



Manufacturer's Name and Address

Manufacturer : Cathodic Protection Technology Pte Ltd

Address : 4 Tuas Drive 1, Singapore 638671.

Technical Specification

- 1.0 Transformer Rectifier Unit : Refer to detail Data Sheet and Component list..
General Arrangement no.A-21-08059 Rev 0
Wiring Diagram no. A-49-08060 Rev 0
- 2.0 Titanium MMO Tubular anode : Anode string - 3/4" dia x 48" length
(x 05 (five) pcs) anode assembled
on No.8 AWG x 100 feet of HMWPE cable
anode spaced at 3.5 feet end to end spaced,
c/w 5 anode centralizer total length = 134
feet c/w rope on last anode for ballast weight
(ballast weight not included)
- 3.0 Anode junction box : ROSE Polyester enclosure
Size 160mm x 260mm x 90mm
Material - Fibreglass reinforced duroplastic
polyester with graphite added
Protection classification - IP66, EN50014
Impact resistance 7Nm, DIN EN60529
Temperature resistance -40°C to +100°C
Terminal - 2 Circuit w/ 20A-50mV shunt on
common bus c/w 4-14 lug
- 4.0 Test points : Copper-copper sulphate reference electrode
Lead wire 50' of #14 AWG HMWPE black
cable.
Stability : + - 5 millivolts with 3.0 microamp
load.
Temperature Range : 32° to 135°F

Test Station

ROSE Aluminium Standard Enclosure ,
Size 230 x 200 x 180mm
Diecast aluminum
Material - AlSi 12, Din 1725.
Lid and base fastened with captive lid screws
in stainless steel
Protection classification – IP 66, EN 60529
Impact resistance > 7 Nm, EN 50014

- 5.0 Carbon Backfill : Asbury # 251 equivalent to SC-2 product
- 6.0 (a) Cadeld mould and flint gun : thermOweld mould for 15 grams
(b) Weld Metal(charge) : thermOweld #15 grams
- 7.0 Cable : HMWPE cable No.8 AWG, 1000 feet /roll
- 8.0 Surge diverter (spark-gap) : DEHN
Threshold a.c. voltage (50 Hz) – 1.0 kV
Threshold surge voltage (1.2/50) – 2.2 kV
Rated discharge surge current (8/20)-
100kA
Explosion protection – Special type of
protection “s” acc.to VDE 0171 / 49
Ignition group - G4
Electrode material – tungsten/copper

DATA SHEET FOR 50V, 20A MANUAL CONTROLLED C. P. RECTIFIER UNIT

Client : NAMKHOA CO. LTD

RECTIFIER GENERAL ARRANGEMENT A-21-08059 Rev 0

Sheet 1 of 2

(For circuit diagram, refer Drg. No.: A-49-08060 Rev. 0)

A) A.C. Input Voltage	:	240V \pm 10%, 1 Ph., 50Hz \pm 5%, AC
B) A.C. Input Current	:	8A (max)
C) D.C. Power Output	:	1000W
D) D.C. Output Voltage	:	0 to 50V
E) D.C. Output Current	:	0 to 20A
F) KVA rating of Transformer	:	2.0 KVA
G) Factor of safety for Diodes	:	Voltage - 300% factor of safety PIV - 1200V Minimum Current - 400% factor of safety
H) Full Load Power Factor	:	Not less than 0.8 lagging
I) Insulation Level	:	2 KV for 1 minute
J) Peak Inverse Voltage - Diode	:	1200V (Minimum)
K) Surge Diverters for Diodes	:	Metal oxide varistors.
L) Lightning Arrestor	:	At both Input & output side of the T/R unit R.M.S. Voltage Rating : 500V R.M.S. Current Rating : 1.5KA Type : LT 0.5 or Eqv.
M) Protection	:	2 pole MCB in AC Input. 2 pole MCB in DC Output. HRC fuses in AC Input HRC fuses in DC Output. Glass cartridge fuses in the live line of all lamps and meter circuits.
N) Manual Voltage Control	:	0 to 50V at 0 to 20A The output DC Voltage can be controlled from 0 to 50V in stepless manner by means of a Variable Autotransformer (Variac).

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- O) Indications : a) Mains ON
- P) Meters / Instruments : 96mm X 96mm Analog meters for the following:
DC Voltage : 0 to 60V DC
DC Current : 0 to 30A DC with shunt
- Q) Enclosure / Construction : Floor mounted Outdoor type.
To be fabricated from 1.5/2.0mm CRCA sheet.
Confirming to IP56 degree of protection.
Lockable doors shall be provided in the front and back.
- R) Cooling : Natural Air cooled.
- S) Painting : Baked epoxy paint/Powder Coating of shade RAL 7032
(Siemens grey) with proper pretreatment and primer
application as per standard industrial practice.
- T) Dimensions : L X B X H = 800mm X 700mm X 1100mm
- U) Weight : 125 Kgs. (Approx.)
- V) Earthing : 2 Nos. M6 earthing bolts and 1 no. nickel plated copper
earth bus bar shall be provided.

COMPONENT LIST FOR 50V, 20A MANUAL CONTROLLED C. P. RECTIFIER UNIT

Client : NAMKHOA CO. LTD

RECTIFIER GENERAL ARRANGEMENT A-21-08059 Rev 0

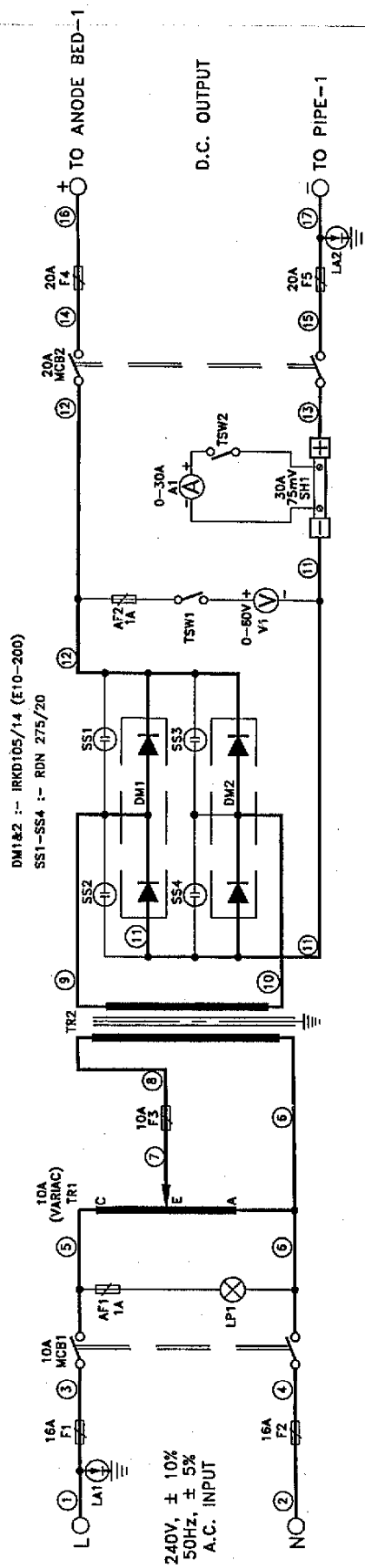
Sh 1 of 2

(For circuit reference, refer Drg. No.: A-49-08060 Rev. 0)

CODE	DESCRIPTION	MAKE
F1 & F2	HRC Fuses in Input AC lines, 16 Amp, Type NS16 in fuse holder, Type NSH.	English Electric
F3	HRC Fuses in Autotransformer (Variac) Input. 10 Amp, Type NS10 in fuse holder, Type NSH.	English Electric
F4 & F5	HRC Fuses in DC outlets. 20 Amp, Type NS20 in fuse holder, Type NSH.	English Electric
AF1 & AF2	Auxiliary fuses in the live leads of various LED type lamp & meter, 1A, Glass Cartridge type, Slow Blow Type.	E.S.I.
LP1	Mains ON indicator Lamp. 230V A.C., LED type, Red Colour Housed in 22.5 mm dia. holder.	Teknic
MCB1	Miniature circuit breaker in AC input. 2 pole, 10A, Type C	L&T- Hager
MCB2	Miniature circuit breaker in DC output. 2 pole, 20A, Type C	L&T- Hager
TR1	Auto Transformer for manual control of output. Variac Type Rating : 10A	Potential Electric
TR2	Main transformer with shield, double wound. Primary : 230V \pm 20% Secondary : 0 to 75V Capacity : 2.0 KVA Insulation : Class F	Canara Electric
V1	Voltmeter to read DC output Voltage. 0 to 60V, DC 96mm X 96mm, Analog moving Coil type. Type : M96	MECO/Rishabh
A1	Ammeter to Read DC output Current. 0 to 30A, DC Analog Moving Coil type with external shunt Type : M96	MECO/Rishabh

CODE	DESCRIPTION	MAKE
SH1	Shunt for ammeter A1. 75mV at 30A	MECO
DM1 & DM2	Rectifier diode modules. I _{av} : 105 Amps PIV : 1400 Volts Type : IRKD105/14	Semikron
TSW1 & TSW2	Toggle switches in various meter circuits. 1 pole, ON/OFF, 6 Amp, 240V. Toggle Type	Kaycee
LA1 & LA2	At Lightning Arrestor both Input & output at of the T/R unit R.M.S. Voltage Rating : 500V R.M.S. Current Rating : 1.5KA Type : LT 0.5 or Eqv.	LAMCO
SS1 thru SS4	Surge Suppressor across diode Modules. MOV type RDN 275/20	Elpro

ENQUIRY NO. : L5105



REF DWG No. CE0088/1

LEGEND:—

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|-------|--------------------------------|
| LP1 | MAINS ON INDICATOR LAMP |
| MCB1 | MAINS ON/OFF MCB |
| MCB2 | D.C. OUTPUT ON/OFF MCB |
| V1 | D.C. OUTPUT VOLTMETER |
| A1 | D.C. OUTPUT AMMETER |
| TR1 | VARIAC FOR OUTPUT CONTROL |
| TTSW1 | ON/OFF SWITCH FOR VOLTMETER V1 |
| TTSW2 | ON/OFF SWITCH FOR AMMETER A1 |
| F1-F2 | FUSES IN A.C. INPUT LINES |
| F3 | FUSE IN MAIN TRANSFORMER INPUT |
| F4 | FUSE IN D.C. +Ve OUTPUT |
| F5 | FUSE IN D.C. +Ve OUTPUT |
| AF1 | FUSE IN VOLTMETER V1 |

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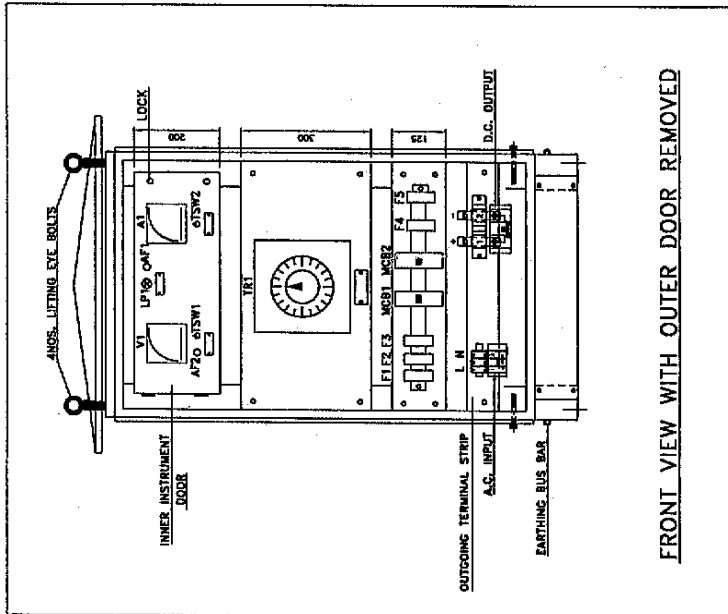
ENQUIRY NO. : L5105

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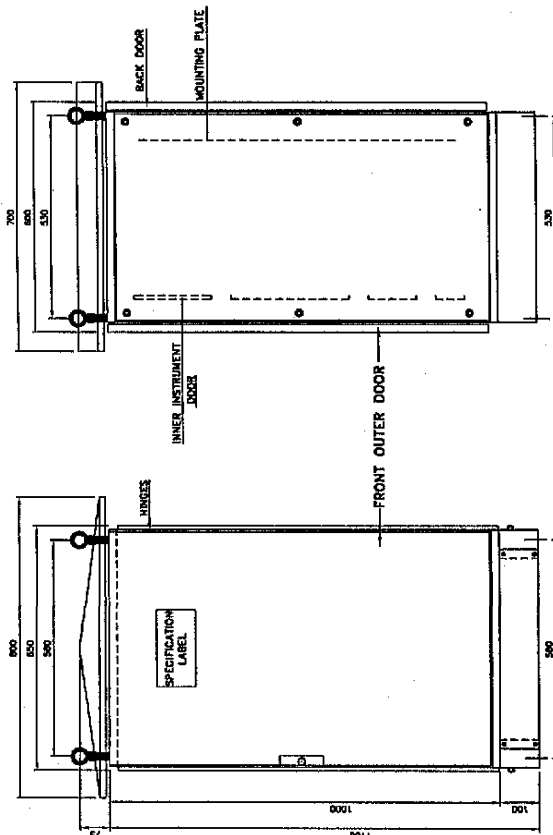
FABRICATION DETAILS :-

1. THICKNESS OF SHEET : 1.5/2.0mm
2. WEIGHT : 125kg APPROX.
3. TYPE OF PROTECTION : IP-56
4. FINISH OUTER : RAL 7032 RAL- 7032- SIEMENS GREY
- INNER : RAL 7032 RAL- 7032- SIEMENS GREY
5. EARTHING BOLT : M6 2NOS.

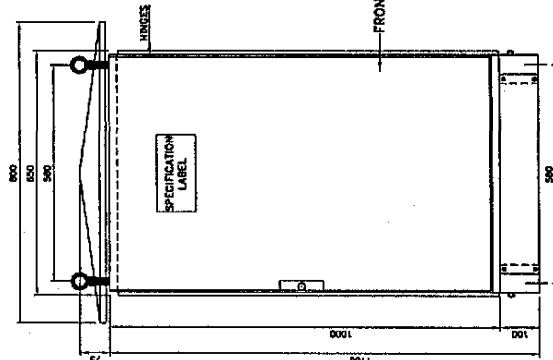
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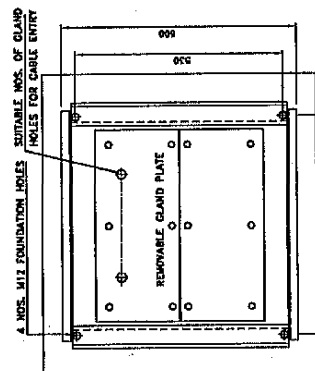
FRONT VIEW WITH OUTER DOOR REMOVED



SIDE VIEW



FRONT VIEW



BOTTOM VIEW

LEGEND:-

- LP1 MAINS ON INDICATOR LAMP
- MCB1 MAINS ON/OFF MCB
- MCB2 D.C. OUTPUT ON/OFF MCB
- V1 D.C. OUTPUT VOLTMETER
- A1 D.C. OUTPUT AMMETER
- TR1 VARIAC FOR OUTPUT CONTROL
- TSW1 ON/OFF SWITCH FOR VOLTMETER V1
- TSW2 ON/OFF SWITCH FOR AMMETER A1
- F1-F2 FUSES IN A.C. INPUT LINES
- F3 FUSE IN MAIN TRANSFORMER INPUT
- F4 FUSE IN D.C. +V_o OUTPUT
- F5 FUSE IN D.C. +V_e OUTPUT
- AF1 FUSE IN VOLTMETER V1

DATE	REV	DESCRIPTION	APP
DRAWN	CHECKED	APPROVED	
NORMAS			
DATE	SCALE	N.T.S.	20/06/03
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Cathodic Protection Technology Pte Ltd			
4 Tuas Drive 1 Singapore 638671			
Tel: 862-3551 Fax: 861-6436			
TITLE			
CATHODIC PROTECTION SYSTEM			
50V 20A MANUAL CONTROLLED			
TRANSFORMER RECTIFIER UNIT			
GENERAL ARRANGEMENT			
DRAWING NO.	A-21-08059		REV. 0