1KW Pure Sine Wave Inverter

Bill of Materials

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	(
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	:
C7	10 uF	Electrolyte	7812 output Capacitor	1	1	:
					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	
C3,C8	10nF, 100 V	Polystar	Totem Pole Bypass capacitor	2	0.5	
C9,C11	100 uF,25V	Electrolyte	Totem Pole Power Capacitor	2	1	
C10	10nF, 100 V	Polystar	Feedback input capacitor	1	0.5	0.!
C5	1 uF, 100 V	Tantalum	Compensation Capacitor	1	5	
C4	220 uF,25V	Electrolyte	Soft Start Capacitor	1	1	-
U1	SG3525		PWM Pulse generator	1	15	1.
SG1	Buzzer		Buzzer	1	5	!
Q1,Q5	BD136	BJT	Totem Pole Output signal	2	2	,
T1,T2	BD135	BJT	Totem Pole Output signal	2	2	
РСВ				6	4	24
	Subtota	<u> </u>				67.9

Name	Value	Туре	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 termin	al 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 tern	ninal 1	0	0
XFR S2		Connector	Transformer Secondary term		0	0
F2,F3	30A	Fuse	Input Protection Fuse (30+30)=60A	2	1	2
BAT(+VE)	307	Connector	Battery positive terminal	1	20	20
BAT(-VE)		Connector	Battery negative terminal	1	20	20
	466750	Hall effect	, ,			
IC1	ACS758	sensor	Input Current sensor	1	750	750
C10	100 nF	Ceramic	Hall effect sensor power	1	0.5	0.5
C22	1uF, 25 V	Electrolyte	capacitor	1	1	1
J3			Control rail Power ON/OFF switch	1	1	1
J2		Linear	connector	1	1	1
IC2	7818	Regulator	Step down for control unit	1	10	10
L2	100mH		Control power inductor 7818 regulator input	1	5	5
C12	100uF,100V	Electrolyte	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
		Licensiyie	Input Capacitor Discharge			
R17	1M,2W	_	Resistor Push Pull center tape	1	2	2
Transformer		Center Tape	transformer	1	500	500
PCB				90	4	360 2416 .
	Subtotal					1

Name	Value	Туре	Description	Unit Price	Qty	Price
D21,D22,D23,D24	MUR3060		Rectifier Diode	40	4	160
D25	MUR3060		Snubber Diode	40	1	40
R43	1K, 20W		Snubber Resistor	50	1	50
L3			DC Filter Inductor	250	1	250
C7,C9,C13,C26,C27,C28	10uF,450V	Electrolyte	DC Filter Capacitor	10	6	60
R16	1M,0.25W		DC-DC output indicator LED series resistor	0.2	1	0.2
LED2	3mm	Red	DC-DC output indicator LED	0.5	1	0.5
R39,R40	1M,2W		DC-DC output capacitor discharge Resistor	2	2	4
<u>F1</u>	10A		Inverter input Fuse H-Bridge Freewheeling	1	1	1
D13,D14,D15,D16	MUR1560		diode	15	4	60
Q18,Q19,Q20,Q21	IRFP460		H-Bridge MOSFET	45	4	180
R33,R34,R35,R36	10k, 0.25W		H-Bridge MOSFET Pull Down Resistor	0.2	4	0.8
D17,D18,D19,D20	15V zener	Zener	H-Bridge MOSFET Gate Protection	0.5	4	2
R37,R15	10k, 0.25W	Zeriei	Power LED Resistor	0.2	2	0.4
			Linear regulator to powe			
IC3	7812	2	H-Bridge control 7812 input bypass	10	1	10
C4	10nF	Ceramic	capacitor	0.5	1	0.5
C8	100uF,25V	Electrolyte	7812 input Capacitor	1	1	1
L1	680uF		7812 series input inductor	5	1	5
R11,R2	1K, 20W		Snubber	50	2	100
C24,C5	2.2uF,630V	Polyster	Snubber	15	2	30
C23	10uF,25V	Electrolyte	7812 output capacitor	1	1	1
C18,C21	100nF,630V	Polyster	Snubber	5	2	10
C30	10uF,450V	Polyster	Output Filter	40	1	40
L4	1.5mH,5A		Output Filter	250	1	250
GND,HVDC	Green Connector	Connector	For test purpose	10	1	10
AC1, AC2	Output Wire,10A	Wire	Output AC line	20	1	20
J4,J5,J6	rail	Connector	Control circuit rail	5	1	5
Jumper1	Jumper	Insulated wire	Powe for H-bridge control	0	1	C
Jumper2	Jumper	Insulated wire	High Voltage DC feedback	0	1	C
	Subtota	I				1291. 4
		-				4
						<u> </u>

Name	Value	Туре	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	Туре	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

	0.4.6		ADC pins power filter		0.5	0.5
C1	0.1uf	ceramic	inductor	1	0.5	0.5
Led2,Led3,LED4,Led5	3mm,RED		Faults indicator Filter inductor for Hall	4	1	4
L3	1mH		sensor output Filter capacitor for Hall	1	4	4
С9	100uf,16V		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
СТ		,	Current Transformer, Turns ratio 1:2500	1	130	130
			Current to voltage			
R6			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 main board	4	0.25	1
J3			Communication rail	6	0.25	1.5
J5			VCC, Gnd rail	4	0.25	1
РСВ				8	4	32
	Subtotal					288.6
Total Cost						
Total Cost						
	Cost(BDT)					
Total Cost Board name Push-Pull controller	Cost(BDT) 67.9					
Board name Push-Pull controller						
Board name	67.9					
Board name Push-Pull controller Main Board(low voltagse side) Main Board(High Votage side)	67.9 2416.1					
Board name Push-Pull controller Main Board(low voltagse side)	67.9 2416.1 1291.4					
Board name Push-Pull controller Main Board(low voltagse side) Main Board(High Votage side) H-Bridge controller Protection circuit	67.9 2416.1 1291.4 309.6					
Board name Push-Pull controller Main Board(low voltagse side) Main Board(High Votage side) H-Bridge controller	67.9 2416.1 1291.4 309.6 288.6					
Board name Push-Pull controller Main Board(low voltagse side) Main Board(High Votage side) H-Bridge controller Protection circuit	67.9 2416.1 1291.4 309.6					