

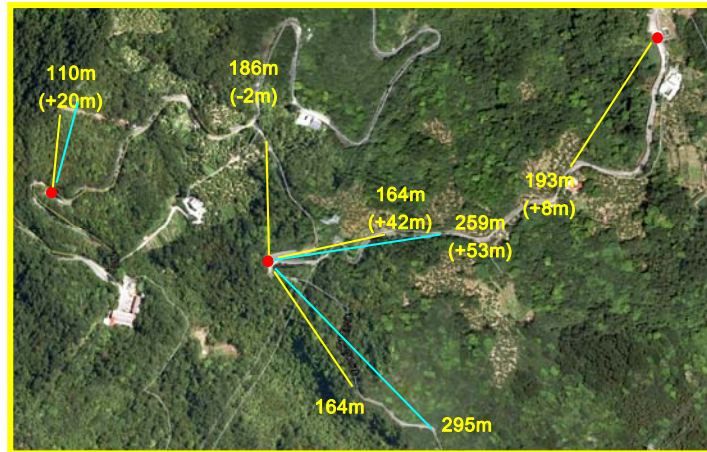
KENKUL-Wireless Sensor Network System

KENKUL-WSN

Wireless Sensor Network system Combination : Wireless Sensor Node, Gateway Reader and Software ◦ Wireless Sensor Node supply sensor's working power, and provide multiple signal input, active push data to Gateway Reader, the host computer can using Gateway Reader with interface such as RS232/485 or USB port connecting with Wireless Sensor Node easily ◦

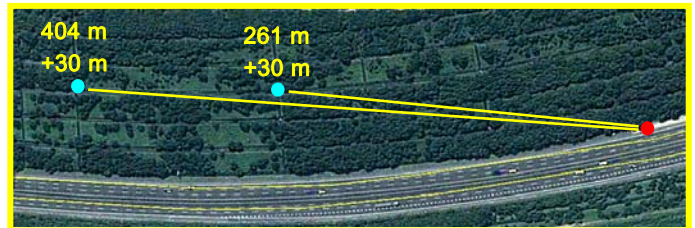
Application

- Geotechnical / Environmental Industry
- Home automation
- Agriculture
- Construction / Bridge
- Danger zone measurement
- Discard area measurement



WSN Network Topologies

KENKUL WSN use star or cluster tree (with Router) network support up to 1000m (LOS) for wireless measurement.

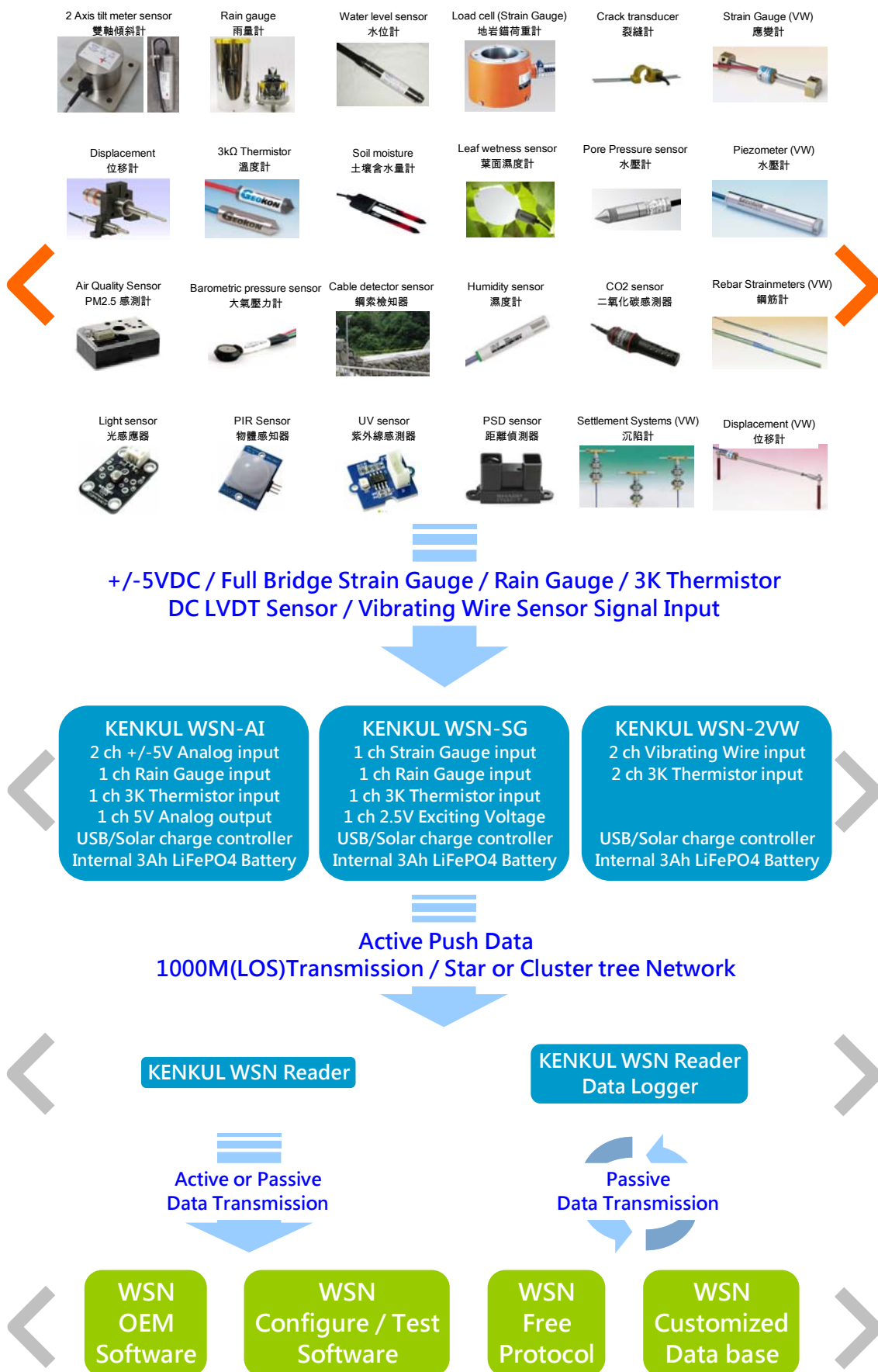


Feature

- Low cost
- Low power consumption
- High resolution A/D
- Multiple signal input
- Multiple functions configurable
- Long life internal battery
- Long distance and high penetrating transmission



KENKUL WSN System Structure



WSN-AI(Analog Input) Specification

Analog sensor Input

Number of channels	2 differential channels
Input ranges	±5 V
ADC resolution	0.0001 VDC
ADC accuracy	16 Bit

Rain gauge sensor Input

Number of channel	1 channel
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Thermistor sensor Input

Number of channel	1 channel (2 wires)
Temperature range	3K Thermistor

Sensor power support

Voltage Output Maximum (100 mA)	5.0 VDC
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Wireless characteristics

Modulation	GFSK
RF data rate	250 kbit/s
Frequency band	ISM 2.4 GHz (2400 MHz to 2500 MHz)
Channels	100
TX Power	20/18/15/10 dBm
Antenna (Standard)	2 dBi
Transmission Range (LOS)	1 km (Max.)

Internal battery power

Type	3.3V LiFePO4 3200mAh
Voltage range	3.0 ~ 3.6 V

Power consumption

Idle	250uA@3.3 VDC(Support with 10mA sensor)
Work	20mA@3.3 VDC(Support with 10mA sensor)

Battery life

1 min sample interval(with Sensor)	Up to 2 month (1 x 3.3V 3200mAH LiFePO4 Battery)
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External power charge

USB	5 V
Solar power	5 V (Max. 6.5 V Input)

Physical characteristics

Dimensions (Not include Antenna)	118 x 40 x 130 mm
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WSN-SG(Strain Gauge Input) Specification

Strain gauge sensor Input

Number of channels	1 channel Full Bridge Strain Gauge (350 Ohm)
Input ranges	$\pm 7.6 \text{ mV/V} (+/- 19000 \times 10^{-6})$
Exciting voltage	+2.5 VDC
Resolution	1 μV
Accuracy	+/- 0.05% +1 μV or batter

Rain gauge sensor Input

Number of channel	1 channel
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Thermistor sensor Input

Number of channel	1 channel (2 wires)
Temperature range	3K Thermistor

Wireless characteristics

Modulation	GFSK
RF data rate	250 kbit/s
Frequency band	ISM 2.4 GHz (2400 MHz to 2500 MHz)
Channels	100
TX Power	20/18/15/10 dBm
Antenna (Standard)	2 dBi
Transmission Range (LOS)	1 km (Max.)

Internal battery power

Type	3.3V LiFePO4 3200mAh
Voltage range	3.0 ~ 3.6 V

Power consumption

Idel	180 μA @3.3 VDC(Support with 350 Ohm Load Cell sensor)
Work	8.3mA@3.3 VDC(Support with 350 Ohm Load Cell sensor)

Battery life

1 min sample interval(with Sensor)	Up to 4 month (1 x 3.3V 3200mAH LiFePO4 Battery)
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External power charge

USB	5 V
Solar power	5 V (Max. 6.5 V Input)

Physical characteristics

Dimensions (Not include Antenna)	118 x 40 x 130 mm
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WSN-VW(Vibrating Wire Input) Specification

Vibrating Wire sensor Input

Number of channels	2 Channel
Input ranges	450 ~ 5000Hz
VW Sensors Resolution	0.1@450 Hz ~ 0.4Hz@5000Hz
VW Sensors Accuracy	< 0.05% F.S

Thermistor sensor Input

Number of channel	2 channel
Temperature Sensor Type	3K Thermistor

Wireless characteristics

Modulation	GFSK
RF data rate	250 kbit/s
Frequency band	ISM 2.4 GHz (2400 MHz to 2500 MHz)
Channels	100
TX Power	20/18/15/10 dBm
Antenna (Standard)	2 dBi
Transmission Range (LOS)	1 km (Max.)

Internal battery power

Type	3.3V LiFePO4 3200mAh
Voltage range	3.0 ~ 3.6 V

Power consumption

Idel	10uA@3.3 VDC(Support with 2 of VW sensor)
Work	65mA@3.3 VDC(Support with 2 of VW sensor)

Battery life

1 min sample interval(with Sensor)	Up to 4 month (1 x 3.3V 3200mAH LiFePO4 Battery)
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External power charge

USB	5 V
Solar power	5 V (Max. 6.5 V Input)

Physical characteristics

Dimensions (Not include Antenna)	118 x 40 x 155 mm
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WSN-Gateway Reader Specification

Wireless characteristics

Modulation	GFSK
RF data rate	250 kbit/s
Frequency band	ISM 2.4 GHz (2400 MHz to 2500 MHz)
Channels	100
Antenna (Standard)	2 dBi
Wireless sensitivity	-104 dBm

USB,RS-232/485 Serial Port

Baud rate (Default)	9600 bps
Data bits	8
Stop bits	1
Parity	None

Handle memory

Max. handle WSN-Node	40
Active push data	Yes

Power requirements

Power supply	9 to 35 V
Idel	33mA@12 VDC
Work	36mA@12 VDC

Physical characteristics

Dimensions (Not include Antenna)	148 x 30 x 110 mm
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WSN-Gateway Reader-Data logger Specification

Wireless characteristics

Modulation	GFSK
RF data rate	250 kbit/s
Frequency band	ISM 2.4 GHz (2400 MHz to 2500 MHz)
Channels	100
Antenna (Standard)	2 dBi
Wireless sensitivity	-104 dBm

USB,RS-232/485 Serial Port

Baud rate (Default)	9600 bps
Data bits	8
Stop bits	1
Parity	None

Handle memory

Max. handle WSN-Node	64
Active push data	No

Datalogger

Full 64 WSN-Node Storage Capacity(Arrays)	16000
Real Time Clock	Yes

Power requirements

Power supply	9 to 35 V
Idel	36mA@12 VDC
Work	40mA@12 VDC

Physical characteristics

Dimensions (Not include Antenna)	148 x 30 x 110 mm
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WSN-Router Specification

Wireless characteristics

Modulation	GFSK
RF data rate	250 kbit/s
Frequency band	ISM 2.4 GHz (2400 MHz to 2500 MHz)
Channels	100
TX Power	20/18/15/10 dBm
Antenna (Standard)	2 dBi
Wireless sensitivity	-104 dBm

Power Input option

Solar power	5V*(Max. 6.5V, Min. 1A Input)
USB power	Mini USB
Battery power	3Ah,3.3V LiFePO4(Option 10 or 20 Ah)

Transform memory

Max. handle WSN-Node	20
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Power requirements

Power supply	DC+5V or 3.3V Battery
Idel	16mA(DC+5V),23mA(3.3V Battery)
Work	46mA(DC+5V),53mA(3.3V Battery)

Physical characteristics

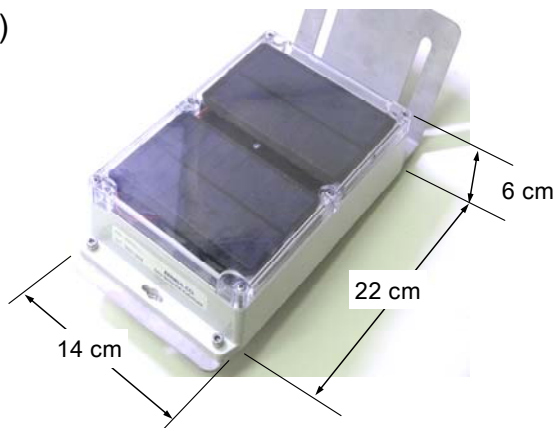
Dimensions (Not include Antenna)	148 x 30 x 110 mm
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*User must Considerations for sunshine



WSN Outdoor option accessory

IP65 BOX with 5V(600mA)Solar panel kits(include stainless mount, WSN module space inside)



Antenna Cable Assembly



Directional Antenna



Panel Directional Antenna



Antenna Mount

