



Team Astra

Sri Krishna College of Engineering and Technology

ETKA Report

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S . No	Name of the component	Description	Specifications	Price	Vendor
1	BLDC MOTOR	<ul style="list-style-type: none"> • Brushless DC motor, converts supplied electrical energy into mechanical energy. • Controlled by feedback mechanisms and also has high efficiency , comparatively 	CAPACITY : 2500W , 60 V WEIGHT : 15 Kg DIMENSION : 320 x 280 x 250 mm	34,000 Rs	Sri Krishna College of Engineering and Technology
2	MOTOR CONTROLLER	<ul style="list-style-type: none"> • Motor controller senses the rotor position and the proper voltage pattern is applied to the motor. • Limits the torque and also change the direction of rotation. 	CAPACITY : 2500W , 60 V WEIGHT : 3 Kg DIMENSION : 260 x 150 x 70 mm	15,000 Rs	Sri Krishna College of Engineering and Technology

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3	TRACTIVE BATTERY	<ul style="list-style-type: none"> • The primary battery in cart. (lithium ion) • The light energy obtained from solar cell can be stored in this battery. • We can use this energy to run the cart 	CAPACITY : 48 V , 100 Ah WEIGHT : 37 Kg DIMENSION : 900 x 325 x 125 mm	80,000 Rs	Sri Krishna College of Engineering and Technology
4	SLI BATTERY	<ul style="list-style-type: none"> • Lithium ion battery. • Secondary battery. • Used to power accessories like headlights, gauges, etc. 	CAPACITY : 12 V , 20 Ah WEIGHT : 1.7 Kg DIMENSION : 150 x 55 x 70 mm	2,500 Rs	Sri Krishna College of Engineering and Technology

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5	BATTERY CHARGER	<ul style="list-style-type: none"> • Used to charge the battery. • Separate chargers for tractive and SLI batteries. 	CAPACITY : 48 V WEIGHT : 1.2 Kg DIMENSION : 200 x 70 x 11 mm	3,500 Rs	Sri Krishna College of Engineering and Technology
6	WIRES	<ul style="list-style-type: none"> • Conductor material transmits electricity to pass through. • Mostly made up of copper • Thickness of the wires varies depending on the components they are used to connect 	DEPENDS ON NEED	-	-

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7	CABLE HARNESSING	<ul style="list-style-type: none"> • Systematic and integrated arrangement of cables within an insulated material 	DEPENDS ON NEED	-	-
8	CONNECTORS	<ul style="list-style-type: none"> • Makes a tight connection with little interference between two or more electrical wires in an electrical box. 	DEPENDS ON NEED	-	-

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9	SOLAR PANELS	<ul style="list-style-type: none"> • It is an assembly of solar cells in grid that can convert light directly into electrical energy. • Convert the solar energy to electricity to a battery, which in turn runs the car's motor. 	CAPACITY : 220 W , 12 / 24 V WEIGHT : 4.5 Kg (Single) DIMENSION : 538.4 x 726.4 x 22.8 mm	60,000 Rs	Sundharamurugan, KCP SIXWELL Solar
10	SOLAR CHARGE CONTROLLER	<ul style="list-style-type: none"> • Manages the power going into the battery bank from the solar array. • Ensures that the batteries are not overcharged . 	CAPACITY : 12 / 24 V , 50 A WEIGHT : 3.6 Kg DIMENSION : 260 x 260 x 100 mm	8,000 Rs	Sundharamurugan, KCP SIXWELL Solar

S . No	Name of the component	Description	Specifications	Price	Vendor
11	HORN	<ul style="list-style-type: none"> • Electromagnetic devices produces audible noise to acknowledge the nearby vehicle occupants or pedestrians. 	CAPACITY : 12 V WEIGHT : 400 gm DIMENSION : 150 x 110 x 90 mm	700 Rs	
12	FUSE	<ul style="list-style-type: none"> • Fuse protects the components from power surges and faults when there is high flow of current the fuse blown and halts the circuit 	CAPACITY : withstand current : 35 A WEIGHT : 20 mm DIMENSION : 42 x 12 mm	300 Rs	Arul Radios

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13 i)	KILL SWITCH	<ul style="list-style-type: none"> It cuts off the tractive power of the vehicle 	CAPACITY : 250 V, 14 mm , 1.5A, 3A WEIGHT : 200 gm DIAMETER : 40 mm	1000 Rs,	Robu.in
13 ii)	BOT SWITCH	<ul style="list-style-type: none"> Brake Over Travel , When brake system fails it kills the ignition and cut the power to any electrical fuel pumps. 	WEIGHT : 200 g DIMENSION : Diameter : 400mm	600 Rs	

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14	MCB	<ul style="list-style-type: none"> • Detects the faults zone in circuit and shorts the circuit i.e switch off the complete circuit 	WEIGHT : 0.115 kg DIMENSION : 85 x 18 mm	340 Rs	Super Electronics
15 i)	SPEEDOMETER	<ul style="list-style-type: none"> • Indicates the speed of the vehicle 	OPERATING VOLTAGE: 9-32V Maximum up to: 36V (\leq 1 min)	160 Rs	Arul Radios

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15 ii)	BATTERY INDICATOR	<ul style="list-style-type: none"> • Visualizes the state of battery charge. • Also includes a ammeter to measure how much current the motor is drawing. 	Voltmeter measures upto 72 Volt max. Ammeter measures upto a maximum of 80A .	350 Rs	Robu.in
15 iii)	TEMPERATURE SENSOR	<ul style="list-style-type: none"> • Measures and indicates the temperature of the battery and motor 	ACCURACY of $\pm 1\%$ FSD	100 Rs	Robu.in

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15 iv)	IGNITION SWITCH	<ul style="list-style-type: none"> It is a Start switch ,which is to activates the main electrical system for the vehicle including accessories. 	DIMENSIONS : 23 x 34 x 11 mm WEIGHT : 100 gm CURRENT RATING : 20 Amps	350 Rs	Amazon.in
15 v)	HAZARD LIGHT SWITCH	<ul style="list-style-type: none"> Turns on all indicators at the same time as an indication of danger or vehicle failure. 	DIMENSIONS: 100 x 50 x 50 mm CURRENT RATING: 10 Amps	150 Rs	Robu.in

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15 vi)	HEAD LIGHT SWITCH	<ul style="list-style-type: none"> Helps to turn on/off head light 	VOLTAGE : 12V DIMENSIONS : 1500 x 1100 x 30 mm	300 Rs	Arul Radios
15 vii)	INDICATOR SWITCH	<ul style="list-style-type: none"> 3 position switch , which indicates (left - off - right) side of turning of the vehicle 	DIMENSIONS : 10 x 90 x 90 mm	400 Rs	Arul Radios

S . No	Name of the component	Description	Specifications	Price	Vendor
15 viii)	FORWARD/ REVERSE SWITCH	<ul style="list-style-type: none"> • 3 position (ON-OFF-ON type) switch, which indicates forward/backward movement of the vehicle 	CURRENT RATING : 20 Amps, 16 Amps	400 Rs	
15 ix)	HORN SWITCH	<ul style="list-style-type: none"> • Activates the horn when current is applied 	VOLTAGE : 12 V DIMENSIONS : 1120 x 880 x 18 mm	150 Rs	

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16 i)	BRAKE LIGHT	<ul style="list-style-type: none"> • Indication of applying brake. 	CAPACITY : 12 V	250 Rs	Thiru Paramy Automobiles
16 ii)	REVERSE LIGHT	<ul style="list-style-type: none"> • Indication of moving backward. 	CAPACITY : 12V 1 W	300 Rs	Thiru Paramy Automobiles

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16 iii)	HEAD LIGHT	<ul style="list-style-type: none"> • For good view at night time. • LED lights for maximum efficiency. 	CAPACITY: 12 V, 35-55 W	800 Rs	Thiru Paramy Automobiles
16 iv)	TURN SIGNALS	<ul style="list-style-type: none"> • Indication for turn vehicle (left or right). 	CAPACITY: 12 V DC	500 Rs	Thiru Paramy Automobiles

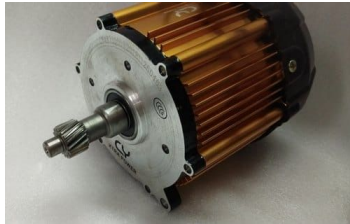
Components



Tractive Battery(Lithium Ion)



SLI Battery (Lithium Ion)



BLDC Motor



BLDC Motor Controller



Solar Panel



Solar Charge Controller



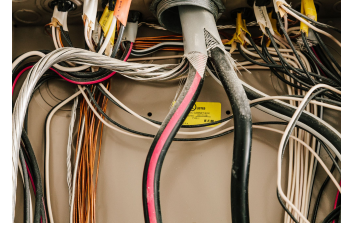
MCB



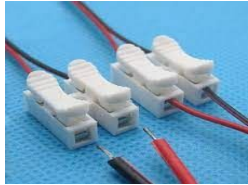
Fuse



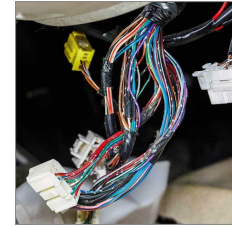
Horn



Wires



Wire Connectors



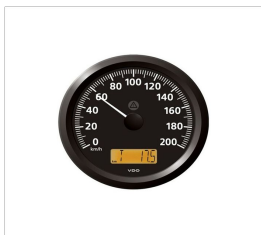
Cable Harnessing



Kill Switch



BOT Switch



Speedometer



Battery Indicator



Hazard Light Switch



Head Light Switch



Horn Switch



Indicator Switch



Forward/Reverse Switch



Ignition Switch



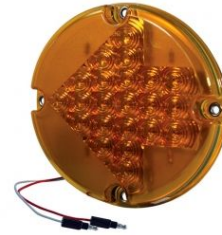
Head Light



Brake Light



Reverse Light



Turn Lights

Simulation

