

GATEBOX: DETAILED ELECTRONICS PARTS LIST

By Shafeeq Rabbani

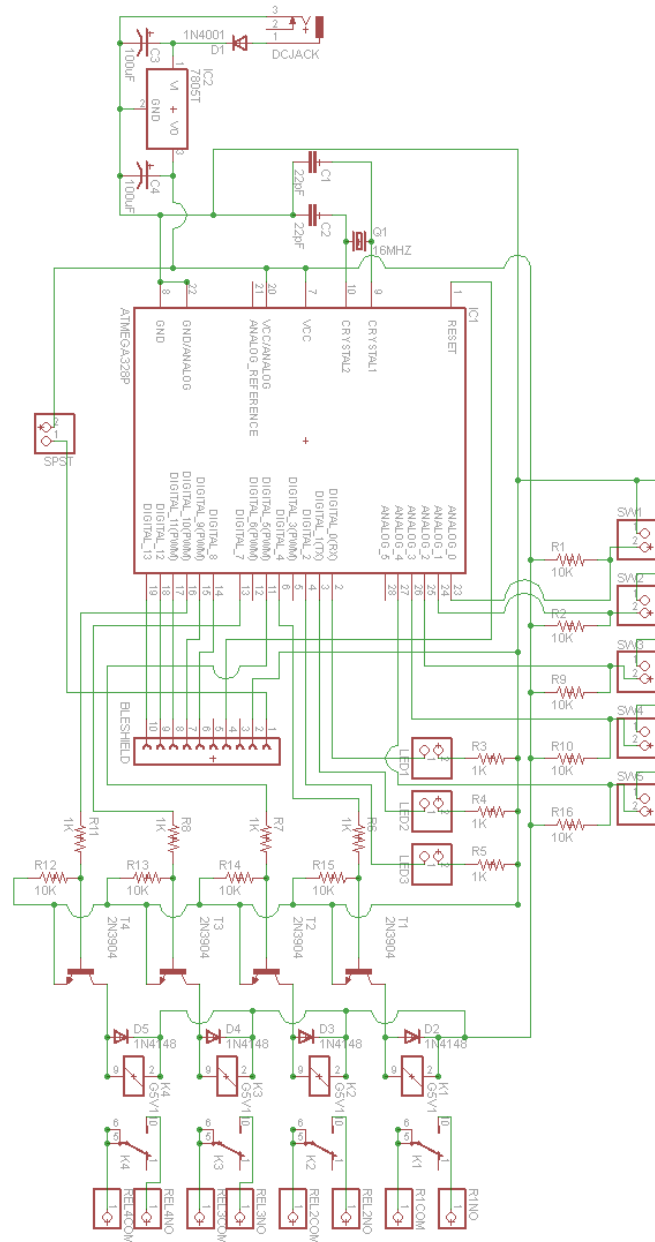


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Introduction

As this approach involves creating everything from scratch and printing it all on a single PCB. Currently, there isn't a complete version of the circuit. There is one that is almost complete: Would appreciate it if someone could replace the two solid state relays in PCB with nRF/Dual Relay with 4 mechanical relays (as shown in PCB V7 board.PNG and PCB V7 Schematic.PNG in Simplified Schematic folder) and re-route all the wires and push the .brd and .sch files. The Detailed Schematic/nRF8001 folder also contains .sch and .brd files of the nRF8001 chip from Nordic Semiconductors and Adafruit, the manufacturers of the nRF8001 chip and the Bluetooth Low Energy module respectively.



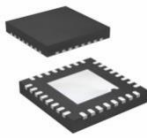
Custom Arduino Board + GateBox Accessories

As the GateBox device is expected to be up and running for 24/7, you will require a 5V DC power supply that can power the Arduino UNO.

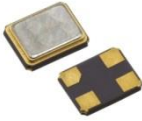

Part	Digikey/ Element14 Part No.	Manufacturer Part No.	Quantity	Picture	Cost
Atmega 328p Microcontroller	68T2944	ATMEGA328P-PU	1		\$3.24
16 MHz Crystal Oscillator	18C1481	XT9S20ANA16M	1		\$0.338
28 pin DIP IC Socket	34P8056	4828-3004-CP	1		\$0.503
Rectifier Diode 1A, 50V	10M8464	1N4001	1		\$0.113
LM-7805-CT Linear Voltage Regulator	MC7805CTG	MC7805CT-BPMS- ND	1		\$0.487
Terminal blocks	ED1623-ND	ED500/2DS	4		0.85
2.1mm DC Barrel Jack	CP-037A-ND	PJ-037A	1		\$1.23
100uF, 25V Aluminum Electrolytic Capacitor	39T8695	25YXH100MEFC6. 3X11	2		\$0.075

22 pF, 50 V Ceramic Capacitors	BC1034TR-ND	K220J15C0GF5TH 5	2		\$0.34
3mm LED, FWD V= 2.1V FWD I= 20mA	94T8843	703-0087	3		\$0.184
10K Ω Resistor, 1W, 5%	95W5667	CFR100J10K	8		\$0.18
1K Ω Resistor, 1/4W, 5%	25M8365	CBT25J1K0	7		\$0.32
6 Pin Male Header	609-3263-ND	68000-406HLF	4		\$0.24
G5V-1-DC Low Signal Relay	Z773-ND	G5V-1-DC5	4		2.77
SPDT Sliding Switch	CKN9565-ND	OS102011MS2QN 1	1		0.54
DIODE GEN PURP	1N4148TACT- ND	1N4148TA	4		0.14
Transistor NPN	2N3904FS-ND	2N3904BU	4		0.26
SWITCH PUSH SPST-NO	EG1900-ND	RP3502ABLK	5		2.80

nRF8001 BLE Board

Part	Digikey/ Elfa Distrelec/ Element 14/ Mouser Part No.	Manufacturer Part No.	Quantity	Picture	Cost
BLUETOOTH LW ENERGY nRF 8001	1490-1026- ND	nRF8001- R2Q32-T	1		\$5.72
Buffers & Line Drivers HEX HIGH-LOW LEVEL SHIFTER	568-8150-1- ND	74HC4050D,653	1		\$0.606
Tantalum Capacitors Solid SMD 10uF	718-1126-2- ND	293D106X96R3 A2TE3	2		\$0.229
LDO Voltage Regulators High	576-2980-2- ND	MIC5225- 3.3YM5 TR	1		\$1.28
CERAMIC CAPACITOR 15PF 50V, C0G, 5%, 0402	38K1652	GRM1555C1H1 50JZ01D	4		\$0.106
CRYSTAL 32.768KHZ 12.5PF SMD	SE2415CT- ND	FC-255 32.7680K-A3	1		\$1.69
Capacitor SMD 33 nF 25 VDC 0402	65-754-51	GRM155R71E3 33KA88D	1		\$ 0.683
CAPACITOR, 0402 0.1NF 50V	578095	CM05CG101J50 AH	2		\$1.00
Capacitor SMD/SMT 0.1uF 25volts	478-7868-1- ND	04023C104KAT 2A	1		\$0.471
CAP, MLCC, X7R, 1NF, 50V, 0402	490-1303-1- ND	GRM155R71H1 02KA01D	1		\$0.368
Ceramic Capacitors MLCC - SMD 10UF 6.3V 20% 0402	81- GRM155R60J 106ME4D	GRM155R60J10 6ME44D	1		\$0.444

Capacitor, 1.5pF 50 V DC C0G Dielectric ±0.1pF SMD	490-8087-1- ND	GJM1555C1H1 R5BB01D	1		\$0.10
Capacitors MLCC - SMD 0402 22pF 50V C0G 5%	581- 04025A220J	04025A220JAT2 A	1		\$0.135
Capacitors MLCC - SMD 0402 1.8pF 50V C0G +/-0.1pF	81- GJM1555C1H 1R8BB01	GJM1555C1H1 R8BB01D	1		\$0.283
CAPACITOR, MLCC, 2.2NF, 50V, X7R, 0402	2310511	MC0402B222J5 00CT	1		\$0.11
RESISTOR, 10K, 0.063W, 1%, 0402, SMD	541- 10.0KLCT-ND	CRCW040210K 0FKED	1		\$0.59
RES SMD 22K OHM 0.1% 1/10W 0603	P22KDBCT- ND	ERA-3AEB223V	1		\$0.91
EMI Filter Beads, Chips & Arrays Ferrite Chip Beads	810- MMZ1608B12 1C	MMZ1608B121C	1		\$0.135
8.2nH SMD Inductor, SRF: 4.9GHz Q: 23 550mA dc 160mΩ Rdc	810- MHQ1005P8 N2JT	MHQ1005P8N2J T	1		\$0.34
INDUCTOR, RF, 10NH, 2%, 3.9GHZ, SMD	994-0402CS- 10NXGLU	0402CS- 10NXGLU	1		\$1.69
INDUCTOR, RF, 15NH, 5%, 3.28GHZ, SMD	994-0402CS- 15NXJLU	0402CS- 15NXJLU	1		\$1.40
INDUCTOR, RF, 3.9NH, 5%, 9.5GHZ, SMD	994-0402HP- 3N9XJLU	0402HP- 3N9XJLU	1		\$1.54
INDUCTOR, RF, 5.6NH, 2%, 6.5GHZ, SMD	994-0402HP- 5N6XGLU	0402HP- 5N6XGLU	1		\$1.34

CRYSTAL 16MHZ 9PF SMD	SER3636CT- ND	TSX-3225 16.0000MF18X- AC3	1		\$0.91
U.FL SMD Antenna Connector	798-U.FL-R- SMT10	U.FL-R-SMT(10)	1		\$1.59

You will need access to a machine that can print PCBs and solder SMD components onto them. This will likely be an electronics manufacturer.