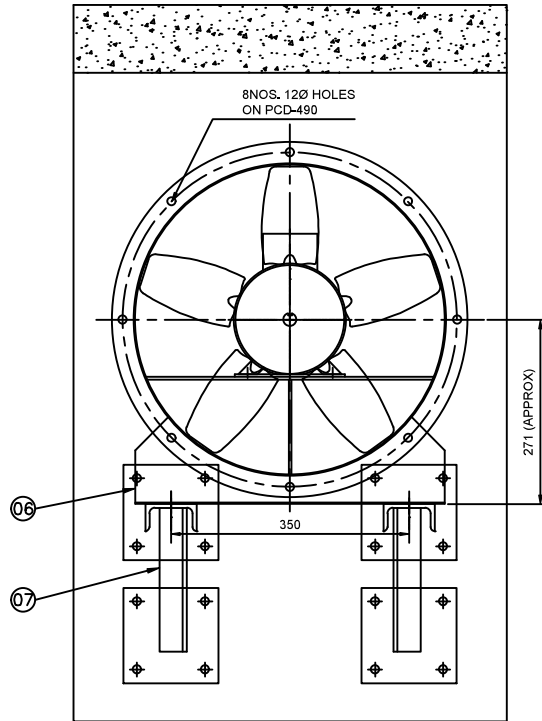


ELEVATION



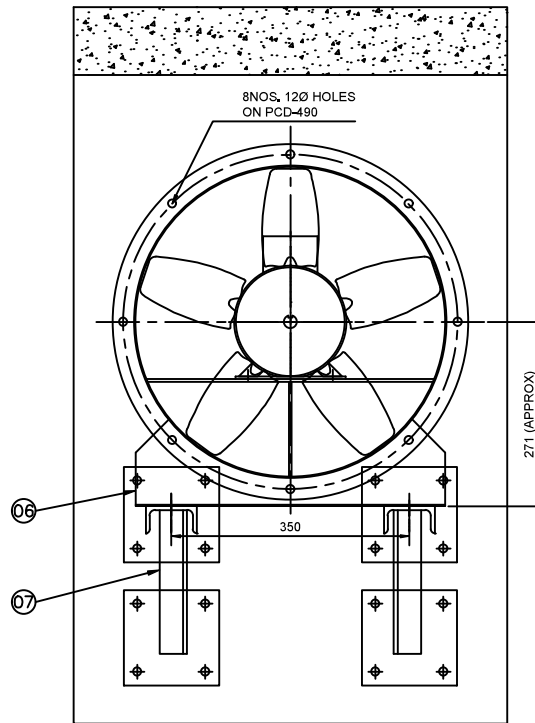
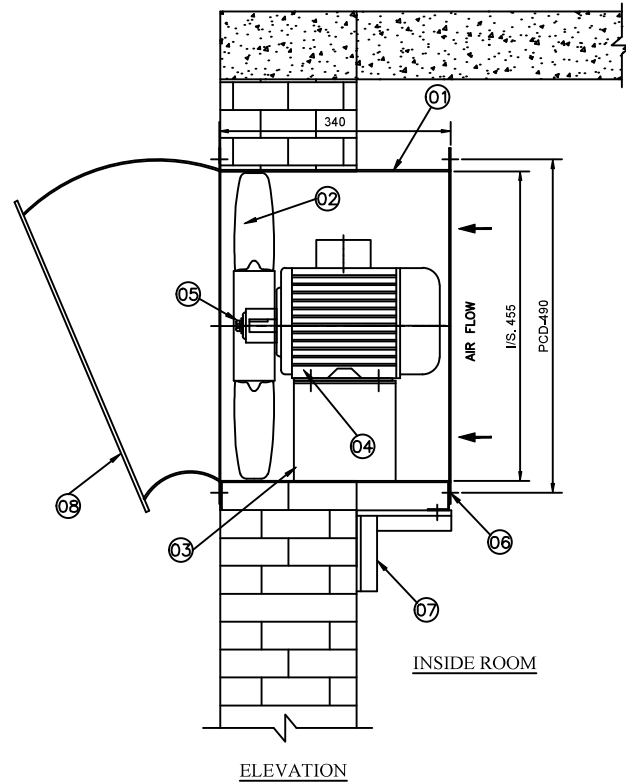
DRIVE END VIEW

(NO. OF BLADES SHOWN ARE PICTORIAL ONLY.  
ACTUAL NO. OF BLADES VARIED AS PER SELECTION.)

**NOTE:-**

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE STATED.
2. FAN WILL BE STATICALLY & DYNAMICALLY BALANCED TO GR:G6.3 AS PER ISO 1940.
3. FAN CONSTRUCTION CONFIRMING AS PER IS:1079. (LATEST)
4. NOISE LEVEL 65 DBA AT 1 MT, AWAY FROM FAN AS PER IS: 12065-1987
5. MECHANICAL VIBRATION OF THE FAN & MOTOR UNIT SHALL BE RESTRICTED ACCORDING TO THE RELEVANT CLAUSES OF ISO 10816-1-1995 (E).
6. PAINTING SHALL BE AS PER SPECIFICATION.
7. THE TUBE AXIAL FANS SHALL BE OF VARIABLE PITCH TYPE.
8. FAN MANUFACTURING AND TESTING SHALL BE AS PER IS 3588-1987
9. FAN WALL CUTOUT AS PER FAN INSIDE DIAMETER BASIS.
10. FAN CONSTRUCTION AS PER CONFIRMING AS PER IS 3588:1987
11. VAIBRATION LIMITED AS PER ISO 14694-2003. (Max- 4.5m/sec)
12. MOTOR DRGEE OF PROTECTION OF IP - 55.
13. MOTOR CLASS OF INSULATION - F
14. MOTOR EFFICIENCY CLASS- IE-3.
15. WALL OPEN, REQ 450 mm FOR FAN FIXING.

SL. NO.	TECHNICAL DATA		
1.	Manufacturer	SUBURBAN INDUSTRIAL WORKS PVT. LTD.	
2.	Model / Nomenclature	TLJ-450/"SARLA"	
3.	Quantity	6 Nos.	
4.	Impeller Dia	450 MM	
(a)	Type of Blade	Aerofoil Type	
5.	Capacity in CMH ( EXHAUST FAN )	4500	
6.	Static Pressure mm. WG.	10	
7.	Fan Speed - RPM	1440	
8.	Fan Total Efficiency - %	69.6	
9.	Shaft Power in KW	0.25	
10.	Material of Construction		
(a)	Fan Casing-Material / Thickness in MM.	MILD STEEL / 3.00 MM	
(b)	Impeller Material	Cast AL. , LM-6	
11.	Motor Data		
(a)	Type of Motor	IE3 TEFC SQ. CAGE INDUCTION MOTOR 415V, ±10%, 50 Hz, 3 Ph, AC Supply	
(b)	Rating of Motor in KW/P	0.55 KW/4 Pole(Frame-80)	
(c)	Motor Speed (Synchronised)	1500	
(d)	Insulation Class	F	
(e)	Protection	IP:55	
13.	Fan Balancing	Dynamically Balanced As per ISO:1940, G6.3.	
14.	Painting	Complete Fan Casing shall be Painted with Synthetic Enamel Paint over two coats of Red Oxide Primer.	
08.	COWL WITH BIRD SCREEN	1 NO.	MS EFE SCOPE
07.	SUPPORTING STRUCTURE	1NO.	MS EFE SCOPE
06.	MOUNTING LEGS	2NOS.	MS IS: 2062/1079
05.	IMPELLER RETAINING WASHER	1 NO.	MS IS: 2062/1079
04.	MOTOR	1 NO.	SIEMENS EFE SCOPE
03.	MOTOR BASE	1 NO.	MS IS: 2062/1079
02.	IMPELLER FANS ALUMINIUM SINGLE PIECE CAST IMPELLERS	1 NO.	AL LM-6 (THIK 3MM)
01.	FAN CASING 3.15THIK M.S	1 NO.	MS IS: 2062/1079
SL.	DESCRIPTION	QTY.	MATL. REFERENCE
<b>BILL OF MATERIAL FOR EACH FAN</b>			



**DRIVE END VIEW**  
(NO. OF BLADES SHOWN ARE PICTORIAL ONLY.  
 ACTUAL NO. OF BLADES VARIED AS PER SELECTION.)

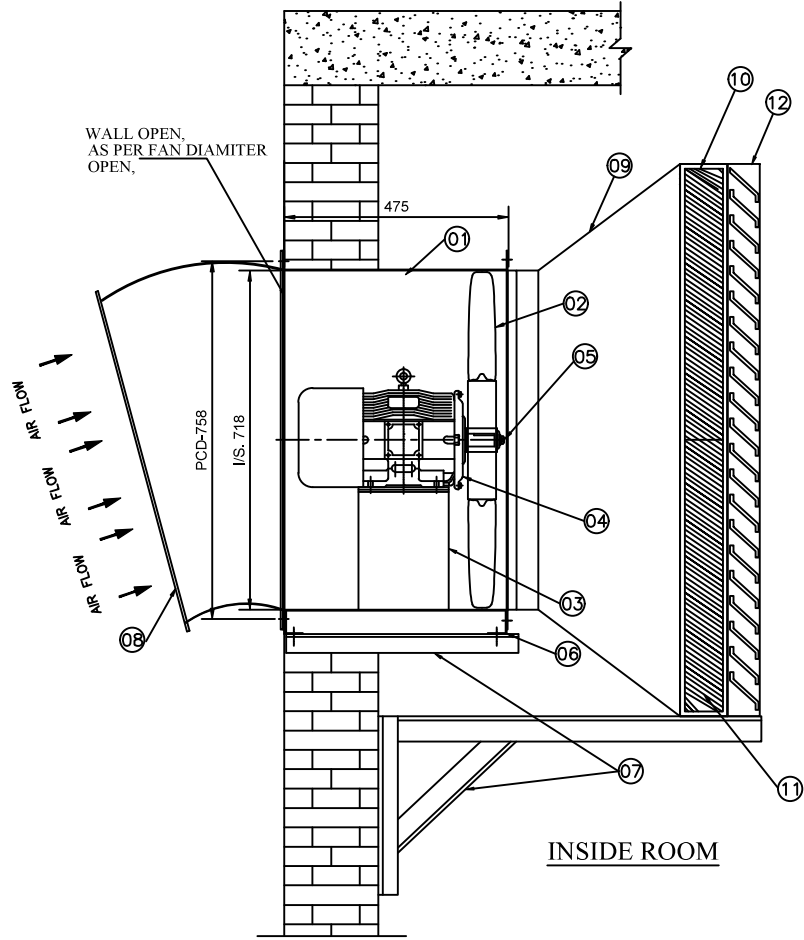
**NOTE:-**

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE STATED.
2. FAN WILL BE STATICALLY & DYNAMICALLY BALANCED TO GR:G6.3 AS PER ISO 1940.
3. FAN CONSTRUCTION CONFIRMING AS PER IS:1079. (LATEST)
4. NOISE LEVEL 85 DBA AT 1 MT, AWAY FROM FAN AS PER IS: 12065-1987
5. MECHANICAL VIBRATION OF THE FAN & MOTOR UNIT SHALL BE RESTRICTED ACCORDING TO THE RELEVANT CLAUSES OF ISO 10816-1-1995 (E).
6. PAINTING SHALL BE AS PER SPECIFICATION.
7. THE TUBE AXIAL FANS SHALL BE OF VARIABLE PITCH TYPE.
8. FAN MANUFACTURING AND TESTING SHALL BE AS PER IS 3588-1987
9. FAN WALL CUTOUT AS PER FAN INSIDE DIAMETER BASIS.
10. FAN CONSTRUCTION AS PER CONFIRMING AS PER IS 3588:1987
11. VAIBRATION LIMITED AS PER ISO 14694-2003. (Max- 4.5m/sec)
12. MOTOR DRGEE OF PROTECTION OF IP - 55.
13. MOTOR CLASS OF INSULATION - F
14. MOTOR EFFICIENCY CLASS- IE-3.
15. WALL OPEN, REQ 450 mm FOR FAN FIXING.

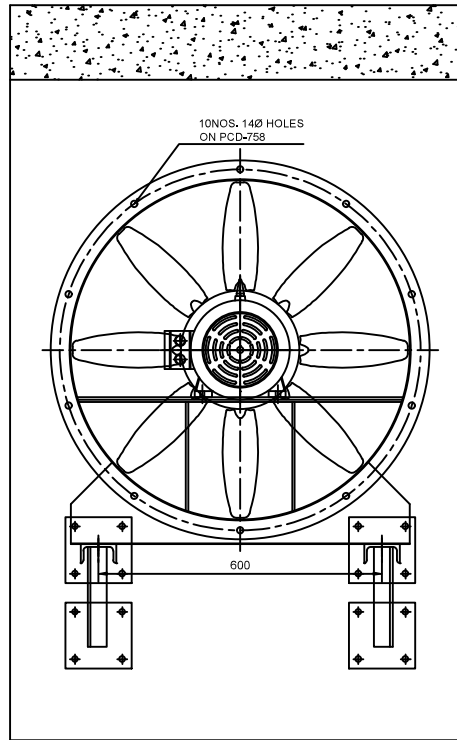
**TECHNICAL DATA**

1.	Manufacturer	SUBURBAN INDUSTRIAL WORKS PVT. LTD.	
2.	Model / Nomenclature	TLJ-450/"SARLA"	
3.	Quantity	3 Nos.	
4.	Impeller Dia	450 MM	
(a)	Type of Blade	Aerofoil Type	
5.	Capacity in CMH ( EXHAUST FAN )	6000	
6.	Static Pressure mm. WG.	10	
7.	Fan Speed - RPM	1440	
8.	Fan Total Efficiency - %	58.2	
9.	Shaft Power in KW	0.45	
10.	Material of Construction		
(a)	Fan Casing-Material / Thickness in MM.	MILD STEEL / 3.00 MM	
(b)	Impeller Material	Cast AL., LM-6	
11.	Motor Data		
(a)	Type of Motor	IE3 TEFC SD. CAGE INDUCTION MOTOR 415V, ±10%, 50 Hz, 3 Ph, AC Supply	
(b)	Rating of Motor in KW/P	0.55 KW/4 Pole(Frame-80)	
(c)	Motor Speed (Synchronised)	1500	
(d)	Insulation Class	F	
(e)	Protection	IP:55	
13.	Fan Balancing	Dynamically Balanced As per ISO:1940,G6.3.	
14.	Painting	Complete Fan Casing shall be Painted with Synthetic Enamel PAINT over two coats of Red Oxide Primer.	
08.	COWL WITH BIRD SCREEN	1 NO.	MS EFE SCOPE
07.	SUPPORTING STRUCTURE	1NO.	MS EFE SCOPE
06.	MOUNTING LEGS	2NOS.	MS IS: 2062/1079
05.	IMPELLER RETAINING WASHER	1 NO.	MS IS: 2062/1079
04.	MOTOR	1 NO.	SIEMENS EFE SCOPE
03.	MOTOR BASE	1 NO.	MS IS: 2062/1079
02.	IMPELLER FANS ALUMINIUM SINGLE PIECE CAST IMPELLERS	1 NO.	AL LM-6 (THIK 3MM)
01.	FAN CASING 3.15THIK M.S	1 NO.	MS IS: 2062/1079
SL.	DESCRIPTION	QTY.	MATL. REFERENCE

**BILL OF MATERIAL FOR EACH FAN**



**ELEVATION**



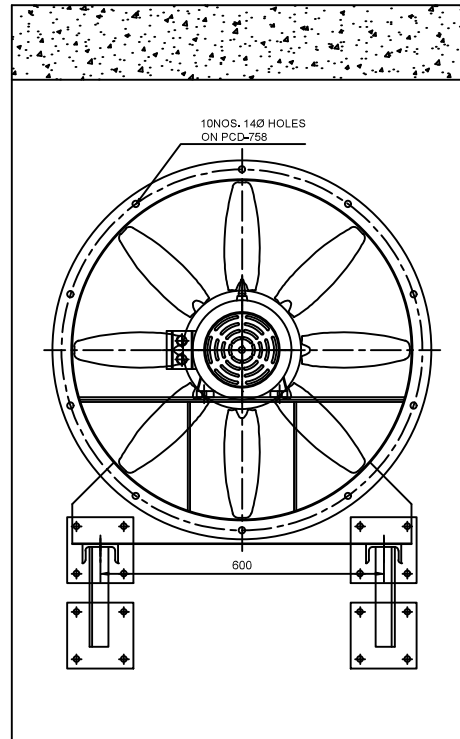
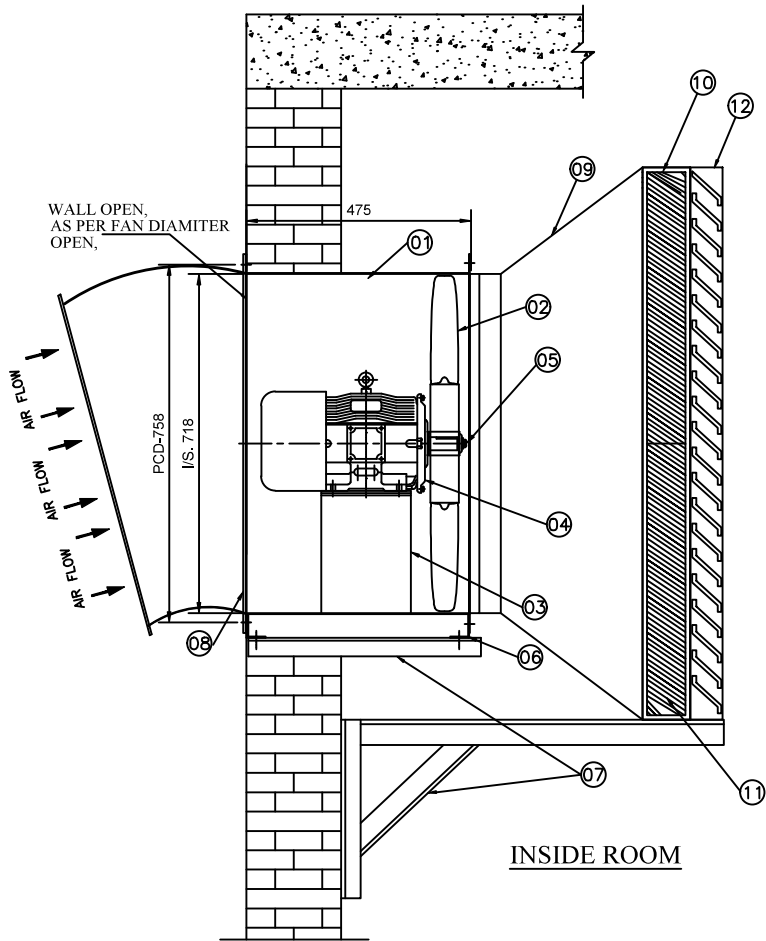
**DRIVE END VIEW**

(NO. OF BLADES SHOWN ARE PICTORIAL ONLY.  
ACTUAL NO. OF BLADES VARIED AS PER SELECTION.)

- NOTE:-**
1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE STATED.
  2. FAN WILL BE STATICALLY & DYNAMICALLY BALANCED TO GR-G8.3 AS PER ISO 1940.
  3. FAN CONSTRUCTION CONFORMING AS PER IS:1079. (LATEST)
  4. NOISE LEVEL 65 DBA AT 1 MT. AWAY FROM FAN AS PER IS: 12005-1987
  5. MECHANICAL VIBRATION OF THE FAN & MOTOR UNIT SHALL BE RESTRICTED ACCORDING TO THE RELEVANT CLAUSES OF ISO 10010-1-1996 (6).
  6. PAINTING SHALL BE AS PER SPECIFICATION.
  7. THE TUBE AXIAL FANS SHALL BE OF VARIABLE PITCH TYPE.
  8. FAN MANUFACTURING AND TESTING SHALL BE AS PER IS 3586-1987
  9. FAN WALL CUTOFF AS PER FAN INSIDE DIAMETER BASIS.
  10. FAN CONSTRUCTION AS PER CONFORMING AS PER IS 3586:1987
  11. VIBRATION LIMITED AS PER ISO 14894-2003. (Max- 4.5m/sec)
  12. MOTOR DEGREE OF PROTECTION OF IP - 55.
  13. MOTOR CLASS OF INSULATION - F
  14. MOTOR EFFICIENCY CLASS- IE-3.
  15. WALL OPEN, REQ 780 mm FOR FAN FIXING.

TECHNICAL DATA			
1.	Manufacturer	SUBURBAN INDUSTRIAL WORKS PVT. LTD.	
2.	Model / Nomenclature	TLJ-710/"SARLA"	
3.	Quantity	6 Nos.	
4.	Impeller Dia	710 MM	
(a)	Type of Blade	Aerofoil Type	
5.	Capacity in CMH (Supply air Fan)	7500	
6.	Static Pressure mm. WG.	30	
7.	Fan Speed - RPM	1440	
8.	Fan Total Efficiency - %	62.5	
9.	Shaft Power in KW	1.04	
10.	Material of Construction		
(a)	Fan Casing-Material / Thickness in MM.	MILD STEEL / 3.00 MM	
(b)	Impeller Material	Cast AL., LM-6	
11.	Motor Data		
(a)	Type of Motor	IE3 TEFC SD. CAGE INDUCTION MOTOR 415V, ±10%, 50 Hz, 3 Ph, AC Supply	
(b)	Rating of Motor in KW/P	1.5 KW/4 Pole(Frame-90L)	
(c)	Motor Speed (Synchronised)	1500	
(d)	Insulation Class	F	
(e)	Protection	IP:55	
13.	Fan Balancing	Dynamically Balanced As per ISO:1940:G8.3.	
14.	Painting	Complete Fan Casing shall be Painted with Synthetic Enamel PAint over two coats of Red Oxide Primer.	
12.	AIR INTAKE LOUVER	1 NO.	GI LIFE SCOPE
11.	FILTER	4 NO.	HDPE LIFE SCOPE
10.	FILTER FRAME	1 NO.	GI LIFE SCOPE
09.	ADOPTER SECTION	1 NO.	GI LIFE SCOPE
08.	COWL WITH BIRD SCREEN	1 NO.	MS LIFE SCOPE
07.	SUPPORTING STRUCTURE	1NO.	MS LIFE SCOPE
06.	MOUNTING LEGS	2NOS.	MS IS: 2062/1079
05.	IMPELLER RETAINING WASHER	1 NO.	MS IS: 2062/1079
04.	MOTOR	1 NO.	SIEMENS LIFE SCOPE
03.	MOTOR BASE	1 NO.	MS IS: 2062/1079
02.	IMPELLER FANS ALUMINIUM SINGLE PIECE CAST IMPELLERS	1 NO.	AL LM-6 (THIK 3MM)
01.	FAN CASING 3.15THIK M.S	1 NO.	MS IS: 2062/1079
SL.	DESCRIPTION	QTY.	MATL. REFERENCE

**BILL OF MATERIAL FOR EACH FAN**



(NO. OF BLADES SHOWN ARE PICTORIAL ONLY. ACTUAL NO. OF BLADES VARIED AS PER SELECTION.)

SL. NO.	TECHNICAL DATA		
1.	Manufacturer	SUBURBAN INDUSTRIAL WORKS PVT. LTD.	
2.	Model / Nomenclature	TLJ-710/"SARLA"	
3.	Quantity	3 Nos.	
4.	Impeller Dia	710 MM	
(a)	Type of Blade	Aerofoil Type	
5.	Capacity in CMH (Supply air Fan)	10000	
6.	Static Pressure mm. WG.	30	
7.	Fan Speed - RPM	1440	
8.	Fan Total Efficiency - %	67.5	
9.	Shaft Power in KW	1.41	
10.	Material of Construction		
(a)	Fan Casing-Material / Thickness in MM.	MILD STEEL / 3.00 MM	
(b)	Impeller Material	Cast AL., LM-6	
11.	Motor Data		
(a)	Type of Motor	IE3 TEFC SD. CAGE INDUCTION MOTOR 415V, ±10%, 50 Hz, 3 Ph, AC Supply	
(b)	Rating of Motor in KW/P	2.2 KW/4 Pole(Frame-100L)	
(c)	Motor Speed (Synchronised)	1500	
(d)	Insulation Class	F	
(e)	Protection	IP:55	
13.	Fan Balancing	Dynamically Balanced As per ISO:1940:G2.3.	
14.	Painting	Complete Fan Casing shall be Painted with Synthetic Enamel PAint over two coats of Red Oxide Primer.	
12.	AIR INTAKE LOUVER	1 NO.	GI EFE SCOPE
11.	FILTER	4 NO.	HDPPE EFE SCOPE
10.	FILTER FRAME	1 NO.	GI EFE SCOPE
09.	ADOPTER SECTION	1 NO.	GI EFE SCOPE
08.	COWL WITH BIRD SCREEN	1 NO.	MS EFE SCOPE
07.	SUPPORTING STRUCTURE	1NO.	MS EFE SCOPE
06.	MOUNTING LEGS	2NOS.	MS IS: 2082/1079
05.	IMPELLER RETAINING WASHER	1 NO.	MS IS: 2082/1079
04.	MOTOR	1 NO.	SIEMENS EFE SCOPE
03.	MOTOR BASE	1 NO.	MS IS: 2062/1079
02.	IMPELLER FANS ALUMINIUM SINGLE PIECE CAST IMPELLERS	1 NO.	AL LM-6 (THIK 3MM)
01.	FAN CASING 3.15THIK M.S	1 NO.	MS IS: 2062/1079
SL.	DESCRIPTION	QTY.	MATL. REFERENCE

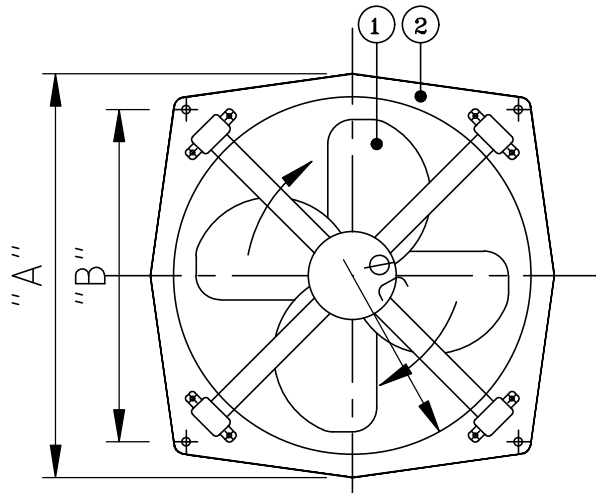
**BILL OF MATERIAL FOR EACH FAN**

**NOTE:-**

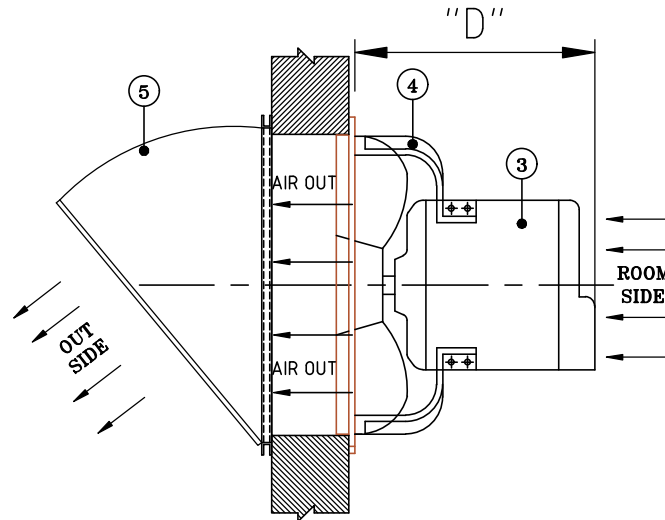
1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE STATED.
2. FAN WILL BE STATICALLY & DYNAMICALLY BALANCED TO GR.G2.3 AS PER ISO 1940.
3. FAN CONSTRUCTION CONFIRMING AS PER IS:1079. (LATEST)
4. NOISE LEVEL 65 DBA AT 1 MT. AWAY FROM FAN AS PER IS: 12005-1987
5. MECHANICAL VIBRATION OF THE FAN & MOTOR UNIT SHALL BE RESTRICTED ACCORDING TO THE RELEVANT CLAUSES OF ISO 10010-1-1995 (E).
6. PAINTING SHALL BE AS PER SPECIFICATION.
7. THE TUBE AXIAL FANS SHALL BE OF VARIABLE PITCH TYPE.
8. FAN MANUFACTURING AND TESTING SHALL BE AS PER IS 3586-1987
9. FAN WALL CUTOUT AS PER FAN INSIDE DIAMETER BASIS.
10. FAN CONSTRUCTION AS PER CONFIRMING AS PER IS 3586:1987
11. VIBRATION LIMITED AS PER ISO 14894-2003. (Max- 4.5m/sec)
12. MOTOR DGREE OF PROTECTION OF IP - 55.
13. MOTOR CLASS OF INSULATION - F
14. MOTOR EFFICIENCY CLASS- IE-3.
15. WALL OPEN, REQ 780 mm FOR FAN FIXING.

# TECHNICAL SPECIFICATION FOR PROPELLER FAN

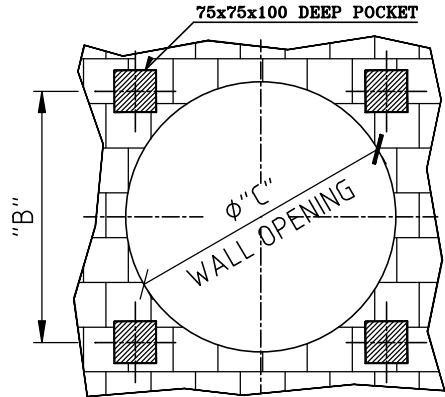
DUTY	MAKE/MODEL	QUANTITY	TYPE	CAPACITY (CMH)	MOTOR STATIC WET	MOTOR DYNAMIC WET	TOTAL PRESSURE (mm.WG.)	POWER INPUT (watts/k.w)	RATED SPEED (RPM)	CRITICAL SPEED	VOLTAGE/PHASE CYCLE/SPEED	INSULATION CLASS
EXHAUST TYPE	MARATHON 300P	09 nos.	PROPELLER	1200 cmh	10k.g	15k.g	FREE AIR DELEVRY	100 WATTS	1440	1800	220V-50HZ A.C FOR SINGLE PHASE	B



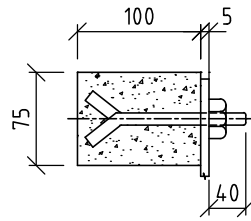
**ELEVATION**



**SIDE VIEW**



**FOUNDATION DETAIL**



**FIXING DETAILS (TYP.)**

### BILL OF MATERIAL

NO.	DESCRIPTION	MATERIAL	QTY
1	FAN BLADE	CRCA	4NOS.
2	FAN MOUNTING RING	M.S.	1NO.
3	MOTOR SINGLE PHASE 220V	STD	1NO.
4	MOTOR BRACKET	M.S.	4NOS.
5	COWL WITH BIRD SCREEN.	G.I	1NOS.

### DIMENSIONS

Fan Model No	A mm	B mm	C mm	D mm
300-P	384	315	327	270

**NOTES:**

1. ALL DIMENSION ARE IN MM.
2. MATERIAL OF CONSTRUCTION AS PER IS:2062 GR-A. & IS:1079 UNLESS OTHERWISE STATED
3. FAN WILL BE STATICALLY & DYNAMICALLY BALANCED TO GR:G6.3 AS PER ISO 1940.
4. FAN CONFIRMS TO IS:2312-1967.
5. NOISE LEVEL OF FAN WITHIN 85 dB(A) AT 1 METER DISTANCE FROM FAN.
6. PAINTING SHALL BE DONE AS PER GTS.
7. PROPELLER FAN CONFIRM TO IS2312-1967 (REFERRED 1994).

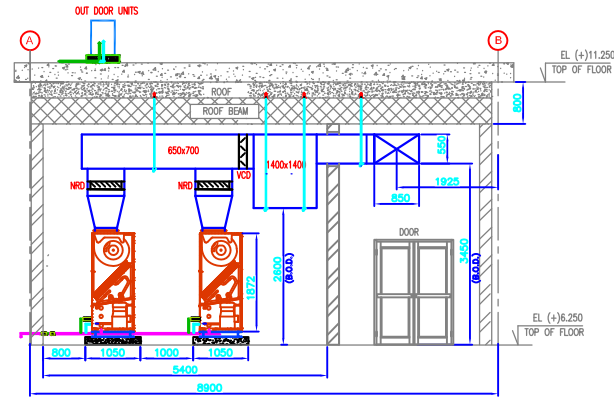
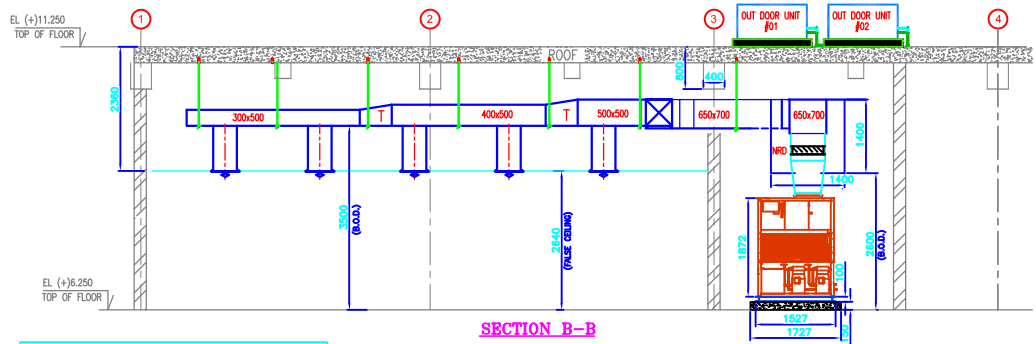
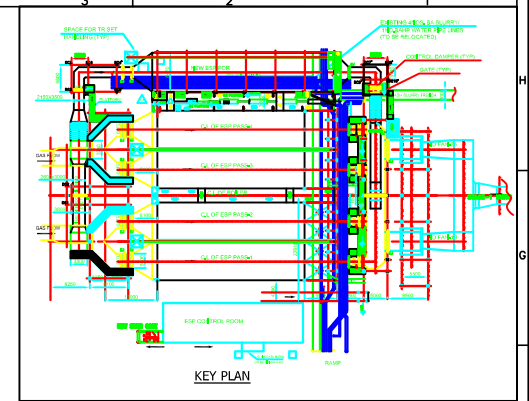
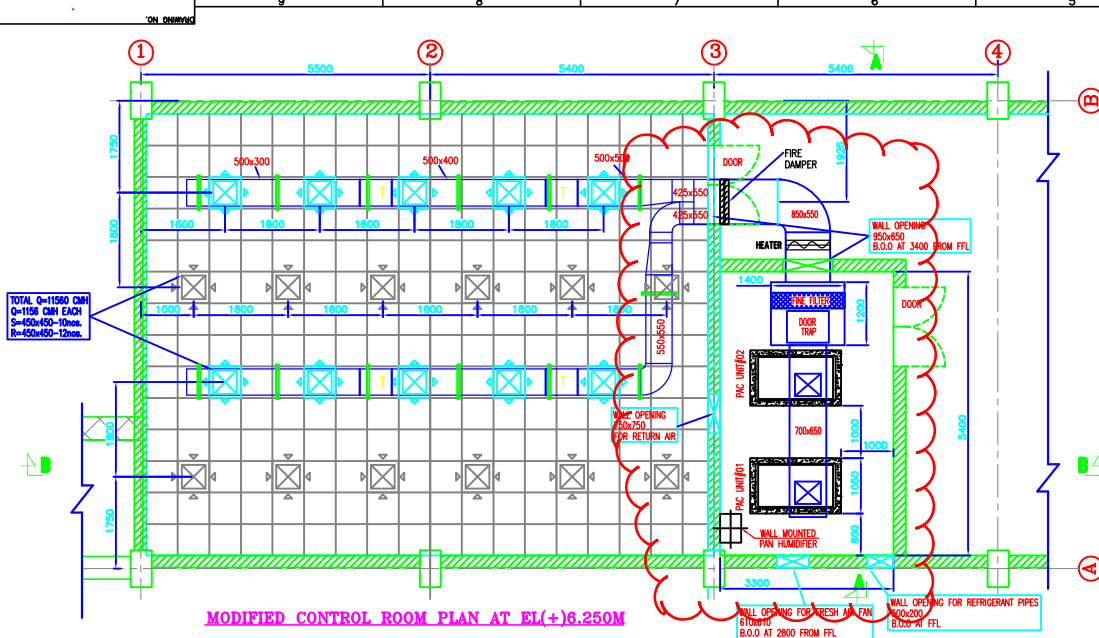
EXHAUST FANS  
1200 cmh @ 100 Watts

EFE		
KOLEATA- 700053 (India)		
	NAME	DATE
DRAWN BY	E.JANA	17-03-21
DESIGNED BY	A.DATTA	17-03-21
CHECKED BY	E.N.D	17-03-21
APPROVED BY	E. ROY	17-03-21
PROJECT DES. NO.	EFE/(P)/01	E-00

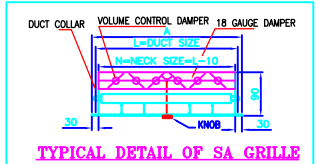
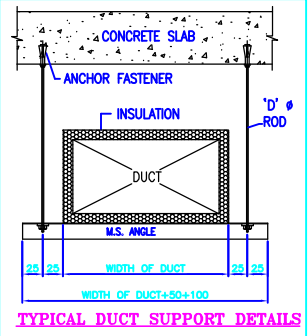
ZONE	REV.	DESCRIPTION	DRAWN	CHKD.	APPR.	DATE







LEGEND	
SYMBOLS	DESCRIPTION
	SUPPLY AIR DIFFUSER
	RETURN AIR DIFFUSER
	VOLUME CONTROL DAMPER
	FIRE DAMPER (SOLENOID OPERATED)
	STRIP HEATER
	PAN HUMIDIFIER

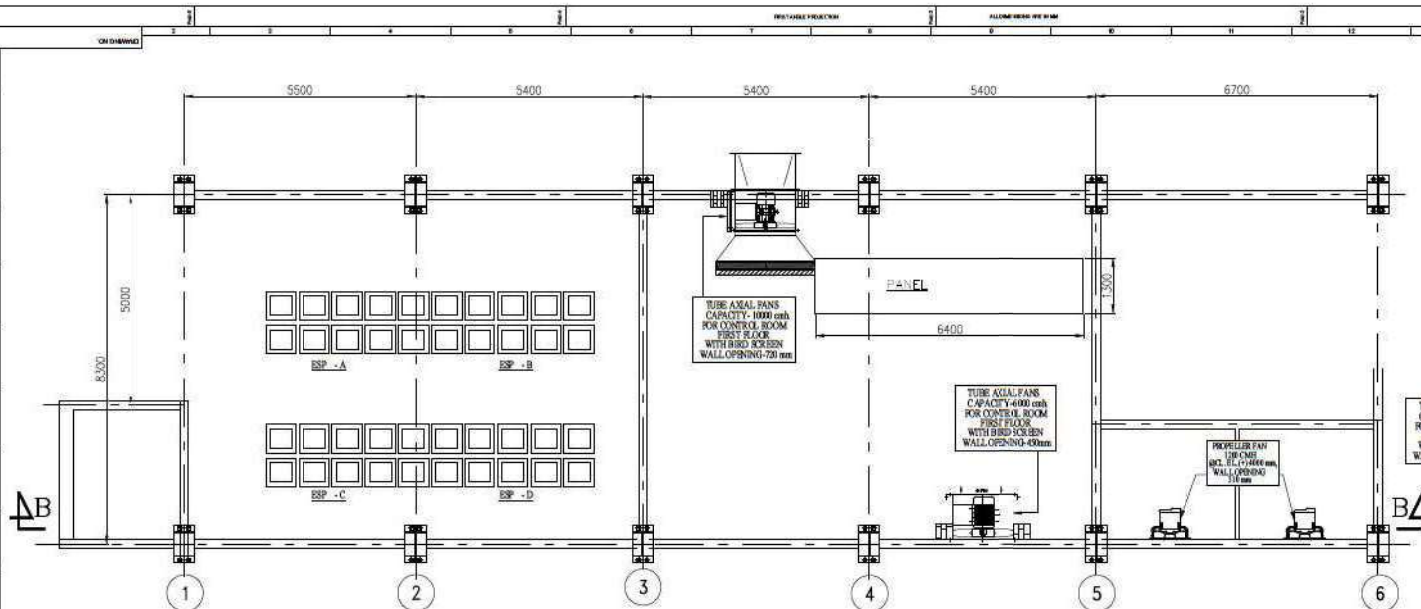


**NOTE :-**

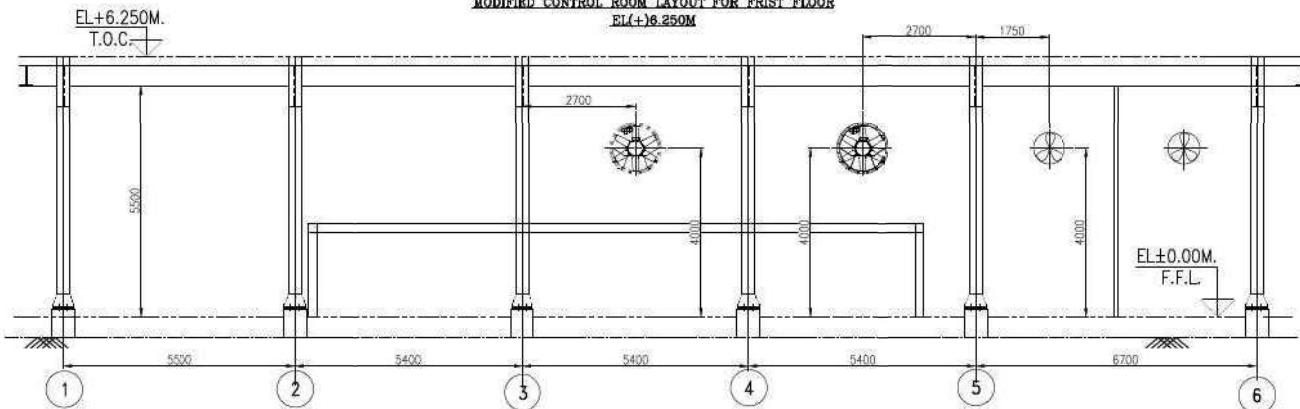
- 1) ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
- 2) DUCTING SHALL BE AS PER IS: 855. DUCT SHEET SHALL BE AS PER IS: 277, (275 GSM) CLASS-IV.
- 3) DUCT SUPPORT FROM CEILING/WALL TO SUIT AT SITE BY ANCHOR FASTENERS, NOT EXCEEDING 2500 MM.
- 4) ACOUSTIC AND THERMAL INSULATION SHALL BE AS PER SPECIFICATION.
- 5) NECESSARY SUITABLE VANES, SPLITTERS & DAMPER AS REQUIRED WILL BE PROVIDED.
- 6) OUT DOOR UNITS OF PACKAGE AC SHALL BE PLACED AS PER SITE SUITABILITY.

CONTRACTOR	SPZ WORKS
BILL NO.	PE-V0-448-571-15000A-A006
RFPC NO.	3120-104A-01-PVM-103
CUSTOMER	NTPC LIMITED
PROJECT	3x200 MW RAMAGUNDAM ESP CONTROL ROOM - R&M
DESIGNED BY	SHARAT HEAVY ELECTRICALS LTD
CHECKED BY	POWER SECTOR PROJECT ENGINEERING MANAGEMENT NTPC
DATE	
SCALE	
DRAWING NO.	3120-104A-01-PVM-103
DATE	

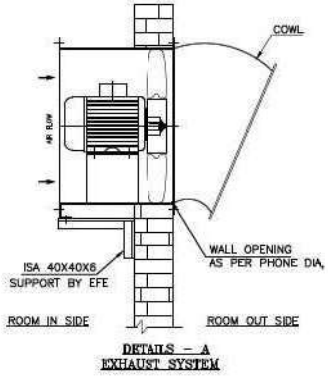
REV	DATE	BY	CHKD	APPD



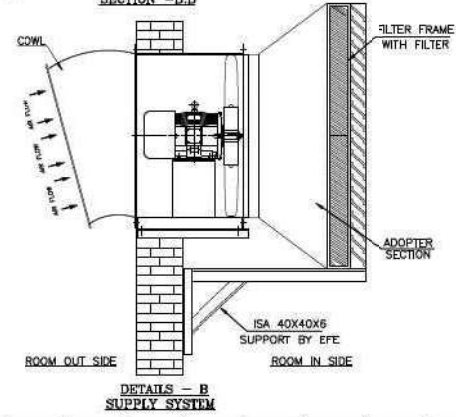
**MODIFIED CONTROL ROOM LAYOUT FOR FRIST FLOOR**  
EL(+)**6.250M**



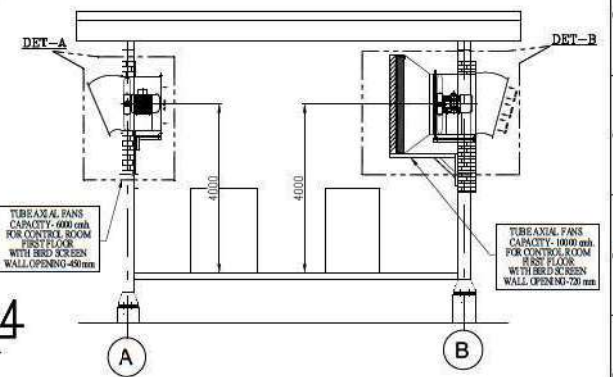
**SECTION -B-B**



**DETAILS - A EXHAUST SYSTEM**



**DETAILS - B SUPPLY SYSTEM**



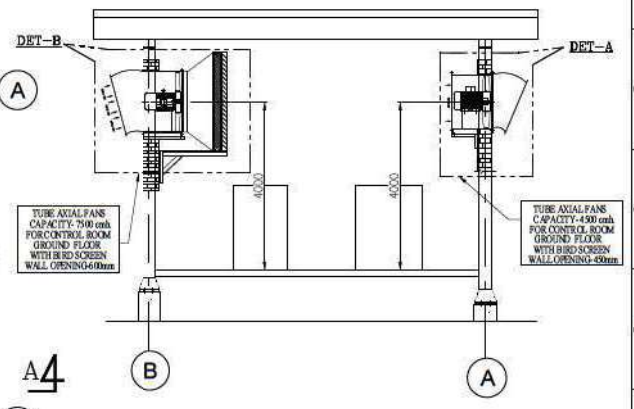
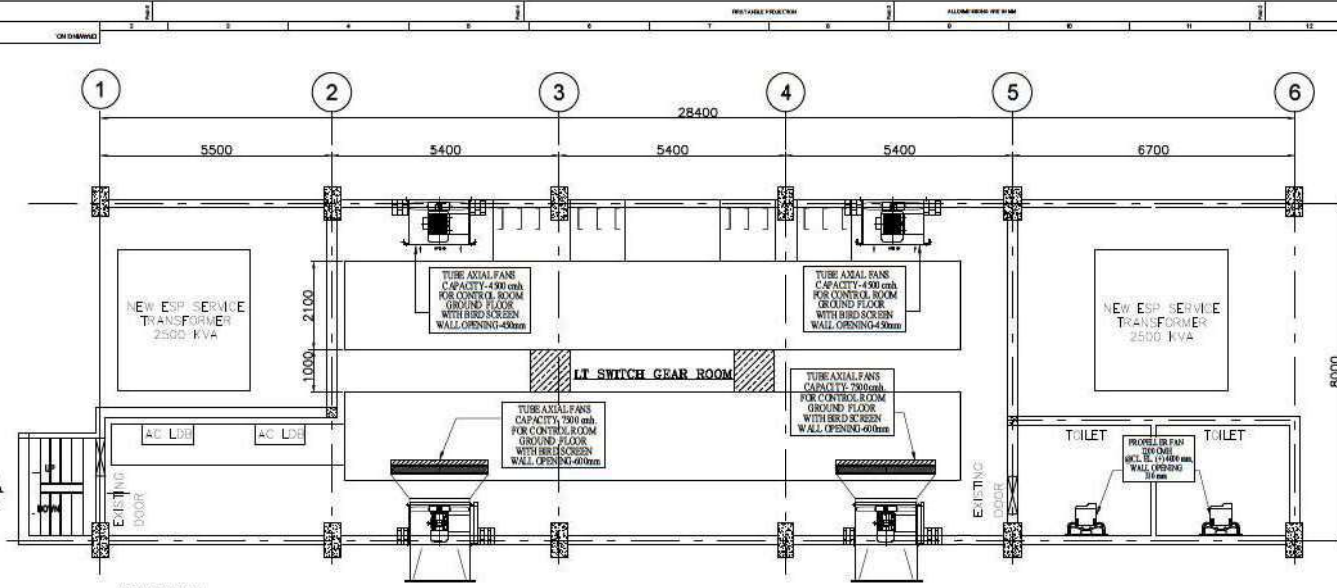
**BILL OF MATERIAL**

CONTROL ROOM LAYOUT FOR FRIST FLOOR		
01	GI AIR INTAKE LOUVER WITH FIXING FRAME 1240X1240	1 SET
02	GI FILTER FRAME 1240X1240	1 SET
03	HDPE FILTER 610X610X150- 5 PLY	4 NOS.
04	TUBE AXIAL FANS CAPACITY 10,000 CMH EXHAUST SYSTEM WITH 2.20/4POLE MOTOR FOR FIRST FLOOR.	1 NO.
05	TUBE AXIAL FANS CAPACITY 6,000 CMH SUPPLY SYSTEM WITH 0.55/4POLE MOTOR FOR FIRST FLOOR.	1 NO.
06	PROPELLERS FANS 1200 CMH	2 NO.
07	ADOPTER SECTION 1240x1240	1 NO.
08	CCWL WITH BIRD SCREEN	1 NO.

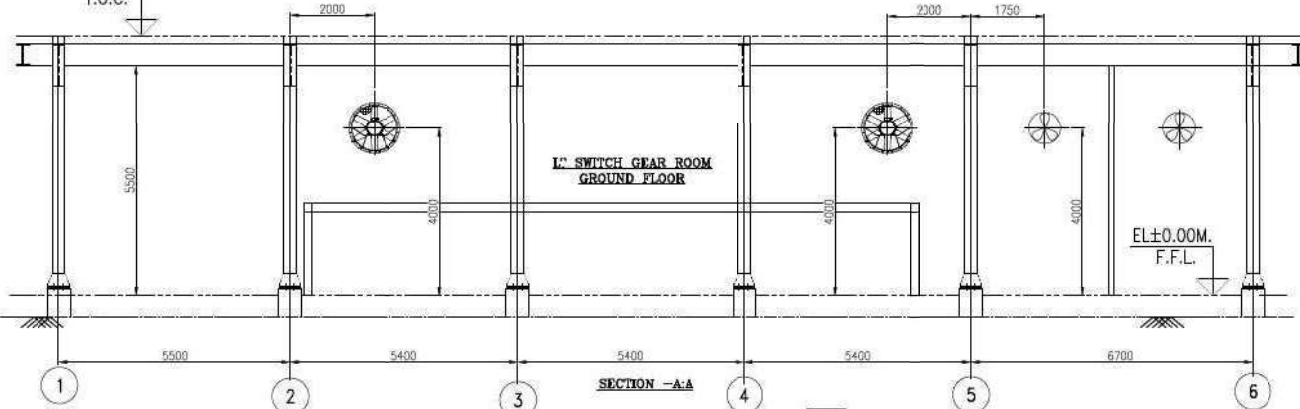
**:- LOCATION :-**  
SWITCH GEAR ROOM - FIRST FLOOR

**:-NOTES:-**

1. ALL DIMENSION ARE IN mm U.S.
2. FAN FIXING WILL BE AS PER DRAWINGS, HOWEVER MINOR MODIFICATION SHALL BE DONE TO SUIT AND SITE CONDITION.
3. ANY CIVIL WORKS LIKE MODIFYING WALL, OPENING AS REQUIRED FOR ERECTION OF VENTILATION SYSTEM, REQUIRED FOR ERECTION OF VENTILATION SYSTEM, SHALL BE DONE BY EFE.
4. ALL NECESSARY MOUNTING ARRANGEMENT, ALL FDN BOLT, WALL & DUCT SUPPORT WILL BE PROVIDED BY EFE.
5. MINOR MODIFICATIONS MAY BE CARRIED OUT TO SUIT AT SITE CONDITION.
6. FOR TUEE AXIAL FANS DETAILS , SO PLEASE REFER THE G.A DWG.



MODIFIED CONTROL ROOM LAYOUT FOR GROUND FLOOR



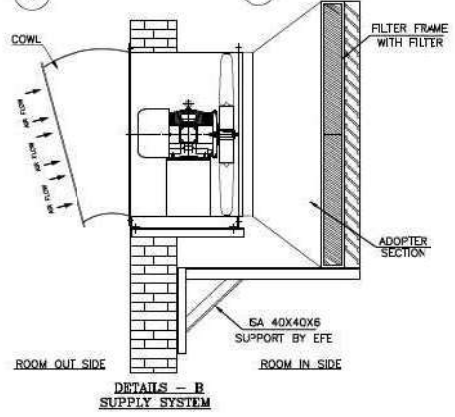
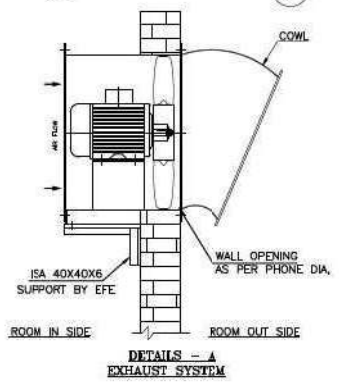
**BILL OF MATERIAL**

CONTROL ROOM LAYOUT FOR GROUND FLOOR LT SWITCH GEAR ROOM		
01	GI AIR INTAKE LOUVER WITH FIXING FRAME 1240X1240	1 SET
02	GI FILTER FRAME 1240X1240	1 SET
03	HDPE FILTER 610X610X150- 5 PLY	4 NOS.
04	TUBE AXIAL FANS CAPACITY 4,500 CMH EXHAUST SYSTEM WITH 0.55/4P MOTOR FOR GROUND FLOOR.	2 NOS.
05	TUBE AXIAL FANS CAPACITY 7,500 CMH SUPPLY SYSTEM WITH 1.50/4P MOTOR FOR GROUND FLOOR.	2 NO.
06	PROPELLERS FANS 1200 CMH	2 NO.
07	ADOPTER SECTION 1240x1240	2 NO.
08	COWL WITH BIRD SCREEN	2 NO.

:- LOCATION :-  
SWITCH GEAR ROOM - GROUND FLOOR

**:-NOTES:-**

1. ALL DIMENSION ARE IN mm U.O.S.
2. FAN FIXING WILL BE AS PER DRAWINGS, HOWEVER MINOR MODIFICATION SHALL BE DONE TO SUIT AND SITE CONDITION.
3. ANY CIVIL WORKS LIKE MODIFYING WALL, OPENING AS REQUIRED FOR ERECTION OF VENTILATION SYSTEM, REQUIRED FOR ERECTION OF VENTILATION SYSTEM, SHALL BE DONE BY EFE.
4. ALL NECESSARY MOUNTING ARRANGEMENT, ALL FDN BOLT, WALL & DUCT SUPPORT WILL BE PROVIDED BY EFE.
5. MINOR MODIFICATIONS MAY BE CARRIED OUT TO SUIT AT SITE CONDITION.
6. FOR TUBE AXIAL FANS DETAILS, SO PLEASE REFER THE G.A DWG.







**ALCO HEATING CO.**  
ELECTRICAL ENGINEERS  
MANUFACTURERS OF ELECTRICAL INDUSTRIAL HEATERS  
**1, TARPAN GHAT ROAD, KOLKATA - 700 053**

**Technical Data Sheet for Air Heating Unit**

Manufacturer	ALCO HEATING
Connection Pattern	Across 415 volts, 3 phase, 4 wire 50 C/s AC supply
Type of Heater	Tubular Finned Air Heating Element 'U' type
Box Material	MS Sheet
Heating Element (Make & Material)	Kanthal DSD & Ni-chrome
Size of Fins	1¼" OD, 24G.
Terminal Connection	Brass Screw Terminals
Location of Installation	At the main supply Air Duct
Painting	One coat of Aluminium finish paint over two coats of Zinc based primer
Material	MS Tube with GI Fin
Inspection & Testing	The following test shall be carried out at the time of inspection Resistance Value by Multimeter Insulation Resistance by 1000V Megger HV Test Insulation Resistance after HV Test  The aforesaid shall be carried out by calibrated instruments



### Technical Data Sheet for Pan Humidifier

Manufacture	<b>ALCO HEATING CO.</b>
Type	Pan Type, Horizontal Floor Mounted
Operating Principle	With the help of Immersion Heater, water evaporates & steam with return air to increase the moisture contained in it.
Rating of Immersion Heater	<b>2 KW</b>
No. of Stage	Single
Connection Pattern	Across 415 volts, 3 phase, 4 wire 50 C/s AC Supply
No. of Elements	6
Location of Installation	Inside AHU Room
Materials of construction of tank	Fabricated from 2mm S. S. Sheet (Duly Painted) and complete with connection for over flows, make-up, drain & thermostat
Water Connection	½" makeup with flow valve, ½" overflow connection and ½" GI pipe for drain connection
Insulation	50mm Thick Mineral Wool (64 Kg/Cubic Meter Density)
Type of Test	Visual Check
	Dimentional Check
	Resistance Value of each element
	Insulation Resistance



**PROJECT : RAMAGUNDAM STPS STAGE-I (3x200 MW) ESP R&M**

**Main Customer - National Thermal Power Corporation Limited**

**Main Contractor - Bharat Heavy Electrical Ltd. ,Power Sector, PEM, Noida**

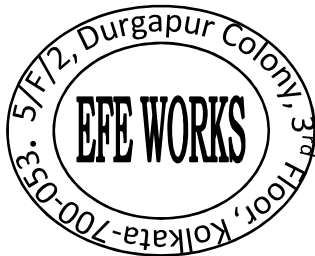
**Sub Contractor - EPE Works**

**SUB: Data Sheet of Pipes**

Sl. No.	DESCRIPTION	SPECIFICATION	Remarks
1	Refrigerant Pipe	Seamless steel tubes conforming heavy grade IS:1239 or Copper tubes as per IS:191 hard copper grade  Suction Pipe = 28.5mm thickness 1.1 mm Discharge Pipe = 19mm thickness 1.1 mm	
2	Drain Pipe (32NB) Make - Jindal	GI conforming heavy grade as per IS 4736 Screw End Make - Jindal	

## Copper Pipe Technical DATA Sheet

Required		Observed		
SIZE		19.5 x 0.8 MM x 10	28-58 x 0.99 MM x 10	
Lot. No.		AS10/12	AST14/12	
<b>CHEMICAL COMPOSITION IN %</b>				
Elements Required	Copper	99.90% (Min.)	99.92	99.94
	Phosphorous	0.015 TO 0.40%	0.023	0.024
<b>DIMENSIONAL REPORT</b>				
OD (mm)	Min.	19.05	29.56	
	Min.	19.08	28.6	
WT (mm)	Min.	0.76	0.94	
	Min.	0.80	1.02	
<b>MECHANICAL PROPERTIES</b>				
Hardness in HR 30T	55 MN	67	68	
Tensile Strength kg/mm <sup>2</sup>	32 MN	43.41	45.27	
Elongation %	N.A	-	-	
Flaring &	N.A	-	-	
Eddy Current Test	Satisfactory	Satisfactory	Satisfactory	
Carbon Content/Firm Test %	N.A	-	-	
Grain Size (mm)	0.025 to 0.060	-	-	



A. Dutta

### Technical Specification of G.I Sheet

<b>S1</b>	<b>Discription</b>	<b>Specification</b>
1	Application	Low pressure air ducting
2	Make	Bhushan
3	Type	G.I sheet lock forming quality (LFQ)
4	Grade	conforming to class 275 of IS: 277
5	From Factors	Conforming to class 655
6	Coating	275 GSM
7	Shape	Rectangular
8	Flange Type	TDF / TDC , As Applicable.
9	Gauge wish Thikness	0 to 750 mm - 24 G
		751 to 1500 mm - 22G
		1501 to 2250 mm - 24G
		2251mm to Above - 18 G



TECHNICAL DATA SHEET

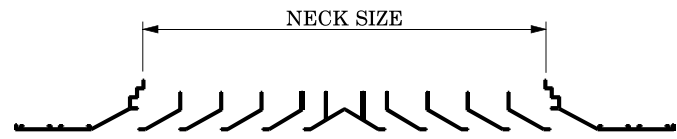
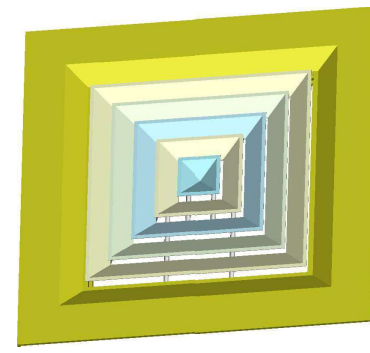
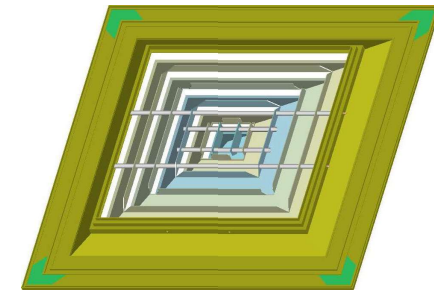
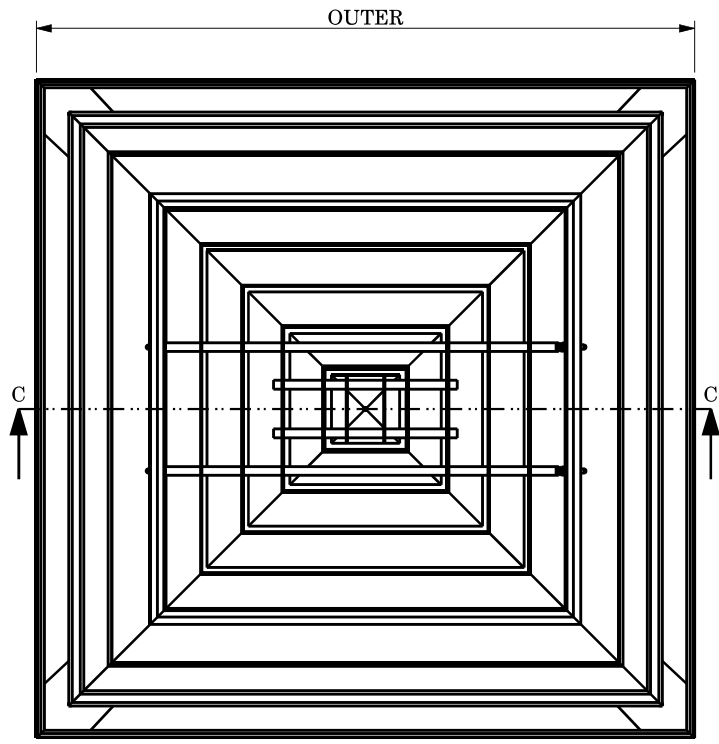
GRID DIFFUSER

S.No.	DESCRIPTION	DETAILS
1	MAKE	SYSTEMAIR INDIA PVT LTD
2	SIZE	NECK- AS PER APPROVED DRAWING
3	MODEL	DF(G) GRID DIFFUSER (4 WAY/3 WAY/2 WAY)
4	MATERIAL OF DIFFUSER	EXTRUDED ALUMINUM FRAME & ALUMINUM SHEET CORE
5	THICKNESS OF MATERIAL	FRAME / BORDER 2 MM THICK EXTRUDED ALUMINUM LOUVER STAMPED ALUMINIUM SHEET CORE 2 MM THICK. WITH POWER COATING (JOINT LESS) CENTER REMOVABLE CORE TYPE
6	COLOURS	RAL9003(30% GLOSSY), OTHER COLOURS ARE AVAILABLE ON REQUEST AGAINST ADDITIONAL CHARGES
7	FINISH	POWDER COATED                      EXTRUDED ALUMINUM
8	MOUNTING	DUCT COLLAR
9	WIDE	NECK 150 X 150 MM / OUTER 595 X 595 MM NECK 225 X 225 MM / OUTER 595 X 595 MM NECK 300 X 300 MM / OUTER 595 X 595 MM NECK 375 X 375 MM / OUTER 595 X 595 MM NECK 450 X 450 MM / OUTER 595 X 595 MM NECK 525 X 525 MM / OUTER 595 X 595 MM

PREPARED BY-  
DEBAJIT SARKAR

UNLESS OTHERWISE SPECIFIED ALL DIMENSION ARE IN m.m.

REV NO.	DATE	REVISION	REV. BY



SECTION C-C

S.NO	DIFFUSER SIZE	NECK SIZE	OUTER
1	150	150 x 150	595 x 595
2	225	225 x 225	595 x 595
3	300	300 x 300	595 x 595
4	375	375 x 375	595 x 595
5	450	450 x 450	595 x 595

Note:- This is only General arrangement drawing, the actual product supplied may deviate from the drawing.

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TOLERANCE LIMIT UNLESS SPECIFIED		MASS PROPERTIES:	
<b>LINEAR DIMENSIONS</b>		WEIGHT (kg)	-
0.5 - 6 = ±2.0	> 120 - 400 = ±8.0	VOLUME (mm³)	-
> 6 - 30 = ±4.0	> 400 - 1000 = ±12	SUR. AREA (mm²)	-
> 30 - 120 = ±6.0	> 1000 - 2000 = ±16		
	Over 2000 = ±20	<b>No. of SC/CC</b>	
<b>ANGULAR DIMENSIONS</b>		SC	-
0 - 10 = ±8°	> 50 - 120 = ±4°	CC	-
> 10 - 50 = ±6°	> 120 - 400 = ±2°		
	Over 400 = ±0°40'		

**PART DESCRIPTION:**

**DF-G**

PART DESCRIPTION:				REMOVE SHARP EDGES		DRAWING No.:		REV NO.:	
DF-G				DATE: 09-Oct-2020		SIPL/ADP/GA/3225		R0	
MATERIAL:	M. STANDARD:	SCALE:	DRN. BY:	BBM	CHKD. BY:	DALIP	APPD. BY:	A.BHARDWAJ	
-	-	N.T.S.							
				SYSTEMAIR INDIA PVT.LTD.					

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TECHNICAL DATA SHEET

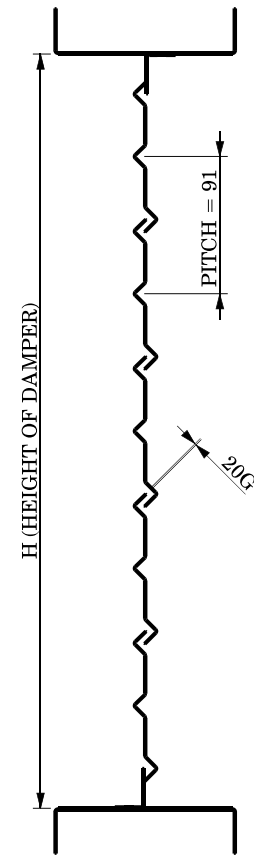
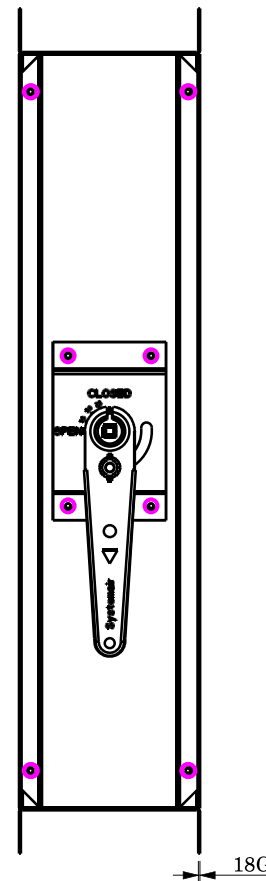
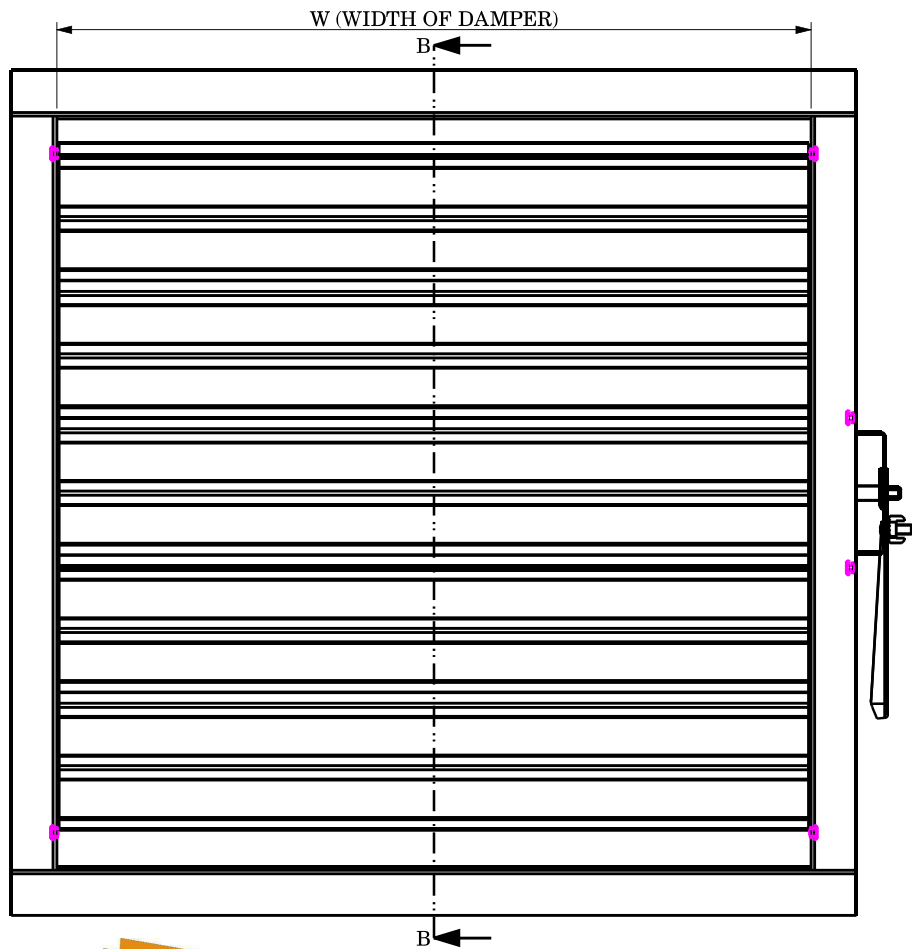
VOLUME CONTROL DAMPER (MANUAL)

S.No.	DESCRIPTION	DETAILS
1	MAKE	SYSTEMAIR INDIA PVT.LTD.
2	SIZE	NECK- AS PER APPROVED DRAWING
3	MODEL	GI VCD
4	MATERIAL OF VCD	GALVANIZED SHEET
5	THICKNESS OF MATERIAL	FRAME-18 SWG GI SHEET
		LOUVER/BLADE- 20 SWG GI SHEET
6	TYPE OF VCD	MANUAL
7	FINISH	ZINC COATING (120 GSM)
8	MOUNTING	DUCT COLLAR
9	DEPTH	120 MM STANDARD
10	BUSH	BRONZ BUSH WITH SELF LUBRICATION
11	WIDE	MINIMUM SIZE 300 X300 mm (NECK)
		MAXIMUM SIZE 1500 X 1000 mm (NECK)
		SIZE ABOVE THAN MAX WILL BE IN PARTITION

PREPARED BY  
DEBAJIT SARKAR

UNLESS OTHERWISE SPECIFIED ALL DIMENSION ARE IN m.m.

REV NO.	DATE	REVISION	REV. BY



SECTION B-B



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TOLERANCE LIMIT UNLESS SPECIFIED

0.5 - 6 = ±0.3	> 120 - 400 = ±2.0
> 6 - 30 = ±0.5	> 400 - 1000 = ±3.0
> 30 - 120 = ±0.8	> 1000 - 2000 = ±4.0

MASS PROPERTIES:

VOLUME (mm³)	-
WEIGHT (kg)	-

No. of SC/CC

SC	-
CC	-

PART DESCRIPTION:

GI - VCD MANUAL (18G/20G)

REMOVE SHARP EDGES

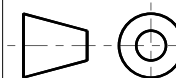
DRAWING No.: REV NO.:

DATE: 03-May-2016 SIPL/ADP/GA/1849 00

MATERIAL:	M. STANDARD:	SCALE:	DRN. BY:	AMIR	CHKD. BY:	DALIP	APPD. BY:	A.BHARDWAJ
-	-	N.T.S.	-	-	-	-	-	-



SYSTEMAIR INDIA PVT.LTD.





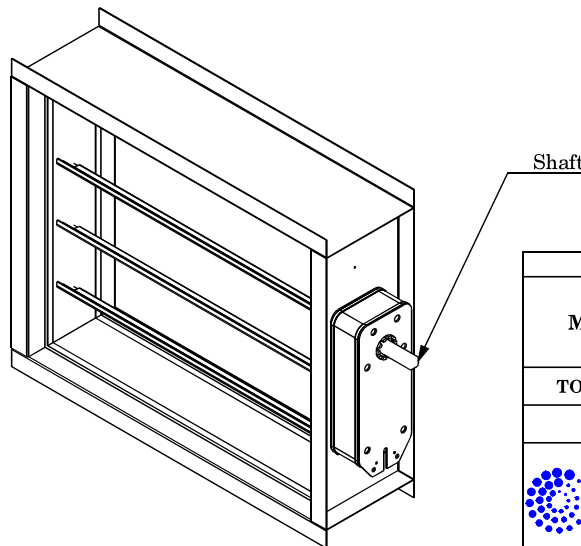
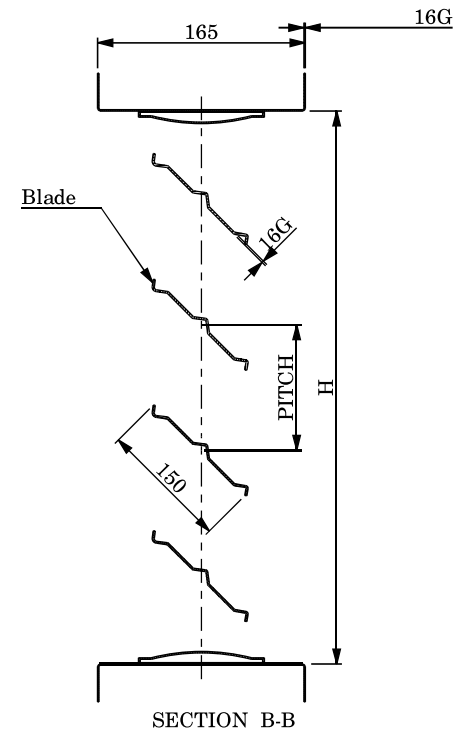
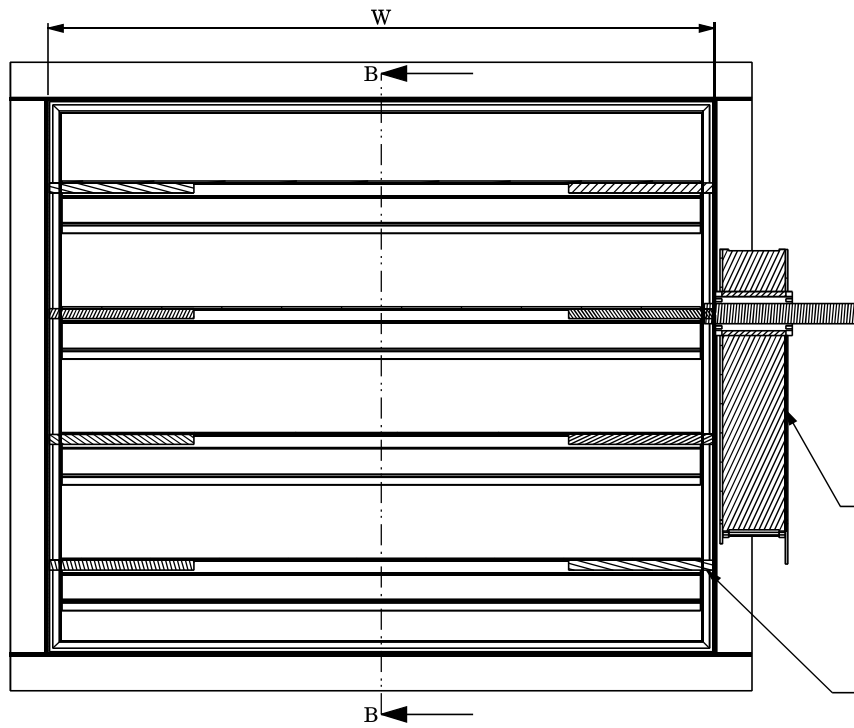
TECHNICAL DATA SHEET


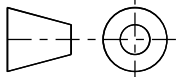
FIRE DAMPER (MOTORIZED)

S.No.	DESCRIPTION	DETAILS
1	MAKE	SYSTEMAIR INDIA PVT. LTD.
2	SIZE	NECK- AS PER APPROVED DRAWING.
3	PRODUCT NAME	FIRE DAMPER (MOTORIZED) WITH 165 MM CASING (WITHOUT SLEEVE)
4	MODEL	WGD
5	CERTIFICATION	CBRI APPROVED 120 MINS FIRE RATING, TESTED AS PER UL 555, 2005
6	FIRE RATING	120 MINUTES
7	MOUNTING	DUCT COLLAR
8	BUSH	BRONZ BUSH WITH SELF LUBRICATION
9	BLADE CONSTRUCTION	SINGLE LEAF V-TYPE
10	MATERIAL OF DAMPER	GALVANIZED STEEL
11	COATING	ZINK COATING (120 GSM)
12	THICKNESS OF MATERIAL	FRAME -16 SWG GI SHEET LOUVER/BLADE -16 SWG GI SHEET
13	LINKAGE	M.S IS-2062 ( 3 MM THICK PLATE )
14	ACTUATOR	BELIMO MAKE SPRING RETURN ROTORY TYPE ON/OFF ACTUATOR
15	CONTROL PANEL	CONTROL PANEL WITH TEMPERATURE SENSOR. SENSOR WORK ON 74 DEGREE TEMP.
16	TYPE OF DAMPER	MOTORIZED
17	WIDE	MINIMUM SIZE -300 X 300 MM (NECK) MAXIMUM SIZE 1200 X 1500 MM (NECK) SIZE ABOVE THAN MAX WILL BE IN PARTITION

PREPARED BY  
DEBAJIT SARKAR

ALL DIMENSIONS ARE IN M.M. (IF IN DOUBT PLS. ASK DON'T SCALE THE DRAWING)



PART/No.:-		MATERIAL:-	DATE:-	DRAWING No.:-	
MOTORIZED FIRE DAMPER		G.I.	12-Oct-2011		
TOLERANCE:-	SCALE:-	DRN. BY:-	RAVI	CHD. BY:-	APPD. BY:-
±2	N.T.S				
 <b>systemair</b> RAVISTAR			RAVISTAR INDIA PVT.LTD.		



TECHNICAL DATA SHEET

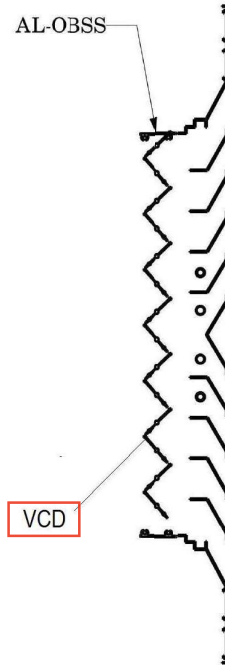
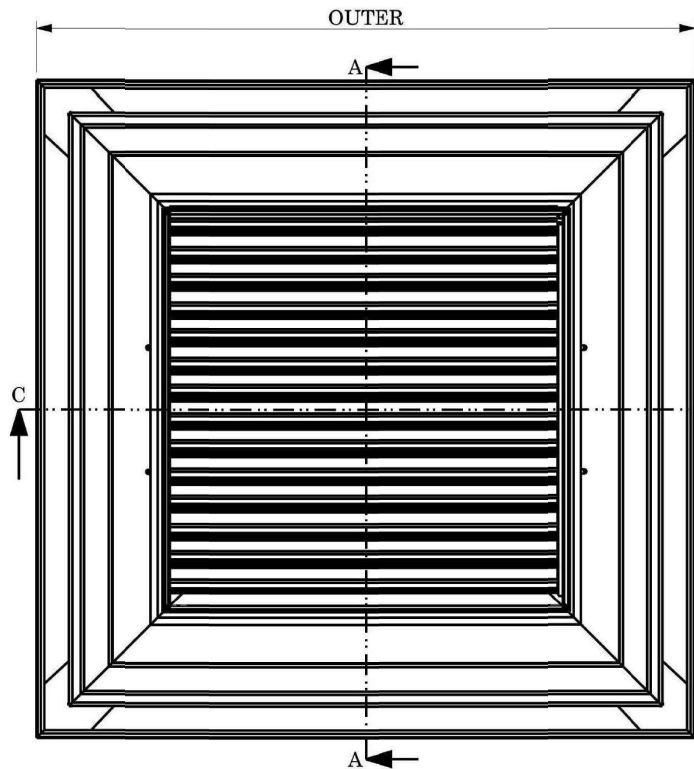
GRID DIFFUSER WITH ALUMINUM COLLAR DAMPER

S.No.	DESCRIPTION	DETAILS
1	MAKE	SYSTEMAIR INDIA PVT LTD
2	SIZE	NECK- AS PER APPROVED DRAWINGS.
3	MODEL	DF(G) + AL OBSS GRID DIFFUSER (4 WAY/3 WAY/2 WAY)
4	MATERIAL OF DIFFUSER	EXTRUDED ALUMINUM FRAME & ALUMINUM SHEET CORE
5	THICKNESS OF MATERIAL	FRAME / BORDER 2MM THICK EXTRUDED ALUMINUM LOUVER STAMPED ALUMINIUM SHEET CORE 2MM THICK. WITH POWER COATING (JOINT LESS) CENTER REMOVABLE CORE TYPE
6	COLOURS	RAL9003(30% GLOSSY), OTHER COLOURS ARE AVAILABLE ON REQUEST AGAINST ADDITIONAL CHARGES
7	FINISH	POWDER COATED
8	MOUNTING	DUCT COLLAR
9	WIDE	NECK 150 X 150 MM / OUTER 595 X 595 MM NECK 225 X 225 MM / OUTER 595 X 595 MM NECK 300 X 300 MM / OUTER 595 X 595 MM NECK 375 X 375 MM / OUTER 595 X 595 MM NECK 450 X 450 MM / OUTER 595 X 595 MM NECK 525 X 525 MM / OUTER 595 X 595 MM
10	MATERIAL OF COLLAR DAMPER	EXTRUDED ALUMINUM SHEET
11	THICKNESS OF COLLAR DAMPER	FRAME / BORDER 16 SWG THICK EXTRUDED ALUMINUM BLADE 1 MM THICK ALUMINUM
12	FINISH OF DAMPER	BLACK POWDER COATED
13	TYPE OF OBSS	KEY OPERATED OPPOSED BLADE TYPE
14	MOUNTING	DUCT COLLAR
15	WIDE	MINIMUM SIZE 150 X 150 MM (NECK) MAXIMUM SIZE 525 X 525 MM (NECK) OR AS PER DIFFUSER NECK SIZE

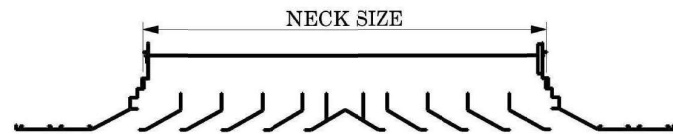
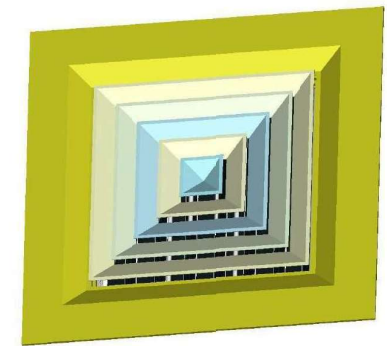
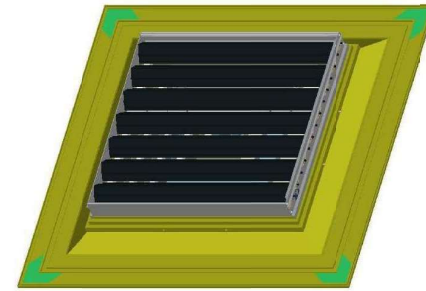
PREPARED BY-  
DEBAJIT SARKAR

UNLESS OTHERWISE SPECIFIED ALL DIMENSION ARE IN m.m.

REV NO.	DATE	REVISION	REV. BY



SECTION A-A



SECTION C-C

FOR SUPPLY

S.NO	DIFFUSER SIZE	NECK SIZE	OUTER
1	150	150 x 150	595 x 595
2	225	225 x 225	595 x 595
3	300	300 x 300	595 x 595
4	375	375 x 375	595 x 595
5	450	450 x 450	595 x 595

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TOLERANCE LIMIT UNLESS SPECIFIED		MASS PROPERTIES:	
<b>LINEAR DIMENSIONS</b>		WEIGHT (kg)	-
0.5 - 6 = ±2.0	> 120 - 400 = ±8.0	VOLUME (mm³)	-
> 6 - 30 = ±4.0	> 400 - 1000 = ±12	SUR. AREA (mm²)	-
> 30 - 120 = ±6.0	> 1000 - 2000 = ±16		
Over 2000 = ±20		<b>No. of SC/CC</b>	
<b>ANGULAR DIMENSIONS</b>		SC	-
0 - 10 = ±8°	> 50 - 120 = ±4°	CC	-
> 10 - 50 = ±6°	> 120 - 400 = ±2°		
Over 400 = ±0°40'			

PART DESCRIPTION:				REMOVE SHARP EDGES		DRAWING No.:		REV NO.:	
DF (G) + AL OBSS				DATE: 06-Apr-2018		SIPL/ADP/GA/2427		00	
MATERIAL:	M. STANDARD:	SCALE:	DRN. BY:	BBM	CHKD. BY:	DALIP	APPD. BY:	A.BHARDWAJ	
-	-	N.T.S.							
<b>systemair</b>				<b>SYSTEMAIR INDIA PVT.LTD.</b>					

FILE PATH: Y:\Plants\Greater Noida\CAD Team\D240BRBM\DESIGN DATA\GAD\ADP\03\_DIFFUSER\GRID TYPE DIFFUSER



**DATA SHEET : TWIGA INSUL TI-1500(24 Kg./m3)**

<b>Parameter</b>	<b>Technical Specification (Duct Thermal insulation)</b>
Make	U.P Twiga Fiberglass Ltd.
Material	Resin bonded fiberglass wool Roll
Standard/Codes to follow	IS 8183: 93/IS 3144: 90
Product Code	1500/50 Plain Roll Form
Physical form	Standard Roll size, width x length: 1.2m x 15m x 50 mm ( TI 1500/50 Plain) = 18 M2
Nominal bulk density	24 Kg/m <sup>3</sup>
Thickness	50mm
Thermal conductivity	0.0393 W/MK at 50 ° C mean temp. (As per GTL Report Feb 2021) (Tolerance +/-5%)

**General Glass wool Properties:**

<b>Parameter</b>	<b>Conformance</b>
Fire Properties	
Non combustibility	Non combustible as per BS 476 part 4
Ignitibility	Class P(Not easily ignitable material) as per BS 476 part 5
Surface Spread of flame	NIL. Class 1 as per BS 476 part 7
Fire propagation	Class 'O', [index I<12, sub-index i1<6].Conforms to BS 476 part 6 and 7.
Toxicity	Non toxic as per BS 6853
Moisture content	<2% .conforms to IS 3144/IS 8183
Shot content	Nil.<2%). conforms to IS 3144/IS8183
Sulphar /Chloride content	Nil. Conforms to IS 3144/IS 8183
Mould growth	Conforms to IS 3144/IS 8183. Inorganic glass fiber does not support mould growth.
Chemical	Neither acidic no basic, chemically almost neutral. pH value very close to 7.



**DATA SHEET : TWIGA INSUL TI-3000 (48 Kg/m<sup>3</sup>)**

<b>Parameter</b>	<b>Technical Specification (Duct Acoustic insulation)</b>
Make	U.P Twiga Fiberglass Ltd.
Material	Resin bonded fiberglass wool Rigidboard
Standard/Codes to follow	IS 8183: 93 /IS 3144: 90
Product Code	TI-3000/25
Physical form	Rigid Board in LDPE Packing Standard size, <b>width x length x thickness:</b> 1.2 m x 0.6m x 25 mm = 18.72 M2/ Packet (26 Boards in one packet)
Nominal bulk density	TI-3000 (48 Kg/m <sup>3</sup> )
Thickness	25 MM
Thermal conductivity	0.0336 W/m.k at 50 degree C mean temperature as per GTL report dated Feb-2021)

**General Glass wool Properties:**

<b>Parameter</b>	<b>Conformance</b>
Fire Properties	
Non combustibility	Non combustible as per BS 476 part 4
Ignitibility	Class P(Not easily ignitable material) as per BS 476 part 5
Surface Spread of flame	NIL. Class 1 as per BS 476 part 7
Fire propagation	Class 'O', [index I<12, sub-index il<6].Conforms to BS 476 part 6 and 7.
Toxicity	Non toxic as per BS 6853
Moisture content	<2% .conforms to IS 3144/IS 8183
Shot content	Nil.<2%). conforms to IS 3144/IS8183
Sulphar /Chloride content	Nil. Conforms to IS 3144/IS 8183
Mould growth	Conforms to IS 3144/IS 8183. Inorganic glass fiber does not support mould growth.
Chemical	Neither acidic no basic, chemically almost neutral. pH value very close to 7.



**OPERATION & CONTROL PHILOSOPHY FOR  
AIR CONDITIONING SYSTEM  
3X200 MW RAMGUNDAM TPS, ESP-R&M**

BHEL DOC NO. PE-V0-448-571-15000A-A008

REVISION 00

DATE: 10.12.2021

PAGE 1 of 2

**1.0 THE AIR CONDITIONING SYSTEM COVERS FOLLOWING AREAS.**

A) Air-Conditioning System at ESP Control Room Building-R&M, Unit#01, #02 & #03.

**3.0 EQUIPMENT DETAILS OF AIR CONDITIONING SYSTEM OF TG BUILDING**

**8.0 DETAILED OPERATION OF DRIVES IN MANUAL MODE FOR ESP CONTROL ROOM R&M BUILDING.  
# EQUIPMENT DETAILS OF AIR CONDITIONING SYSTEM OF ESP CONTROL ROOM R&M BUILDING**

The AC system in ESP Control Room R&M Building area consists of the following major equipment's:

**8.1**

- a) 2 nos. PAC's (1W+1S) are located at 6.25M Grid (3-4) of ESP Control Room-R&M Building
- b) Accessories like Fresh Air Fan, Heaters, Pan Humidifier, Temperature & RH. Sensors, Fire Dampers, etc. at 6.25M Grid (AC-3-4) of ESP Control Room- R&M Building
- c) 2 nos. Supply Air Fan are located at Ground Floor Grid (2-5) and 1 nos. Supply Air Fan is located at 6.25M Grid(3-4)of ESP Control Room-R&M Building
- d) 2 nos. Exhaust Air Fan are located at Ground Floor Grid (2-5) and 1 nos. Exhaust Air Fan is located at 6.25M Grid(4-5)of ESP Control Room-R&M Building

**9.1 DETAILED OPERATION OF DRIVES IN MANUAL MODE FOR ESP CONTROL ROOM-R&M BUILDING.**

AC System of ESP Building-R&M shall be controlled by **GIU/PLC**.

Auto and manual selection shall be done by operator.

Before that Operator is to do selection of Standby and Working drive.

When **Manual mode** is selected then individual equipment of that particular area can be operated by actuation of start & stop PB (soft button of respective drive).

When **Auto mode** operation is selected then total system of that particular area operates automatically in sequence as per the preset program in GIU/PLC provided that "**Auto start**" Command is given.

All drives will have individually **Service / Maintenance** mode selection-but by default they will be in Service mode only.

Following drives shall be controlled in this system from GIU/PLC

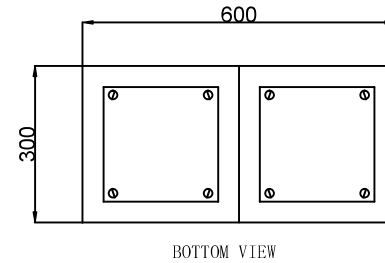
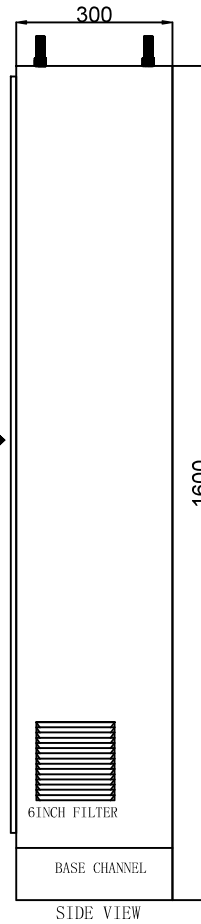
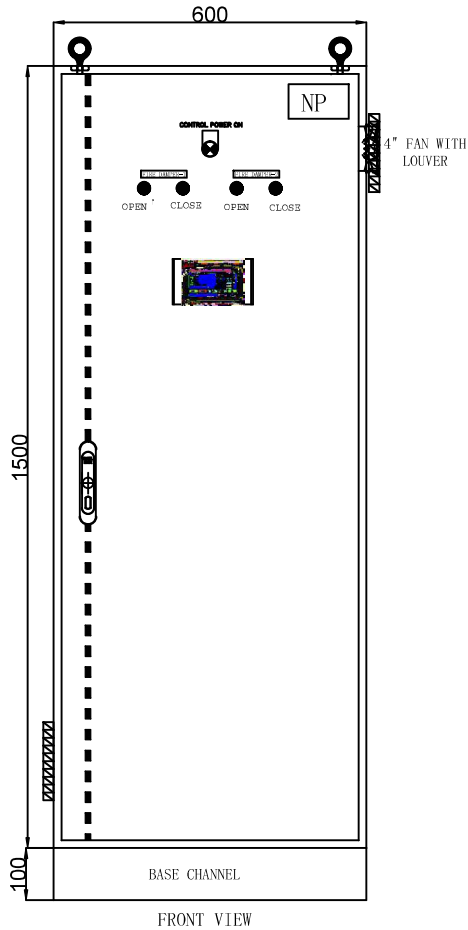
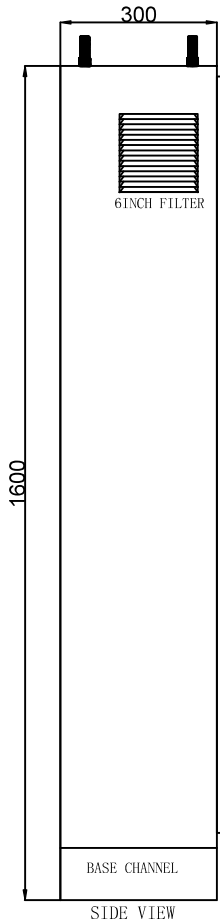
1. Packaged AC
2. Fresh Air Fans
3. Heaters
4. Pan Humidifiers
5. Ventilation supply as well as exhaust fans

GUI/PLC will issue commands to fire dampers also as per requirement. In case of fire, the fire dampers shall close and running equipment shall also be switched off. In addition, hardwired pushbuttons shall be provided to operate fire dampers in case of failure of GIU/PLC



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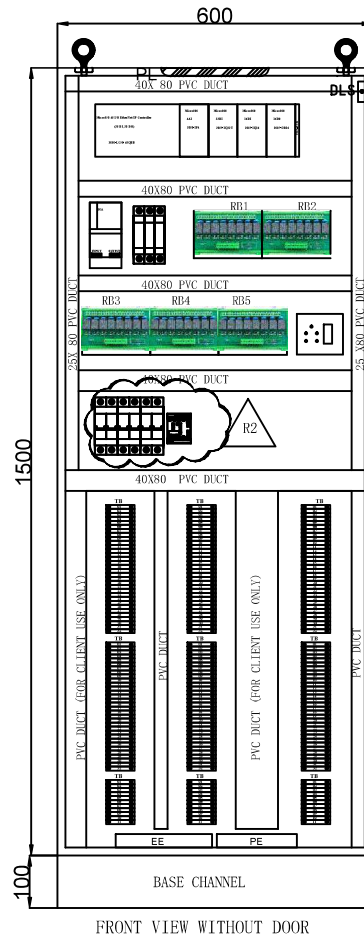
DRAWING NO: - SATS/EFEW/PLC/20-21/SM03122021



Issue	Remarks	Date	Name	Prep. By	S.M	SATS AUTOMATION PVT LTD	Description:- Work:- PLC PANEL	Sales Ref.:-	Qty.:- 1	= IGA	Sheet
				P.Date	12.12.2021			Item No.:-		+ REV:R2	2
				Ckd. By	S. Chowdhury			W.O.:-			16

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DRAWING NO:-- SATS/EFEW/PLC/20-21/SM03122021



FRONT VIEW WITHOUT DOOR

- NOTE :-
- 1) PANEL :- SIZE H600XW600XD250MM
  - 2) CABLE ENTRY FROM BOTTOM .
  - 3) WALL MOUNTING.
  - 4) PAINT SHADE :OUTSIDE & INSIDE :(RAL - 7035).
  - 5) FRONT ACCESS PROVIDED ;
  - 6) ENCLOSURE FRAME :-DOOR-1,6MM,BASE PLATE 2 MM PANEL MAKING SHEET.
  - 7) PAINTING :-POWDER COATED .
  - 8) CONTROL WIRING :-  
1.5SQMM FOR CONTROL,0.5 sq mm FOR PLC DI/DO,
  - 9) CONTROL WIRING :-ALL WIRES STANDARD WITH LUGS/CRIMP CONTACT ON BOTH END.
  - 10) CONTROL TERMINALS SIZE :- SCREW TYPE 2.5SQMM SINGLE TIER TYPE.
  - 11) WIRING COLOR CODING -240VAC L -GREY  
240VAC N -BLACK  
24VDC P -RED  
24VDC M -BLACK  
PLC INPUT -BLUE  
PLC OUTPUT -YELLOW  
POWER EARTH -GREEN/YELLOW  
ELECTRONIC EARTH -GREEN
  - 12) PANEL MAKE : SATS AUTOMATION PVT. LTD.

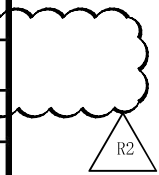
Issue	Remarks	Date	Name	Date	26.12.2021	Prep. By S.M	P.Date 12.12.2021	Ckd. By J. Showkunt	12.12.2021	CLIENT USE WORKS	SATS AUTOMATION PVT LTD		Description:- Work:- PLC PANEL	Sales Ref.:-	Item No.:-	Qty.:- 1	REV:R2	Sheet 3
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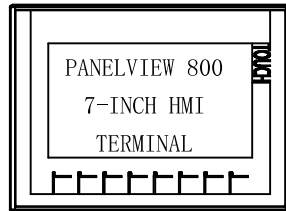
DRAWING NO: - SATS/EFEW/PLC/20-21/SM03122021

SL NO.	ITEM DESCRIPTION (EFE WORKS PANEL )	MAKE	TYPE NO.	QTY
1	MCB DP 16AMP 10KA MAIN	L&T		1
2	MCB DP 6AMP 10KA SMPS	L&T		2
3	MCB SP 8AMP 10KA CPU, HMI, FAN	L&T		3
4	Auxiliary Contactor Blocks 2NO+2NC, 230V AC	L&T/SIEMENS		1
<b>PLC ITEM -</b>				
1	Micro850 48 I/O EtherNet/IP Controller (28 DI, 20 DO)	Rockwell	2080-LC50-48QBB	1
2	Micro800 4 Point Analog Input Plug-In	Rockwell	2080-IF4	1
3	Micro800 32 Point Digital Input Module	Rockwell	2085-IQ32T	1
4	Micro800 16 Point Digital Input Module	Rockwell	2085-IQ16	1
5	Micro800 16 Point Source Output Module	Rockwell	2085-OB16	1
6	Micro800 Expansion Module End Cap	Rockwell	2085-ECR	1
7	PANELVIEW 800 7-INCH HMI TERMINAL	Rockwell	2711RT7T	1
8	PRO ECO 120W 24V 10A	WEIDMULLER	1469490000	1
<b>BROUGHT OUT ITEM</b>				
1	RELAY BOARD 1CO 8CH 24VDC	TRINTY		5
2	4INCH FAN	REXNORD	QTY	1
3	6INCH FILTER	JHONTION	QTY	2
4	PANEL TUBE LED	HAVELLS/PHILIPS	QTY	1
5	5AMP SCOKET	ANCOR	QTY	1



Prep. By	S.M	SATS AUTOMATION PVT LTD		Description:- IGA & BOM	Sales Ref.:-	= IGA	Sheet	
P.Date	12.12.2021			Work:- PLC PANEL	Item No.:-	Qty.:- 1	+ REV:R2	4
Ckd. By	<i>J. Chowdhury</i>				W.O.:-			153
Issue	Remarks	Date	Name	Date	12.12.2021		16	

# PLC ARCHITECTURE



PROFINET

Micro850 48 I/O EtherNet/IP Controller (28DI, 20DO)	Micro800 4 AI	Micro800 32 DI	Micro800 16 DI	Micro800 16 DO	2085-ECR
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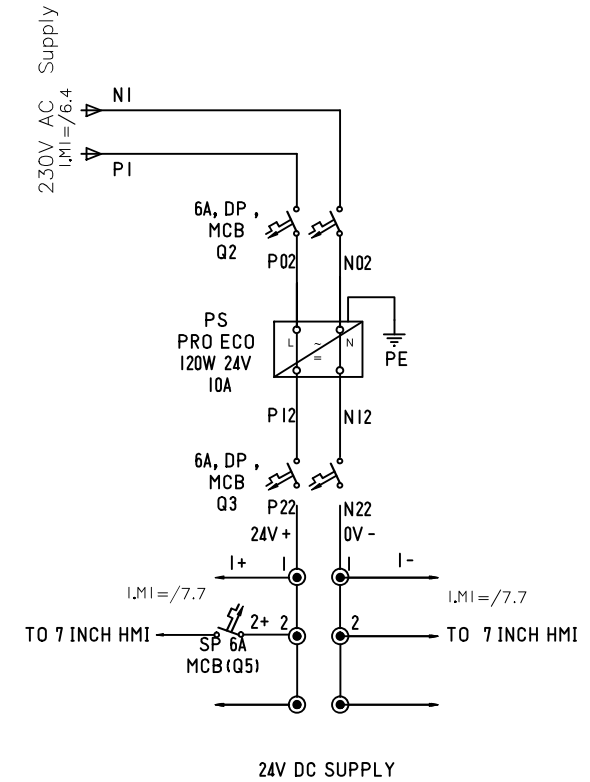
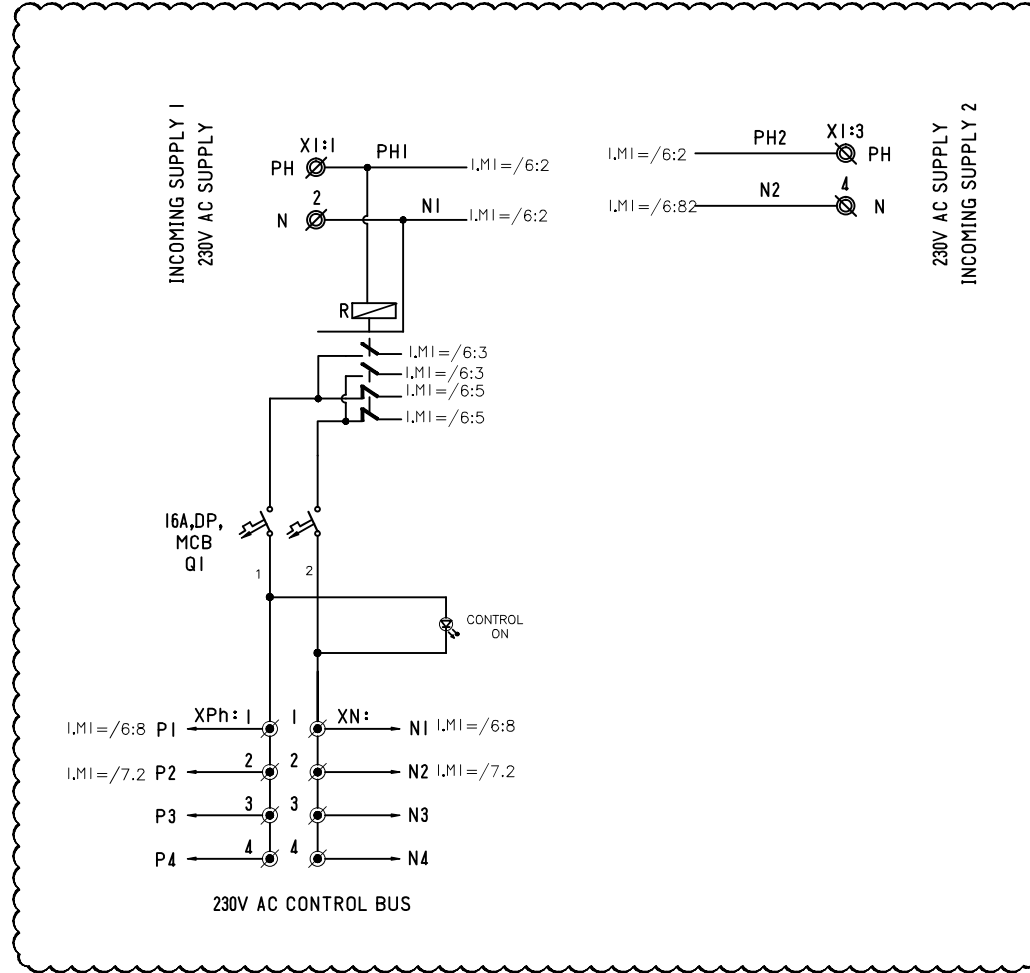
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DRAWING NO: -SATS/EFEW/PLC/20-21/SM03122021

Prep. By	S.M		Description:- ARCHITECTURE DRAWING Work:- PLC PANEL	Sales Ref.:-	=	Sheet	
P.Date	12.12.2021			Item No.:-	+	REV:R2	5
Ckd. By	<i>S. Chowdhuri</i>			W.O.:-	154		16
Issue	Remarks	Date	Name	Date	12.12.2021		

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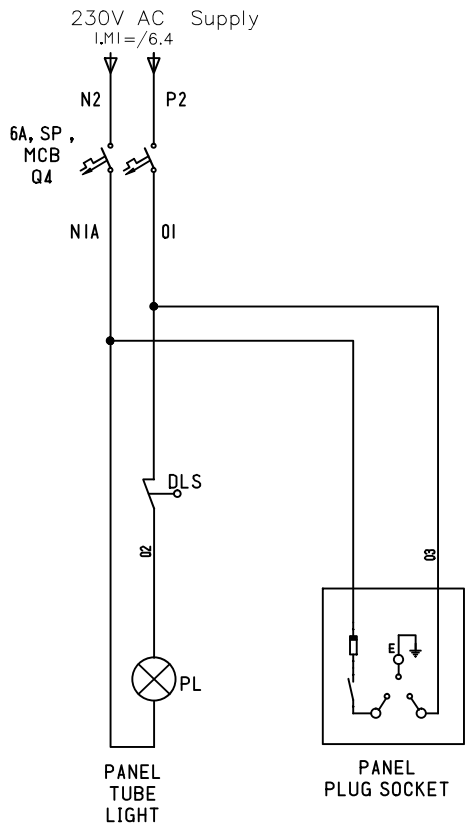
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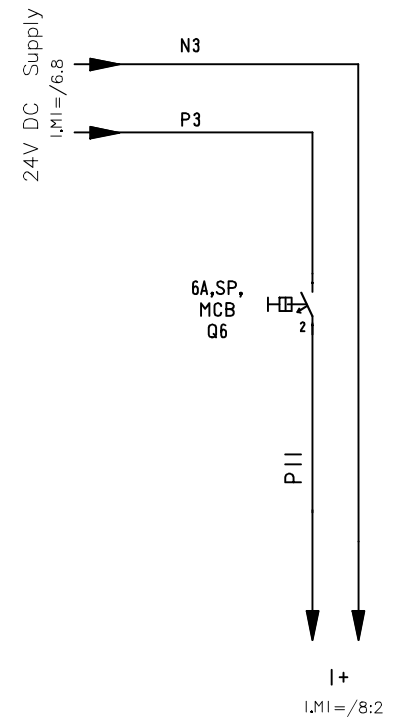
Prep. By	S.M	SATS AUTOMATION PVT LTD	Description:- POWER WIRING	Sales Ref.:-	= I.M1	Sheet		
P.Date	12.12.2021			Item No.:-		Qty.:- 1	+ REV:R2	6
Ckd. By	S. Chowdhuri			W.O.:-				16
Issue	Remarks	Date	Name	Date	12.12.2021			


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DRAWING NO: -SATS/EFEW/PLC/20-21/SM03122021



FOR CPU  
(28DI,20DO)



Issue	Remarks	Date	Name	Date	12.12.2021		Description:- POWER WIRING Work:- PLC PANEL	Sales Ref:- Item No.:- Qty.:- 1 W.O.:-	= I.MI + REV:R2	Sheet
										7
										16

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DRAWING NO:-SATS/EFEW/PLC/20-21/SM03122021

RAMAGUNDAM ESP R&M		
UNIT - 1		
Air Flow Switch 1	FEEDBACK	DI
Air Flow Switch 2	FEEDBACK	DI
DP switch-1	FEEDBACK	DI
DP switch-2	FEEDBACK	DI
Airstat	FEEDBACK	DI
Geysterstat	FEEDBACK	DI
Temperature	FEEDBACK	AI
RH sensor	FEEDBACK	AI
Package AC-1	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Package AC-2	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Supply fan 1	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Supply fan 2	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Supply fan 3	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Exhaust fan 1	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO

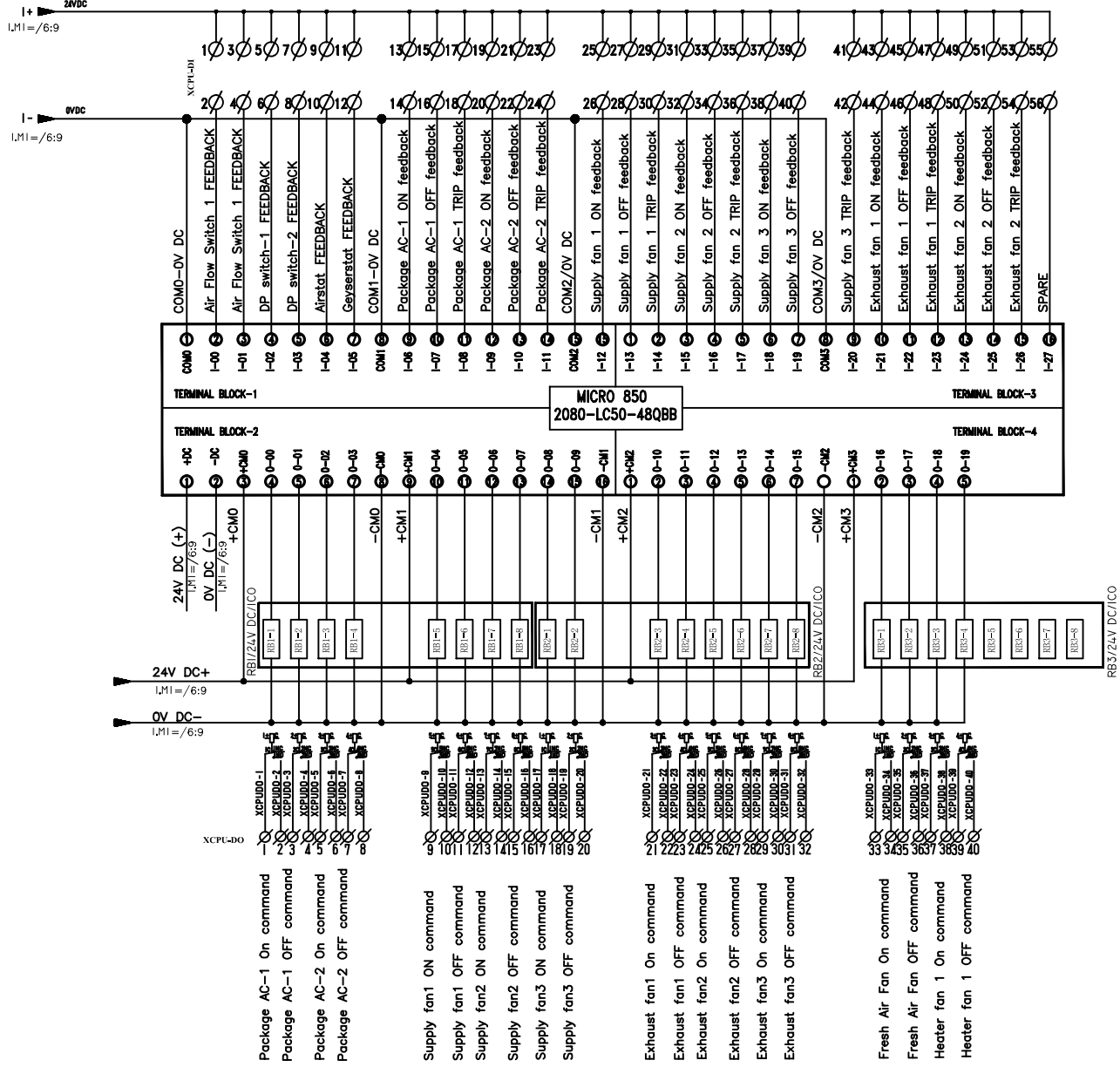
RAMAGUNDAM ESP R&M		
UNIT - 1		
Exhaust fan 2	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Exhaust fan 3	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Fresh Air Fan	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Heater fan 1	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Heater fan 2	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Heater fan 3	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
HUMIDIFIER	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	On command	DO
	off command	DO
Fire damper 1	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	OPEN PB	DI
	CLOSE PB	DI
	On command	DO
	off command	DO
Fire damper 2	ON feedback	DI
	OFF feedback	DI
	Trip feedback	DI
	OPEN PB	DI
	CLOSE PB	DI
	On command	DO
	off command	DO

SUMMARY				
Required No of IO's are following	SPARE	Considering No of IO's are following		
DI	56	20%		68
DO	28	20%		34
AI	2	20%		3

Prep. By	S.M	SATS AUTOMATION PVT LTD	Description:- I/O LIST Work:- PLC PANEL	Sales Ref.:-	= I,MI	Sheet	
P.Date	12.12.2021			Item No.:-	Qty.:- 1	+ REV:R2	7A
Ckd. By	S. Shandhant			W.O.:-	I	16	
Issue	Remarks	Date	Name	Date	12.12.2021		

DRAWING NO:--SATS/EFEW/PLC/20-21/SM03122021

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Prep. By	S.M
P.Date	12.12.2021
Ckd. By	S. Chowdhuri
Issue	Remarks
Date	Date

CLIENT: FFF WORKS

SATS  
AUTOMATION  
PVT LTD



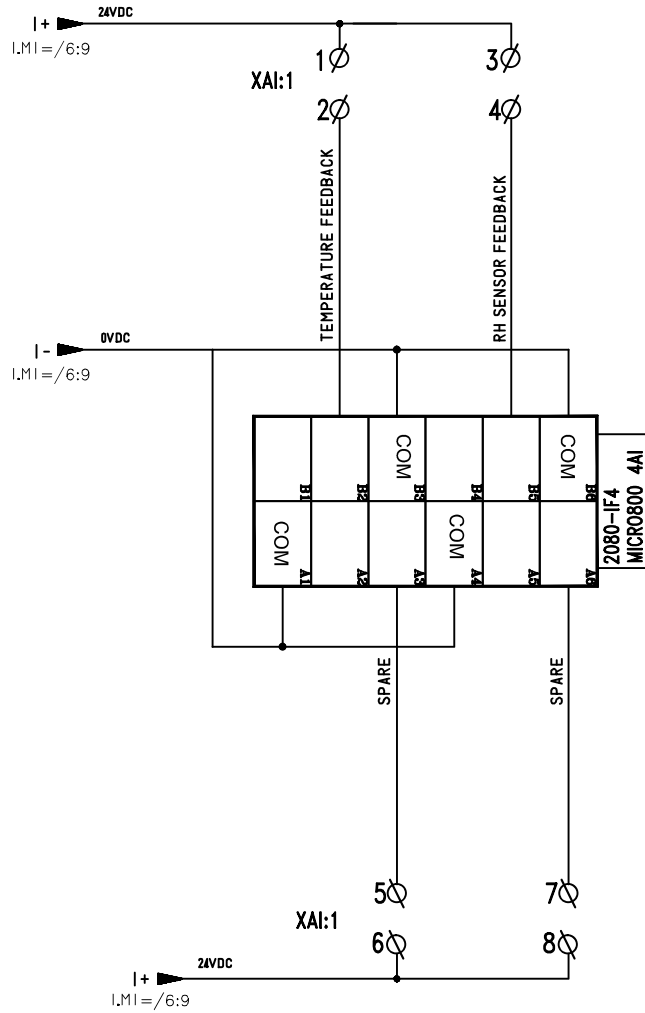
Description:- WIRING DIAGRAM OF MICRO 850 CONTROLLER  
Work:- PLC PANEL

Sales Ref.:-  
Item No.:- Qty.- 1  
W.O.:-

=	L.M1	Sheet
+	REV:R2	8
I	158	16

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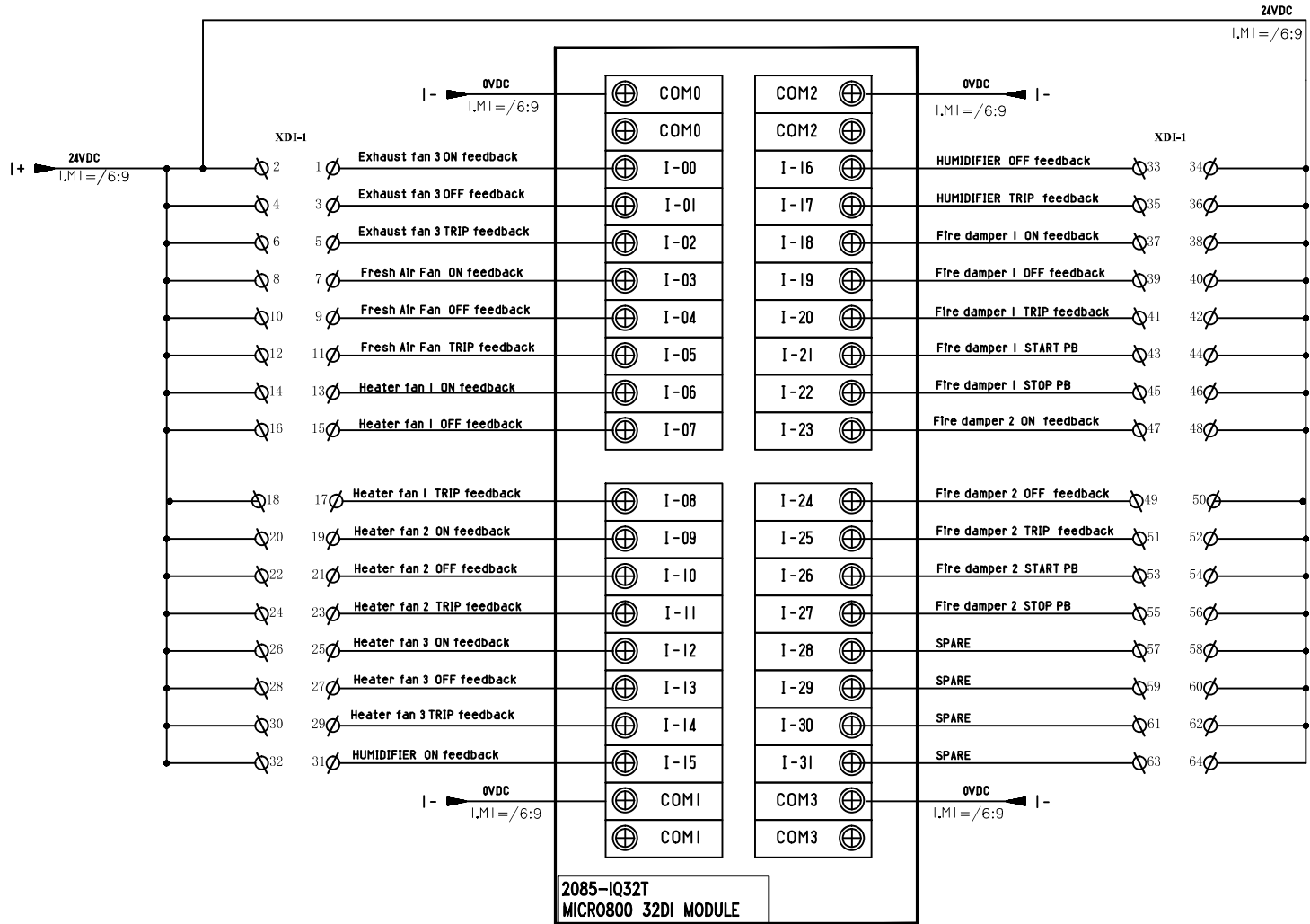
DRAWING NO: - SATS/EFEW/PLC/20-21/SM03122021



		Prep. By S.M		SATS AUTOMATION PVT LTD		Description:- WIRING DIAGRAM OF ANALOG INPUT		Sales Ref.-		= I.MI		Sheet	
		P.Date 12.12.2021		SATS		Work:- PLC PANEL		Item No.-		+ REV.R2		9	
		Ckd. By S. Chowdhury		SATS				W.O.-		I 159		16	
Issue		Remarks		Date		Date		Date		Date		Date	

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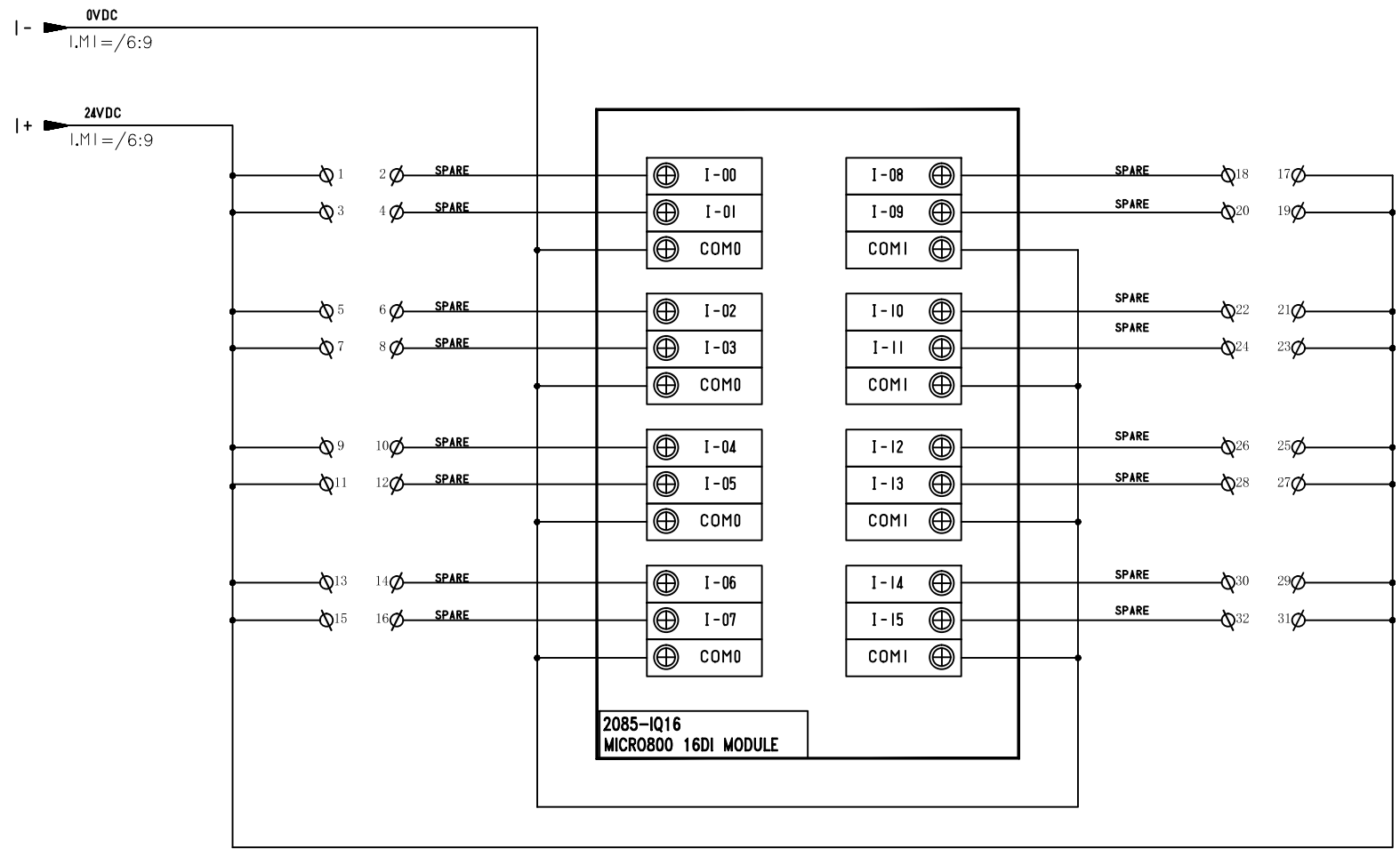


2085-IQ32T  
MICRO800 32DI MODULE

Prep. By	S.M	SATS AUTOMATION PVT LTD	Description:- WIRING DIAGRAM OF DIGITAL INPUT Work:- PLC PANEL	Sales Ref.:-	Item No.:-	Qty.:- 1	= I,M1	Sheet	
P.Date	12.12.2021								
Ckd. By	<i>S. Chowdhury</i>								
Issue	Remarks	Date	Name	Date	12.12.2021	W.O.:-	+	REV:R2	10

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DRAWING NO: - SATS/EFEW/PLC/20-21/SMO3122021



2085-IQ16  
MICRO800 16DI MODULE

Issue	Remarks	Date	Name	Prep. By	S.M	SATS AUTOMATION PVT LTD	Description:- WIRING DIAGRAM OF DIGITAL INPUT Work:- PLC PANEL	Sales Ref.:-	= I,M1	Sheet		
				P.Date	12.12.2021			Item No.:-		Qty.:- 1	+ REV:R2	11
				Ckd. By	S. Chowdhury			W.O.:-			16	

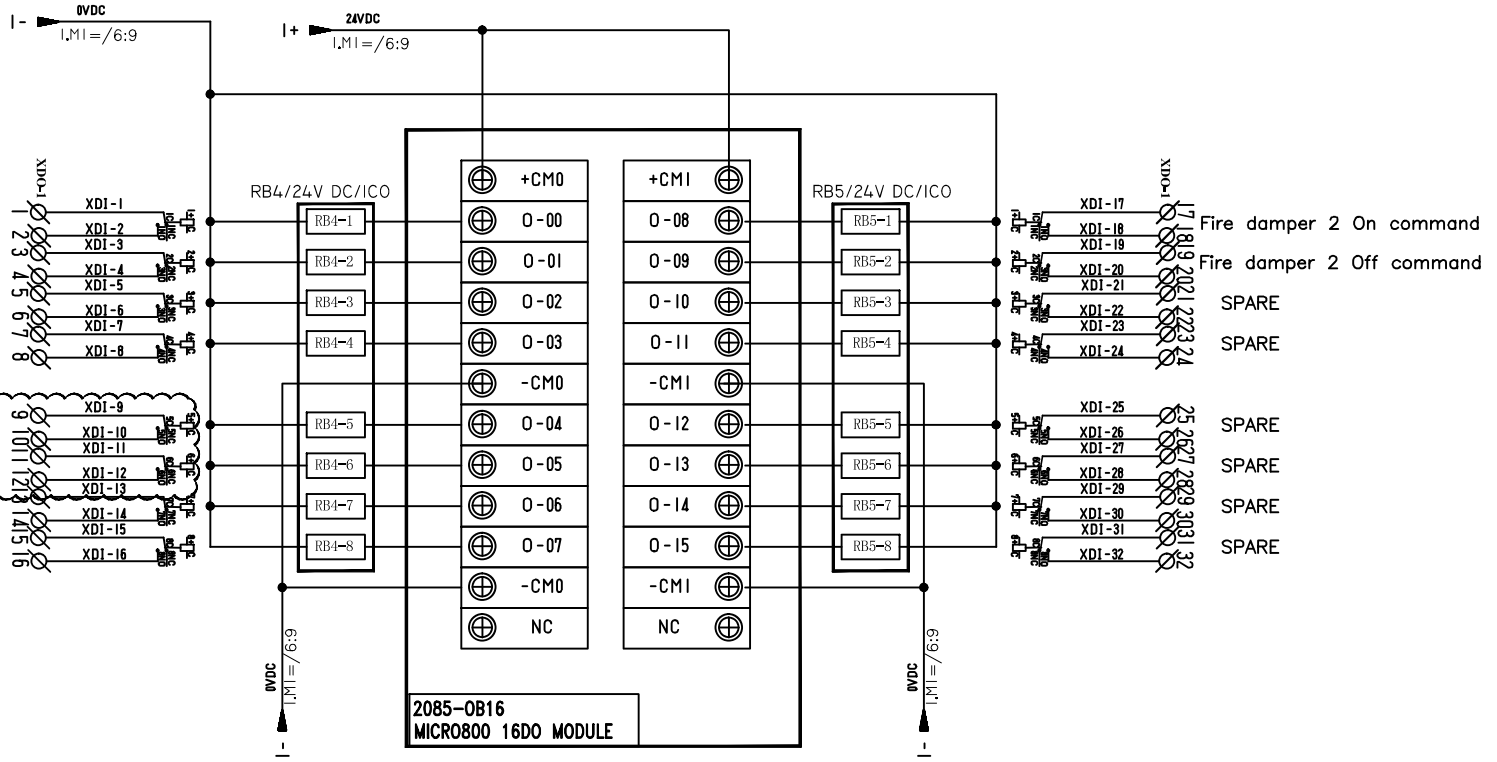
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Heater fan 2 On command  
 Heater fan 2 OFF command  
 Heater fan 3 On command  
 Heater fan 3 Off command

HUMIDIFIER On command  
 HUMIDIFIER Off command

Fire damper 1 On command  
 Fire damper 1 Off command



Prep. By	S.M	CLIENT: EFEWORKS	SATS AUTOMATION PVT LTD	Description:- WIRING DIAGRAM OF DIGITAL OUTPUT Work:- PLC PANEL	Sales Ref.:- Item No.:- Qty.:- 1	= I.MI + REV:R1	Sheet
P.Date	12.12.2021						12
Ckd. By	J. Chandrasekar						16
Issue	Remarks	Date	Name	Date	12.12.2021	W.O.:-	