

## TRANSMISSION CORPORATION OF ANDHRA PRADESH LTD.

## GUARANTEED TECHNICAL PARTICULARS FOR 36kV 1600A DB ISOLATORS

S.No	Item	Guaranteed value
1	Type / Installation	"DBR' Double Break Center post rotating type" / Outdoor installation
2	Manufacturer's Name and Country of Manufacture	PAVANI POWR SYSYEM PVT LTD. INDIA
3	Standards according to which the isolators are manufactured	IS: 9921 - Part-I to V / IEC:62271-102
4	Miximum design voltage at which the isolator can operate (kV)	36kV
5	Frequency (Hz)	50Hz
6	Rated voltage (kV)	33kV
7	Maximum current that can be safely interrupted by the isolator Inductive (A & % PF ) Capacitive (A & % PF)	Inductive- 0.7 Amps at 0.15 p.f. Capacitive- 0.7 Amps at 0.15 p.f.
8	Continuous current rating Nominal (Amps) under site conditions	1600
9	Rated short time current	MAIN SWITCH
	i) For 3 seconds (kA rms)	31.5KA 3.Sec.
	ii) For 1 second (kA rms)	Not Applicable
	iii) Rated peak short time current (kVp)	78.75
10	Current density at the minimum cross-section of	Contact sizes indicated in Annexure - III of specification & as per the property of materials.
	a) Moving blade (Amps/ Sq.mm) Cu. Tube	2.0 Amps / Sq.mm for HDE Cu. Tube
	b) Terminal pad : Aluminum Flat	1.0 Amp/ Sq.mm for EC grade Alu. Flat
	c) Contacts : Cu.Flat	1.6 Amps/Sq.mm for HDE Cu. Flat
	d) Terminal connector : Aluminm Casting	1.0 Amps/Sq.mm for Alu. Alloy.
11	Maximum Temp. Rise of current carrying parts when carrying rated current continuously (deg.C)	Within the specified limits of IS: 9921 - PartII/ IEC-62271-102
12	<b>Insulation Levels</b>	:
	i) Impulse withstand voltage (kV peak) phase to earth across isolating distance:	170/ 195 kV peak
	ii) Switching surge withstand voltage (kV peak) phase to earth across isolating distance	Not applicable
	iii) Power frequency withstand voltage (kV rms) Phase to earth isolating distance	70/ 80 kV rms
13	<b>Minimum clearance in air</b>	:
	i) Between poles (mm)	Phase spacing of 1300 mm
	ii) Between live parts and earth (mm)	450mm (Equal to dry arcing distance of insulators selected)
	iii) Between live parts when switch is open	:
	a) On the same pole (mm)	900
	b) Between adjacent poles (mm)	1300

NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.

Chief Engineer (Projects)



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S.No	Item	Guaranteed value
14	<b>Rated mechanical terminal load</b>	:
	i) Load along the terminal connector side (Kg.)	: Not applicable ( As per IS / IEC )
	ii) Load across the terminal connector side (Kg.)	: Not applicable ( As per IS / IEC )
16	Torque required to operated the switch in Kg.m	: 36
17	<b>Standards according to which the isolators are manu</b>	:
	i) No. of insulators per pole	: Three
	ii) No. of breaks per pole	: Two
	iii) Type of closing / opening mechanism (Horizontal/Vertical break straight etc.)	: Horizontal double break isolator
	iv) <b>Contacts</b>	:
	a) Material and grade	: Hard drawn electrolytic copper flat, contact area is silver plated (15 Microns)
	b) Cross-sectional area (mm)	: 1017 sq.mm for 1600 Amps
	v) <b>Moving blades</b>	:
	a) Material and grade	: Hard drawn electrolytic copper flat, contact area is silver plated (15 Microns)
	b) Cross-sectional area (mm)	: 829 sq.mm for 1600 Amps
	vi) <b>Contact support</b>	:
	a) Material and size of channel/block	: 4 mm thick, MS HDG
	b) Material and size of plate	: 6 mm thick, MS HDG Plate
	vii) Rain hood - Material grade and size	: 1mm GI Sheet
	viii) Turn & twist type mechanism	:
	a) Material and size of clamps	: 8 mm thick, M.S. flat ( HDG)
	b) Maerial size of springs	: Ø 3mm S.S spring
	c) Whether springs are encased	: Not encased
	ix) Nuts and Bolts	:
	a) Size, material and grade in live parts	: Less than M12: Stainless steel
	b) Size, material and grade in other parts	: M12 and above: MS HDG.
	x) Insulator base plate material and size of plate below insulators	: 6 mm MS Hot dip galvanised plate
	xi) Bearings	:
	a) Material and size of housing	: MS HDG suitable for 25 ID taper roller/ ball bearing.
	b) No. of bearings, location and size	: 2 Nos . Below centre rotating post insulator.

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Chief Engineer (Projects)


Drawing approval subject to valid vendor registration

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## TRANSMISSION CORPORATION OF ANDHRA PRADESH LTD.

## GUARANTEED TECHNICAL PARTICULARS FOR 36KV 1600A DB ISOLATORS

S.No	Item	Guaranteed value
	xii) Tandem pipe	:
	a) Size, class and No. of pipes	: 25mm NB Class B, as per GA drgs
	b) Size of shackle, screw	: Suitable for 25 NB pipe
	c) No. of bearings/bush and its material and size	: Not applicable
	xiii) Type of interlock	: Not applicable
	xiv) Down pipe size and class	: 40 NB Class B GI pipe
	xv) Type of universal/swivel joint	:
	a) Between bearing and down pipe	: Universal Joint
	b) Between down pipe and operating mechanism	: Vernier flange
	xvi) Operating mechanism	: Manual operated mechanism for main switch
	a) Control cabinet material and thickness	: 3.mm THK Aluminum Sheet
	Degree of protection	: IP: 55 as per IS: 2147
	Type, size and No. of cable glands	: Double compression type 2Nos. 19 mm (Contractor scope of supply)
	Whether removable gland plate provided	: Yes, removable gland plate provided.
	b) Make, type, rating and quantity of motors	: Not applicable
	Auxiliary switch	: 4 NO + 4 NC Contacts for Isolator
	Terminal blocks	: 10 Amps, 2 A DC Breaking with 2A - 1 No.
	Insulated wires	: UBT-4
	xvii) Base:	: 1100 V grades, 2.5 Sq. mm PVC cable
	a) Size of steel section used	: 100x50x5mm channel (M.S.HDG)
	b) Overall size	: 100 x 50 x 1050 mm
	c) Total weight.	: 9Kgs (Approx.) one pole
18	List of drawings furnished.	: Enclosed.
	Name of the firm	: For Pavani Power Systems Pvt. Ltd.
	Signature of Bidder	: 
	Designation & Seal	: ( T. SESHAGIRI RAO ) Managing Director
	NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.	Date: 18-05-2023

1) Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators in the substation during foundation works to ensure safe live to ground clearances as per IE rules.

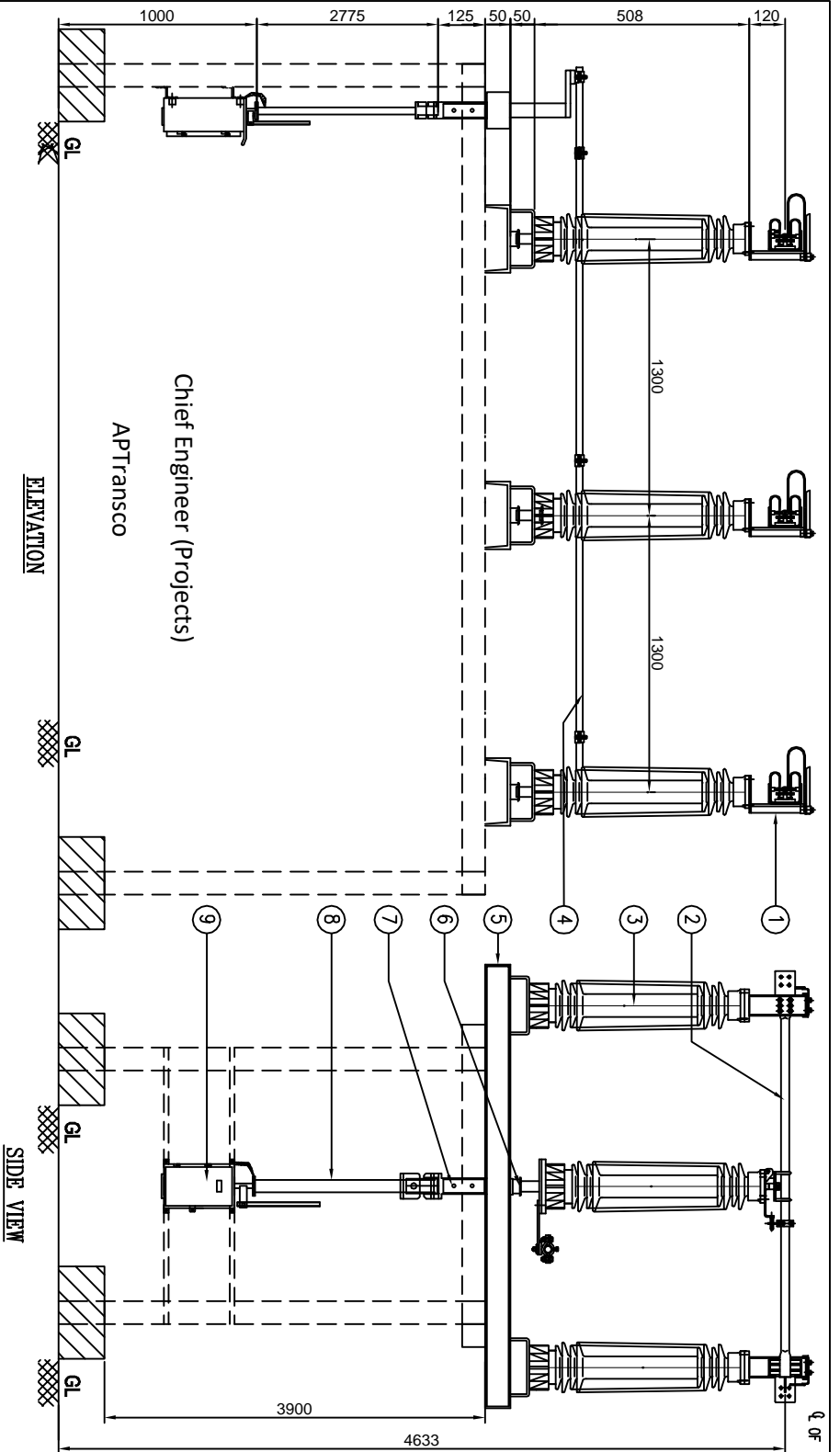
2) Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings, the EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolators requirement and compatibility.

Chief Engineer (Projects)

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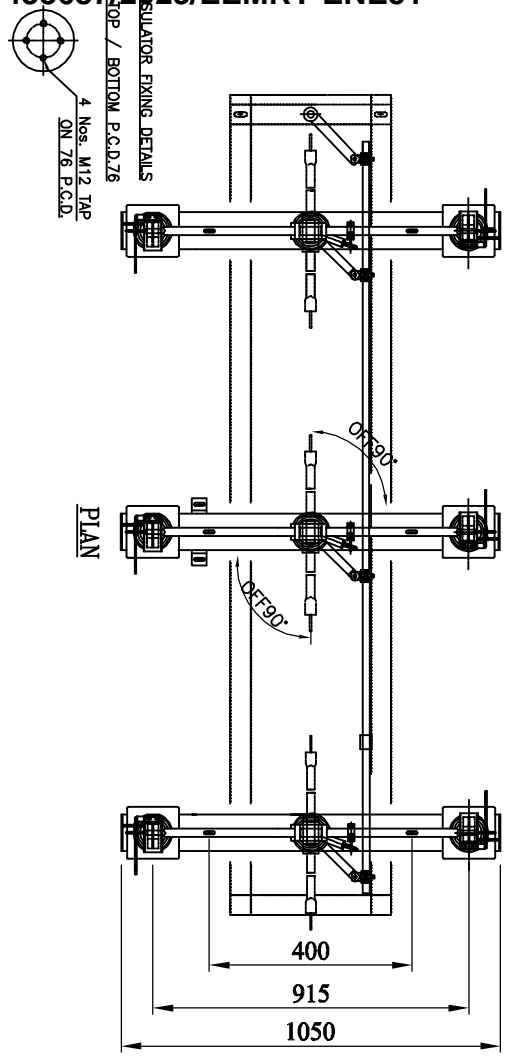
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7433687/2023/EEMRT-ENE51



Chief Engineer (Projects)  
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PART LIST

1. FIXED CONTACT ASSEMBLY
2. MOVING CONTACT ASSEMBLY
3. INSULATOR STACK ( CUSTOMER SCOPE)
4. TANDEM PIPE FOR ISOLATOR(25NB, CLASS'B'G.I PIPE)
5. BASE CHANNEL (100 X 50 X 5MM THK. M.S HDG)
6. ROTATING STOOL BASE WITH LEVER ARM & CLAMP (M.S HDG)
7. SWIVEL JOINT (M.S HDG)
8. DOWN PIPE FOR ISOLATOR (40NB CLASS'B" G.I PIPE)
9. MANUAL OPERATING MECHANISM (R.G BOX) FOR ISOLATOR

REFERENCE DRAWINGS:

1. FOR ISOLATOR CONTACT ASSEMBLY (1800 AMPS)
2. FOR MANUAL OPERATED MECHANISM FOR ISOLATOR
3. FOR NAME PLATE DETAILS

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. THE INDICATED DIMENSIONS ARE SUBJECT TO THE MANUFACTURING TOLERANCE:  
UP TO 50mm -----±3%; 51 TO 100mm ----- ±2%  
101 TO 300mm -----± 1%; ABOVE 300mm -----±0.5%
3. SHORT TIME CURRENT RATING 31.5KA rms. FOR 3 Sec.
4. MIN. CREEPAGE DISTANCE 900 mm(25mm/KV)
5. APPLICABLE STANDARD : IEC: 62271-102
6. ALL FERROUS PARTS ARE HOT DIP GALVANIZED (85MICRONS)

For Pavani Power Systems Pvt. Ltd.

( T. SESHAGIRI RAO )  
Managing Director



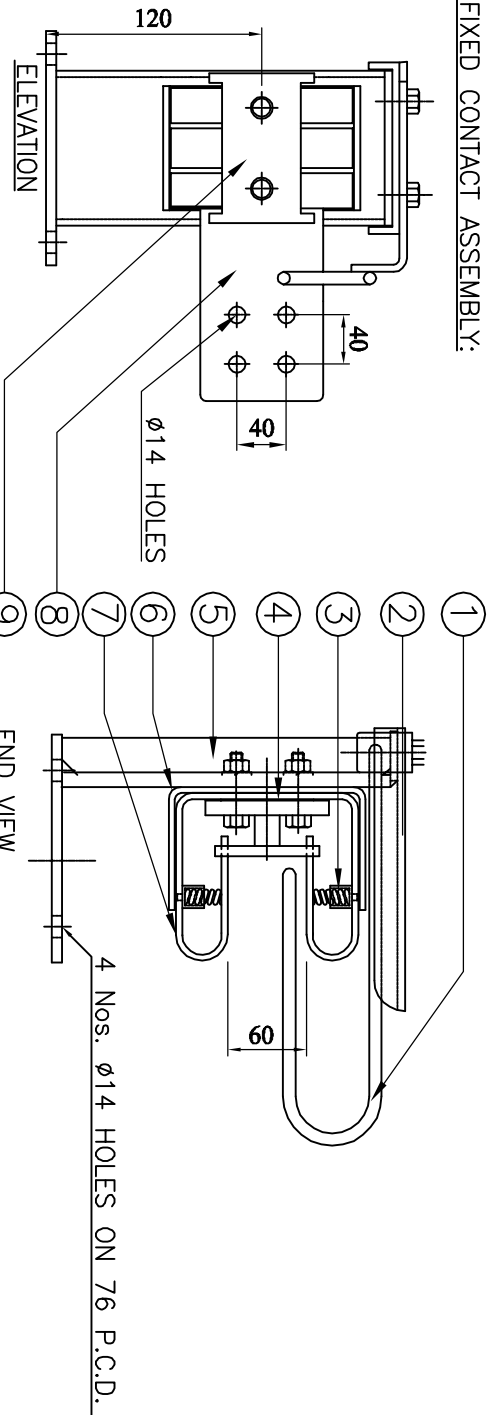
TRANSMISSION CORPORATION OF  
ANDHRA PRADESH LTD

REVISIONS:		SCALE: 1:1	
D	C	18-05-2023	DATE
B	A		DATE
A			DATE
P.V. No. 38KV 1800 A, TP, HDB, RT, ISOLATOR WITHOUT E.S. ( WITH MANUAL OPERATING MECHANISM )		DRAWN	
P.V. No. 38KV 1800 A, TP, HDB, RT, ISOLATOR WITHOUT E.S. ( WITH MANUAL OPERATING MECHANISM )		CHECKED	
P.V. No. 38KV 1800 A, TP, HDB, RT, ISOLATOR WITHOUT E.S. ( WITH MANUAL OPERATING MECHANISM )		APPROVED	
P.V. No. 38KV 1800 A, TP, HDB, RT, ISOLATOR WITHOUT E.S. ( WITH MANUAL OPERATING MECHANISM )		SHEET 01 OF 04	
P.V. No. 38KV 1800 A, TP, HDB, RT, ISOLATOR WITHOUT E.S. ( WITH MANUAL OPERATING MECHANISM )		Dwg. No. PPSPl-APT-CAD-44-01	

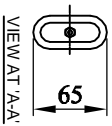
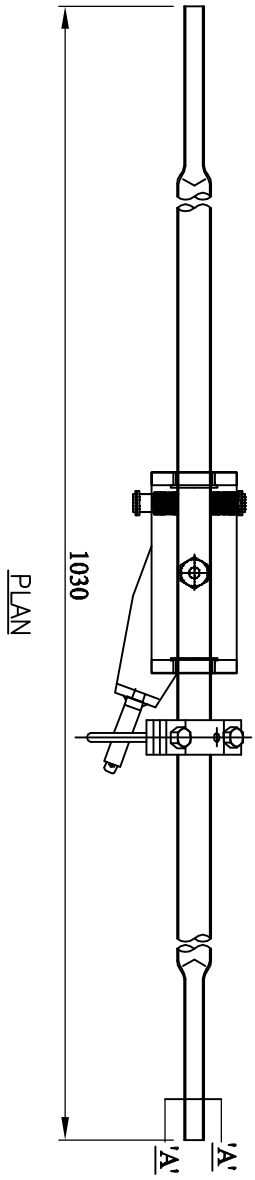
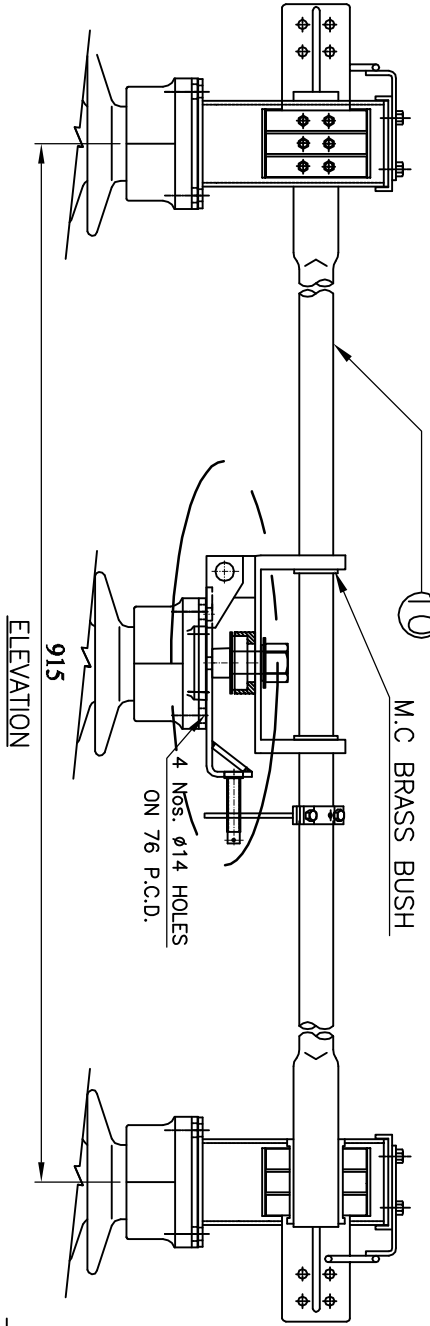


PAVANI POWER SYSTEMS PVT. LTD.  
Plot No. 05/055/4/6, K.K. OPENERS SOCIETY,  
KODAPALLI POST, HYDERABAD - 500100.  
KODAPALLI WALKER DIST. TELANGANA

FIXED CONTACT ASSEMBLY:



MOVING CONTACT ASSEMBLY:



BILL OF MATERIAL PER ONE SET

SL NO.	DESCRIPTION	SIZE IN MM	MATERIAL
1.	ARCING HORNS	ø10MM ROD	M.S HDG
2.	RAIN HOOD	1MM SHEET	M.S HDG
3.	JAW SPRINGS	ø2mm WIRE	STAINLESS STEEL
4.	BI-METALLIC SHEET	2mm THK	ALU. + CU.
5.	FIXED CONTACT SUPPORT CHANNEL	115x30x4 mm	M.S HDG
6.	JAW SUPPORT BRACKETS	32 X 5 FLAT	M.S HDG
7.	FIXED CONTACT JAWS ( 3. NOS)	32 X 5.3 FLAT	HDEC
8.	JUMPER PAD	100 X 16 FLAT	ALUMINIUM
9.	FC SPACER	-----	ALUMINIUM
10.	MOVING CONTACT	50-ODX38-ID	HDEC

**NOTE:**

1. ALL DIMENSIONS ARE IN MILLIMETER
2. ALL FERROUS PARTS ARE HOT DIP GALVANIZED (85 MICRONS)
3. ALL NON FERROUS CONTACT POINTS ARE SILVER PLATED (15 MICRONS)
4. MOVING CONTACT ASSEMBLY SHOWN IS FOR TURN & TWIST ASSEMBLY

For Pavani Power Systems Pvt. Ltd.

( T. SESHAGIRI RAO )  
Managing Director

**TRANSMISSION CORPORATION OF ANDHRA PRADESH LTD**

REVISIONS

NO.	DATE	DESCRIPTION
D		
C		
B		
A		

**AP TRANSCO**

MAIN SWITCH CONTACT ASSEMBLY  
( FOR 36KV, 1600A ISOLATOR)

PAVANI POWER SYSTEMS PVT.LTD.  
Plot No. 05/055/4/6, K.K. OPENERS SOCIETY,  
INDA, DULAPALLY, QUTHUBULLAPURU MANDAL,  
KOMURU FORT, HYDERABAD - 500100.  
REGIONAL MANAGER DIST. TELANGANA

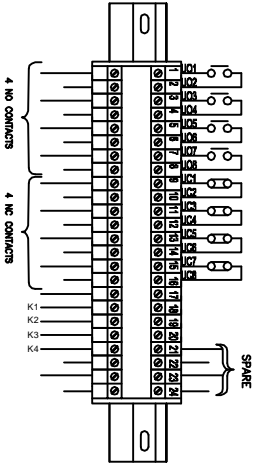
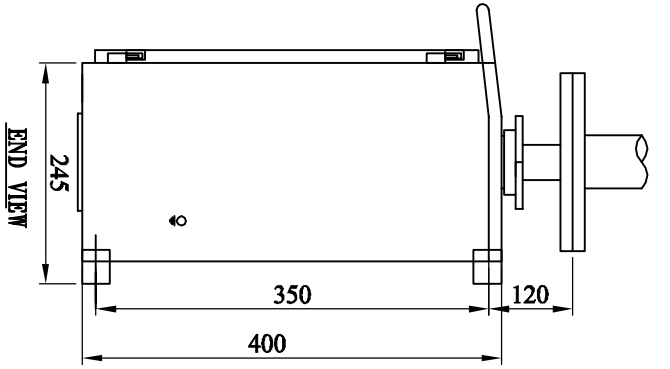
SCALE: 1:1  
DATE: 18-05-2023  
DRAWN: \_\_\_\_\_  
CHECKED: \_\_\_\_\_  
APPROVED: \_\_\_\_\_  
SHEET: 02 OF 04  
Dwg. No: PPSPL-APT-MCA-44-02

Drawing approval subject to valid vendor registration

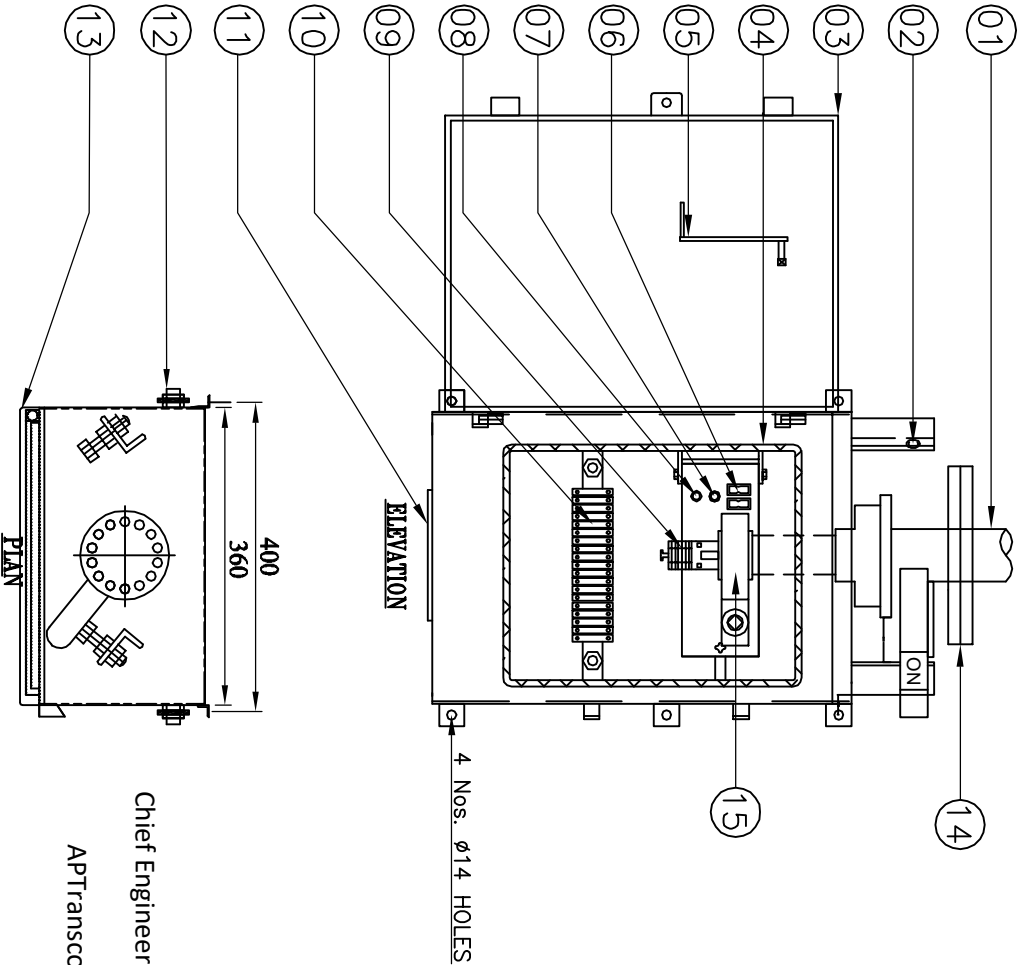
Chief Engineer (Projects)

APTRANSCO

7483687/2023/EFMRT-ENE51



AUX. SWITCH CONTACT DETAILS FOR ISOLATOR (4 NO + 4 NC )



Drawing approval subject to valid vendor registration

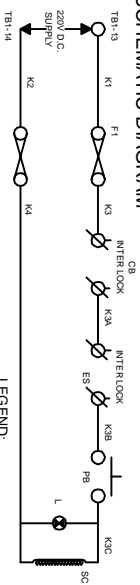
ALL DIMENSIONS ARE IN MILLIMETERS  
 CUBICLE WILL BE POWDER COATED WITH LIGHT GRAY SHADE NO:631 OF IS : 5  
 DEGREE OF PROTECTION IP: 55 AS PER IS :13947  
 20% SPARE TERMINALS WILL BE PROVIDED AND SHALL BE UNIFORMLY DISRIBUTED  
 TO ALL TERMINAL BLOCKS EQUALLY  
 WIRING WILL BE DONE WITH 1100V.GRADE 2.5 Sq.MM CU STRANDED P.V.C.  
 INSULATED CONDUCTOR

WEIGHT OF THE BOX : 35Kg (APPROX.)  
 PPSPL MAKE REDUCTION GEAR RATIO:20:1 MATERIALS EN8/STEEL

PART LIST:-

1. DOWN PIPE
2. ON & OFF STOPPER
3. CUBICAL WITH DOOR 3mm Alu. SHEET)
4. RUBBER GASKET (EPDM)
5. OPERATING HANDLE
6. FUSES (2A)
7. INDICATION LAMP
8. PUSH BUTTON
9. AUXILIARY SWITCH 4NO + 4NC
10. TERMINAL BLOCK(UBT-4 (VINMECH OR EQVT.))
11. DETACHABLE TYPE CABLE GLANDS PLATE
12. EARTHING TERMINAL-2 Nos.
13. RAIN SHADE
14. 12/14 HOLES FLANGE 8MM THK. (M.S HDG)
15. REDUCTION GEAR BOX

SCHEMATIC DIAGRAM



LEGEND:  
 F1 F2-----FUSES (2amp Rating)  
 PB-----PUSH BUTTON  
 L-----INDICATION LAMP  
 SC-----SOLENOID COIL

Chief Engineer (Projects)

APTransco

For Pavani Power Systems Pvt. Ltd.

( T. SESHAGIRI RAO )  
 Managing Director



TRANSMISSION CORPORATION OF  
 ANDHRA PRADESH LTD

REVISONS	D	C	B	A

TYPE: AP TRANSCO

MANUAL OPERATING MECHANISM BOX  
 ( FOR 36KV ISOLATOR)



PAVANI POWER SYSTEMS PVT.LTD.  
 Plot No. 05/055/4/6, K.K. OPENERS SOCIETY,  
 DDA, DULAPALLY, QUTHUBULLAPUR MANDAL,  
 KOMPALA POST, HYDERABAD - 500100.  
 MEDICAL MANAGER DIST. TELANGANA

SCALE: 1:1	DATE: 18-05-2023
DRAWN: _____	CHECKED: _____
APPROVED: _____	SHEET: 05 OF 04
DRG.No: PPSPl-APT-0M-14-03	

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**FOR EPC CONTRACTS ONLY**



**MANUFACTURED & SUPPLIED BY**  
**PAVANI POWER SYSTEMS PVT.LTD.**  
 PLOT No.05/055/A/6, K.K.OWNERS SOCIETY, DULAPALLY INDUSTRIAL AREA,  
 KOMMPALLY POST, HYDERABAD-500100, MEDCHAL MALKAJGIRI DIST. T.S.

**ISOLATOR RATING NAME PLATE**

**CLIENT:** TRANSMISSION CORPORATION OF A.P LTD

**CUSTOMER:** -----

**PO No / DATE:** -----

**YEAR OF MFG.**  -----  SL.No. -----

**TYPE** DBR **FREQUENCY (Hz)** 50

**VOLTAGE (kV)** 36 **I.W. VOLTAGE** 170kVp

**STC KA / SEC.** 31.5 / 3 **P.F.W. VOLTAGE(DRY)** 70KV rms

**CURRENT (A)** 1600 **OPERATING DRIVE** MANUAL

**CONTROL VOLTAGE** 220 V DC

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2) Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings, the EPC contractors shall be instructed to supply the same in line with CT/PT/CVT/Isolators requirement and compatibility.

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APTransco

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 Managing Director

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**TRANSMISSION CORPORATION OF ANDHRA PRADESH LTD**



REVISIONS
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TYPE:	SCALE: 1:1
NAME PLATE DETAILS ( 33kV ISOLATOR )	DATE: 18-05-2023
	DRAWN:
	CHECKED:
	APPROVED:
	SHEET: 04 OF 04
	DWG.No: PPS/Pl-APT-NPD-44-04

**PAVANI POWER SYSTEMS PVT.LTD.**  
 Plot No. 05/055/A/6, K.K.OWNERS SOCIETY,  
 DULAPALLY QUARTERMASTERS MANDAL,  
 KOMMPALLY POST, HYDERABAD - 500100.  
 MEDCHAL MALKAJGIRI DIST. TELANGANA