



台禹®  
TWSI

# Community Based Early Warning Systems for Flash Flood

Beyond computer-aided forecast systems, web-based data acquisition systems, ALERT and flood risk assessments, you need the real status of rainstorm around your site to take action for disaster mitigation in time especially for **flash flood**. (©)

TWSI announced a series of cost-effective community based early warning systems for variable applications with the key functions to monitor multiple rainfall intensities and alert at each warning thresholds.



## Basic equipments:

- Smart StormPanel plus tipping bucket rain gauge, cable connected or wireless
- Super water level transmitter with long-range but low cost wireless transmission
- Smart multipoint water level detector for low cost applications
- Digital displacement transmitter or event-triggered wire extensometer for landslide monitoring
- Digital soil saturation transmitter for debris flow monitoring
- Tipping Bucket Rain Gauge, Smart Rainfall Transmitter & Precision Field Calibrator

## Features:

- Multiple bright LED displays help getting information for rainstorm at a glance
- Multiple rainfall intensities data simultaneously for disaster forecasting
- Multiple dynamic level data displays the rising status. (Optional)
- Smart buzzer alarm with multiple easy re-settable warning thresholds for taking refuge
- Smart power-saving and built-in backup battery provides 24 hours warning during power-lose
- Large flash memory for multiple logging afford long-term data acquisition and event records
- Easy data output via RS-232/RS-485 interface help most communication requirements
- Optional GSM modem for SMS at each alarm
- Low power wireless transmission with long range up to 1km help system installations
- Secondary Input water level, soil saturation and digital wire displacement for landslide, etc.
- Event trigger of water level or displacement monitoring assure the instant of rising.
- Low cost and flexible combinations for variable applications
- Precision level measuring without filtering and transmission in time improve the accuracy of prediction system

## Applications:

- Urban flash flood warning system for lives
- Urban flood warning system for below-grade parking garage
- Pump station monitoring system
- Debris flow warning system
- Water intake control system
- Real time landslide monitoring system

© : According to the paper of AMS Council, **Flash Floods** are distinguished from other types of flooding by the short timescales over which flood-producing rainfall occurs (generally less than 6 h) and the small spatial scales (generally less than 1000 km<sup>2</sup>) of drainage basins in which flooding occurs. Most flash floods occur at night and, as would be expected, produce the most damage in urban areas.

### Sensors:

Rainfall: tipping bucket default 0.5mm resolution, cable connected, optional local area wireless transmitter range to 700m

Water level: CET Float operated level transducer with local range wireless transmitter, 5mm resolution event triggered transmission

Displacement; digital wire extensometer with 1mm event triggered transmission except for regular wireless transmission

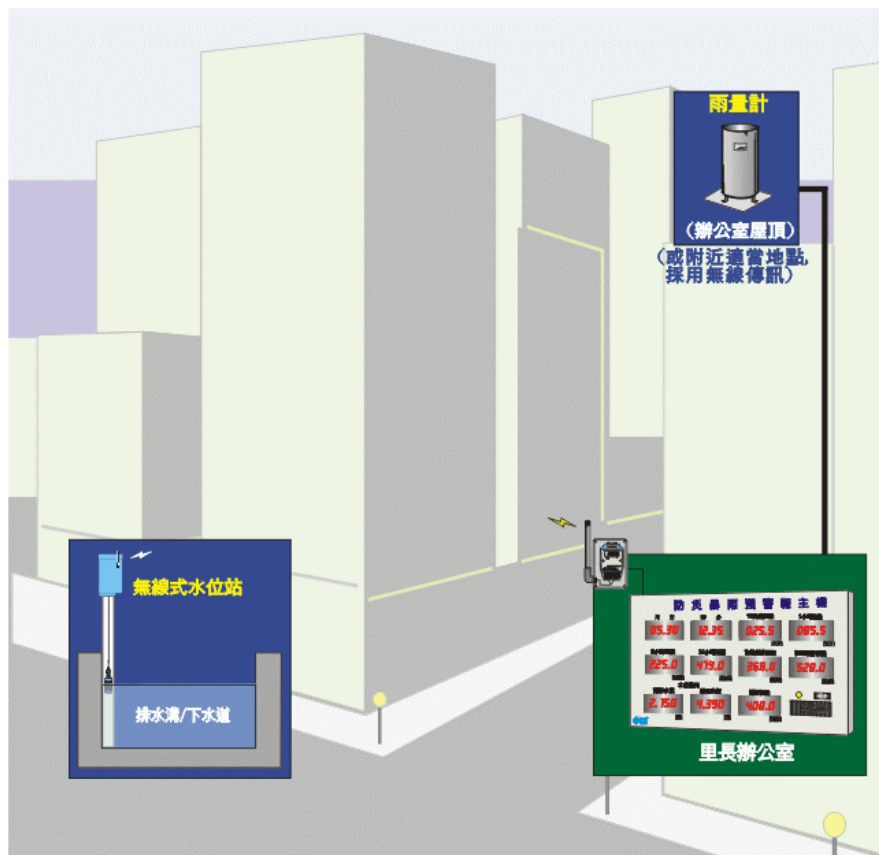
### Wireless Transmission:

Transmission frequency: 433 Mhz

Transmission range: up to 1km LOS

Transmitter: timely and event triggered with LCD active 30mA/6V, standby 0.2mA

Receiver: receives 8 sensors with ID, LCD display and output to system, cable powered



### Features

#### ◇ rainstorm and flash-flood alert

Could set critical value for rainfall intensity. Automatic announce alert when water level exceeds critical value. Detect freshet and announce alert automatically.

#### ◇ cost-free radio communication network

Use low power region radio system. Real-time transfer. No license required, no fees required.

#### ◇ long-term recording

Record long-term history data, provide for hydrology analyses or future enquiry

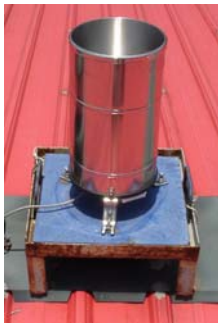
#### ◇ long lasting back up battery

Continuous work for 24 hrs during power failure. Make effect at the critical time.

### What aid could rainstorm disaster prevention & warning system provide?

1. Complete rainfall information which closer to local real condition.
2. Direct receive local rainfall information, no need to worry about communication network condition.
3. The Panel will sounds alert automatically, no need to keep close watching on terminal of PC to get the weather data.
4. Could modify warning thresholds freely depending on your local hydrology condition.
5. The Panel could provide multiple thresholds for pre-alert before primary critical value.
- 6. During power failure, StormPanel could continuously display all rainfall and water level information more than 24 hours. No need to worry about power supply.**

When the Panel equipped to receive a regional wireless water level station, Community based Early Warning System was to work at real time monitoring status for Flash Flood and provides sufficient time to take refuge.



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## Specifications

### System Master (TW-86RP/TW-84RP)



1. Displays : 11sets, 4digits, 25mm character height red LED display.
2. Dynamic displays : Dynamic integrate and display 10min to 24hrs, six types of rainfall intensity and accumulated rainfall
3. Alert function : built-in buzzer alert device automatically sounds alarm when values exceed pre-set threshold value.
4. Power-saving & backup : with intelligent power saving display function, built-in backup battery could supply power for 24 hrs during power failure.
5. Data logger : built-in 512k Flash memory, could store detailed rainfall data for 420 days( 5min/per), also could upload to computer database for reference.

### Rain Gauge (TW-210S)

1. Type : tipping-bucket
2. Orifice : 200±6 mm
3. Resolution : 0.5 mm/pulse
4. Accuracy :  $\leq \pm 3\%$
5. Material : S304stainless steel



### Cable-Extension Float-Driven level transducer (TW-264S/TW-265S)

1. Type : float operated, spring loaded (suspended by single steel cable)
2. Range : 6/10m
3. Resolution : 5 mm
4. Accuracy :  $\pm 0.1\%$  F.S.
5. Output : Absolute Digital Signal
6. Stilling well :  $\phi$  4~6 inch
7. Advantages : not affected by temperature, water quality or foam. Digital output not fluctuating if water level stays the same.



### Wireless Transmitter (TW-348T)

1. Frequency : 433MHz
2. Data string : header+ Identifier +ID code+ data value+CRC-16
3. RF power : 25 mW
4. Power supply : DC 6V rechargeable battery or 3.6V lithium battery, replace once a year. Low maintenance cost. Could powered with 1w solar cell if necessary



### Wireless Receiver (TW-348R)

1. Frequency : 433MHz
2. Data Rx : header+ Identifier +ID code+ data value+CRC-16
3. Range : by Tx power (700 m)
4. Standby current : 10 mA
5. Display : 10mm LCD
6. Output : RS-232/RS-485 port, ID+ data string; with additional output port for wireless rain gauge

