



RF-LPS

90 μ A Low Power RF Controlled Switch

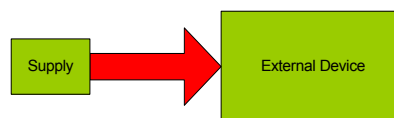
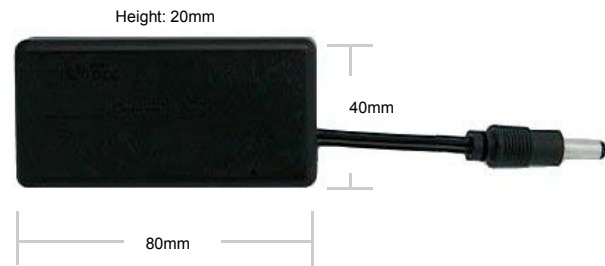
The RF-LPS is a low power RF controlled switch which draws only 90 μ A! Primarily intended as a remote controlled device for battery saving applications, the RF-LPS is designed to remotely connect and disconnect the (battery) power supply to a connected device. The RF-LPS is used in conjunction with the 2CH-REML two channel RF remote transmitter. Pressing the GREEN button on the remote will cause the RF-LPS to pass the external (battery) power supply of the connected device, turning it ON. Pressing the RED button interrupts the external (battery) power to the connected device, turning it OFF. The RF-LPS is constantly powered by two internal Lithium-Ion batteries lasting up to sixteen months. The RF-LPS is ideal as a power saving (retrofit) interface for applications that are usually constantly powered, but are not being used for continuous duty.

Features

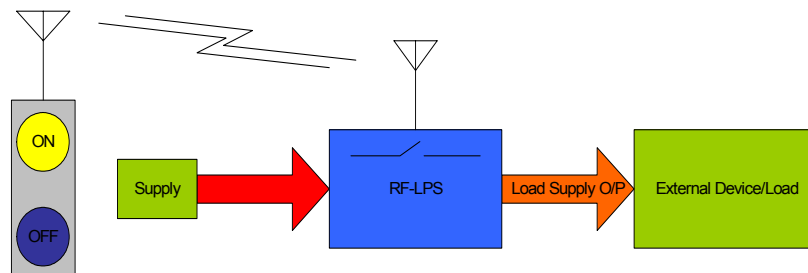
- Low current consumption (typically 90 μ A)
- Long battery life: continuous operation up to 16 months off internal batteries
- Switches any supply from 5V_{dc} to 35V_{dc}
- Can switch external loads up to 400mA
- For higher currents, a relay may be used to switch the power supply
- Simple series connection between load power supply and load device
- Works in conjunction with the 2CH-REML handheld RF remote radio transmitter
- Operates on 433.92MHz
- Receiver has -94dBm sensitivity
- Open Field Range of up to 400 feet
- 8 bit selectable address

Typical Applications

- Low power remote switch
- Switch devices ON/OFF in areas which are difficult to reach
- Conserve battery power in remote locations



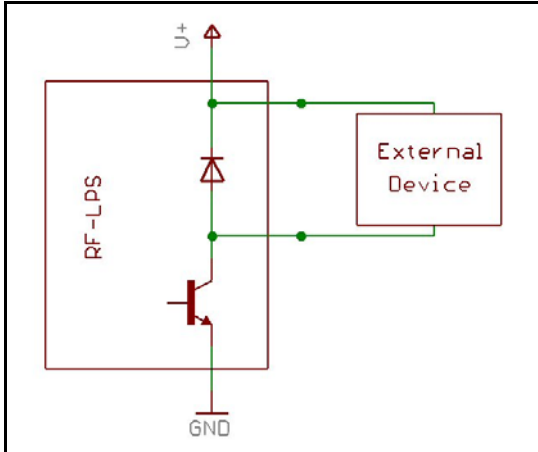
Without the RF-LPS, the remote device is constantly on, drawing maximum current.



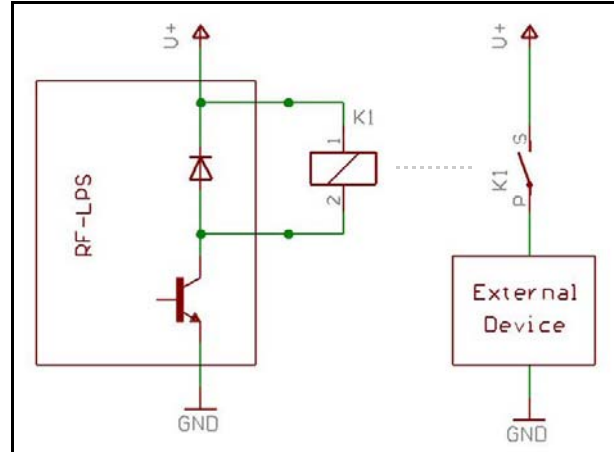
With the RF-LPS, the supply is switched to the load via RF remote control.
When OFF, the supply drain is only 90 microamps !

Connecting the RF-LPS

The RF-LPS is patched in series between the load devices power supply and the load device. Simply connect the external power supply to the 'Supply In' jack on the RF-LPS and plug the output of the RF-LPS in to the supply input of the desired load or device. If the device being switched through the RF-LPS draws more than 400mA, the RF-LPS output can be used to drive a relay whose contacts can switch the supply to the load device. The output of the RF-LPS is an open collector output and includes an internal fly-back diode which is necessary when controlling a relay. The figures below show the open collector output and the method for connecting a device and a relay.



A device powered through the RF-LPS without the use of a relay



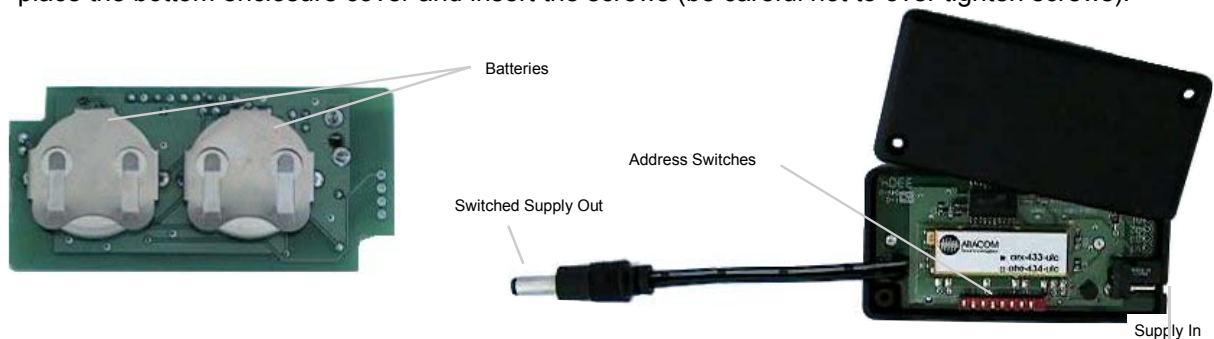
A device powered through the RF-LPS using a relay to control more current

Setting the Communication Address

The RF-LPS will only respond to valid transmissions matching its configured address. The transmitter and RF-LPS are preconfigured and may not need changing. To set the address, open the enclosure by removing the two screws on the bottom. On the circuit board there is a row of switches which may be set to any combination for a desired address. Please note that the address set on the RF-LPS must match the address on the hand held RF remote controls (2CH-REML or TX12E-2C). See TX12E-2C later for additional configuration details. It is advisable to NOT set address switches to ALL ON or ALL OFF.

Replacing Batteries

The RF-LPS uses two coin type Lithium-Ion 2450 series batteries. To replace, open the enclosure by removing the two screws on the bottom, and remove the circuit board from inside the enclosure. On one side of the circuit board there will be two battery holders. To remove the batteries, simply slide them out of their holder. Slide the new batteries in with the negative towards the circuit board. Feed the antenna back through the hole in the enclosure, insert the circuit board, replace the bottom enclosure cover and insert the screws (be careful not to over tighten screws).

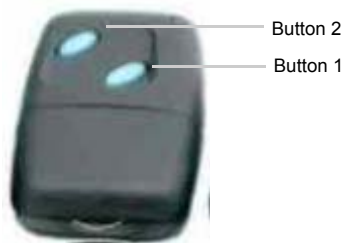


RF-LPS Specifications

Absolute Limits and Operating Parameters	
Input/Output DC Connector	2.1mm Center Positive
Breakdown Voltage	5V to 35V
Max. Current Throughput	200mA
Receiver Frequency	433.92MHz
Receiver Sensitivity	-94dBm
Receiver Front-end Filter	600KHz
Modulation	AM
Receiver Architecture	Super Regenerative
Replacement Batteries	3V Lithium Ion 2450 series
Number of selectable addresses	255

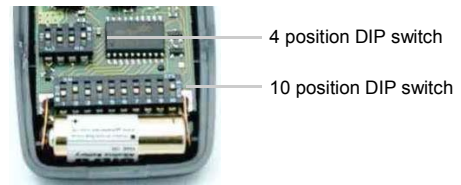
RF-LPS when used with TX12E-2C Keyfob Transmitter

This section applies only to the RF-LPS and TX12E-2C transmitter.



The TX12E-2C has two sets of DIP switches internally:

- One 10 position DIP switch and
- One 4 position DIP switch



10 Position DIP switch

Switches 1-8 are for configuring the system address. These settings may be any combination provided they are the same settings for both the transmitter and the receiver.

Switch position 9 must always be set to OFF. (default position). This is important for correct operation.

Switch 10 position will affect the output state of D3 pin header on the RF-LPS.

DIP switch 10 in the OFF position (default position) will always result in a HIGH state on pin D3 regardless of which button is keyed on the transmitter. Conversely, with DIP switch 10 in the ON position will always result in a LOW state on pin D3 regardless of which button is keyed on the transmitter.

4 Position DIP switch

DIP switch 2 must ALWAYS be set to ON (set to ON by default. Do not change)

DIP switch 4 must ALWAYS be set to OFF (set to OFF by default. Do not change)

DIP switches 1 and 3 may be set to the combinations according to the truth table on the next page:

RF-LPS Pin Header Truth Table

DIP #1	DIP #3	TX BUTTON 1	TX BUTTON 2	VT	D1	D2	D3	RF-LPS O/P
ON	ON	ON	OFF	1	0	0	1 or 0	OFF
		OFF	ON	1	1	0	1 or 0	ON
ON	OFF	ON	OFF	1	0	0	1 or 0	OFF
		OFF	ON	1	1	1	1 or 0	ON
OFF (default)	ON (default)	ON	OFF	1	0	1	1 or 0	OFF
		OFF	ON	1	1	0	1 or 0	ON
OFF	OFF	ON	OFF	1	0	1	1 or 0	OFF
		OFF	ON	1	1	1	1 or 0	ON

From the above table, the following can be noted:

- VT always goes high upon a button press, and may be used to indicate a valid transmission. VT remains HIGH for the duration of the button press and then goes LOW
- Each button press latches the states of D1, D2 and D3
- D1 toggles state from Button 1 press to Button 2 press
- D3 is always HIGH if DIP switch 10 is in the OFF position
- D3 is always LOW if DIP switch 10 is in the ON position
- D2 toggles state between button 1 press and button 2 press when DIP switches 1 and 3 are not both set to ON or OFF

The RF-LPS pin header for VT, D1, D2 and D3 may be used to connect to external devices for custom applications.

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