

1KW Pure Sine Wave Inverter

Bill of Materials

Push-Pull Controller components

Component name	value	type	description	Qty	Unit Price (BDT)	Price (BDT)
R1, R3	1k, 0.25W		Totem pole Base Resistor	2	0.2	0.4
R2	1.5k, 0.25W		3525 oscillator resistor RT	1	0.2	0.2
R10	1M, 0.25 W		Feedback resistor	1	0.2	0.2
					0	0
R7	1k, 0.25W		Shutdown BJT Base Resistor	1	0.2	0.2
R6	10k, 0.25W		Shutdown BJT Pull Down Resistor	1	0.2	0.2
R12	1K, 0.25W		Buzzer BJT Base Resistor	1	0.2	0.2
R9	10k, 0.25W		Buzzer BJT Pull Down Resistor	1	0.2	0.2
R11	10k, 0.25W		Feedback Resistor	1	0.2	0.2
R5	5.6k, 0.25W		Feedback Resistor	1	0.2	0.2
R4	680R, 0.25W		Feedback Resistor	1	0.2	0.2
R8	5.6k, 0.25W		Power LED	1	0.2	0.2
C1	10 nF	Polystar	7812 input Capacitor	1	0.5	0.5
C14	100 uF	Electrolyte	7812 input Capacitor	1	1	1
C7	10 uF	Electrolyte	7812 output Capacitor	1	1	1
					0	0
C2	10nF, 100 V	Polystar	3525 Oscillator capacitor, CT	1	0.5	0.5
C12, C13	10nF, 100 V	Polystar	Totem Pole Base Capacitor	2	0.5	1
C3,C8	10nF, 100 V	Polystar	Totem Pole Bypass capacitor	2	0.5	1
C9,C11	100 uF,25V	Electrolyte	Totem Pole Power Capacitor	2	1	2
C10	10nF, 100 V	Polystar	Feedback input capacitor	1	0.5	0.5
C5	1 uF, 100 V	Tantalum	Compensation Capacitor	1	5	5
C4	220 uF,25V	Electrolyte	Soft Start Capacitor	1	1	1
U1	SG3525		PWM Pulse generator	1	15	15
SG1	Buzzer		Buzzer	1	5	5
Q1,Q5	BD136	BJT	Totem Pole Output signal	2	2	4
T1,T2	BD135	BJT	Totem Pole Output signal	2	2	4
PCB				6	4	24
Subtotal						67.9

Main board Low voltage side components

Name	Value	Type	Description	Qty	Unit Price	Price
Q1,Q2,Q3,Q4,Q5,Q6,Q7,Q8,Q14,Q15,Q16,Q17	IRF P150N		Push Pull MOSFET	12	55	660
R1,R3,R4,R6,R8,R10,R14,R20,R22,R24,R26,R31	10R, 0.5 W		MOSFET gate Resistor	12	0.5	6
R5,R7,R9,R12,R13,R18,R19,R21,R23,R25,R30,R32	10K, 0.25 w		MOSFET gate Pull Down Resistor	12	0.2	2.4
D1,D2,D3,D4,D5,D6,D7,D8,D9,D10,D11,D12	15V ZENER		MOSFET gate Zener Diode	12	0.5	6
XFR PR 1		Connector	Transformer Primary terminal 1		0	0
XFR PR 2		Connector	Transformer Primary terminal 2		0	0
XFR CENTER		Connector	Transformer center terminal		0	0
XFR S1		Connector	Transformer Secondary terminal 1		0	0
XFR S2		Connector	Transformer Secondary terminal 2		0	0
F2,F3	30A	Fuse	Input Protection Fuse (30+30)=60A	2	1	2
BAT(+VE)		Connector	Battery positive terminal	1	20	20
BAT(-VE)		Connector	Battery negative terminal	1	20	20
IC1	ACS758	Hall effect sensor	Input Current sensor	1	750	750
C10	100 nF	Ceramic		1	0.5	0.5
C22	1uF, 25 V	Electrolyte	Hall effect sensor power capacitor	1	1	1
J3			Control rail	1	1	1
J2			Power ON/OFF switch connector	1	1	1
IC2	7818	Linear Regulator	Step down for control unit	1	10	10
L2	100mH		Control power inductor	1	5	5
C12	100uF,100V	Electrolyte	7818 regulator input capacitor	1	5	5
C11	10nF	Ceramic	7818 regulator input bypass capacitor	1	0.5	0.5
R15	10K, 0.25 w		Power LED series Resistor	1	0.2	0.2
LED 1	3mm	Red	Power LED	1	0.5	0.5
C14	10nF,100V	Polyster	Battery bypass capacitor	1	0.5	0.5
C15	100nF,100V	Polyster	Battery bypass capacitor	1	0.5	0.5
J7			Supporting rail to protection circuit	1	1	1
J1			Push Pull Control circuit rail	1	1	1
C1,C2,C16,C17	1000uF,100V	Electrolyte	Input Battery Ripple control capacitor	4	15	60
R17	1M,2W		Input Capacitor Discharge Resistor	1	2	2
Transformer		Center Tape	Push Pull center tape transformer	1	500	500
PCB				90	4	360
Subtotal						2416.1

Main board (High Voltage Side) components

[illegible]

H-Bridge Controller Components

Name	Value	Type	Description	Qty	Unit Price	Price
R1,R4,R5,R6	10R, 0.25W		Optocoupler output resistor	4	0.2	0.8
R2,R3,R7	220R, 0.25W		Optocoupler Input Resistor	3	0.2	0.6
R11	1K, 0.25W		Power indicator LED	1	0.2	0.2
D2,D4,D5,D6	FR 107		Optocoupler output diode	4	1	4
D1,D3	FR 107		Bootstrap diode	2	1	2
C5,C6,C8,C10	10 nF	ceramic	Optocoupler output capacitor	4	0.5	2
C11,C12	22pF	ceramic	Crystal capacitor	2	0.5	1
C1	100uF, 50V	Electrolytic	7805 Input	1	2	2
C3	0.1uF,25V	Electrolytic	7805 Output	1	1	1
C14	10 nF	ceramic	Atmega Bypass capacitor	1	0.5	0.5
C15	100uF,25V	Electrolytic	Atmega power capacitor	1	2	2
C2,C9,C6,C4	100uF,25V	Electrolytic	Optocoupler output capacitor	4	2	8
J1, J2	3 pin rails		Programmer rails	1	1	1
J3,J4	3 pin rails		Control signal rails	1	1	1
J5	2 pin rail		Power rail	1	1	1
IC3,IC4,IC5,IC6	TLP250		Optocoupler	4	40	160
IC2	7805		Power regulator	1	10	10
IC1	ATmega8		Microcontroller	1	80	80
LED1	3mm	Red	Power indicator LED	1	0.5	0.5
PCB				8	4	32
Subtotal						309.6

Protection Circuit components

Name	Value	Type	Description	Qty	Unit Price	Price
IC1	atmega8		Microcontroller	1	80	80
IC2	7805			1	10	10
C3	100uf	Electrolytic	Charge Storage capaticor	1	1	1
C4	0.1uf	polyster	bypass capacitor	1	0.5	0.5
L2	680uH		Filtering inductor	4	1	4
C5	1uf,25V	Electrolytic	Noise filtering	1	1	1
R28,R7,R5,R4,R3	10K, 0.25W		Led indicator series resistor	5	0.01	0.05
Led1	3mm,RED		Power indicator	1	1	1
C2	0.1uf	ceramic	ADC Reference noise filter cap	1	1	1
L1	680UH		ADC pins power filter inductor	4	1	4

C1	0.1uf	ceramic	ADC pins power filter inductor	1	0.5	0.5
Led2,Led3,LED4,Led5	3mm,RED		Faults indicator	4	1	4
L3	1mH		Filter inductor for Hall sensor output	1	4	4
C9	100uf,16V		Filter capacitor for Hall sensor output	1	1	1
R1			Battery voltage sense resistor	1	0.01	0.01
R2			Battery voltage sense resistor	1	0.01	0.01
R12,R19	680,0.25W		LM35 Noise filter res	2	0.01	0.02
C10,C8	0.1uf	ceramic	LM35 Noise filter cap	2	0.5	1
D1,D2,D3,D4	1n5819	Schottky	Current Transformer Rectifier	4	2	8
CT			Current Transformer, Turns ratio 1:2500	1	130	130
R6			Current to voltage transfer resistor	1	0.01	0.01
J7,J6			Program upload rail	6	0.25	1.5
J1			Serial Communication rail	2	0.25	0.5
J2			Battery voltage sense rail	4	0.25	1
J3			main board Communication rail	6	0.25	1.5
J5			VCC, Gnd rail	4	0.25	1
PCB				8	4	32
Subtotal						288.6
Total Cost						
Board name	Cost(BDT)					
Push-Pull controller	67.9					
Main Board(low voltage side)	2416.1					
Main Board(High Voltage side)	1291.4					
H-Bridge controller	309.6					
Protection circuit	288.6					
Grand Total	4373.6					
Grand Total	\$54.67					