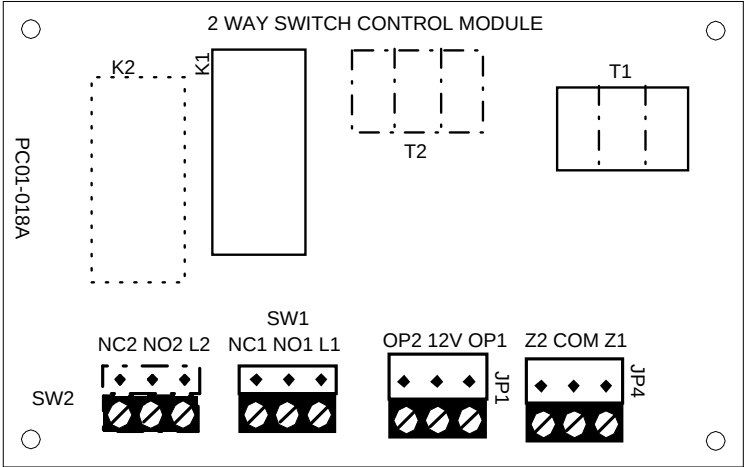
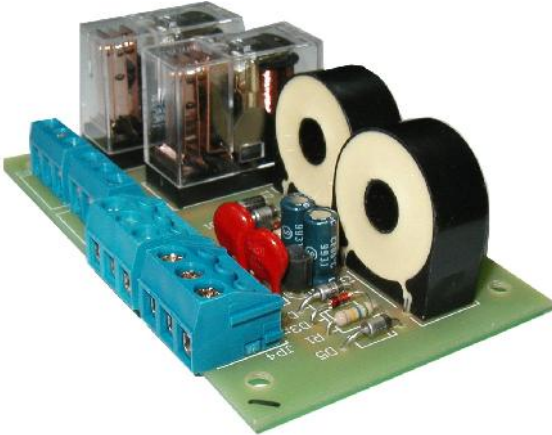


TWS01/02 Lighting Control Module



Note: K2, T2 and SW2 are not present in model TWS01



Specifications:

Physical:

PCB size:	88 x 53 mm
Mounting Holes:	78 x 43 mm (M3 holes 5 mm from each corner)
Weight:	85 grams (TWS01) 88 grams (TWS02)
Relay Power Rating :	240 VAC 50 Hz 6 Amps Resistive Load

Relay Specifications

Arrangement:	1 Form C
Max Switching Current:	16A (TWS Not to exceed 6A, rated current)
Max Switching Voltage:	380 VAC (not to exceed 240 Volts)
Max Switching Power:	4000 VA, 480 W
Insulation Resistance:	1000 MegaOhm min at 500 VDC
Breakdown Voltage:	

Between Open Contacts 1000 VRMS for 1 minute

Between contact and coil: 5000 VRMS for 1 minute

Expected Life:

Electrical:	100,000 cycles (at 1,800 operations/hr) under rated load
Mechanical:	10,000,000 cycles min (at 18,000 operations/hr)
Coil:	Controlled by the Comfort Control Panel Output 12V DC 44mA

Note

The Relay 6 Amps rating is for Resistive Loads only. Rating for Inductive load is 3 Amps provided a snubber is used.

For Inductive Loads (eg Fluorescent Lamps and halogen lamps with Transformer, use a Snubber (eg Roxburge XEB1201) connected across the Load to increase Relay life.

Terminal Block (SW1, SW2)

Wire size:	14 AWG to 24 AWG
Rating	16Amp 300 VAC

Current Sensor

Dimensions:	35 mm x 25 mm
Transformer Hole Diameter	8 mm
Sensitivity	100 mA rms (23 Watts @230V)
Output:	Open Collector to Ground

Lighting Switch

A two way light switch (i.e. with contacts in both “Up” and “Down” position) must be used.. This is not supplied

Safety Disconnecting Switch

A additional lighting switch may be installed as a disconnect device (see Safety Instructions). This is not supplied

Models

TWS01: One relay and one current sensor to control 1 lighting circuit

TWS02: Two relays and two current sensors to control 2 independent lighting switches.

Connections

The Two Way switch Lighting Control Module is used with the Comfort control panel to control a lighting circuit. It uses a mains-rated relay to switch the AC to the lights and a current sensor to sense the current flowing in the lighting circuit. Model TWS01 has 1 set of relay and current sensor to control one lighting circuit, while TWS02 has 2 sets of relays and current sensors to control 2 independent lighting circuits.

The circuit connection is shown below

The TWS module implements a two-way switch arrangement, with the Comfort output controlling the DC relay and the mechanical two way switch making up the “switches” In this way, the mechanical light switch can be used to control the light even if the Control Panel is faulty

JP1 (3 pin terminal block, pluggable)

This is for the outputs from the Comfort Control Panel. If TWS01 is used, the OP1 and center terminals are connected to the DC relay K1. If TWS02 is used, OP2 and the center terminal (common 12V) is connected to the second DC relay K2. For each output, use a low voltage 2 pair 0.5 mm wire to connect to the Comfort control panel, with 1 pair spare.

JP4 (3 pin terminal block, pluggable)

This is the current sensor feedback to the inputs on the Comfort Control Panel. If TWS01 is used, the Z1 and center terminal are connected to the Current Sensor T1 If TWS02 is used, Z2 and the center terminal (common 0V) is connected to the second Current Sensor T2. For each input, use a low voltage 2 pair 0.5 mm wire to connect to the Comfort control panel, with 1 pair spare. **DO NOT CONNECT THIS TO COMFORT OUTPUTS, OTHERWISE IT WILL DAMAGE THE CURRENT SENSOR DETECTION CIRCUIT WHEN CURRENT IS DETECTE**

SW1 (3 pin terminal block, fixed)

This terminal is connected to the Relay K1 terminals on the TWS module. L1 is connected to the light switch common terminal (Live). NO1 and NC1 are

connected to the OFF and ON contacts of the two way switch. Use 3 standard 1.5 mm electrical wires. **This terminal block carries Mains Voltage - Do Not Touch**

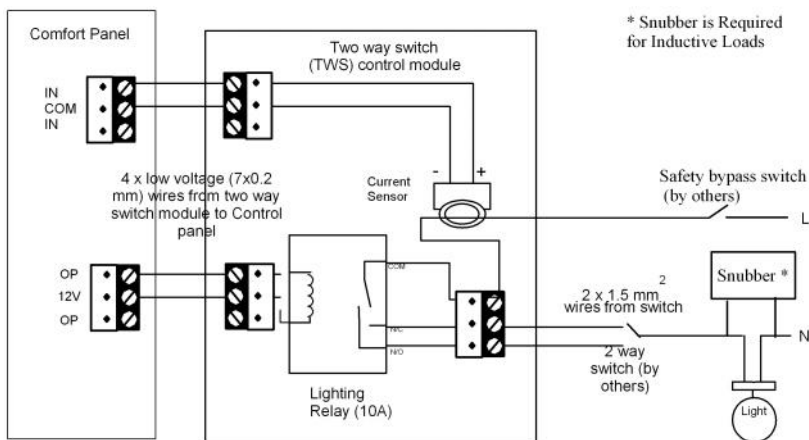
SW2 (3 pin terminal block, fixed)

This terminal is connected to the Relay K2 terminals on the TWS02 module. L2 is connected to the light switch common terminal (Live). NO2 and NC2 are connected to the OFF and ON contacts of the two way switch. Use 3 standard 1.5 mm electrical wires. SW2 is not used in model TWS01. **This terminal block carries Mains Voltage - Do Not Touch**

Current Sensor

The current sensors T1 and T2 sense the AC current flowing in an electrical wire which passes through the center hole. When no current is flowing, the output is open circuit. When sufficient current (min 100 mA rms) flows, the coil produces a voltage which turns on the Open collector output. **The current sensor can detects minimum current of 100 mA (23W @ 230V) To detect lower current, loop the mains cable 2 times through the hole. 2 turns through the current sensor allows 50 ma (12W @ 230V) to be detected. The current sensor works on AC current only.**

The output pin Z1 for T1, Z2 for T2 at the terminal block should be connected to any Input Zone of the Comfort panel. The Com pin should be connected to the corresponding COM terminal of the zone.

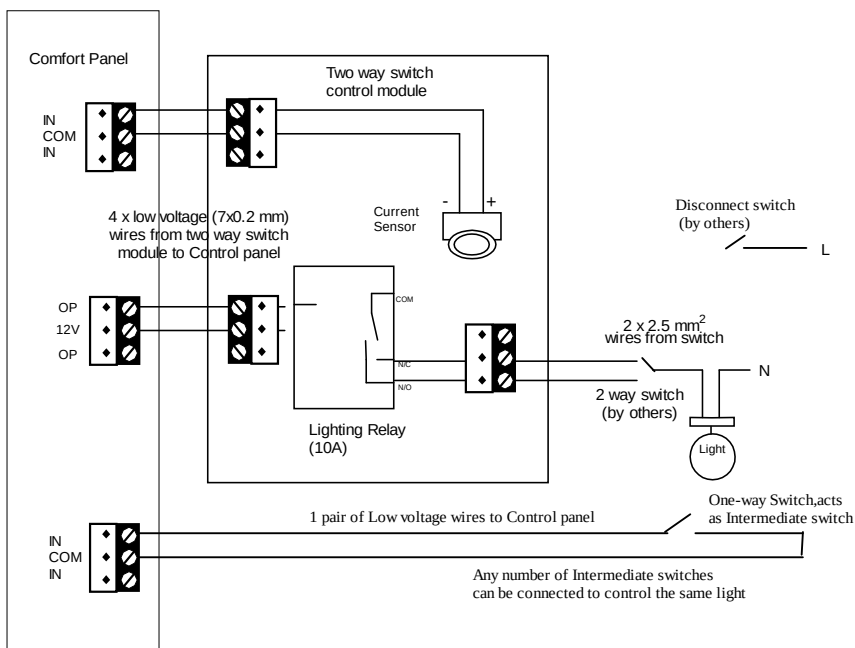


TWS Connections

Wiring Guide

Two Way Switch to Lighting Module: 2 x 1.5 mm² electrical wires

Lighting Module to Comfort HA Control panel: 4 x 0.5 mm² low voltage wires



Connection Scheme for Intermediate Switches to control the same Light

Important Safety Instructions

The TWS01/TWS02 has been designed to comply with the requirements of EN60960-1: 2001. The following safety instructions must be complied with in all installations

Disconnecting Switch

A lighting switch with rating of at least 6 amps must be connected in series on the Live wire between the AC source and the TWS module, to be used as a disconnecting device. The location of this disconnecting switch is to be close to the TWS Module. The ON and OFF positions of the disconnecting switch must be indicated clearly using the symbols O (circle) and 1 (line) to represent ON and OFF respectively.

Note that a single pole switch can be used as a disconnecting device under Clause 3.4.6 of EN60950-1 if it is possible to identify the Neutral conductor in an AC Mains Supply

The AC supply of the TWS module should be connected to a Circuit Breaker in the unit where it is installed, where the breaker acts as an additional disconnect device for Live and Neutral conductors.

Programming

Program the zone as a normally open switch (Zone Type 8). Set the shunt for the zone to the lower position (2-3) for No End of Line resistor.

To switch on the appliance irrespective of the position of the two-way switch, use the following Response:

If Input Zone# = 0 Then

 Toggle Output Output#

End If

Zone# is the zone number, Output# is the output number.

When translated to Action Codes;

79, *input#*, 13, 78, *output#*, 255

These actions do the following

79, *input#* Check Input number *input#*, and return 1 if on, 0 if off

13 Exit if Not Zero, Exit if the Input is ON

78, *output#* Change State of Output Number *output#*

255 *Terminator*

To switch off the appliance irrespective of the position of the two-way switch, use the following Response:

If Input Zone# <> 0 Then

 Toggle Output Output#

End If

When translated to Action Codes;

79, *input#*, 13, 78, *output#*, 255

These actions do the following

79, *input#* Check Input number *input#*, and return 1 if on, 0 if off

12 Exit if Zero, Exit if the Input is OFF

78, *output#* Change State of Output Number *output#*

255 *Terminator*

Feedback Status Announcement

To announce the state of the device on the Control Menu, eg

Living Room Light **ON**,

Press 0 for OFF, 1 for ON

See worksheet table 26 (Control Menu). Each Control key has a Location where the Feedback Input (from the current Sensor) can be programmed. If a non-zero value is programmed in the respective location, the voice menu will announce the state of the device. The words that the system uses for the state e.g “On” and “off” is taken from the Action words programmed for the control key for 1 and 0. For example, if the following is programmed for control key 1

Control Key words: “Garage Door”

Action Key words: 0 = “close”, 1 = “open”

The control menu for key 1 will be

Garage Door Open (or closed)

Press 0 for Close, 1 for Open

It is much simpler to program feedback status in Comfigurator. See the Control Menu screen below. Each Control Key has a feedback box. In Feedback Type, select Zone/Input. In the Zone/Input box below, select the zone number which the current sensor is connected to.

Control Menu

Control Group 0 -

- 0 -
- 1 - Light
 - 0 - Off
 - 1 - On
 - 2 -
 - 3 -
 - 4 -
 - 5 -
 - 6 -
 - 7 -
 - 8 -
 - 9 -
 - ...
- 2 -
- 3 -
- 4 -
- 5 -
- 6 -
- 7 -
- 8 -

Phrase

Light

Feedback

Type: Zone/Input

Zone/Input: Zone08

Zone06

Zone07

Zone08

Zone09

Zone10

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