



T30-2C - 0V

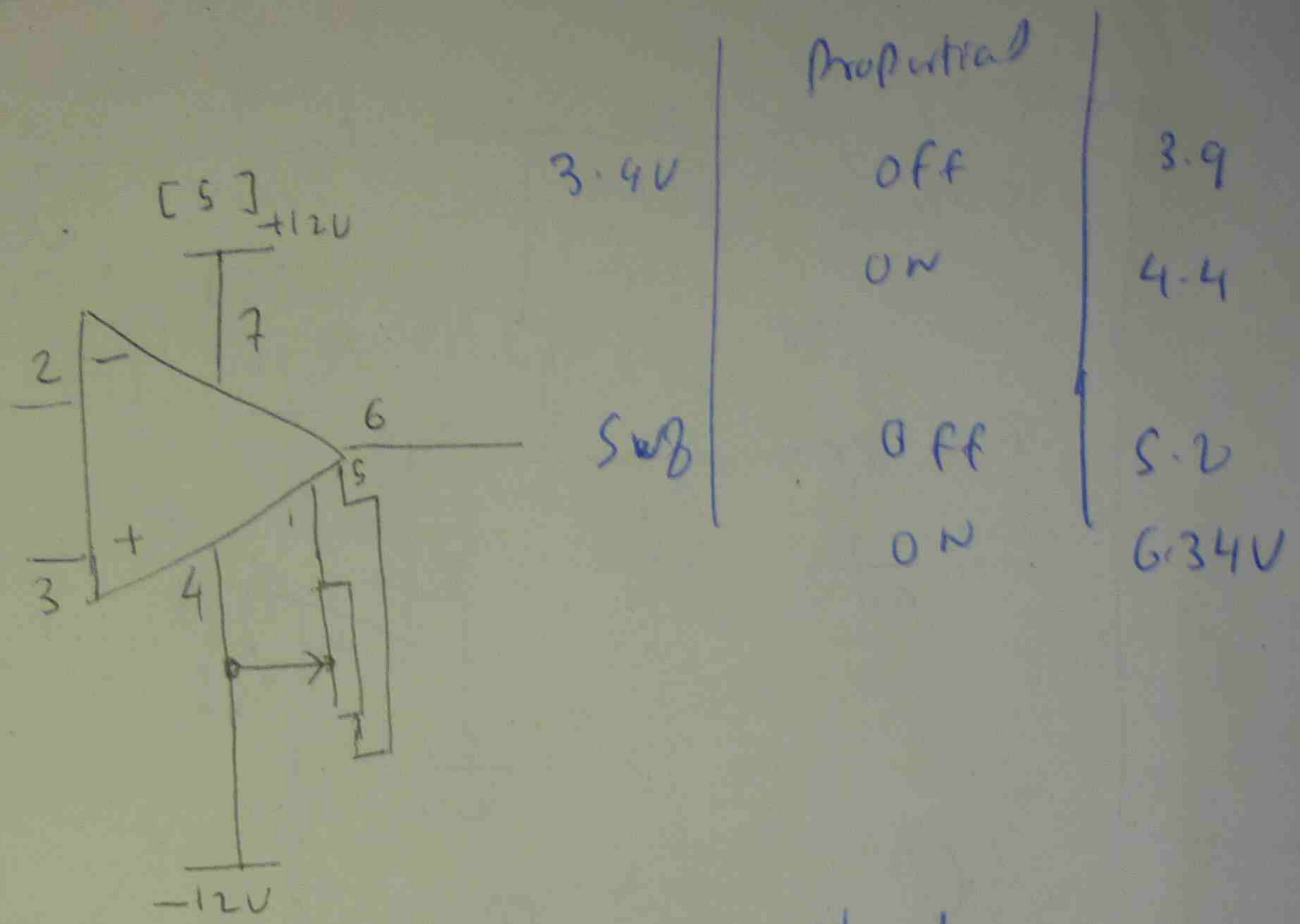
APC3030 = 12V

(7) feedback
 $I_{input} = +1.55$
 V_2 } offset = -1.36
 set point 1.24

	1st	2nd
3IP 1.74	0.77	1.24
2	1.9	1.24
1.22	1.76	1.24
3IP chase \rightarrow O/P = 1.24		

motor proportional control

LM 741



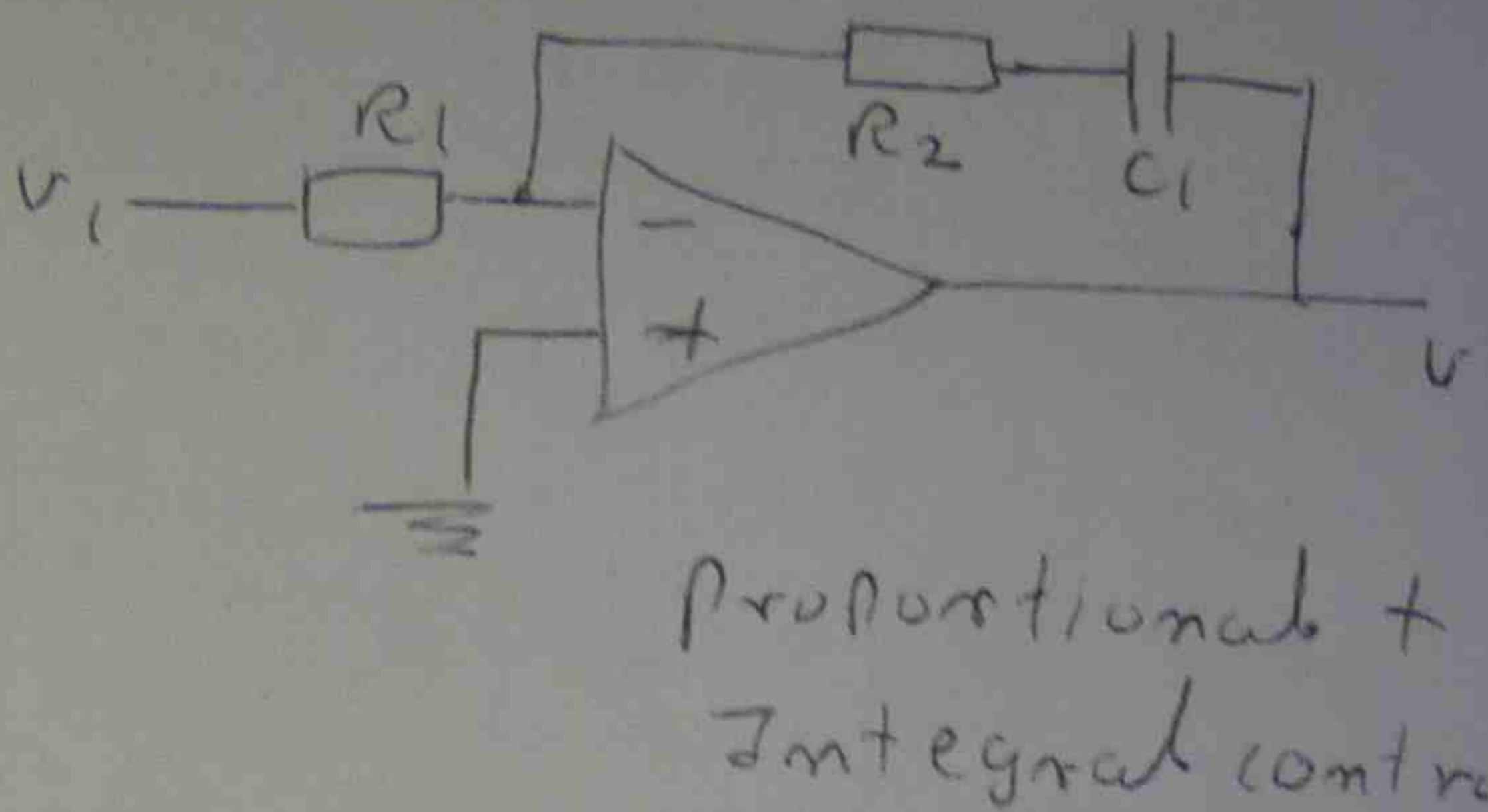
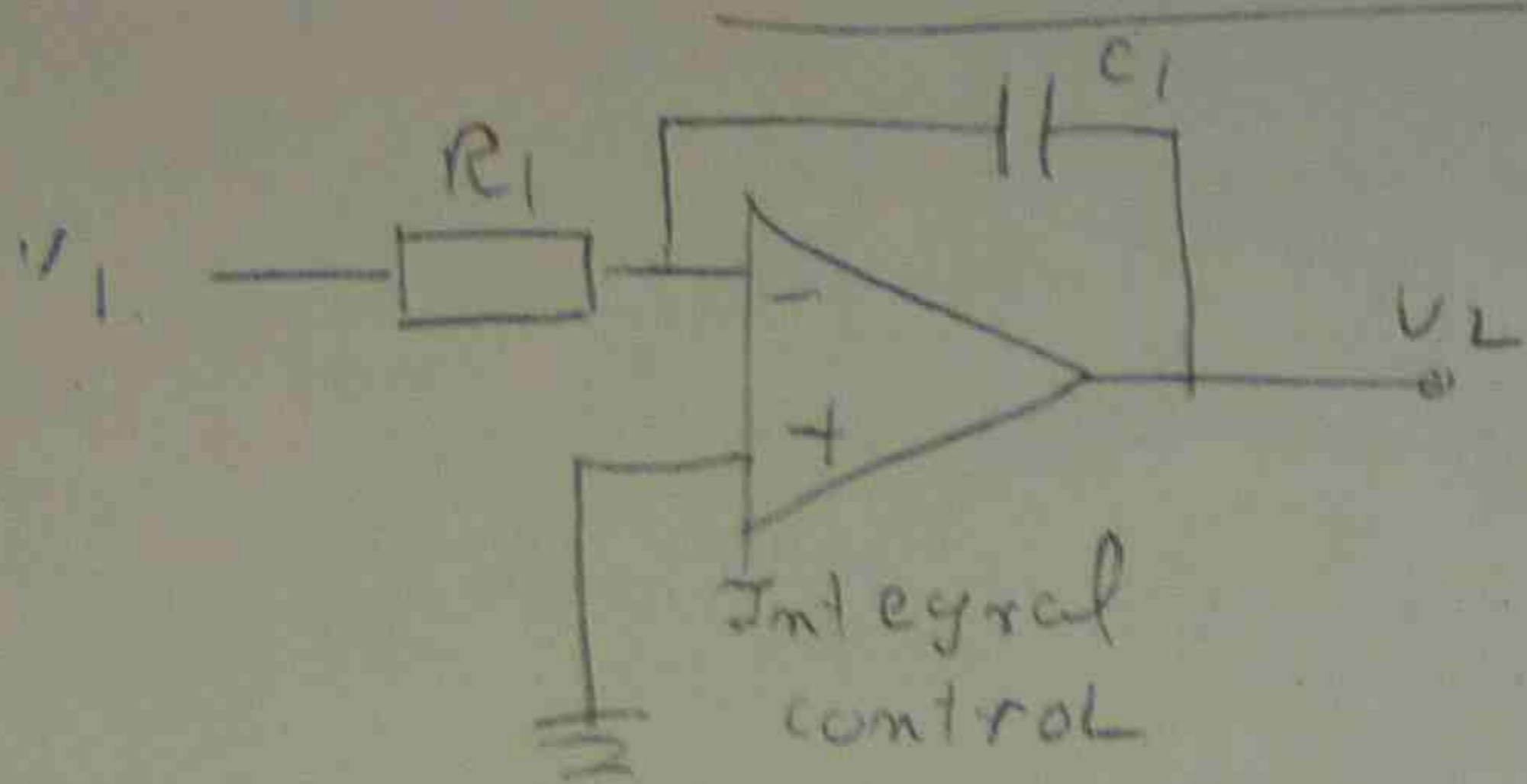
(3)

without

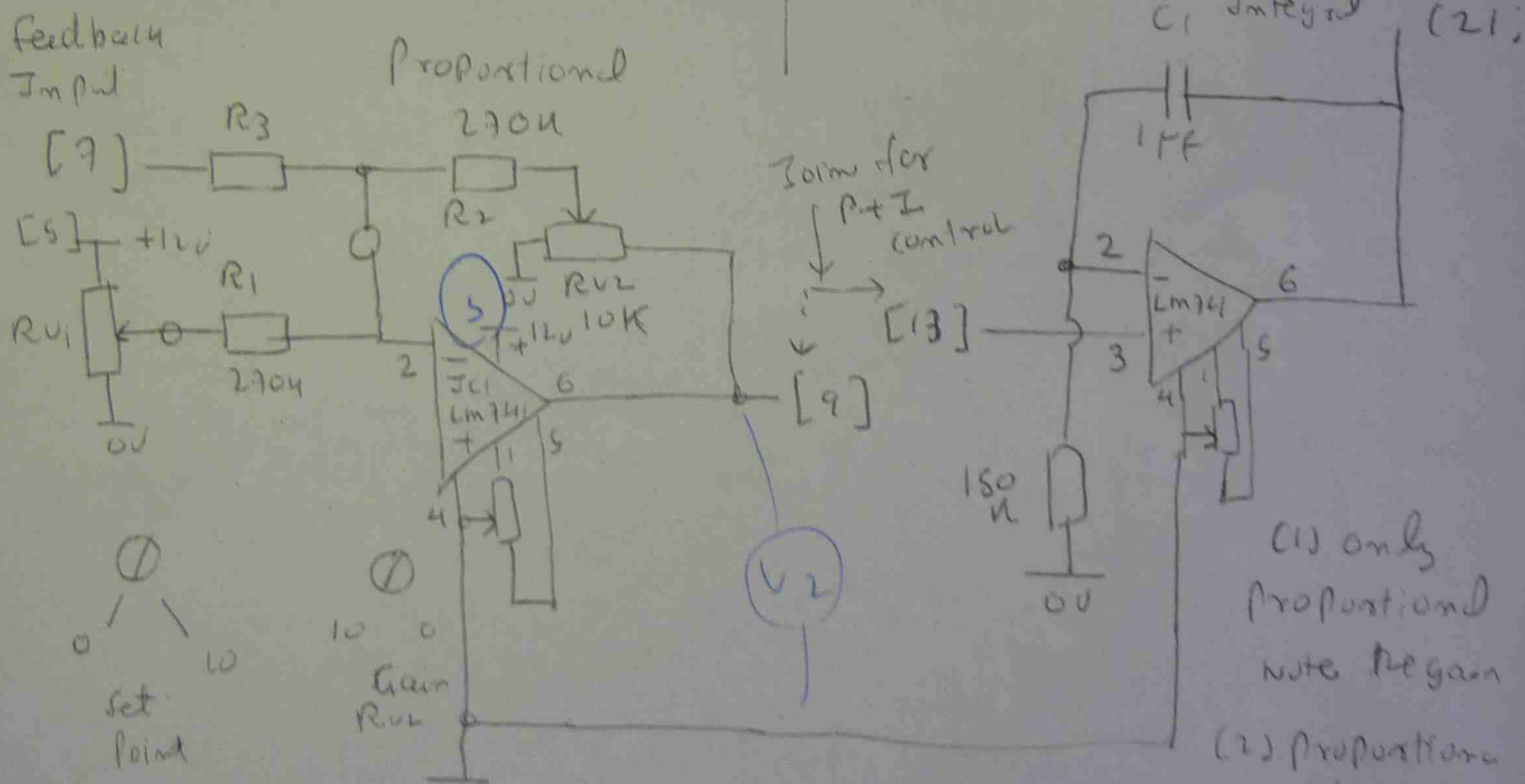
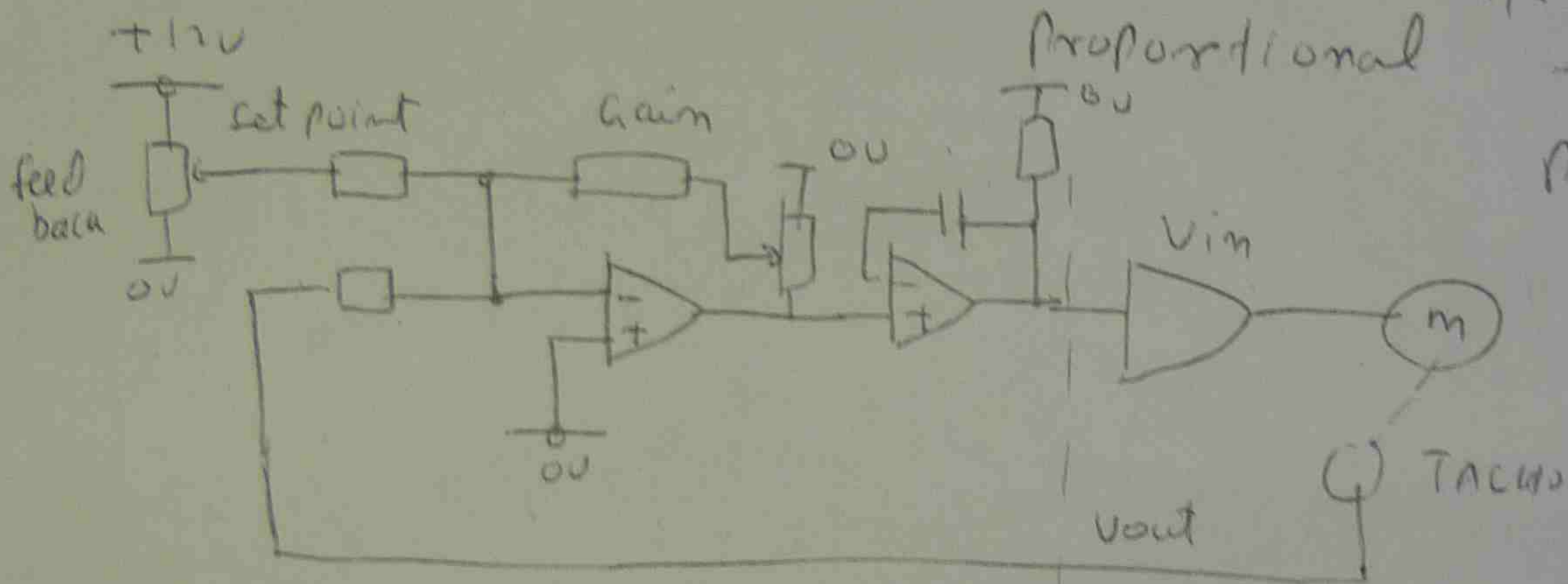
IOOG Practical

- (1) proportional control
- (2) Integral control
- (3) proportional + Integral control
- (4) 3 Terminal Regulator
- (5) PLC Practical (1)
- (6) PLC Practical (2)
- (7) construction of digital gate (OR)
- (7) Transducer (RPM to voltage → Tachometer)
- (8) Field excitation → speed concept

motor proportional + Integral control



Total change in output = change due to Proportional + Change due to Integral Proportion.



$7 - \frac{1}{2} = 730 - 20 (v_1)$
 $+12V - 11V$
 (5) (3) $\mu A 3030$

⊕ Off set Null

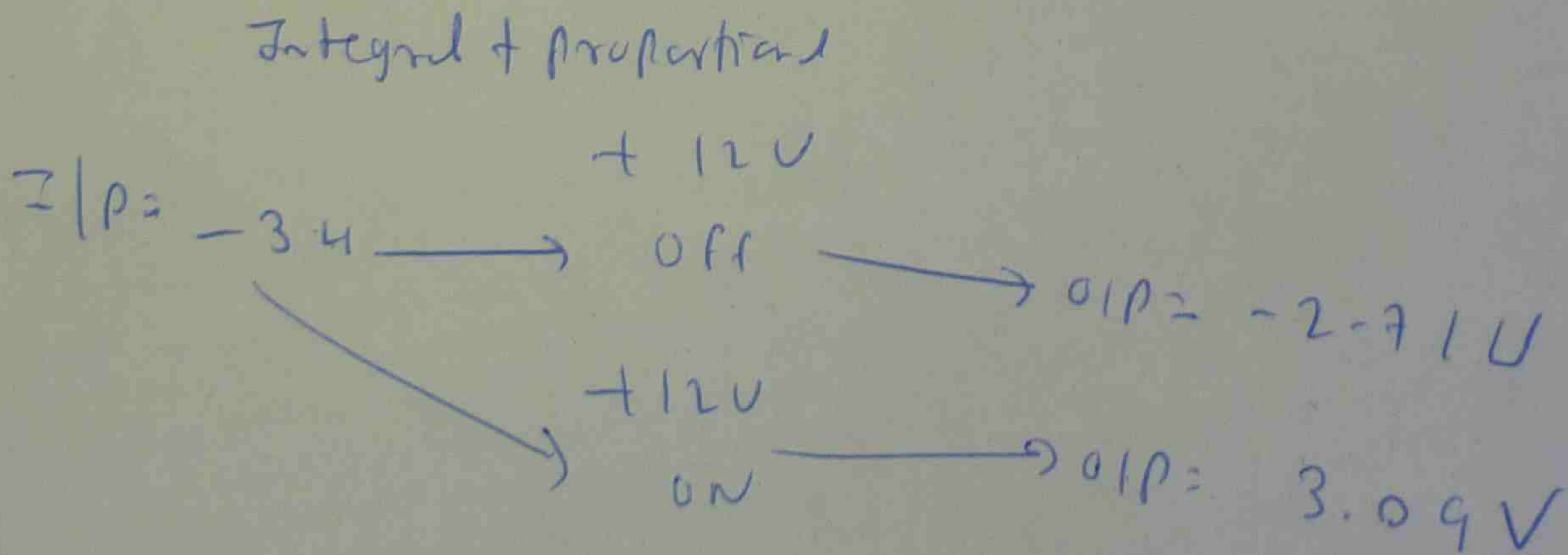
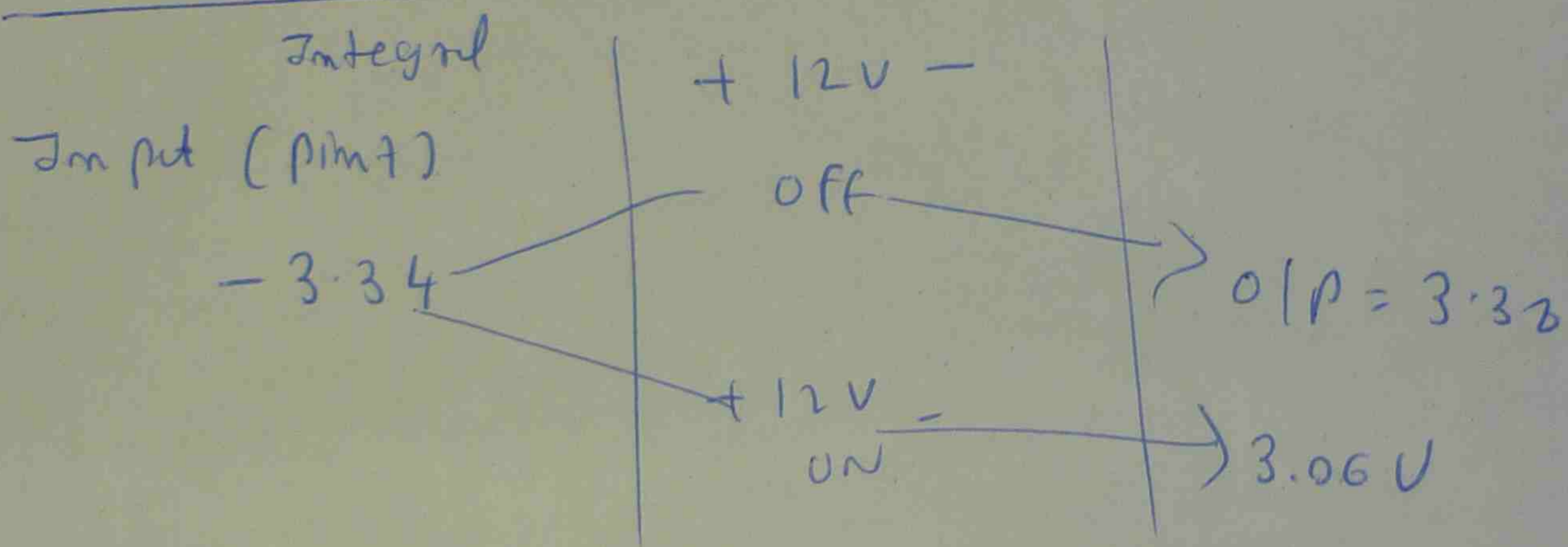
⊕ off set null

(1) only Proportional
 note the gain
 (2) Proportional + Integral
 note the gain

Only Proportional

Input $-1.25 / 0.75$ O/P = ~~1.11~~ 1.44

Proportional + Integral.



#

without
+12V

pin 15 - 100 ~~mf~~ mf

IP ~~0~~ 0 → 5V
OIP 0.04V → 0V

with
+12V

IP @V

OIP
0

- 1 output go ball too
- 2 m.
- 3 0.02 → 0
- 4 _____ 0
- 5 _____ → 0
- _____ → 0

pin 17 - 1kF

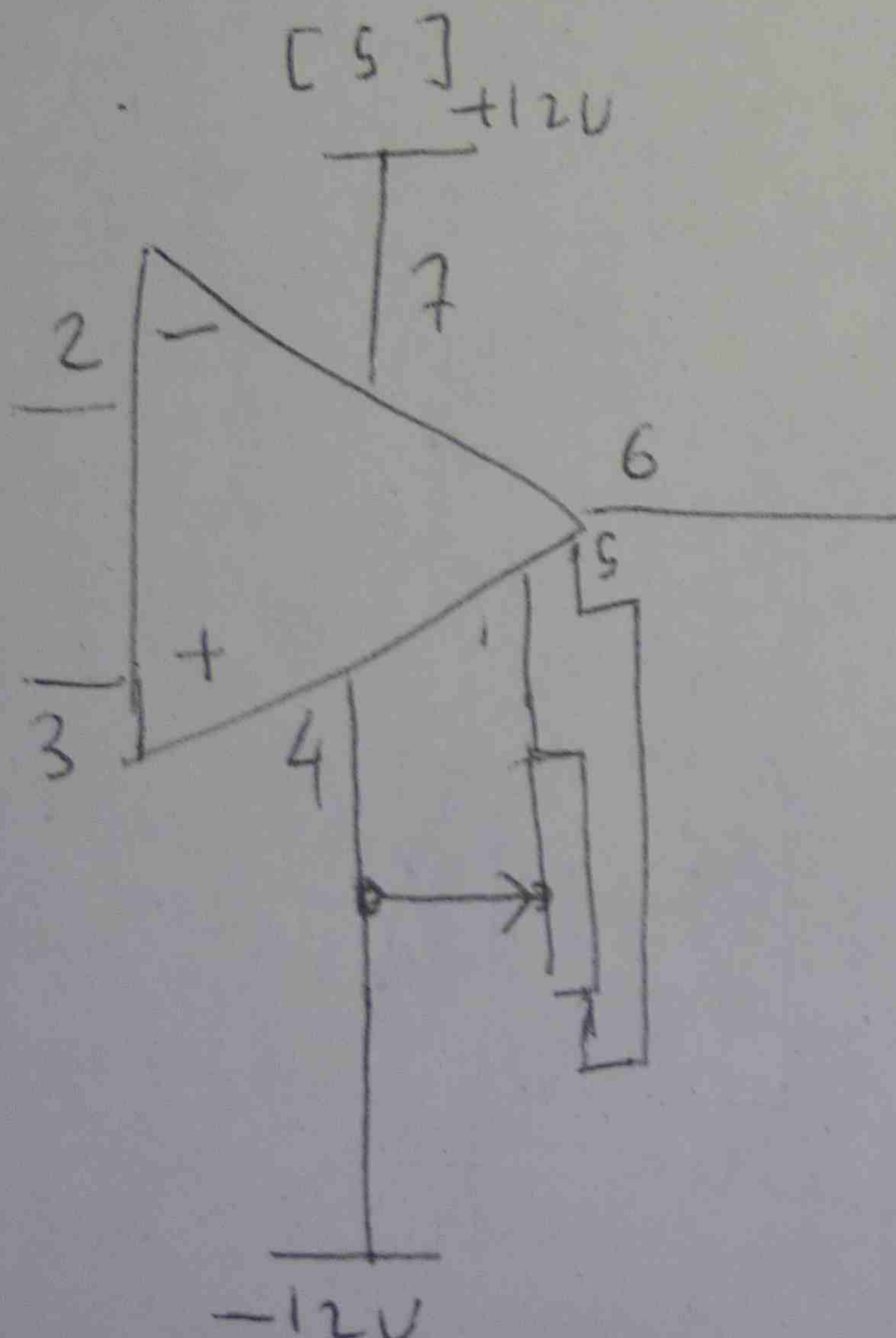
~~Input~~ pin 15 OIP
 0 → 5V 100mf ?
 OFF → ON .

IP pin 17 OP
 0 → 5V 1kF ?
 OFF → ON .

IP pin 19 OP
 0 → 5V 44kF
 OFF → ON

Proportional control

LM 741, Supply to
+12V Pin 5 & 3



3.4V

SWB

Proportional

OFF

3.9

ON

4.4

OFF

5.2

ON

6.34V

Only Proportional

Input $- \cancel{+2.5} / 1.75$ O/P = ~~+5V~~ 1.44

Proportional + Integral

Integral	+ 12V - supply to pin 5 & 3	
Input (pin 7)	off	O/P = 3.32
- 3.34	+ 12V - on	3.06 V

Integral + Proportional

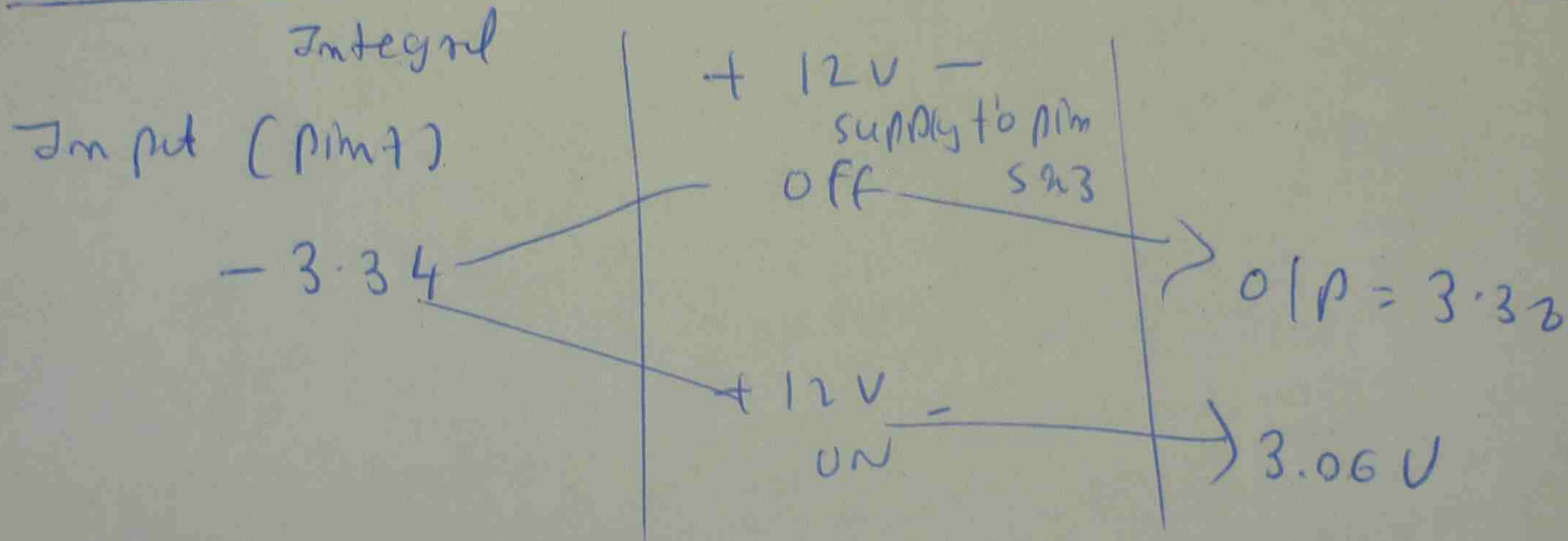
O/P = - 3.4 $\xrightarrow{+ 12V \text{ off}}$ O/P = - 2.71 V

\searrow $\xrightarrow{+ 12V \text{ on}}$ O/P = 3.06 V

Only Proportional

Input $-1.25 / 0.75$ O/P = ~~1.11~~ 1.44

Proportional + Integral.



Integral + Proportional

