



Electra Enterprises

(An ISO 9001 : 2015)



➤ **Leading Electrical Turnkey Contractor.**

- ◆ Basic Electrical Designing & Detailed Engineering for Conceptualizing to Commissioning.
- ◆ Project Executions & Liaisoning including Switchyards substations of 11KV/22KV/33KV transmission lines.

➤ **Manufacturer of IEC-61439 LT Control Panels.**

➤ **Provide entire range of LT Power Distribution Panel Solutions.**

- ◆ PCC Panel
- ◆ MCC Panel
- ◆ APFC Panels
- ◆ DG Panels
- ◆ AMF Panels
- ◆ All Types of DB's

➤ **Manufacturer of Sheet Metal Enclosures, Fabricated Product & Powder Coating Work.**

- ◆ Cable Trays
- ◆ Perforated Cable Trays
- ◆ Ladder Type Cable Tray
- ◆ Cable Tray Bends & Support System Accessories.
- ◆ All Types of Canopies

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In House Facilities at Factory



RG M2 1003 Bending Machine



AE 2510 NT Punching Machine



Conveyerised Powder Coating Plant



7 Tank Pretreatment Process

Facilities :-

- AE 2510 NT Punching Machine
- RG M2 1003 Bending Machine
- Busbar Machine
- 7 Tank Pretreatment Process
- Conveyerised Powder Coating Plant
- Shearing Machine
- Cable Tray & accessories Punching Machine (Press Machine)
- Hydraulic Bending Machine
- Power Press Machine work (10 tone, 50 tone & 100 tone)
- CO2 Welding Machine
- Fabricated Support, Clamps, Slotted Channels & Heavy Fabrication works
- Indoor , Outdoor Transformer & HT equipment installation.
- Illumination, Power Distribution Scheme, Busbar Trunking Systems, Cable tray & earthing works.
- Interior & Exterior Electrification Work, Supply, Installation, Commissioning of LV/ BMS System.



Busbar Machine

We strive to achieve customer delight by delivering excellent quality product in scheduled time and giving customer support on continual basis.

Our Products



LT Breaker Panel



Thyristor Panel



Transformer Installation



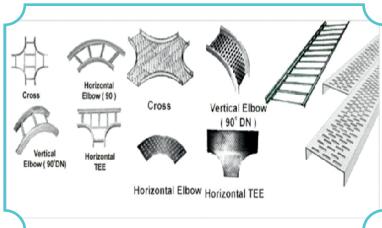
Street Light work



Busduct Installation work



Shed illumination Work
(Highbay Installation)



Cable tray Bends and Accessories



Electrical Distribution Works

Superior Quality Manufacturer of an Array Sheet Metal Component for Control Panel, Switchgears, Acoustic enclosures, Distribution Panels, Cable Tray and Control Panels.

Our Esteemed Clients



We are committed to maintain and continually improve the quality of our Products, Services, Processes, and Systems and keep upgrading our Personnel through training and motivation.

ELECTRICAL FORMULAE

Volts (E):

Volts = square root of (watts x ohms)

Volts = watts / amperes

Volts = amperes x ohms

Amperes (I):

Amps = volts / ohms

Amps = watts / volts

Amps = square root of (watts / ohms)

Ohms (R):

Ohms = volts / amperes

Ohms = volts² / watts

Ohms = watts / amperes²

AC Motor Formulas:

E = voltage / I = amps / W = watts /

PF = power factor / Eff

= efficiency / HP = horsepower

Watts (W):

Watts = volts / ohms

Watts = amperes² x ohms

Watts = volts x amperes

Single Phase:

Kilowatts (KW) $WK = \frac{1.73 \times I \times E \times PF}{1000}$ (where hp is known)

Kilovolt-Amps $Kva = \frac{1.73 \times I \times E}{1000}$ (where hp is known)
(Kva)

AC Efficiency and Power Factor Formulas:

Single Phase Efficiency : $\frac{746 \times HP}{E \times I \times PF}$

Single Phase Power Factor : $\frac{\text{Input Watts}}{V \times A}$

Three Phase Efficiency : $\frac{746 \times HP}{E \times I \times PF \times 1.732}$

Three Phase Power Factor : $\frac{\text{Input Watts}}{E \times I \times 1.732}$

Electrical Rules of Thumb :

Sync Speed	Approx. Torque
rpm	lb-ft per hp
3600	1.4
1800	3
1200	4.5
900	5.8

Rated Approximate Amps / hp

Voltage	Single Phase	Three Phase
115	10	
230	5	2.5
460		1.25
575		1

Current (amps) $I = \frac{HP \times 746}{E \times Eff \times PF}$ (where hp is known)

Current (amps) $I = \frac{KW \times 1000}{E \times PF}$ (where KW is known)

Current (amps) $I = \frac{Kva \times 1000}{E}$ (where Kva is known)

Horsepower (hp) $= I \times E \times Eff \times PF$
 $\frac{746}{(hp)}$

Kilowatts (KW) $(KW) = \frac{I \times E \times PF}{1000}$

Kilovolt-Amps $Kva = \frac{I \times E}{1000}$
(Kva)

Three Phase :

Current (amps) $I = \frac{HP \times 746}{1.73 \times E \times Eff \times PF}$ (where hp is known)

Current (amps) $I = \frac{KW \times 1000}{1.73 \times E \times PF}$ (where hp is known)

Current (amps) $I = \frac{Kva \times 1000}{1.73 \times E}$ (where hp is known)

Horsepower (hp) $HP = \frac{1.73 \times I \times E \times Eff \times PF}{746}$ (where hp is known)

WEIGHTS & MEASURES

APOTHECARIES' WEIGHT		LONG MEASURE		MISCELLANEOUS	
20 grains	1 scruple	12 inches	1 foot	3 inches	1 palm
3 scruples	1 dram	3 feet	1 yard	4 inches	1 hand
8 drams	1 ounce	5½ yards	1 rod	6 inches	1 span
12 ounces	1 pound	40 rods	1 furlong	18 inches	1 cubit
Ounce and pound are the same as in Troy Weight		8 furlongs	1 statute mile	21.8 inches	1 bible cubit
AVOIRDUPOIS WEIGHT		3 miles	1 league	2½ feet	1 military pace
TROY WEIGHT		LIQUID MEASURE		THE METRIC SYSTEM	
27 ½ grains	1 dram	4 gills	1 pint	LINEAR MEASURE	
16 drams	1 ounce	2 pints	1 quart	10 millimetres	1 centimetre
16 ounces	1 pound	4 quarts	1 gallon	10 centimetres	1 decimetre
28 pounds	1 quarter	31½ gallons	1 barrel	10 decimetres	1 metre
4 quarters	1 cwt	2 barrels	1 hogshead	10 metres	1 decametre
2,000 pounds	1 short ton	DRY MEASURE		10 decametres	1 hectometre
2,240 pounds	1 long ton	2 pints	1 quart	10 hectometres	1 kilometre
SQUARE MEASURE		8 quarts	1 peck	SQUARE MEASURE	
144 square inches	1 square foot	4 pecks	1 bushel	100 sq millimetres	1 sq centimetre
9 square feet	1 square yard	36 bushels	1 chaldron	100 sq centimetres	1 sq decimetre
30 ¼ square yards	1 square rod	MARINER'S MEASURE		100 sq decimetres	1 sq metre
40 square rods	1 rood	6 feet	1 fathom	100 sq metres	1 sq decametre
4 roods	1 acre	120 fathoms	1 cable length	100 sq decametres	1 sq hectometre
640 acres	1 square mile	7½ cable length	1 mile	100 sq hectometres	1 sq kilometre
CUBIC MEASURE		5,280.2 feet	1 statute mile	CUBIC MEASURE	
1,728 cubic inches	1 cubic foot	6,080.2 feet	1 nautical mile	1,000 cu millimetres	1 cu centimetre
27 cubic feet	1 cubic yard	SURVEYORS' MEASURE		1,000 cu centimetres	1 cu decimetre
128 cubic feet	1 cord (wood)	7.92 inches	1 link	1,000 cu decimetres	1 cu metre
40 cubic feet	1 ton (shipping)	25 links	1 rod	LIQUID MEASURE	
2,150.42 cubic inches	1 standard bu	4 rods	1 chain	10 millilitres	1 centilitre
231 cubic inches	1 U.S. standard gal	10 sq chains or 160 sq rods	1 acre	10 centilitres	1 decilitre
1 cubic foot	about 4/5 of a bushel	640 acres	1 square mile	10 decilitres	1 litre
ANGULAR MEASURE		36 sq miles (6 miles sq)	1 township	10 litres	1 decalitre
60 seconds	1 minute	TIME MEASURE		10 decalitres	1 hectolitre
60 minutes	1 degree	60 seconds	1 minute	10 hectolitres	1 kilolitre
30 degrees	1 sign	60 minutes	1 hour	WEIGHTS	
90 degrees	1 quadrant	24 hours	1 day	10 milligrams	1 centigram
4 quadrant, or 360 degrees 1 circumference or great circle	7 days	1 week	10 centigrams	1 decigram
The earth rotates at a velocity of 15 degrees an hour (about 17.366 miles a minute at the Equator); 1 degree is therefore equal to 4 minutes.		28, 29, 30 or 31 days	1 cal. month	10 decigrams	1 gram
		30 days	1 month	10 grams	1 decagram
		365 days	1 year	10 decagrams	1 hectogram
		366 days	1 leap year	10 hectograms	1 kilogram
INTERNATIONAL PAPER SIZES		CLOTH MEASURE		100 kilograms	1 quintal
A series is based on A0 (841 x 1189 mm), which is the equivalent of a square metre in area, and each smaller size, A1, A2, etc., is equal to half the area of the preceding larger size.		2½ inches	1 nail	10 quintals	1 ton
		4 nails	1 quarter		
		4 quarters	1 yard		
		millimetres	inches	millimetres	inches
2A	1189 x 1682	46.81 x 66.22	A3	297 x 420	11.69 x 16.54
A0	841 x 1189	33.11 x 46.81	A4	210 x 297	8.27 x 11.69
A1	594 x 841	23.39 x 33.11	A5	148 x 210	5.83 x 8.27
A2	420 x 594	16.54 x 23.39	A6	105 x 148	4.13 x 5.83
			A7	74 x 105	2.91 x 4.13
			A8	52 x 74	2.05 x 2.91
			A9	37 x 52	1.46 x 2.05
			A10	26 x 37	1.02 x 1.46

CONVERSION FORMULAE

NON-METRIC TO METRIC

LINEAR

To convert	Multiply by
inches into millimetres	25.4
inches into centimetres	2.540
inches into metres	2.540x10 ⁻²
feet into centimetres	30.48
feet into metres	0.3048
yards into metres	0.9144
miles into metres	1,609.344
miles into kilometres	1.609344

AREA

To convert	Multiply by
sq inches into sq centimetres	6.4516
sq feet into sq centimetres	929.03
sq feet into sq metres	0.092903
sq yards into sq metres	0.8361
sq miles into sq kilometres	2.58999
sq miles into hectares	258.999
acres into sq metres	4,046.856
acres into hectares	0.40469

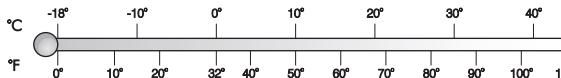
VOLUME & CAPACITY

To convert	Multiply by
cu inches into cu centimetres	16.3871
cu inches into litres	0.016387
cu feet into cu metres	0.028317
cu feet into litres	28.32
cu yards into cu metres	0.7646
pints into litres	0.56826
quarts into litres	1.13652
UK gallon into litres	4.54609
US gallon into litres	3.7854

VELOCITY

To convert	Multiply by
feet per second into centimetres per second	30.48
feet per second into metres per second	0.3048
miles per hour into kilometres per hour	1.609344

TEMPERATURE CONVERSION



VOLUME & CAPACITY

To convert	Multiply by
cu centimetres into cu inches	0.06102
cu metres into cu feet	35.3147
cu metres into cu yards	1.30795
litres into cu Inches	61.03
litres into pints	1.7598
litres into quarts	0.8799
litres into UK gallons	0.219976
litres into US gallons	0.264178

MASS

To convert	Multiply by
grams into ounces	0.03527
grams into grains	15.4324
grams into tahil	0.02646
kilograms into pounds	2.2046
kilograms into tons	0.009842
kilograms into katis	1.653
kilograms into stones	0.1575
kilograms into hundredweights	0.01968

VELOCITY

To convert	Multiply by
centimetres per second into feet per second 0.03281
metres per second into feet per second	3.281
metres per second into feet per minute	196.9
kilometres per hour into miles per hour	0.6214

POWER

To convert	Multiply by
kilowatts into horsepower	1.341
metric horsepower into horsepower	0.98632
Metric horsepower into foot pounds-force per second	542.48

FORCE

To convert	Multiply by
newtons into pounds force	0.2248
newtons into pounds	7.2330

CALCULATION FORMULAE

To Calculate	Multiply by
area of triangle	base by ½ height
area of circle	(diameter) ² by 0.7854
area of sector of circle	arc by ¼ diameter
area of square, rhombus	base by height
area of equilateral triangle	(side) ² by 0.433
area of trapezium	height by ½ sum of parallel sides

To calculate	Multiply by
area of ellipse	major axis by minor axis x 0.7854
area of parabols	containing rectangle by 0.5
circumference of circle	diameter by 3.1416
convex surface of sphere	(diameter) ² by 3.1416
content of cone	height by ⅓ area of base

To calculate	Multiply by
surface of cone
½ side by perimeter of base + area of base
solidity of sphere	(diameter) ² by 0.5236
Content of cube or prism
length by breadth by depth
volume of hexagonal prism
..... (side) ² by height by 2.598

Calendar 2021

January						
S	M	T	W	T	F	S
			1	2		
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

February						
S	M	T	W	T	F	S
			1	2	3	4
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

March						
S	M	T	W	T	F	S
			1	2	3	4
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April						
S	M	T	W	T	F	S
			1	2	3	
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

May						
S	M	T	W	T	F	S
			1			
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

June						
S	M	T	W	T	F	S
			1	2	3	4
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

July						
S	M	T	W	T	F	S
			1	2	3	
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

August						
S	M	T	W	T	F	S
			1	2	3	4
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

September						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

October						
S	M	T	W	T	F	S
			1	2		
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

November						
S	M	T	W	T	F	S
			1	2	3	4
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

December						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	