KC778B

Master PIR Control Chip (MPCC)

General

The MPCC has been designed for easy implementation of AC control functions that use a Passive Infra-Red (PIR) motion detector. Due to its high sensitivity and reliability, it is also widely used in security product.

Features

A) Circuit design maximizes performance while minimizing external component count and board layout space.
B) Low cost solution for PIR motion control switching applications.
C) High sensitivity PIR input with special noise cancellation circuitry.
D) Choice of two PIR gain settings: 62 db and 68 db.
E) Adjustable PIR sensitivity.
F) Internal switched capacitor bandpass filter reduces external component count and improves reliability by minimizing sensitivity to external component values.
G) RFI noise immunity exceeds 30 V/m from 1 MHz to 1000 MHz.
H) High immunity to line frequency noise.
I) Daylight detector circuitry is designed to use either Silicon photo diode or CdS detector.
J) Adjustable daylight detector sensitivity.
K) Adjustable OFF timer accuracy is determined by external components.
L) Output can directly drive TRIACs, opto-couplers and small relays (no buffering required).
M) Four main operating modes can be used in any combination:

1)Auto-ON: Load turns on when motion is detected (adjustable sensitivity).
Adjustable daylight detector disables Auto-ON during daytime.
Auto-ON mode can be disabled.
Daylight detector can be disabled.

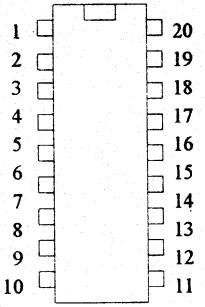
2)Auto-OFF: Adjustable OFF timer activates whenever motion stops.
Load turns off if there is no motion during the time delay.
If Auto-ON mode is disabled, the load will turn on if there is motion within 6 seconds after turn-off. (If the load goes off because you stopped moving (reading a book for example), you have 6 seconds to wave your arm to turn the load back on.)
Auto-OFF mode can be disabled.

3)Manual-ON: Load turns on manually, with a momentary contact switch.

4)Manual-OFF: Load turns off manually, with a momentary contact switch.
Load will remain off for 25 seconds, even if there is motion during this time (to give you time to leave the room).

N) If the ON/AUTO/OFF input is held either high or low, the load will be held ON or OFF respectively, overriding all other modes, until the input returns to the AUTO position.
O) If the Toggle input is held low, the load will change from on to off or from off to on, and will be held in that state, overriding all other modes, until the input returns high.
P) When power is restored after an outage, the load will be OFF and motion will be ignored for 25 seconds.
Q) Operating chip voltage is 4 - 15V.
R) Operating chip current is typically 300 μA.
S) Chip is ESD protected to more than 1000 V (human body model).
T) Operates with 50-60 Hz AC line frequency.

Pin Assignment :



20 pin DIP or SOIC

Pin	Name	Description
1	Vcc	Supply Voltage (5 V)
2	Sensitivity Adjust	PIR motion sensitivity input. If this pin equals to pin 7, sensitivity will be min. If it ties to ground, sensitivity will max.
3	Offset Filter	PIR motion offset filter output
4	Anti-Alias	Low pass filter input.
5	DC CAP	PIR gain stabilization filter ouput. Need a low leakage cap.
6	VReg	Voltage regulator output
7	Pyro (D)	Pyro drain reference output. Power supply independent
8	Pyro (S)	Pyro source input. It is a sensitive node. Ground plane needed.
9	Gnd (A)	Analog circuitry ground
10	Gnd (D)	Digital circuitry ground
11	Daylight Adjust	Daylight adjustment and CdS input
12	Daylight Sense	Silicon photo diode input
13	Gain Select	PIR gain select tri-state input. When it is tied to ground, gain is set to 62 dB. When it is tied to VCC or unconnected, gain is set to 68dB.
14	ON/AUTO/OFF	Mode select tri-state input. When it is high, the OUT will force on. When it is low, the OUT will force off. It is in auto mode when this pin is unconnected.
15	Toggle	Mode select toggle input. When it is connected to ground, the OUT will change from on to off or from off to on and will remain in the new state unconditionally as long as it is connected to ground.
16	OUT	Load ON/OFF output. Active high.
17	LED	PIR motion indicator output. Built in current limiter.
18	C	OFF timer oscillator input. For min off time delay, connect this pin to R. The OUT will be same as LED.
19	R	OFF timer oscillator output
20	FRef	Frequency reference oscillator. Connect external RC to get 160Hz reference oscillator.