TIMER/DELAY CONFIGURATION

SWITCH POSITION							TIME/DELAY
1	2	3	4	5	6	7	
OFF	OFF	OFF	OFF	OFF	OFF	OFF	0 seconds
OFF	OFF	OFF	OFF	OFF	OFF	ON	1 second
OFF	OFF	OFF	OFF	OFF	ON	OFF	2 seconds
OFF	OFF	OFF	OFF	OFF	ON	ON	3 seconds
OFF	OFF	OFF	OFF	ON	OFF	OFF	4 seconds
OFF	OFF	OFF	OFF	ON	OFF	ON	5 seconds
OFF	OFF	OFF	OFF	ON	ON	OFF	6 seconds
OFF	OFF	OFF	OFF	ON	ON	ON	7 seconds
OFF	OFF	OFF	ON	OFF	OFF	OFF	8 seconds
OFF	OFF	OFF	ON	OFF	OFF	ON	9 seconds
OFF	OFF	OFF	ON	OFF	ON	OFF	10 seconds
OFF	OFF	OFF	ON	OFF	ON	ON	11 seconds
OFF	OFF	OFF	ON	ON	OFF	OFF	12 seconds
OFF	OFF	OFF	ON	ON	OFF	ON	13 seconds
OFF	OFF	OFF	ON	ON	ON	OFF	14 seconds
OFF	OFF	OFF	ON	ON	ON	ON	15 seconds
OFF	OFF	ON	OFF	OFF	OFF	OFF	16 seconds
OFF	OFF	ON	OFF	OFF	OFF	ON	17 seconds
OFF	OFF	ON	OFF	OFF	ON	OFF	18 seconds
OFF	OFF	ON	OFF	OFF	ON	ON	19 seconds
OFF	OFF	ON	OFF	ON	OFF	OFF	20 seconds
OFF	OFF	ON	OFF	ON	OFF	ON	21 seconds
OFF	OFF	ON	OFF	ON	ON	OFF	22 seconds
OFF	OFF	ON	OFF	ON	ON	ON	23 seconds
OFF	OFF	ON	ON	OFF	OFF	OFF	24 seconds
OFF	OFF	ON	ON	OFF	OFF	ON	25 seconds
OFF	OFF	ON	ON	OFF	ON	OFF	26 seconds
OFF	OFF	ON	ON	OFF	ON	ON	27 seconds
OFF	OFF	ON	ON	ON	OFF	OFF	28 seconds
OFF	OFF	ON	ON	ON	OFF	ON	29 seconds
OFF	OFF	ON	ON	ON	ON	OFF	30 seconds
OFF	OFF	ON	ON	ON	ON	ON	31 seconds
OFF	ON	OFF	OFF	OFF	OFF	OFF	32 seconds
OFF	ON	OFF	OFF	OFF	OFF	ON	33 seconds
OFF	ON	OFF	OFF	OFF	ON	OFF	34 seconds
OFF	ON	OFF	OFF	OFF	ON	ON	35 seconds
OFF	ON	OFF	OFF	ON	OFF	OFF	36 seconds
OFF	ON	OFF	OFF	ON	OFF	ON	37 seconds
OFF	ON	OFF	OFF	ON	ON	OFF	38 seconds
OFF	ON	OFF	OFF	ON	ON	ON	39 seconds
OFF	ON	OFF	ON	OFF	OFF	OFF	40 seconds
OFF	ON	OFF	ON	OFF	OFF	ON	41 seconds
OFF	ON	OFF	ON	OFF	ON	OFF	42 seconds
OFF	ON	OFF	ON	OFF	ON	ON	43 seconds
OFF	ON	OFF	ON	ON	OFF	OFF	44 seconds
OFF	ON	OFF	ON	ON	OFF	ON	45 seconds
OFF	ON	OFF	ON	ON	ON	OFF	46 seconds
OFF	ON	OFF	ON	ON	ON	ON	47 seconds
OFF	ON	ON	OFF	OFF	OFF	OFF	48 seconds
OFF	ON	ON	OFF	OFF	OFF	ON	49 seconds
OFF	ON	ON	OFF	OFF	ON	OFF	50 seconds
OFF	ON	ON	OFF	OFF	ON	ON	51 seconds
OFF	ON	ON	OFF	ON	OFF	OFF	52 seconds
OFF	ON	ON	OFF	ON	OFF	ON	53 seconds
OFF	ON	ON	OFF	ON	ON	OFF	54 seconds
OFF	ON	ON	OFF	ON	ON	ON	55 seconds
OFF	ON	ON	ON	OFF	OFF	OFF	56 seconds
OFF	ON	ON	ON	OFF	OFF	ON	57 seconds
OFF	ON	ON	ON	OFF	ON	OFF	58 seconds
OFF	ON	ON	ON	OFF	ON	ON	59 seconds
OFF	ON	ON	ON	ON	OFF	OFF	1 minute
OFF	ON	ON	ON	ON	OFF	ON	2 minutes
OFF	ON	ON	ON	ON	ON	OFF	3 minutes
OFF	ON	ON	ON	ON	ON	ON	4 minutes
ON	OFF	OFF	OFF	OFF	OFF	OFF	5 minutes
ON	OFF	OFF	OFF	OFF	OFF	ON	10 minutes
ON	OFF	OFF	OFF	OFF	ON	OFF	15 minutes
ON	OFF	OFF	OFF	OFF	ON	ON	20 minutes
ON	OFF	OFF	OFF	ON	OFF	OFF	25 minutes
ON	OFF	OFF	OFF	ON	OFF	ON	30 minutes
ON	OFF	OFF	OFF	ON	ON	OFF	35 minutes
ON	OFF	OFF	OFF	ON	ON	ON	40 minutes
ON	OFF	OFF	ON	OFF	OFF	OFF	45 minutes
ON	OFF	OFF	ON	OFF	OFF	ON	50 minutes
ON	OFF	OFF	ON	OFF	ON	OFF	55 minutes
ON	OFF	OFF	ON	OFF	ON	ON	1 hour
ON	OFF	OFF	ON	ON	OFF	OFF	2 hours
ON	OFF	OFF	ON	ON	OFF	ON	3 hours
ON	OFF	OFF	ON	ON	ON	OFF	4 hours
ON	OFF	OFF	ON	ON	ON	ON	5 hours
ON	OFF	ON	OFF	OFF	OFF	OFF	6 hours
ON	OFF	ON	OFF	OFF	OFF	ON	7 hours
ON	OFF	ON	OFF	OFF	ON	OFF	8 hours
ON	OFF	ON	OFF	OFF	ON	ON	9 hours
ON	OFF	ON	OFF	ON	OFF	OFF	10 hours
ON	OFF	ON	OFF	ON	OFF	ON	11 hours
ON	OFF	ON	OFF	ON	ON	OFF	12 hours
ON	OFF	ON	OFF	ON	ON	ON	13 hours
ON	OFF	ON	ON	OFF	OFF	OFF	14 hours
ON	OFF	ON	ON	OFF	OFF	ON	15 hours
ON	OFF	ON	ON	OFF	ON	OFF	16 hours
ON	OFF	ON	ON	OFF	ON	ON	17 hours
ON	OFF	ON	ON	ON	OFF	OFF	18 hours
ON	OFF	ON	ON	ON	OFF	ON	19 hours
ON	OFF	ON	ON	ON	ON	OFF	20 hours
ON	OFF	ON	ON	ON	ON	ON	21 hours
ON	ON	OFF	OFF	OFF	OFF	OFF	22 hours
ON	ON	OFF	OFF	OFF	OFF	ON	23 hours
ON	ON	OFF	OFF	OFF	ON	OFF	24 hours

LED CONFIGURATION

By default, blue LED1 feedback for relay state is enabled. If this is undesirable, it may be toggled off with the following procedure:

TOGGLE RELAY STATUS LED OUTPUT
Move dip switches 1-6 to the ON position

LED2 will flash red twice for disabled LED output, or once for enabled LED output. Return all dip switches to the original positions. LED2 will flash red 4 times. **Red LED2 is always enabled, as it is essential feedback for mode input/unworkable conditions.**

LED FEEDBACK

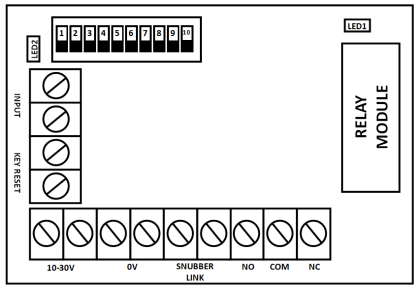
LED1 (BLUE) STATUS	LED2 (RED) STATUS	DESCRIPTION
OFF	OFF	RELAY IS OFF **-OR-** RELAY IS ON (WITH LED1 DISABLED) **-OR-** UNIT IS UNPOWERED
ON	OFF	RELAY IS ON
FLASHING	FLASHING	UNDER/OVER VOLTAGE CONDITION (<9.5V or >30V). RELAY WILL NOT SWITCH.
ANY	4 FLASHES	DIP SWITCH CONFIGURATION HAS BEEN STORED
ANY	10 FLASHES	FACTORY RESET HAS PROCESSED
ANY	1 FLASH	AN INPUT HAS BEEN SET N/C **-OR-** LED1 HAS BEEN ENABLED
ANY	2 FLASHES	AN INPUT HAS BEEN SET N/O **-OR-** LED1 HAS BEEN DISABLED
OFF	FLASHING	DUAL INPUT DETECTED (RS SAFETY MODE). RELAY WILL NOT SWITCH
OFF	ON	KEY RESET INPUT IS ACTIVE (KEYSWITCH MODE), PREVENTING RELAY OPERATION
RAPID, ALTERNATE FLASHING		UNIT IS STARTING UP

KNIGHT FIRE & SECURITY

RRLY1

10-30V SPDT RELAY WITH DUAL REED-SAFE INPUT

RRLY1 is a SPDT relay unit designed to switch on input from a magnetic contact or other electronic switch. Isolation of the input switches from the power input prevents their damage through powered electrical switching. A 10-input dip switch is used to configure all on-board features. A snubber is built in — removing the snubber wire link will remove it from the circuit



Input voltage: 10-30VDC
Current draw inactive: ~15mA
Current draw active: 60mA MAX
Switching poles rated: 30VDC / 250VAC, 6A MAX

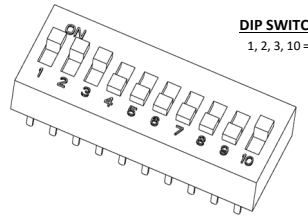
INSTALLATION

- Unscrew & remove the lid from the unit. Thread wiring through the base at the entry points desired.
- Fix the base to the mounting surface using the 4 screw-holes provided.
- Supply power to the unit & configure as per the application demands. See below/within for detail.

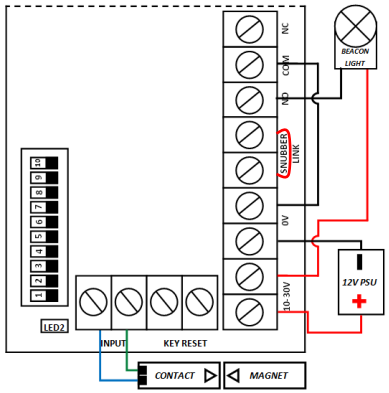
!! Test configuration before wiring poles !!

Wire in the switched equipment to the poles & fit the lid to the base, ensuring that internal wiring is not pinched or trapped at the fixing points. Screw the lid into place & test operation.

DIP SWITCH STATE EXAMPLE
1, 2, 3, 10 = **ON** <> 4–9 = **OFF**



WIRING / CONFIGURATION EXAMPLES



FOLLOW MODE:

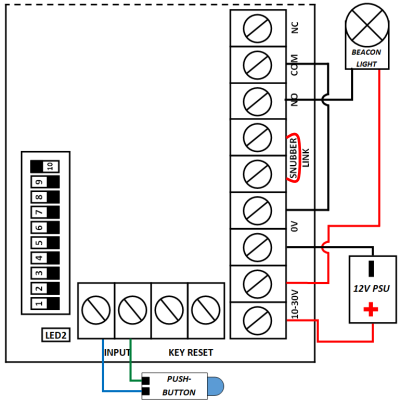
Set dip switches 8, 9 & 10 to OFF position. The relay will energise and LED1 will light blue for as long as the input remains open, switching off when the input terminals are closed.

This wiring example switches a beacon light on when the circuit of a magnetic contact fixed to the door opens. Provides visual warning of an open door at a distance. Beacon will switch off when the door closes, by closing the circuit of the magnetic contact.

Assumes contact circuit closes with magnet present, with the input in the default N/O mode. Input may be reversed if the magnetic contact operates oppositely (see page 3).

The relay and the beacon light can share the PSU.

Input at the Key Reset terminals & timer settings are both ignored.



TOGGLE MODE:

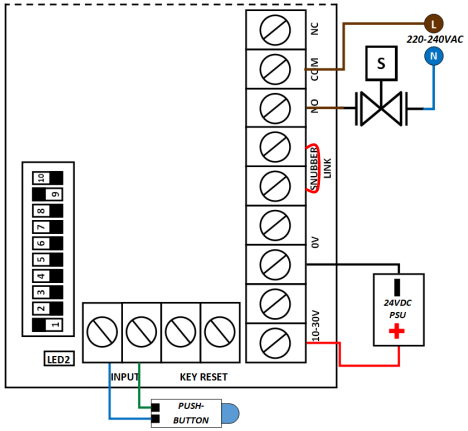
Set dip switches 8 & 9 to OFF position. Set dip switch 10 to ON. The relay will toggle its output with each time the switch connected to the input terminals opens. LED1 will light blue while the relay is energised, extinguishing when it is not.

This wiring example toggles a beacon light on/off when a momentary switch wired to the input terminals is pressed. Provides a manually set visual warning at a distance.

Assumes button operates N/C (opening on press, closing on release), with the input in the default N/O mode. Input may be reversed if the button operates oppositely (see page 3).

The relay and the beacon light can share the PSU.

Input at the Key Reset terminals & timer settings are both ignored.

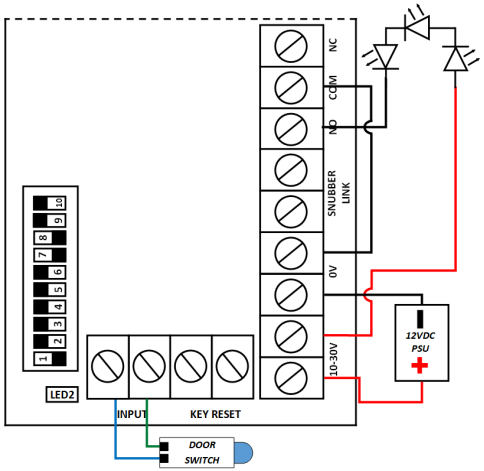


TIMED MODE:
Set dip switch 9 to ON. Set dip switches 8 & 10 to OFF. Set dip switches 1-7 to specify the timer length (see back page). The relay will energise and latch when the switch connected to the input terminals opens, then switch off after the set timer elapses. LED1 will light blue while the relay is energised, extinguishing when it is not.

This wiring/dip configuration example switches a separately powered solenoid valve for 5 minutes when a momentary switch wired to the input terminals is pressed. This would allow for a controlled dispensing of fluids/irrigation etc.

Assumes button operates N/C (opening on press, closing on release), with the input in the default N/O mode. Input may be reversed if the button operates oppositely (see page 3).

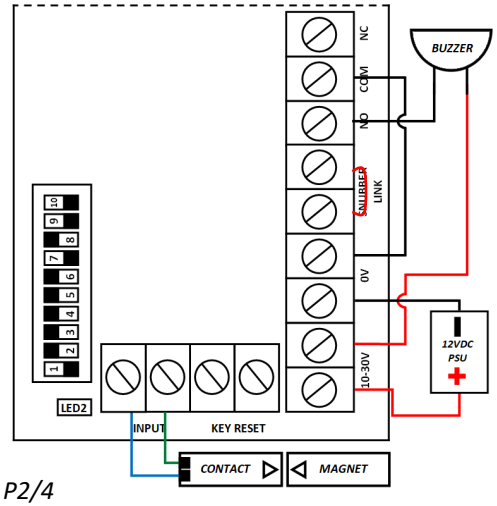
Input at the Key Reset terminals and repeat inputs during the timer phase are ignored.



TIMED MODE WITH FOLLOW:
Set dip switches 9 & 10 to ON. Set dip switch 8 to OFF. Set dip switches 1-7 to specify the timer length (see back page). The relay will energise and latch when the switch connected to the input terminals opens, then switch off after the set timer elapses OR if the Input circuit closes again. LED1 will light blue while the relay is energised, extinguishing when it is not.

This wiring/dip configuration example switches a cupboard-mounted LED strip on for 3 minutes when a fitted door switch opens. The timer ensures the LEDs are not left on if the cupboard is accidentally left open, while the follow function will switch the strip off if the cupboard closes before the timer elapses. The snubber link is removed, as it can cause undesired operation of the LEDs when the relay is off.

Assumes button operates N/O (closing while actuated by the door, opening on release), with the input in the default N/O mode. Input may be reversed if the button operates oppositely (see page 3).

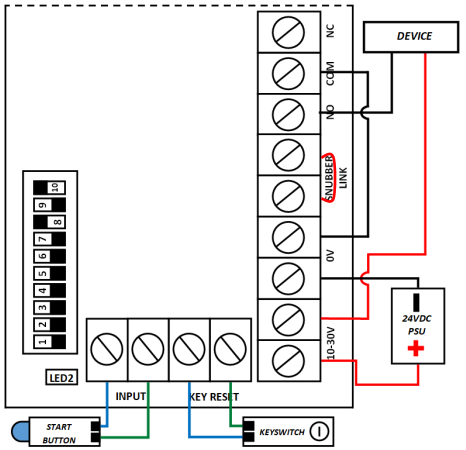


DELAY MODE WITH FOLLOW:
Set dip switch 8 to ON. Set dip switches 9 & 10 to OFF. Set dip switches 1-7 to specify the delay length (see back page). The internal delay timer is started when the input circuit opens, energising the relay after the time elapses. The relay will not energise if the input returns to the original state before the delay time elapses. Likewise, the relay will switch off if the input is restored. LED1 will light blue while the relay is energised, extinguishing when it is not.

This wiring/dip configuration example sounds a buzzer 3 minutes after a magnetic contact wired to the input terminals opens. This would allow for an open-door alarm that only activates after a certain time left open. The follow part of the configuration will silence the buzzer if door is closed after activation. The same PSU is used to power both the buzzer and the relay unit.

Assumes contact closes when secure & opens on release, with the input in the default N/O mode. Input may be reversed if the button operates oppositely (see page 3).

Input at the Key Reset terminals is ignored.

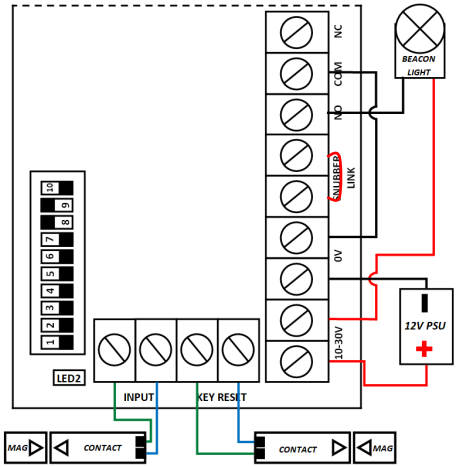


KEYSWITCH MODE:
Set dip switches 8 & 10 to ON position. Set dip switch 9 to OFF. The relay will switch and latch when the input terminal circuit opens. LED1 will light blue while the relay is active. When the Key Reset terminals close, the relay will deactivate and reactivation will be prevented for as long as the Key Reset input is closed. LED2 will light red in this lockout condition.

This wiring example switches a device on when the start button is pushed. To discontinue use of the device, a keyswitch can be used on the Key Reset terminals to cut power to the device and prevent it re-energising - perhaps for maintenance, payment, safety etc. The device shares a PSU with the relay, though it may be powered separately if desired.

Assumes button operates N/C (opening when actuated, closing on release), with the input in the default N/O mode. Assumes keyswitch operates N/O with Key Reset input in default N/O mode. Input may be reversed if the either operate oppositely (see below).

Timer settings (switches 1-7) may be applied in this mode (see back page). If no timer switches are set, the relay will remain latched until manually reset as above.



TRANSIT MODE:
Set dip switch 10 to OFF. Set dip switches 8 & 9 to ON. The relay will only energise if both inputs are open. When either input closes, the relay will switch off. LED1 will light blue while the relay is energised, extinguishing when it is not. When both inputs are closed, the device interprets the condition as a fault and will not energise the relay. LED2 will flash red to signify this condition.

In this example, two magnetic contacts are mounted on a rollershutter door. One contact closes when the door is fully open, with the other closing when the door is fully closed. This allows the relay to power a warning beacon when the door is in movement with neither contact closed. When fully open or fully closed, the relay switches off and the beacon extinguishes. This mode may be used for any circuit that requires a device to be switched for the length of a transition period from one state to another.

Assumes both contacts close in presence of the magnet (opening on movement away), with both inputs in the default N/O mode. Either or both inputs may be reversed to suit existing contacts if necessary (see below).

Timer settings are ignored.

INPUT REVERSAL

The inputs of the unit can be reversed in logic, allowing both N/O and N/C input devices to have the desired effect on the relay:

REVERSE INPUT
Move dip switches 1-7 to the ON position

- OR -

REVERSE KEY RESET
Move dip switches 8-10 to the ON position

Once set, LED2 will flash red once for N/C or twice for N/O. Turn all switches back to original configuration & test operation.

If both inputs need to be reversed, follow these steps twice—once for each input. Attempting to reverse both by setting all switches ON will factory reset the unit! Operation logic is stored in non-volatile memory and will be retained/recalled after power loss.

FACTORY RESET

In case of unknown or undesirable operation, the unit can be restored to factory defaults. This sets both inputs to N/O mode and enables LED feedback:

FACTORY RESET
Move ALL dip switches ON position

After the last dip switch is set, wait for LED2 to flash red 10 times. The unit is now reset.

Configure switches as required and wait for LED2 to flash red 4 times.