

1 COMPONENTS USED

CRYSTALCLEAR ELECTRONICS CURRICULUM

Part name	Value	Quantity
Resistors	100R, 330R, 680R, 1k, 3.3k, 6.8k, 10k, 33k, 68k, 100k, 330k, 680k, 1M	13x20
Power resistors	47R/5W, 68R/10W	2x2
Potentiometer	10k	2
Capacitors	1nF, 100nF, 10uF, 22uF	4x5
Diodes	Silicon (1N4148), Schottky (SR160), Zener (BZX85C33, BZX85C10, 1N746A)	5+2+(2x5+10)
Transistors	NPN (BC546), PNP (2N5087), N-MOSFET (NTD4963N), P-MOSFET (IRF9Z34NPBF)	5+5+1+1
Optical devices	LED-s, optocoupler (MOC8102X), reflective optocoupler (TCRT1000)	3x10+2+1
Integrated circuits	7805 stabilizer, 555 timer, comparator (LM293P), microcontroller (ATMEGA16A)	2+5+5+2
Pushbuttons, switches		5+2
Fuses with fuse holder		5
Fan	12V	1
Piezzo buzzer		1
Sensors	NTC temperature sensor (22k Ω), light dependent resistor (2..6k Ω)	1+1
Crystal		1
Banana plug	red and black (4mm)	1+1
Wires	2m red, 2m white, 2m green	1+1+1

2 TOOLS USED @ CRYSTALCLEAR ELECTRONICS CURRICULUM

Part name	Value	Quantity
Adapter board for programming	Connects the microcontroller programmers' pins to the pins of the microcontroller. It can be made individually based on the schematic found in the 9 th chapter of the curriculum (Microcontrollers I.).	1
Relay with adapter board	Connects the pins of the relay to the breadboard.	1
DC connector with adapter board	Connects the AC/DC power supply to the breadboards.	1
Microcontroller programmer	ATATMEL-ICE-BASIC	1
Breadboard		1
Multimeter		1
AC/DC power supply	90...264VAC, 12VDC	1
Laboratory power supply		1