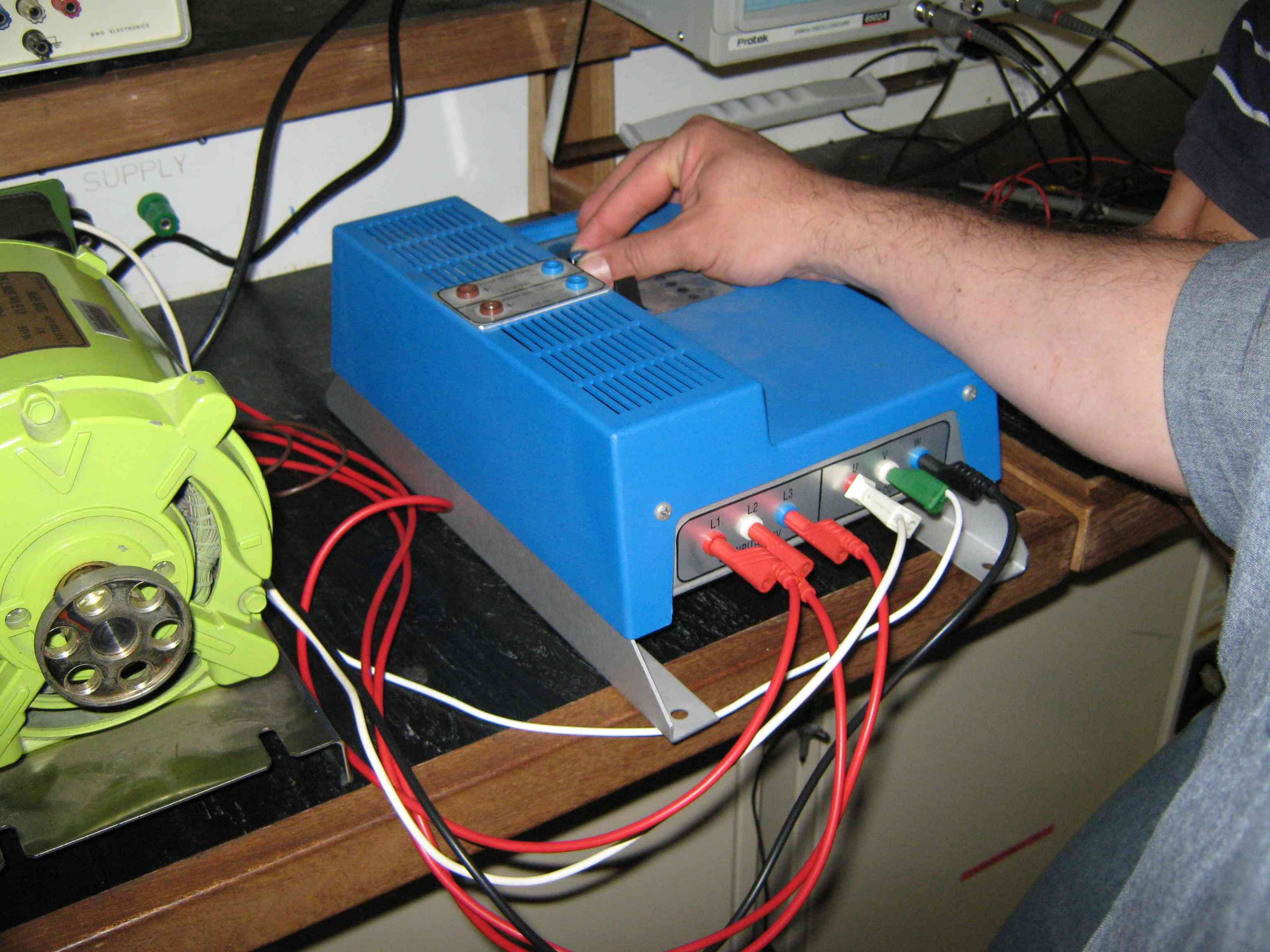
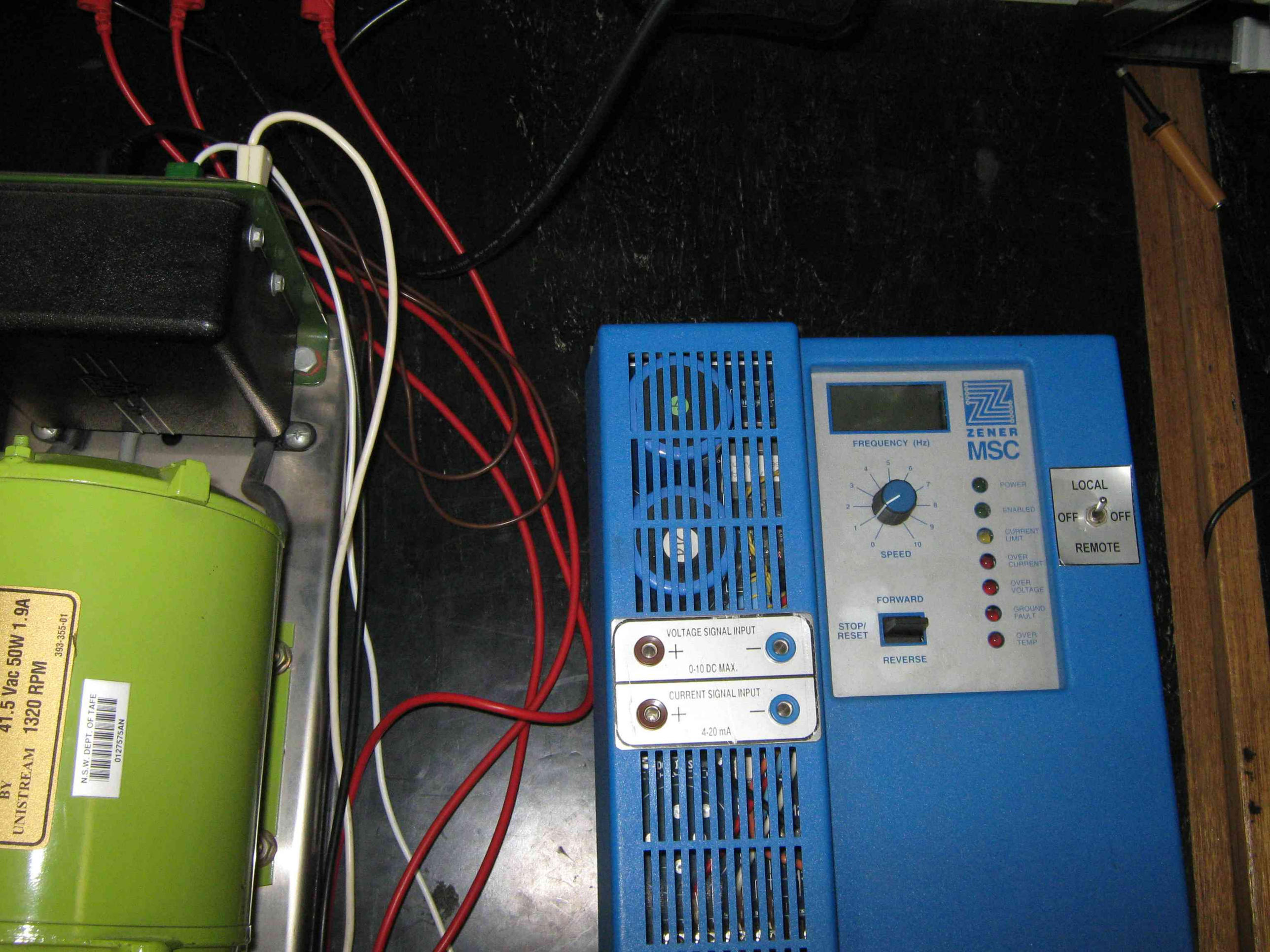
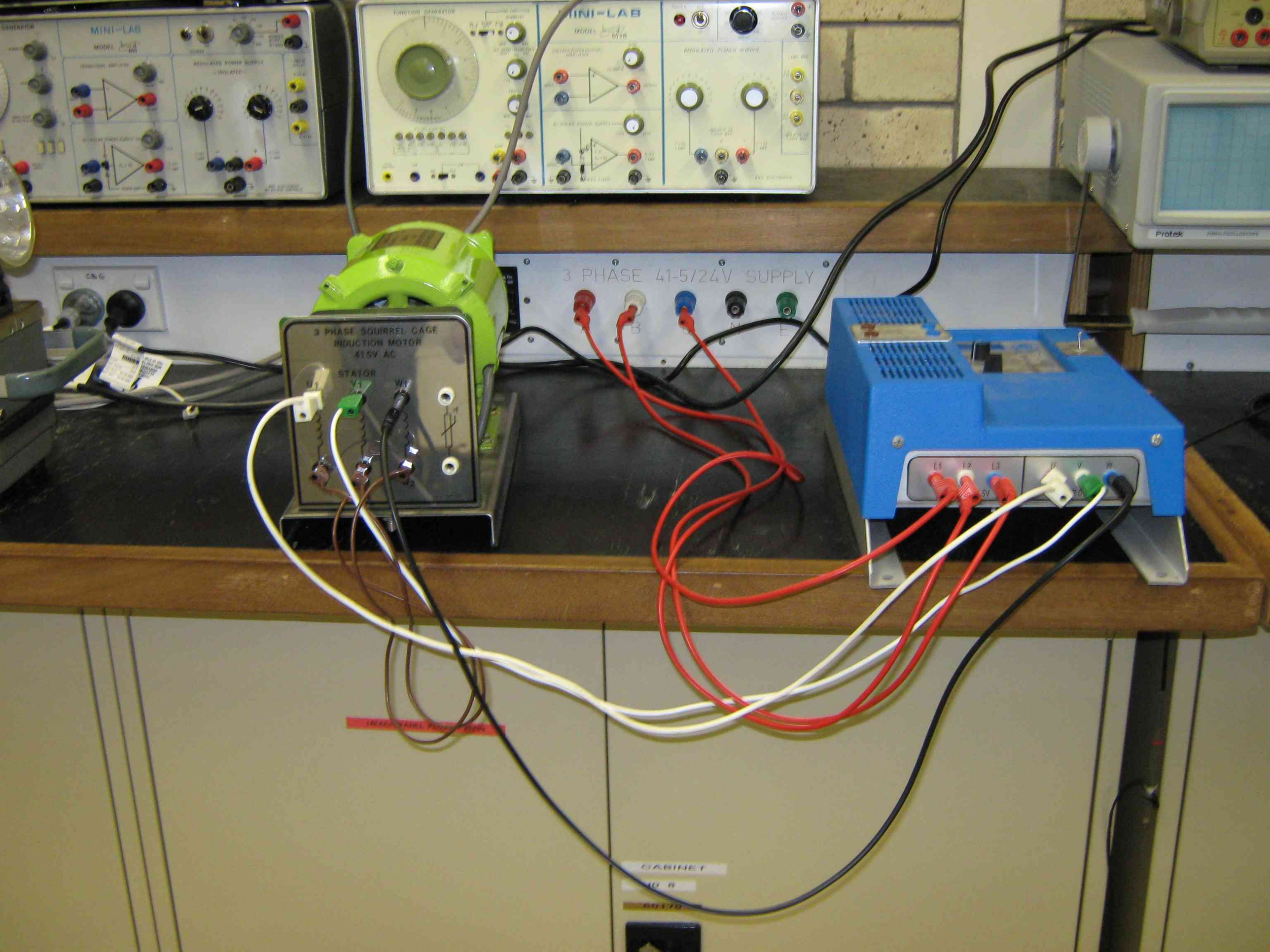

20.9
00.3
EMTEK
520
POWER
INTENSITY
TRACE ROTATION
FOCUS
CAL
VERTICAL
POSITION
VOLTS/DIV
VARIABLE
AC
GND
DC
INPUT A or X
INPUT B or Y
TRIGGER
SLOPE
LEVEL
TIME/DIV
SOURCE
COUPLING
EXT INPUT
7VA Max
DANGER 380 VOLTS.
240V G.P.O.
240V MAIN SWITCH Nº1
EARTH
240V MAIN SWITCH Nº2
240V G.P.O.
110 VOLTS
110 VOLTS
110 VOLTS

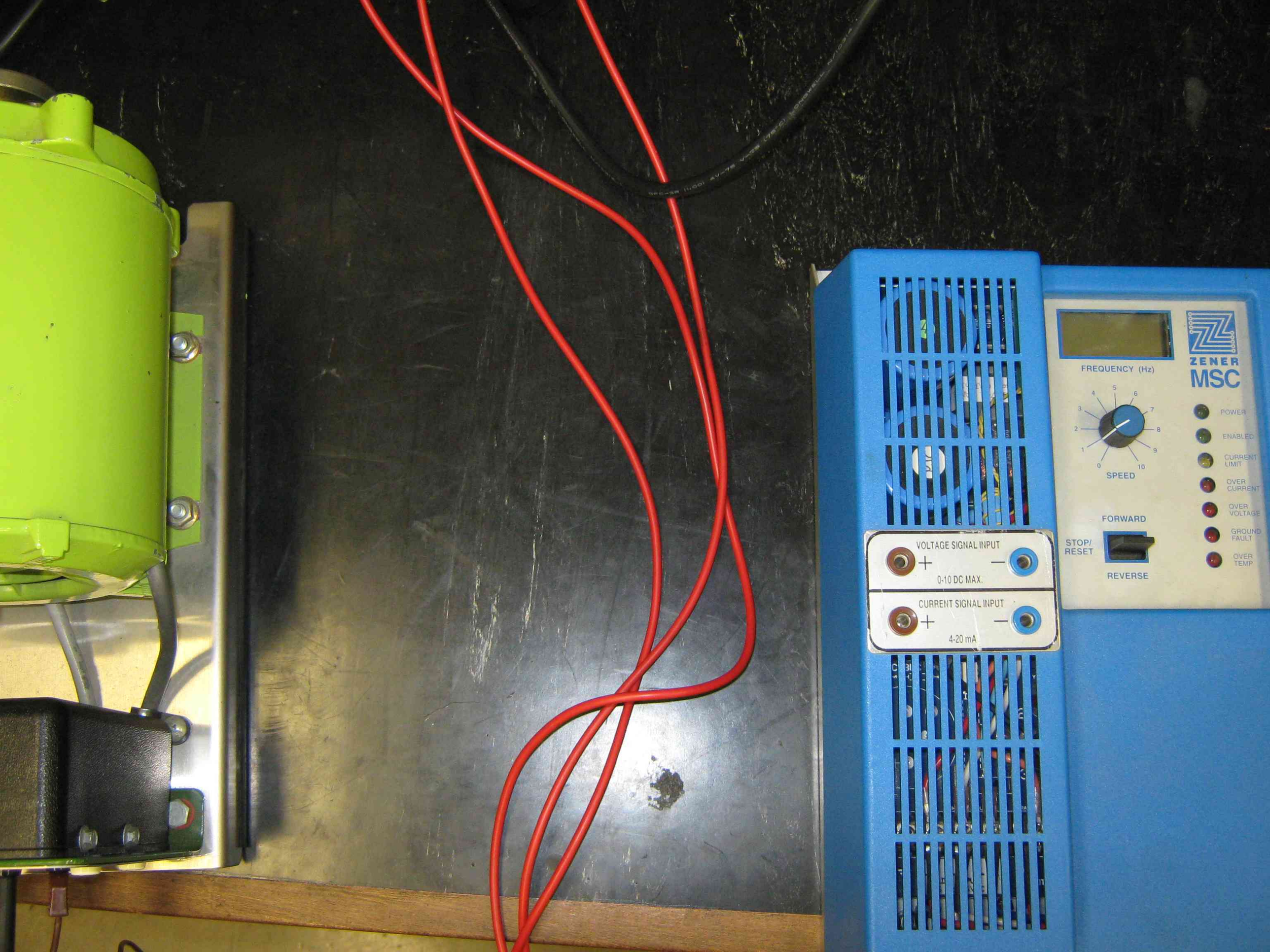

SUPPLY
Protek
L1
L2
L3
U
V
W


VOLTAGE SIGNAL INPUT
CURRENT SIGNAL INPUT
STOP
START
REVERSE
SPEED
MSC
OFF
LOCAL
REMOTE
OFF

MINI-LAB
MODEL 603B
FUNCTION GENERATOR
REGULATED POWER SUPPLY
INSTEK DIGITAL MULTIMETER
Protek 20MHz OSCILLOSCOPE 8502A
L1 L2 L3 U V W
REACH PANEL PLUG/IN 28PIN


41.5 Vac 50W 1.9A
1320 RPM
393-355-01
BY
UNISTREAM
N.S.W. DEPT. OF TAFE
0127575AN
FREQUENCY (Hz)
ZENER
MSC
SPEED
POWER
ENABLED
CURRENT LIMIT
OVER CURRENT
OVER VOLTAGE
GROUND FAULT
OVER TEMP
FORWARD
STOP/ RESET
REVERSE
LOCAL
OFF
OFF
REMOTE
VOLTAGE SIGNAL INPUT
0-10 DC MAX.
CURRENT SIGNAL INPUT
4-20 mA


MINI-LAB
MINI-LAB
3 PHASE 41-5/24V SUPPLY
3 PHASE SQUIRREL CAGE
INDUCTION MOTOR
415V AC
STATOR
Protek
L1
L2
L3
CABINET


ZENER
MSC
FREQUENCY (Hz)
SPEED
POWER
ENABLED
CURRENT LIMIT
OVER CURRENT
OVER VOLTAGE
GROUND FAULT
OVER TEMP
FORWARD
STOP/ RESET
REVERSE
VOLTAGE SIGNAL INPUT
0-10 DC MAX.
CURRENT SIGNAL INPUT
4-20 mA

DUAL TRACKING DC POWER SUPPLY

FUNCTION GENERATOR

MINI-LAB

MODEL

REGULATED POWER SUPPLY

MINI-LAB

MODEL

REGULATED POWER SUPPLY

PHASE 41-5/24V SUPPLY

3 PHASE SQUIRREL CAGE
INDUCTION MOTOR
41.5V AC

STATOR

U1 V1 W1

L1 L2 L3

CABINET

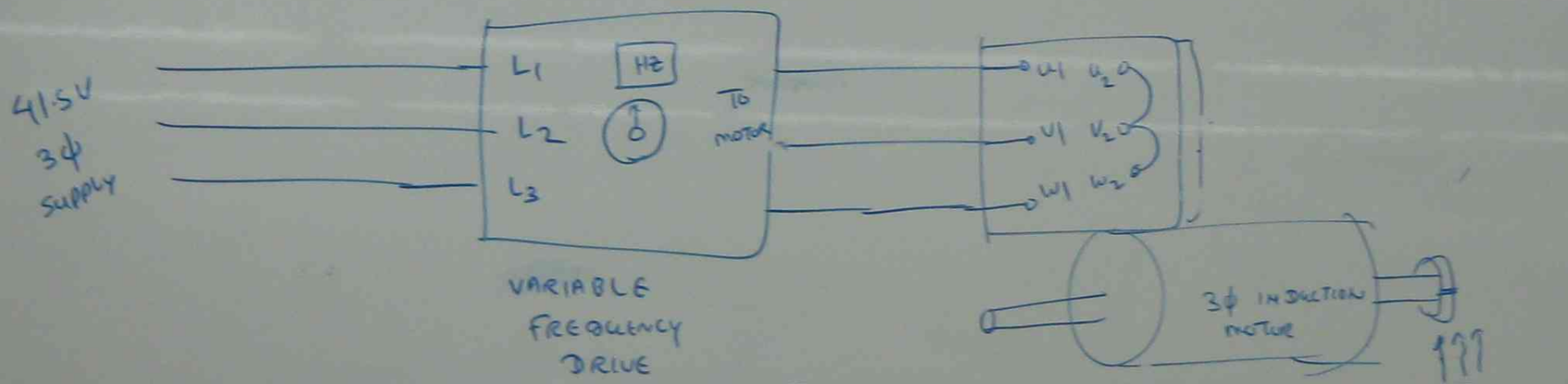
NO 8

Cap = 18 chairs
18 desks

ADVANCED AC MACHINE

LAB (4) 3φ INDUCTION MOTOR VARIABLE SPEED DRIVE

$N = \frac{120 \times 10}{4} = 300$ RPM



(1) CONNECT THE ABOVE CIRCUIT

(2) INCREASE THE FREQUENCY FROM 1Hz TO 10Hz.

OBSERVE THE MOTOR ROTATION

(a) WHAT WILL HAPPEN TO MOTOR SPEED WHEN FREQUENCY IS INCREASED

(3) THEN GIVE THE FREQUENCY 10 Hz TO MOTOR, MEASURE THE SPEED BY STARBOSCOPE.

(4) CALCULATE THE SPEED BY

$N = \frac{120 f}{P}$

WHERE P = 4 POLES

(5) COMPARE THE MEASURED SPEED & CALCULATED SPEED

(6) WRITE - YOUR FINDINGS WITH SKETCHES & DATA

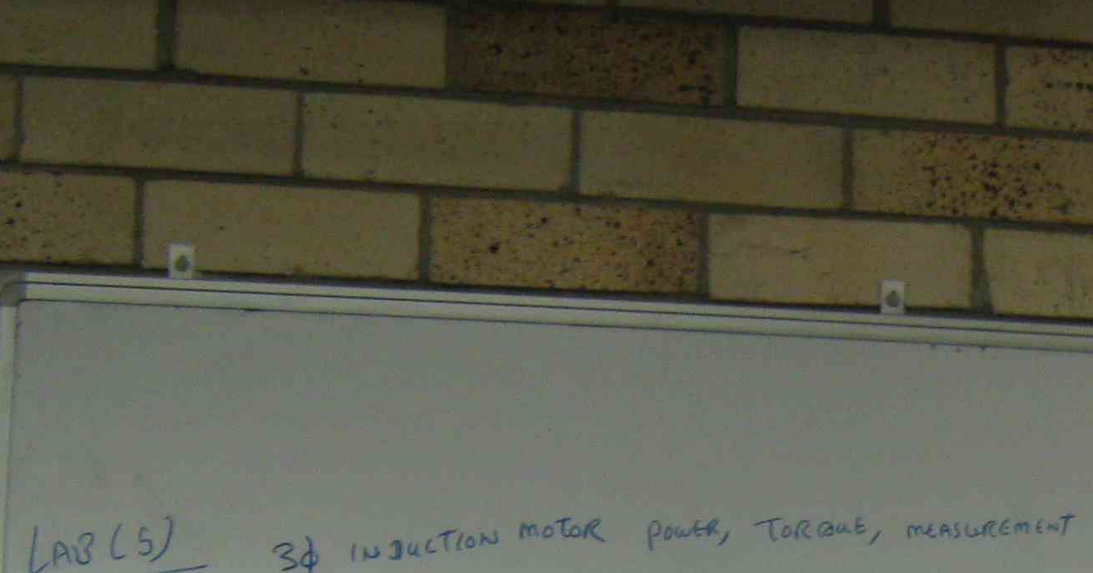
(7) SUBMIT THE LAB REPORT ON 27/11/08

LAB MARKS 10% WILL BE ADDED TO TEST (4).

LAB (5) 3ϕ INDUCTION MOTOR POWER, TORQUE, MEASUREMENT & NO LOAD TEST

(1) MEASURE WINDING RESISTANCE / PHASE BY USING OHM METER

(2) CONNECT THE CIRCUIT



(3) RUN THE MOTOR & MEASURE AMP | VOLT | PF.

(4) FILL THE TABLE

V_{OLT} (ENL)	I	PF	$S_{NL}=3VI$	$P_{WR}=3VI\times P.F$	$Q_{WR}=\sqrt{S_{NL}^2-\theta_{NL}^2}$	$T=\frac{POWER_{MASS}}{mg}$

READ MOTOR SPEED ON NAME PLATE IT IS N_S

POWER = $3VI\times Pf$

(5) THEN DETERMINE MOTOR MAGNETIZING REACTANCE (X_m) & CORE RESISTANCE (R_m)

ENL IS ACQUIRED IN PHASE VOLTAGE

S_{NL} - NO LOAD APPARENT POWER

P_{NL} - NO LOAD ACTIVE POWER

Q_{NL} - NO LOAD REACTIVE POWER

$$R_m = \frac{E_{NL}^2 \times 3}{P_{NL} - 3I_{NL}^2 r}$$

$$X_m = \frac{E_{NL}^2 \times 3}{Q_{NL}}$$

FUNCTION GENERATOR

MINI-LAB

MODEL 603B

REGULATED POWER SUPPLY

3 PHASE 41-5/24V SUPPLY

Protek 20MHz OSCILLOSCOPE 6502A

3 PHASE SQUIRREL CAGE
INDUCTION MOTOR
41.5V AC

STATOR

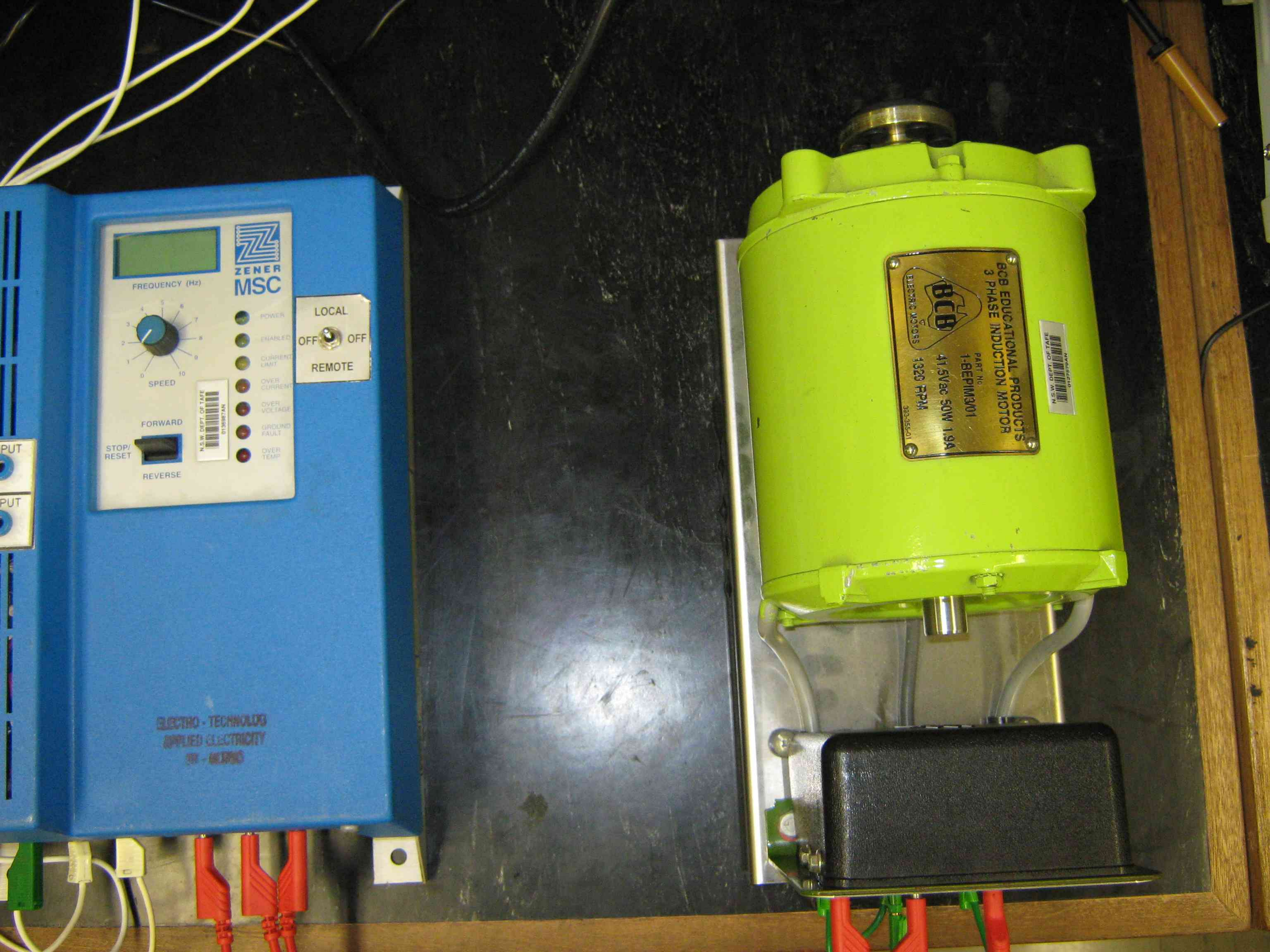
U1 V1 W1

U2 V2 W2

L1 L2 L3

U V W

14EACH PANEL PLUG/IN 28PIN


FREQUENCY (Hz)
ZENER
MSC
SPEED
FORWARD
STOP/
RESET
REVERSE
POWER
ENABLED
CURRENT
LIMIT
OVER
CURRENT
OVER
VOLTAGE
GROUND
FAULT
OVER
TEMP
LOCAL
OFF
OFF
REMOTE
N.S.W. DEPT. OF TAFE
ELECTRO - TECHNOLOGY
APPLIED ELECTRICITY
BCB EDUCATIONAL PRODUCTS
3 PHASE INDUCTION MOTOR
PART No.
1-BEPIM301
41.5Vac 50W 1.9A
1320 RPM
BCB
ELECTRIC MOTORS
DEPT. OF TAFE

0-1V

INPU

P.A.
$A_V = 10$

+5V FIXED

± 15V
1 AMP

1 AMP

± 15V
1 AMP

BWD ELECTRONICS

3 PHASE 41-5/24V SUPPLY

A

B

N

E

On
Off

On
Off

Quicklag

Quicklag

Quicklag

ZENER
MSC

FREQUENCY (Hz)

SPEED

POWER

ENABLE

CURRENT LIMIT

OVER CURRENT

OVER VOLTAGE

GROUND FAULT

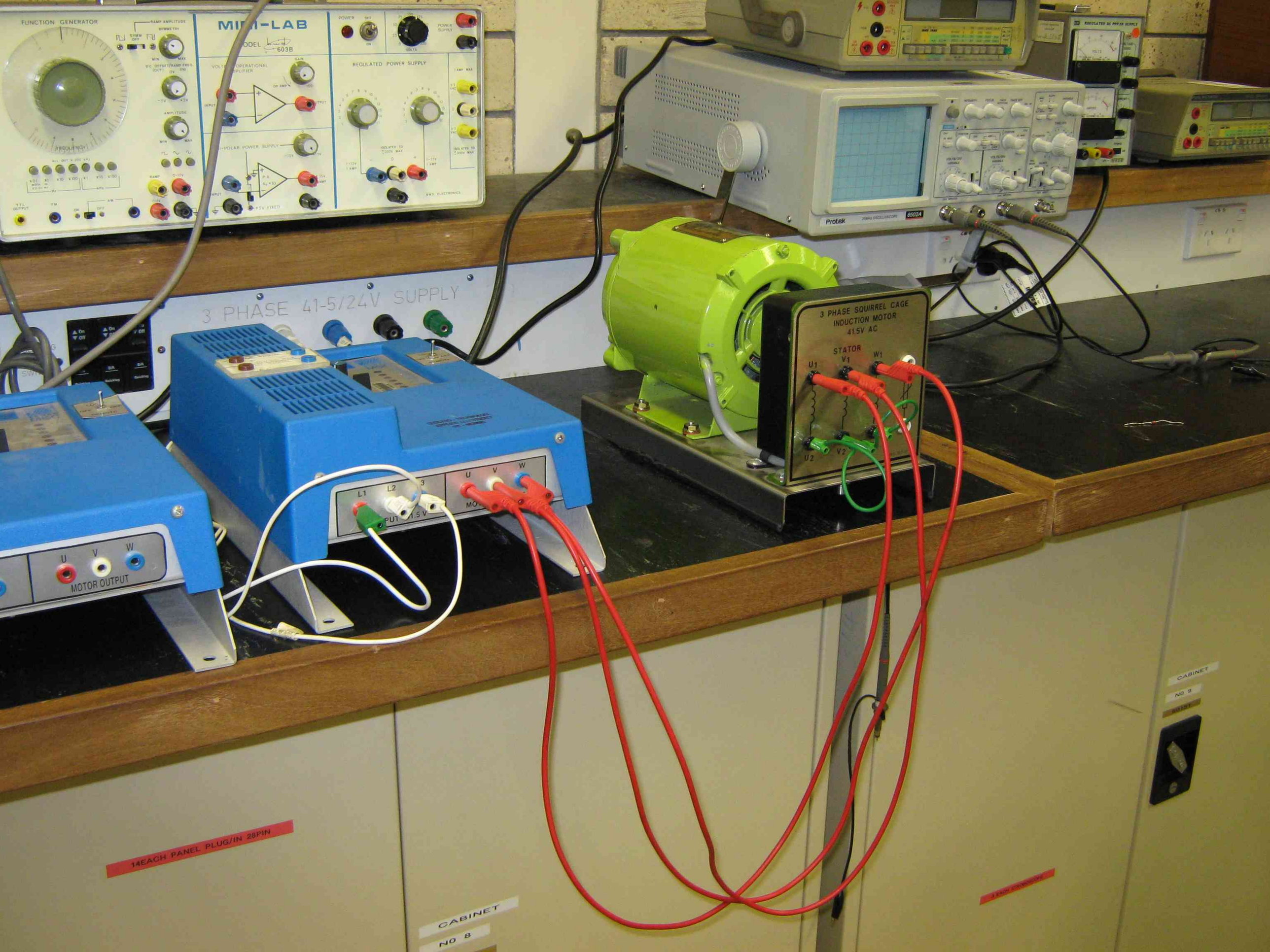
LOCAL

OFF

OFF

REMOTE

N.S.W. DEPT. OF TAFE
01365987AN


FUNCTION GENERATOR
MIDI-LAB
MODEL 603B
REGULATED POWER SUPPLY
3 PHASE 41-5/24V SUPPLY
3 PHASE SQUIRREL CAGE
INDUCTION MOTOR
41.5V AC
STATOR
U1
V1
W1
U2
V2
MOTOR OUTPUT
U
V
W
L1
L2
14EACH PANEL PLUG/IN 28PIN
CABINET
NO 8
CABINET
NO 9

ZENER
MSC

FREQUENCY (Hz)

SPEED

FORWARD

STOP/
RESET

REVERSE

POWER

ENABLED

CURRENT
LIMIT

OVER
CURRENT

OVER
VOLTAGE

GROUND
FAULT

OVER
TEMP

LOCAL

OFF

OFF

REMOTE

N.S.W. DEPT. OF TAFE
0136987AN

VOLTAGE SIGNAL INPUT
+ −
0-10V.DC MAX

CURRENT SIGNAL INPUT
+4-20 mA −

ELECTRO - TECHNOLOGY
APPLIED ELECTRICITY

BCB
ELECTRIC MOTORS

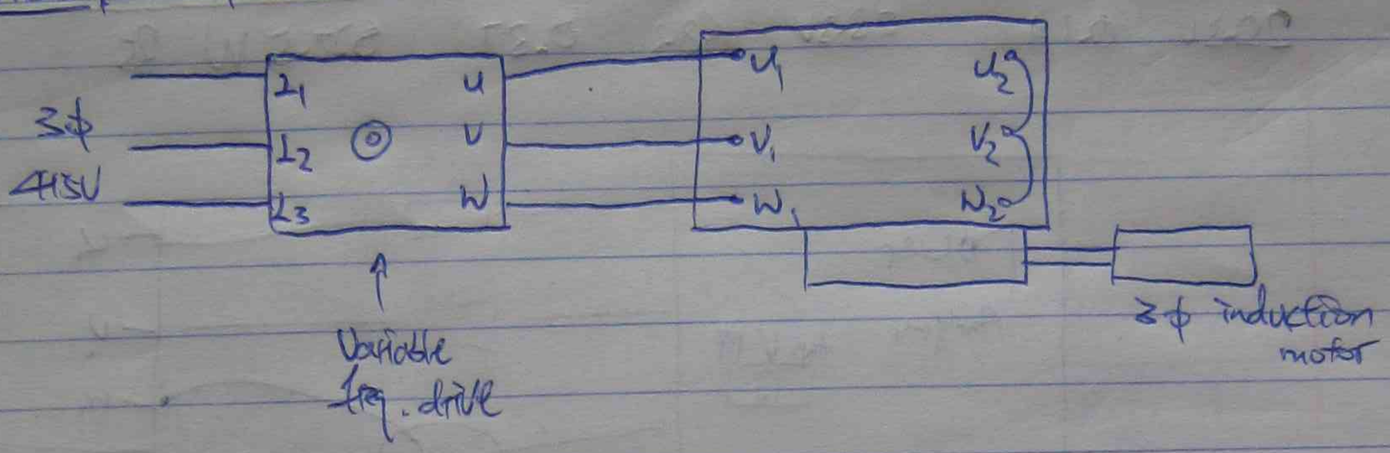
PART No.
1-BEPIM3V01

41.5Vac 50W 1.9A

1320 RPM

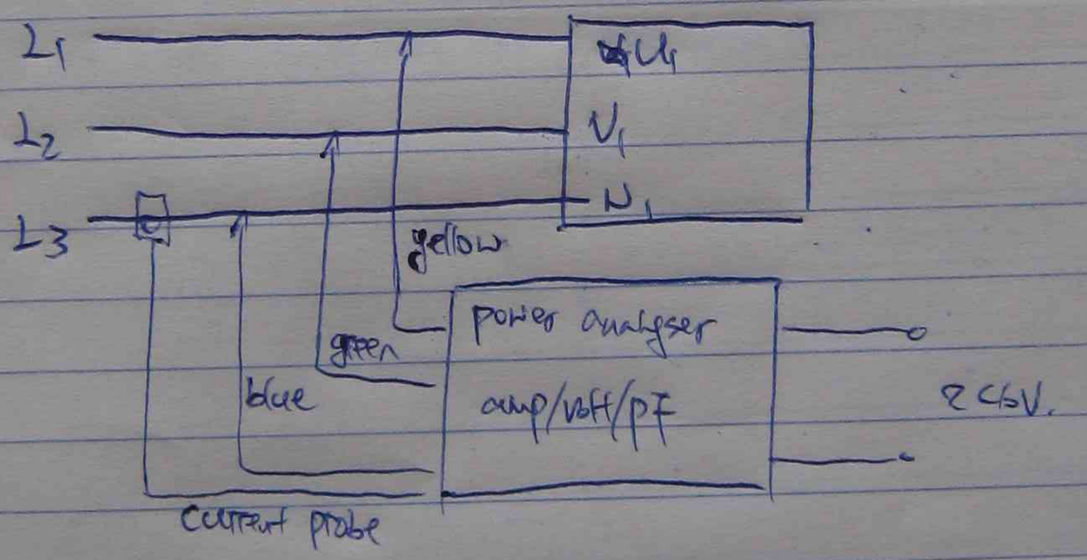
Kekun Chen ~~Kekun Chen~~

LAB #4 3ϕ Induction motor variable speed drive.



Frequency increase, speed of dc motor increase.

Lab5. 3ϕ Induction motor power/torque measurement & no load test



Phase Resistance

$W_1-W_2 = 4.3\Omega$

$U_1-U_2 = 4.3\Omega$

$V_1-V_2 = 4.3\Omega$

Amp = 0.1 A

Voltage = 25.5V

PF = 68.3