# LiteTek TDRF910U
# RF-Chain-Control
# Light Modular

## User's Guide

**LiteTek Opto-Electronics Co. Ltd.**

## FCC Caution:

RF exposure warning:

The equipment complies with RF exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void

your authority to operate the equipment.

Information to OEM integrator

1. The antenna orientation in the intended application will have the antennas horizontally mounted at the bottom of conducted display section. As for grounding, the antenna cable must be grounded in close proximity to where it exits the enclosure of the host system.
2. The antenna(s) used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter within a host device, except in accordance with FCC multi-transmitter product procedures.
3. Only those antennas with same type and lesser gain filed under this FCC ID number can be used with this device.
4. The regulatory label on the final system must include the statement: "Contains FCC ID: VCD6061AS1 or using electronic labeling method as documented in KDB 784748.
5. The final system integrator must ensure there is no instruction provided in the user manual or customer documentation indicating how to install or remove the transmitter module except such device has implemented two-ways authentication between module and the host system.
6. The final host manual shall include the following regulatory statement:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna

-Increase the distance between the equipment and the receiver.

-Connect the equipment to outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## IC Caution:

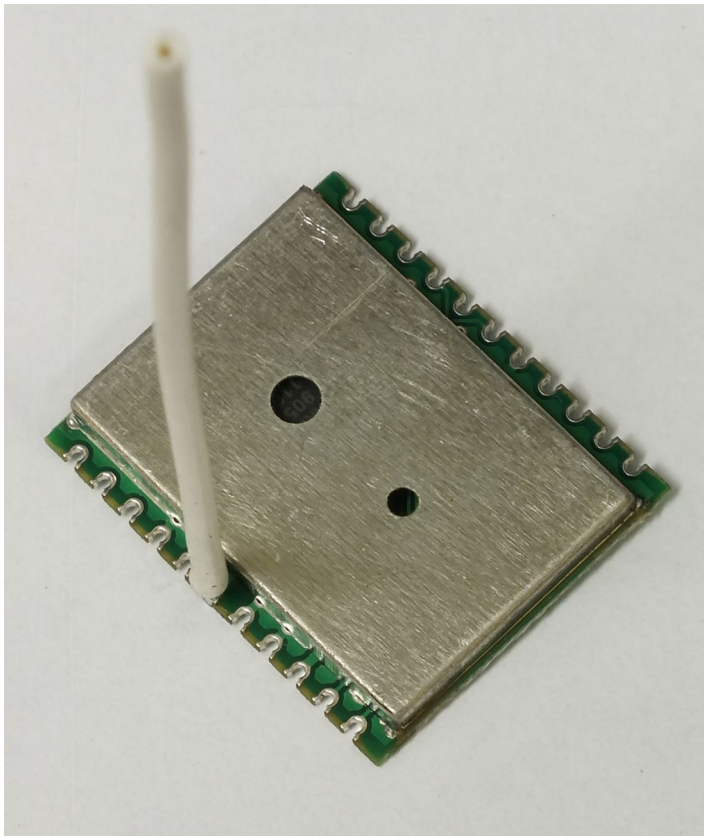
This device complies with Industry Canada licence-exempt RSS standard(s).
Operation is subject to the following two conditions:
(1)this device may not cause interference ,and(2)this device must accept any interference, including interference that nay cause undesired operation of the device.

Cet appareil est conforme la norme d’Industrie Canada de licence RSS(s).
Son finctionnement est soumis aux deux conditions suivantes: (1)cet appareil ne peut pas causer d’ interférences,et(2)cet appareil doit accepater toute interférences,
y comparis les interferences qui peuvent causer un mauvais fonctionnement de I’appareil.

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

# In This User’s Guide…

# 1. Overview



TDRF910U is dedicated solar powered LEDs wireless control module.

TDRF910U wireless control module is a linkage kit for solar powered LEDs group. All of LEDs group have a common clock system. Each of LEDs group illumination is controlled by memory encoding signal. The whole set action will be consistently changed in order by pre-programmed. TDRF910U solar powered LEDs wireless control module contains wireless transceiver, microprocessor and output PWM pulse to drive the LED illumination.

Connect TDRF910U to LEDs driver board, with a preset manufacturer code and ID number, TDRF910U can sending and receiving wireless data, each solar powered LEDs group will be synchronize.

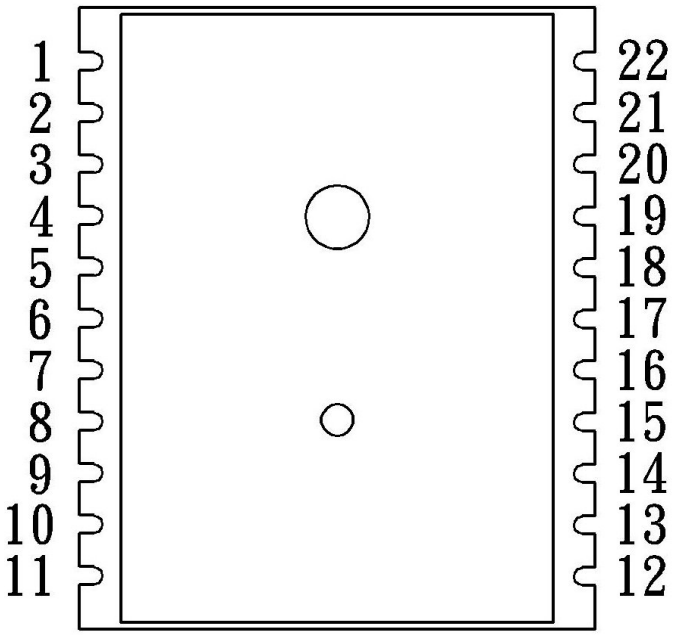
Each module has four independent PWM outputs which can be connected to an external circuit; promote fade- in and fade-out illumination. Those blinking, flashing, chasing can create variety illumination.

TDRF910U has a fixed antenna which can not be changed. It is a quarter-wavelength monopole antenna.

# 2. **Specifications**

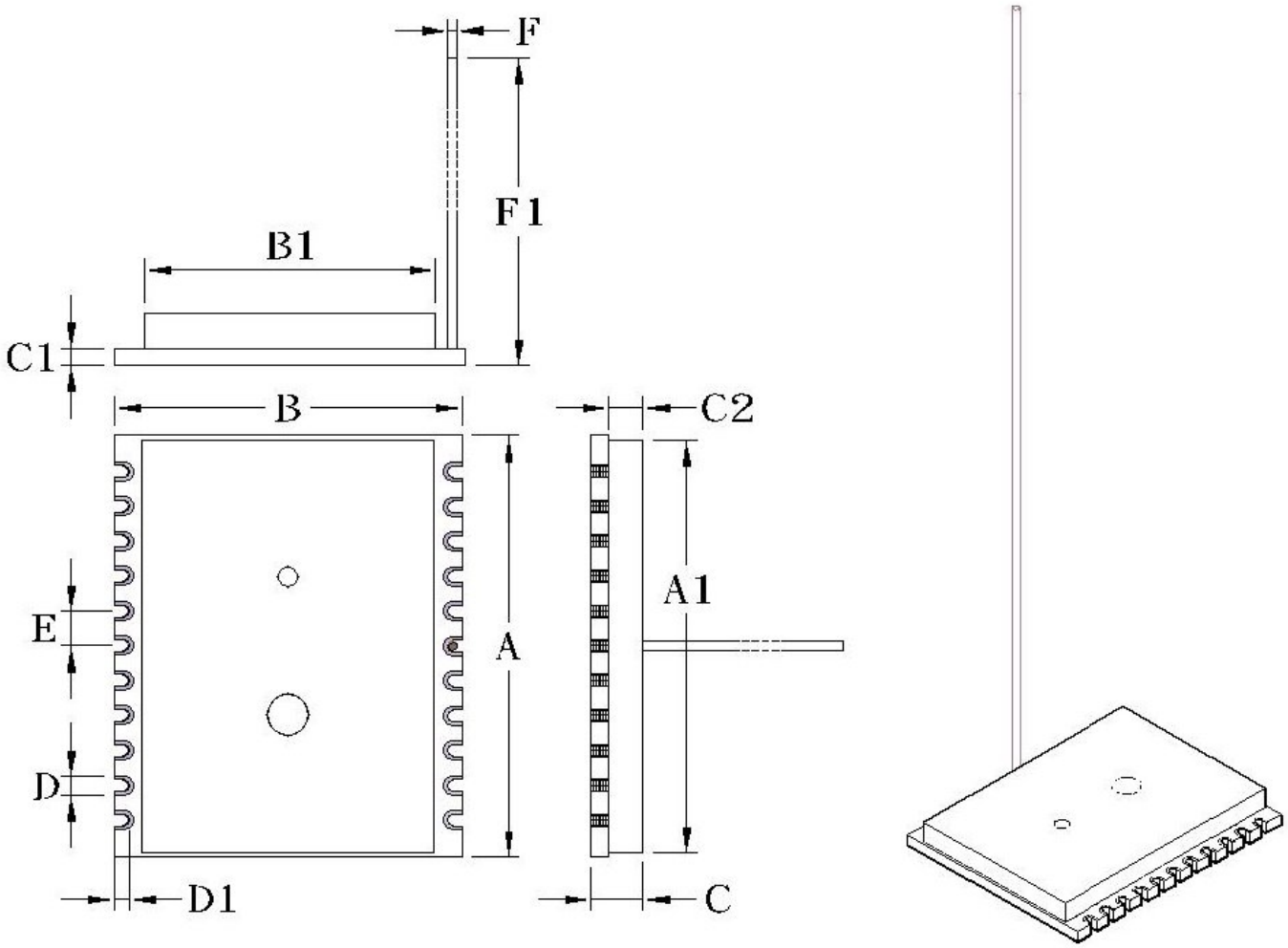
| **Specification** | TDRF910U |
|---|---|
| **RF Performance** | |
| Indoor/Urban Range | up to 300ft (100m) |
| Outdoor RF line-of-sight Range | up to 1000ft(300m) |
| Transmit Power Output | +10 dBm (0.01W) |
| RF Data Rate | 50 kbps |
| Operating Frequency Band | 902-928 MHz (ISM) |
| Modulation | GFSK |
| Antenna | 1/4 wave wire antenna, |
| Number of Channels | 50 channels |
| Network Topologies | multipoint- to-multipoint (max node 65000) |
| Receiver Sensitivity | -100dBm |
| **Power Consumption** | |
| Supply Voltage | 3. 2 to 6. 0 VDC |
| Operating Current (Transmit) | 34mA |
| Operating Current (Receive) | 13.9mA |
| Operating Current (Average date time led off) | 0.571mA |
| Operating Current (Average night time led on) | 1.130mA, (not include led power) |
| Power-down Current(All Turn Off) | 0. 076mA |
| **PWM output signal** | |
| output high level | 3. 0V |
| Frequency | 21.7KHz |
| Duty range | 0% - 70% |
| **General** | |
| Dimensions | 0.945 in x 0.787 in x 0.118 in (24mm x 20mm x 3mm) |
| Operating Temperature | -40 to 85℃ (Industrial), 0 to 95% non-condensing |
| **Agency Approvals** | |
| United States (FCC Part 15.247) | FCC ID：VCD6061AS1 |
| Industry Canada (IC) | IC:10817A-TDRF910U |

**Pin signal description:**




| PIN | **Description** | PIN | **Description** |
|---|---|---|---|
| 1 | Second input Din2 | 12 | Vdd output3.0V |
| 2 | LED stepup feedback | 13 | First input Din1 |
| 3 | NC | 14 | Solar charge control |
| 4 | GND | 15 | Reel-SW input |
| 5 | GND | 16 | GND |
| 6 | ANT | 17 | NC |
| 7 | GND | 18 | First output Do2 |
| 8 | GND | 19 | PWM4 output |
| 9 | Vcc input | 20 | PWM2 output |
| 10 | measure battery voltage input | 21 | PWM3 output |
| 11 | measure solar voltage input | 22 | PWM1 output |

**Size Drawing:**




| NAME | LABEL | mm | NAME | LABEL | mm |
|---|---|---|---|---|---|
| Module length | A | 24 | PCB thick | C1 | 1 |
| Module width | B | 20 | Solder width | D | 1.2 |
| Module height | C | 3 | Solder deep | D1 | 0.86 |
| Shelter length | A1 | 23.6 | Solder pitch | E | 2 |
| Shelter width | B1 | 16.7 | Antenna diameter | F | 0.55 |
| Shelter height | C2 | 2 | Antenna length | F1 | 70 |

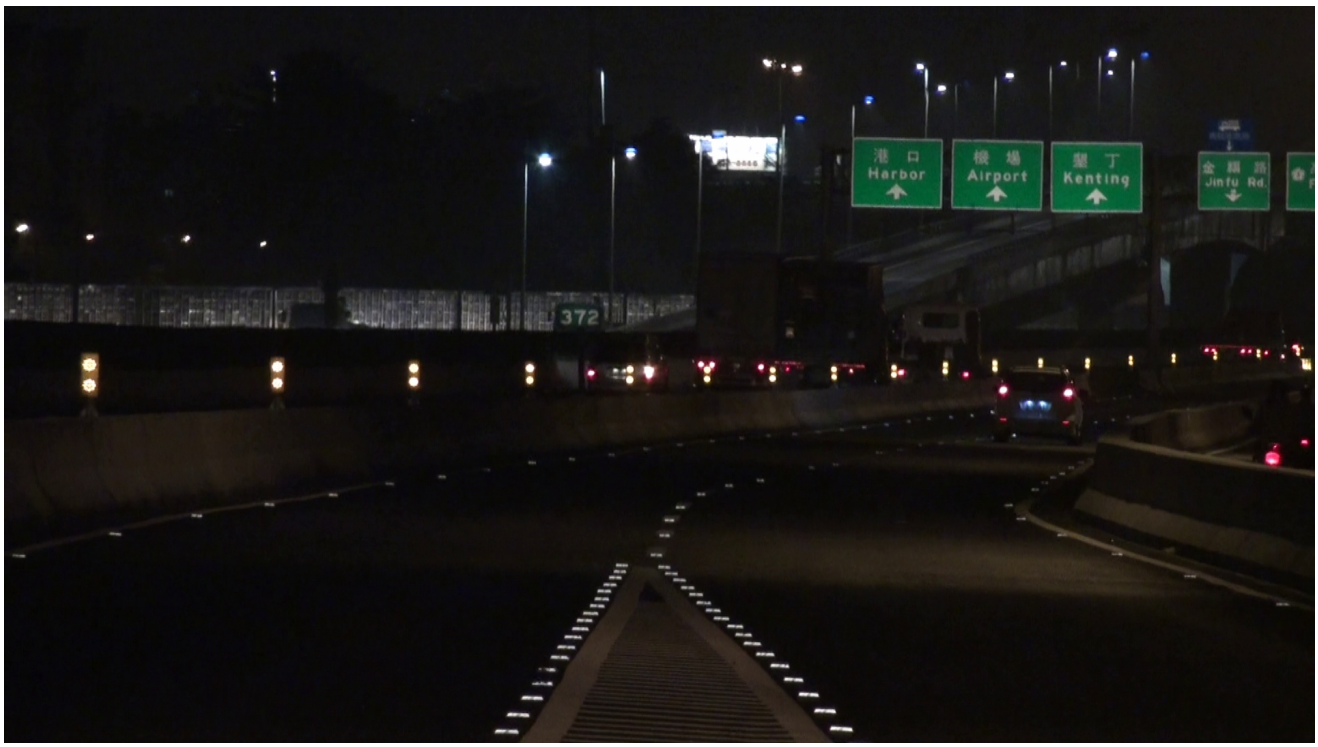
# 3. Application

## Road signs

Location: Kaohsiung Expressway, Kaohsiung, Taiwan R.O.C.

Detail:

- 1W solar panel
- 3.7V battery
- 4200mAH Lithium battery
- 18 LEDs on each sign
- 20 meter between each sign
- Total connected distance of 600 meter



Location: Beijing's 5th Ring Road, CHINA

Detail:

- 3.8W solar panel
- 3.7V battery
- 8400mAH Lithium battery
- 90 LEDs on each sign
- 30 meter between each sign
- Total connected distance of 1.2 kilometer

## Landscaping lights

Location: BaDe City, Tao Yuan Hsien, Taiwan R.O.C.

Detail:

- 2.5W solar panel
- 3.7V battery, 8400mAH Lithium battery
- 9 multicolor and 9 white LEDs on each pattern
- 2 meter between each pattern
- Total connected distance of 32 meter

Location: Jiu-guang Lake,  Jin-men Village,

Detail:

- 1W solar panel
- 3.7V battery
- 1800mAH Lithium battery
- 12 red, blue and green LEDs on each pattern
- 5 meter between each pattern
- Total connected distance of 100 meter

# 4. Technical contact

TDRF910U module contains several fixed data, such as: factory serial number, vendor code and site sequence code. It also contains several parameters, such as: cell voltage, voltage of solar panels, LEDs showing pattern program code and PWM output parameters.

In your application, please describe all your requirements such as:

1. application in road signs or landscaping.
2. the distance between each pattern lights.
3. lighting time (24 hours a day or dusk-to-dawn).
4. output LED quantity, type, series connection or parallel connection.
5. battery type, battery voltage and capacity.
6. solar panel specifications, open circuit voltage and short circuit current.
7. LED light pattern and schedule (duty cycle, synchronous flashing cycle, fading or chasing, and others).

For more info, please contact

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