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INTRODUCTION

This detector circuit uses a passive infrared (PIR) sensor to detect human and animal movements from up to 4 meters. It can be used for work or fun and be applied to a variety of practical applications such as alarm systems, automatic power off, and lighting systems.

ASSEMBLY INSTRUCTIONS

Please follow the printed silkscreen on the PCB for component placement. It is best to add the lowest height components to the board first: the low resistant components first and then the higher. It is important to note the direction of polarity of the diodes, capacitors, and transistors. Please arrange them carefully according to polarity before mounting them on board. Care must be taken when bending any of the leads. Hold the leads in needle nose pliers when you bend the leads. Do not bend them against the case by pushing them over with your fingers as this can easily break the case.

CIRCUIT DESCRIPTION

This circuit can be divided into two sections; the PIR sensor section and the Control section. The PIR sensor works in a way such that when an animal or person passes in range, a signal at pin S will be sent to the IN point of the control board. The Control section is the most important part with the IC2 microprocessor. This processor is programmed from the factory. SW1, SW2, and SW3 switches are used for setting the time. Point JP1 is used to select the operating pattern. If JP1 is connected, when the PIR sensor detects an object, the relay starts counting down. If it picks up something else within a set time, the time will be counted. If JP1 is not connected, the first countdown will continue and ignore the new signal.

PIR Sensor Board

Resistors

R1	100 Ω	-br,blk,br,gd
R2	500 Ω	-gr,blk,br,gd

Ceramic Capacitors

C1	=	-0.1 µF

Electrolytic Capacitors

C2,C3	=	-10 µF

Diodes

D1, D2	=	1N4148

IC

IC1	=	HT7533

Control Board

Resistors

R1-R3,R9-R11	5 kΩ	-gr,blk,rd,gd
R4,R5	10 kΩ	-br,blk,or,gd
R6	2 kΩ	-rd,blk,rd,gd
R7	3 kΩ	-or,blk,rd,gd
R12-R19	500 Ω	-gr,blk,br,gd
R20-R23	1 kΩ	-br,blk,rd,gd

Ceramic Capacitors

C2,C4,C7	=	-0.1 µF
C5,C6	=	-10 pF

Electrolytic Capacitors

C1	=	-470 µF
C3	=	-10 µF

Diodes

D1	=	1N4007
D2	=	IN4148

ICs

IC1	=	78L05
IC2	=	MB95F264

Transistor

TR1,TR2	=	BC557
TR3,TR4	=	BC547

HOW TO USE THIS KIT

Setting the delay timer

The display will start with two horizontal lines "- -" in the middle.

1. Push the switch SW1, the display will show "A1" to set the delay timer of the power. Push the SW3 to adjust the minutes and SW2 for the seconds. The timer max setting is 99.59.
2. Push SW1, the display will now show "A2" to set the delay timer for detection. Push the SW3 to adjust the minutes and SW2 for the seconds. The timer max setting is 99.59.
3. Push SW1, the display will now show "A3" to set the operation timer for the relay. Push the SW3 to adjust the minutes and SW2 for the seconds. The timer max setting is 99.59.
4. Push SW1, the display will now show "A4" to set the waiting timer during operation. Push the SW3 to adjust the minutes and SW2 for the seconds. The timer max setting is 99.59.
5. Push SW1, the display will now show "5E" to save settings and exit the programming mode. The display will return to the two horizontal lines "- -" in the middle.

Reset the delay timer value to factory presets

1. Remove the power supply from the circuit.
2. Push and hold SW3 and reconnect the power supply. The display will show "F1." Release SW3 and all timers will be reset to 00.00.

Operation

1. The A1 delay timer applies to the time after the power supply is turned on and how long it takes until the control board will start to receive the signal.
2. The A2 delay timer applies to the time during which the PIR sensor is receiving a signal. At the end of the time, the information is passed onto A3.
3. The A3 operation timer applies to the relay and the display shows the timer counting.
4. The A4 waiting timer applies after A3 ends. The display will show the delay timer counting. During this time the Control board will not receive any signal from the PIR sensor. The display will show the two horizontal lines "- -" when ready again and the cycle shifts back to standby until another object is detected.

Figure 2. Circuit Assembling
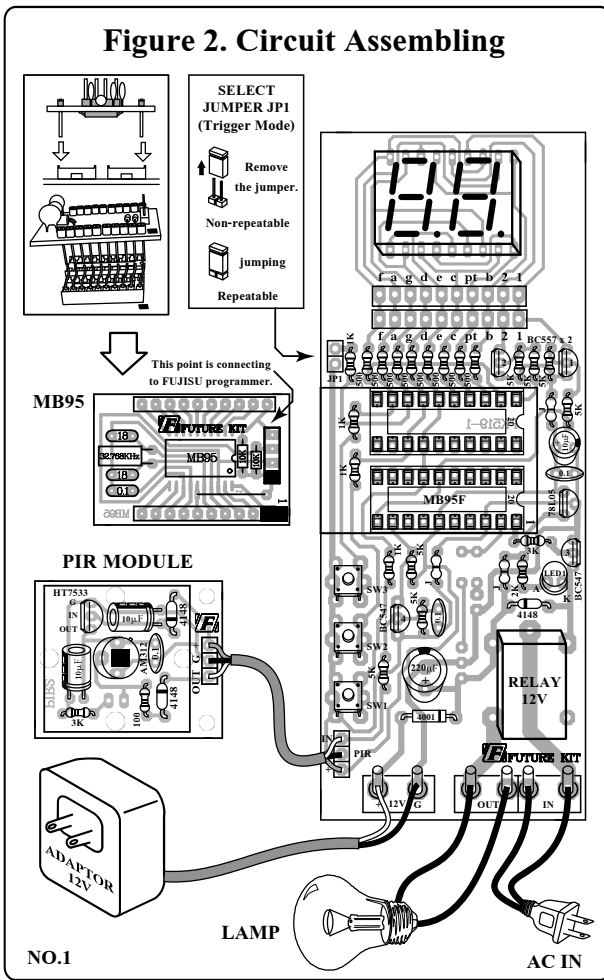
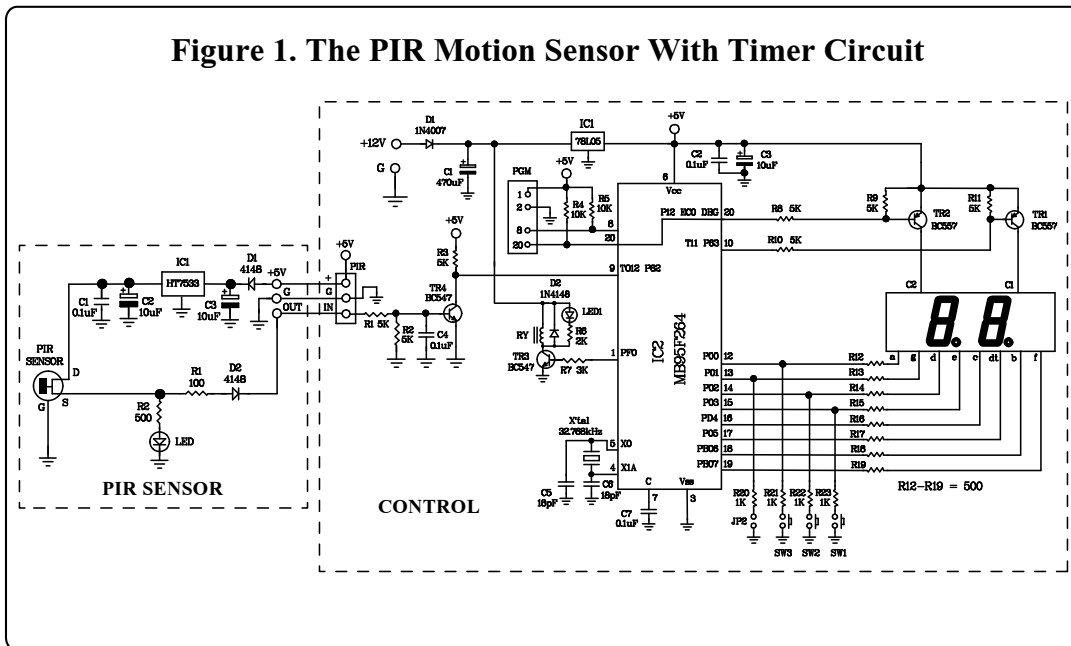Figure 3. Installing the Components
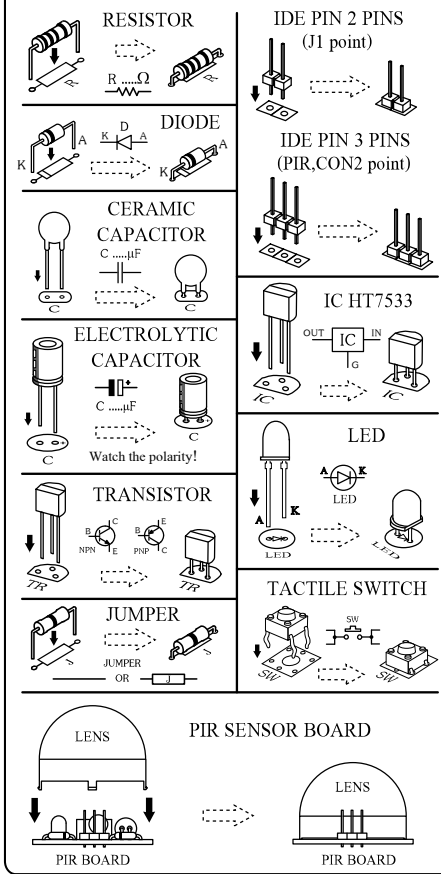
Figure 1. The PIR Motion Sensor With Timer Circuit

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