

DAM MONITORING SYSTEM





**DATA LOGGER
TMR AWLR**



**DATA LOGGER
TMR Piezo VW**

Sistem Monitoring Bendungan & Telemetry adalah solusi untuk mengamati kondisi bendungan secara otomatis, seperti: Pemantauan tinggi muka air, pemantauan tekanan pori air tanah, kondisi cuaca & lingkungan serta kondisi lainnya.

SENSOR

RADAR WATER LEVEL SENSOR

TMR-S01-30-RD

Spesification

Range: 10m,30m,50m,70m
Output: 4-20mA, RS48570m(MODBUS-RTU)
Supply Voltage : 12VDC,24VDC,220VAC
Process connection: G1_1/2,support flange
Working frequency: Range <30m:6.8GHz , Range >30m/<70m:26GHz
Accuracy: ±3mm
Ingress Protection: IP67



Feature

- Small beam Angle, the energy concentration, strong anti-interference,high accuracy and reliability
- Range of up to 70 meters, covering large reservoir and other water level measurement
- Modbus data output, so it can directly connected to Embeded controller without any sensor interface module
- Realtime water level measurement

Application

- River water level
- Dam or Lake water level
- Shallow water level
- Hyrographic survey
- Environmental protection



Application Radar Water Level Sensor on dam

V-NOTCH OPEN CHANNEL FLOW SENSOR

Spesification

Measurement range: 0.1l/s~99999.99m³/h
Flow Accuracy: 1%~5% (depends on poling board type and weir's precision)
Total Flow: 4290000000.00m³
Level Accuracy: 0.25%F.S
Level Resolution: 0.1%FS
Power supply: 12VDC
Operating temperature: Display meter-20~+60℃ & Transducer-20~+80℃
Protection Class: Display IP65, Transducer IP68
Transducer Cable Length: 10m

Application

- Sewage pipes
- Wastewater treatment plant
- City sewer flow
- Farmland irrigation channels



Application V-Notch

WEATHER SENSOR

Wind Speed & Direction sensor

Spesification

Range: speed 0 - 70 m/s; direction 0-360°
Resolution: speed 0.1 m/s; direction 1°
Accuracy: speed ±0.5%; direction <±3°



Atmospheric Temperature, Humidity & Pressure Sensor

Spesification

Range: Temperature -40~60℃; Humidity 0~100%RH; Pressure 100~1100hPa
Resolution: Temperature 0.1℃; Humidity 0.5%RH; Pressure 0.1hPa°
Accuracy: Temperature ±0.5℃; Humidity ±3%RH; Pressure ±1hPa



Solar Radiation Sensor

Spesification

Spectral Range: 300~1100nm
Range: 0~1500W/m²
Resolution: 1W/m²
Accuracy: <±0.3%



Radar Rainfall Sensor

Spesification

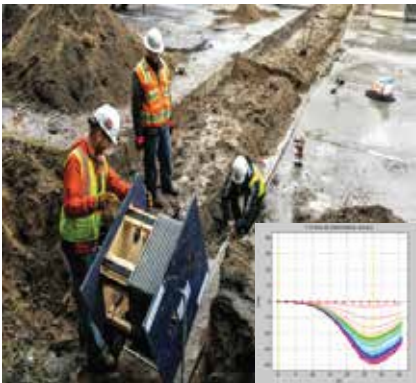
Object measured: Rain drops, snow, hail
Rain intensity: 0~4mm/min
Resolution: 0.1mm
Accuracy: ±4%



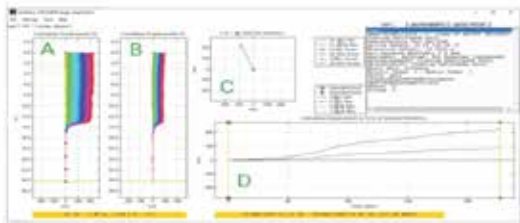
SHAPE ARRAY

What Is Shape Array?

Automated inclination
Shape measuring instrument
Sensitive monitoring of displacement (detailed inclinometer or In-Place Inclinometer style measurement)
Sensitive monitoring of vibration (rail way line monitoring)
May be installed vertically, horizontally or arc
Can be rolled up for shipping or storage



SAAX (monitor settlement / vertical)



SAAV (monitor lateral displacement)

Monitoring Of Shape Array



Figure SAAFPU

Manual Monitoring



Customized Datalogger



Standalone Datalogger

DIGITAL BROAD-BAND SEISMOMETER

3C seismic and 3C acceleration sensor
DR: 155dB velocity. 97dB acceleration
BB Response V:30-60-120sec, A:DC-550Hz
Low power consumption
Cost affordable design
Only 130mm D/150mm H
Integrated 24bit digitizer, 140dB
Embedded Seedlink & Earthworm Server
Realtime Telemetry and Local Storage
MiniSeed data format
High sensitivity 1500V/m/s
Waterproof IP67 aluminum case



EARLY WARNING ACCELEROGRAPH

3 components miniature Accelerograph

Range $\pm 2g$, $\pm 4g$, $\pm 8g$

Low power consumption

Ethernet and WiFi

Dimensions 90 X 115 X 55 mm

20bit analog to digital converter

Embedded Seedlink and Earthworm Server

Realtime Telemetry and Local Storage

MiniSEED data format

Web Configuration Interface

Operation Range: -20 $+70$ C

Waterproof IP67 Aluminum Case



SENSOR GEOTECHNICAL



Inclinometer



Piezometer



Extensometer



Tilt Meter



Strain Gauge



Pressure Cell



Settlement



Displacement

DATA LOGGER



Application

- Pore pressure / piezometer vibrating wire sensor for Dam or Mining
- Vibrating wire strain gauge for structural strain monitoring
- Vibrating Wire Crackmeter sensor. etc



Feature

- Wi-Fi Uplink or Ethernet WAN Connection.
- One RS-232/485 for Modbus RTU Connection.
- IEEE 802.11a/b/g/n/ac Wi-Fi Compliance
- One LAN Port for Linking Local Ethernet Devices.
- One DI/One DO For Device Triggering or Event Reporting
- Designed by Solid And Easy- to- Mount Metal Body

TMR-VIBWIRE

Vibrating Wire

Spesification

8ch Vibrating Wire Input (4-wire)

Measuring Range: 400...6 KHz

Excitation Mode: Auto-resonance

Accuracy: 0.001 Hz ; Resolution: 32 bit

Temperature Range : -50°C ... 70°C

Temperature Accuracy : $\pm 0.2^{\circ}\text{C}$

Temperature Resolution : 0.1 oC +/- 0.2° thermistor

Operating Voltage 10.5...16 VDC

Power Consumption : 80mA @12V DC

Operating Temperature: -20°C ... 65°C

Connection: Screw-Terminal

Feature

- Sensor data sample scan 1 - 8 s, depend on active channel number.
- High accuracy measurement up to 0.001Hz
- Modbus data output, so it can directly connected to Embedded controller.

TMR WIFI GATEWAY

Spesification

Wi-Fi: IEEE 802.11a/b/g/n/ac

Security: WEP / WPA / WPA2 / WPA-PSK / WPA2-PSK / 802.1x

Ethernet: 1 * RJ45 FE

UART Baudrate: RS-232 9600 / 19200 / 38400 / 57600 / 115200

UART Baudrate: RS-485 9600 / 19200 / 38400 / 57600 / 115200 / 230400 / 460800

Power Input: +9~ 48 VDC

Dimensions: 31x108x131mm (DIN Rail kit)

Application

- Wi-Fi/Ethernet/UART Converter
- Roaming
- Command Line Interface (CLI)
- Website Configuration Interface
- Modbus Connections

Spesification

- Processor : Intel 2GHz, 2 cores
- Memory: DDR4, SO-DIMM, 8GB
- Expansion: Full size Mini PCIe
- Storage: 2.5" SATA SSD 128GB
- I/O Ports: 2 x USB2.0; 2 x USB3.1; 4 x Gigabit Ethernet
- RJ45; 2 x COM RS232/422/285 (DB9)
- System Operation: Windows 10 IoT Enterprise
- System Mounting: Wall mount / DIN Rail mount
- Power Supply: 12 to 24 VDC
- Operating temperature: -20°C to 60°C
- Dimension: (W*H*D):202*151*81mm
- Weight: 2.72kg



Feature

- Realtime sensor data acquisition with preconfigurable sampling data rate
- Preconfigurable data transmit rate to local server
- Online realtime data can be view on a web browser app dashboard
- Data can be downloaded / exported to a CSV file via monitoring software

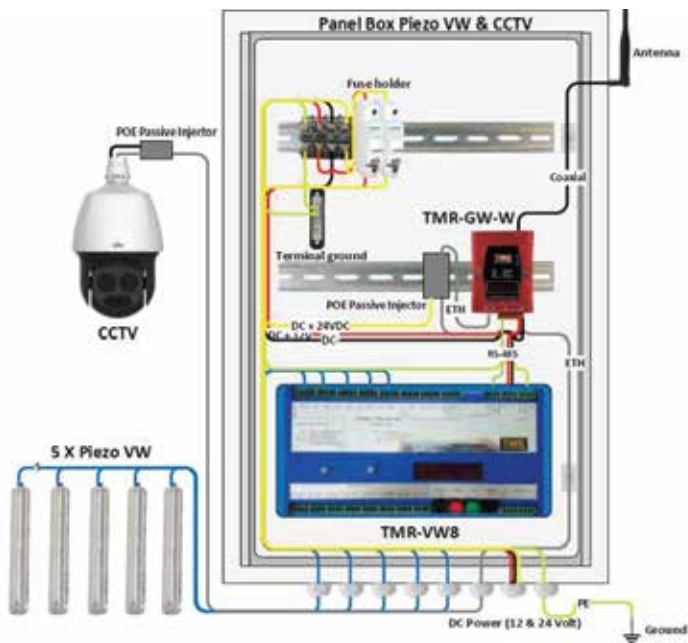
Automatic data Logger
for (V-Notch Flow sensor)

Spesification

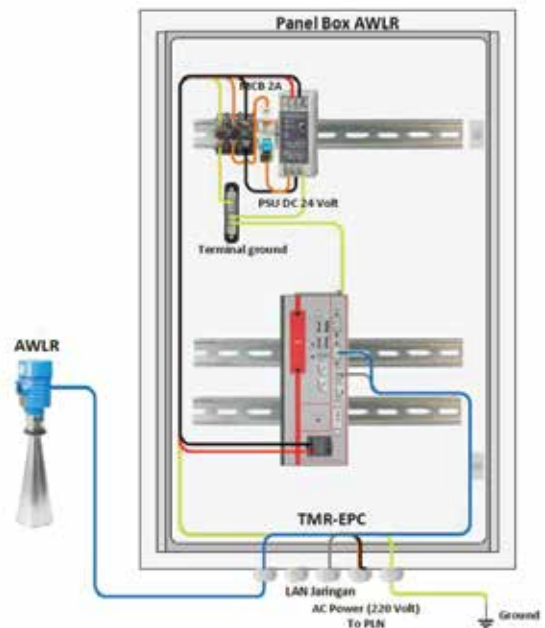
2.4GHz Wi-Fi connection (WPA2)
1 second to 1 day intervals data logging
1 minute to 1 day intervals data push
8GB micro SD-Card storage
512kB program storage
64kB SRAM runtime memory
3x state, On-time meter or pulse counter (max. 10kHz)
8 x mathematical operators and functions (a/o cos, sin, atan2, ln, sqrt)
8x aggregation channels, min/max, average, gust, std dev
Serial RS232 / RS485 Modbus RTU sensor input
Power: Integrated 12V Sealed Lead Acid/LiFePO4 battery charger for external 21Voc solar panel



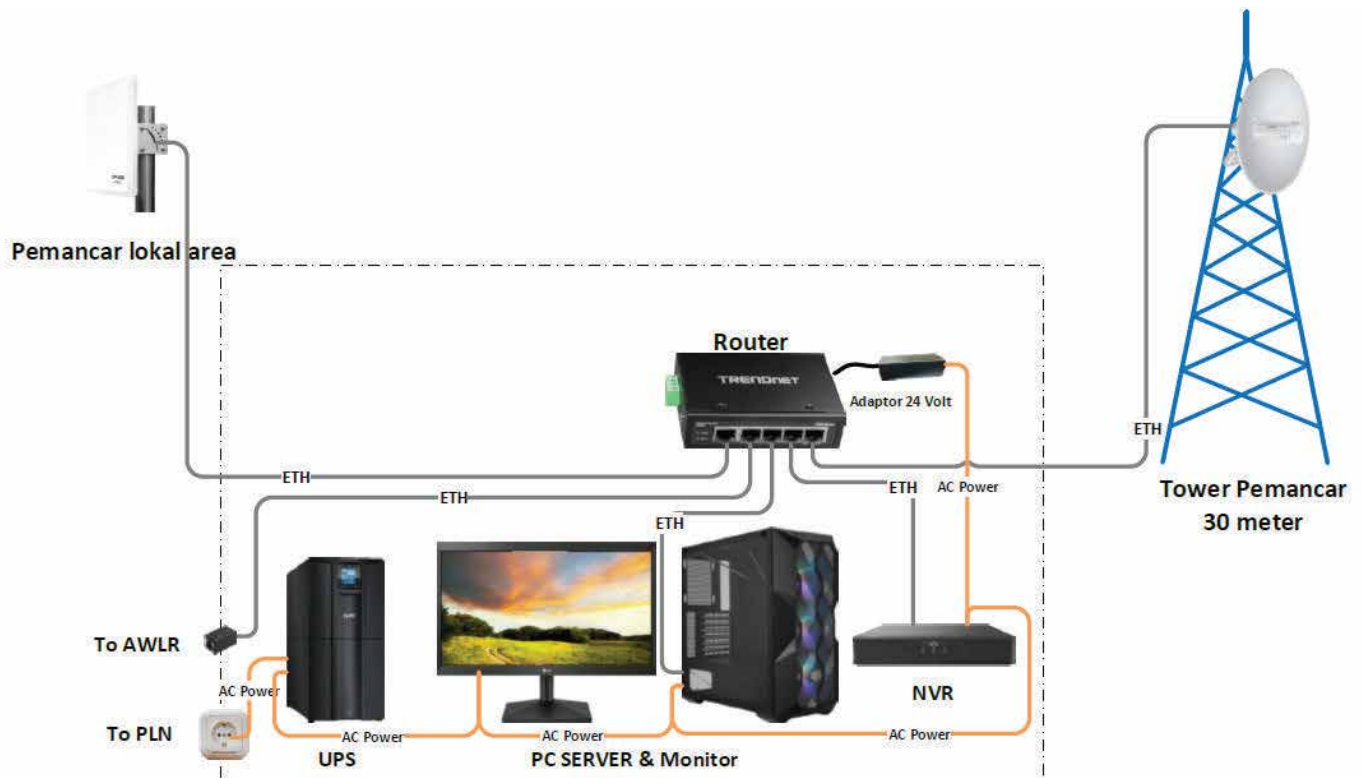
LAYOUT & DRAWING



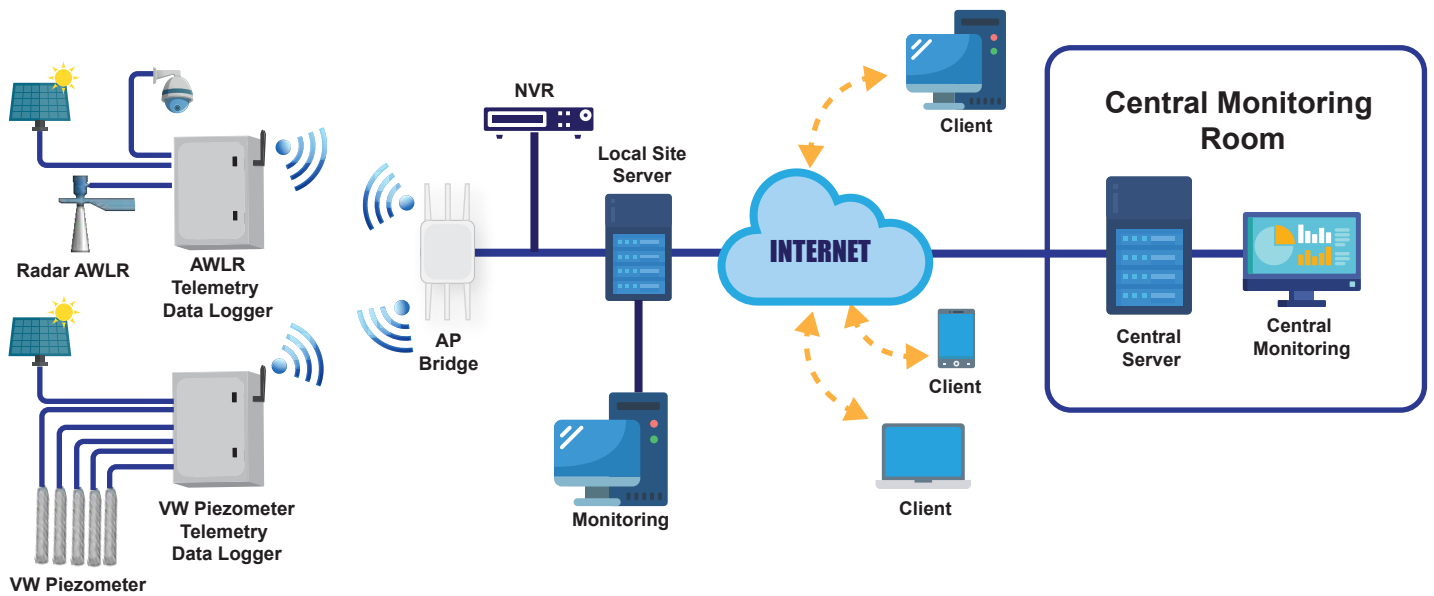
Drawing Panel Box PiezoVW & CCTV Bendungan



Drawing Panel Box AWLR



LAYOUT OVERVIEW



WEB MONITORING

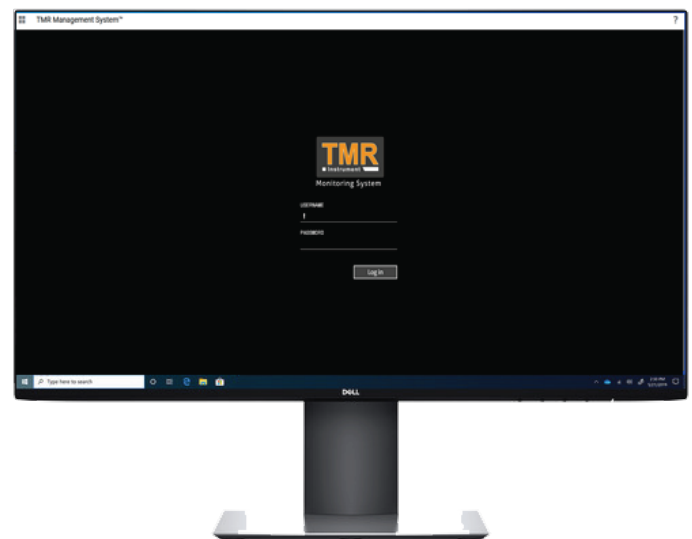
Database Center & Dashboard Web Monitoring (TMR-Instrumentweb.com)

Data Base Center :

- Dapat diakses melalui handphone maupun PC Desktop
- Manajemen lokasi pos pengamatan
- Manajemen dan konfigurasi Data Logger
- Informasi kesehatan Data Logger real time live
- Data-data telemetry hadir real time hingga per 10 detik
- Terdapat fitur download data telemetry
- Mendapat storage database untuk processing data telemetria

Web Publikasi / Dashboard :

- Publikasi data melalui web dengan nama domain institusi pengguna
- Aplikasi web berupa informasi publik untuk Curah Hujan dan Tinggi muka air



Feature

1. TMA waduk

- Ketinggian dalam mdpl
- Volume waduk
- Ambang batas normal, waspada, siaga, awas
- Animasi 2D dengan background bendungan dan kondisi TMA
- Dapat melihat data time series grafik dan tabular untuk parameter TMA
- Export data ke CSV (excel)

2. TMA Bendung

- Ketinggian
- Volume parameter
- Ambang batas normal, waspada, siaga, awas
- Animasi 2D dengan background aramet dan kondisi TMA
- Dapat melihat data time series grafik dan tabular untuk parameter TMA
- Export data ke CSV (excel)

3. Vnotch

- Ketinggian dalam mm dan debit
- Ambang batas normal, waspada, siaga, awas
- Animasi 2D dengan background bendungan & kondisi Vnotch
- Dapat melihat data time series grafik dan tabular untuk parameter Vnotch
- Export data ke CSV (excel)

4. Flowmeter pada outflow

- Pembacaan dalam satuan debit
- Animasi 2D dalam bentuk widget
- Dapat melihat data time series grafik dan tabular untuk parameter flowmeter
- Export data ke CSV (excel)

5. Tekanan pori

- Tekanan pori dalam Kpa, Mh2o
- Ambang batas normal, waspada, siaga, awas
- Animasi 2D dengan background bendungan dan kondisi sensor tekanan pori
- Dapat melihat data time series grafik dan tabular untuk parameter tekanan pori
- Export data ke CSV (excel)

6. Klimatologi

- Untuk curah hujan dan penguapan adalah akumulasi harian dimana harinya dimulai sejak pukul 07.00 waktu setempat
- Animasi 2D dalam bentuk widget per parameter
- Dapat melihat data time series grafik dan tabular untuk parameter klimatologi
- Export data ke CSV (excel)

7. Accelerometer

- Dapat melihat data time series grafik dan tabular untuk parameter Accelerometer
- Export data ke CSV (excel)



8. CCTV

- Dapat melihat video yang telah tersimpan (playback) menggunakan NVR
- Dapat melihat live video
- Dapat mengendalikan fitur PTZ menggunakan NVR

9. Kualitas Air

- Animasi 2D dalam bentuk widget per parameter
- Dapat melihat data time series grafik dan tabular untuk parameter kualitas air
- Export data ke CSV (excel)

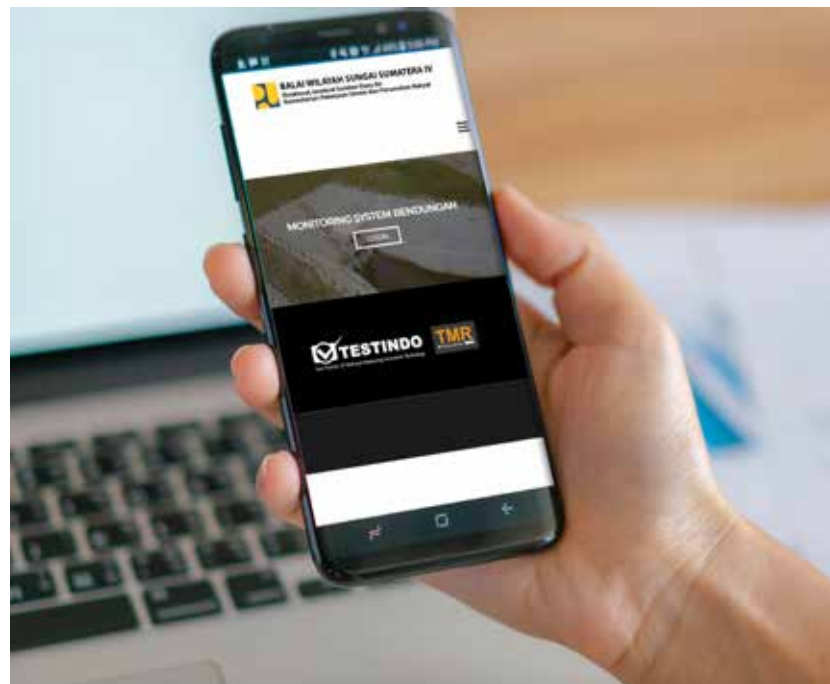
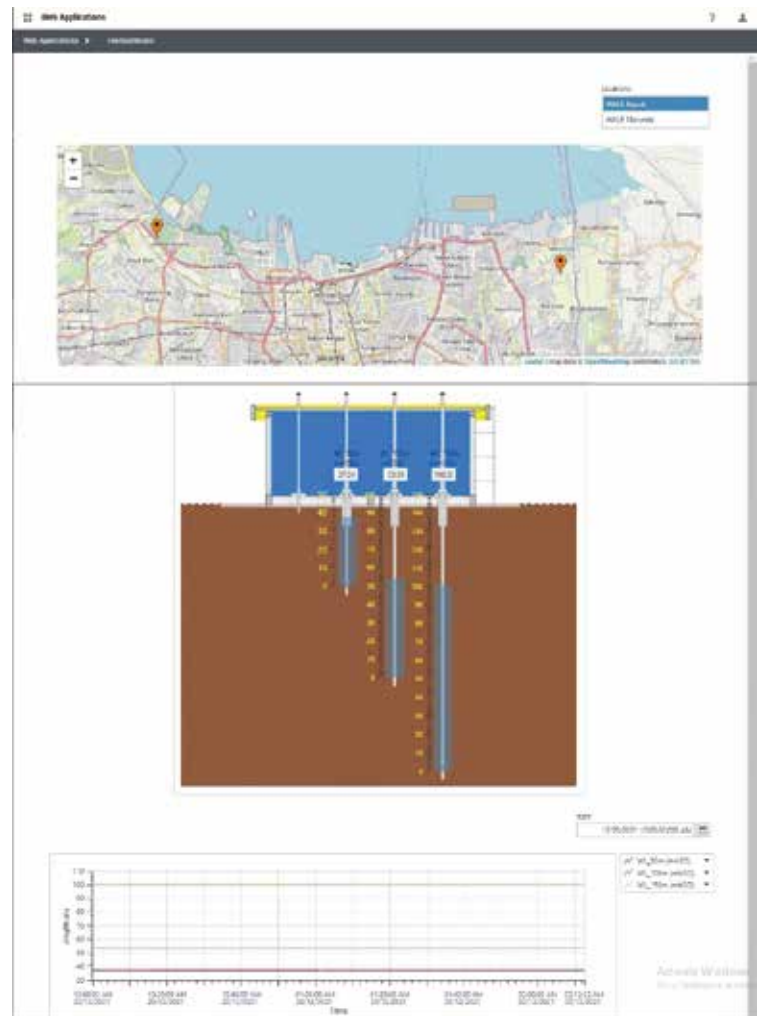
10. Web based

11. Dapat di integrasikan ke server PUPR SINBAD baik melalui jaringan VPN/Internet

12. Dapat memberikan notifikasi alarm (email)

13. Fasilitas input data manual

- Pengamat Pos secara periodik difasilitasi untuk input data hasil pengukuran, dengan menggunakan HP (mobile web)
- Pengamat Pos dapat memindahkan data dari SD Card pada masing-masing data logger ke server data center melalui website
- Untuk mengantisipasi kegagalan koneksi, data perekaman juga tersimpan di masing-masing data logger



PROJECT EXPERIENCE

1. Project Semarang-Demak



2. Project Monitoring Bendungan Tamblang



3. SISTEM MONITORING & TELEMETRI BENDUNGAN SEI HARAPAN BATAM



4. SISTEM MONITORING & TELEMETRI BENDUNGAN SEI LADI BATAM



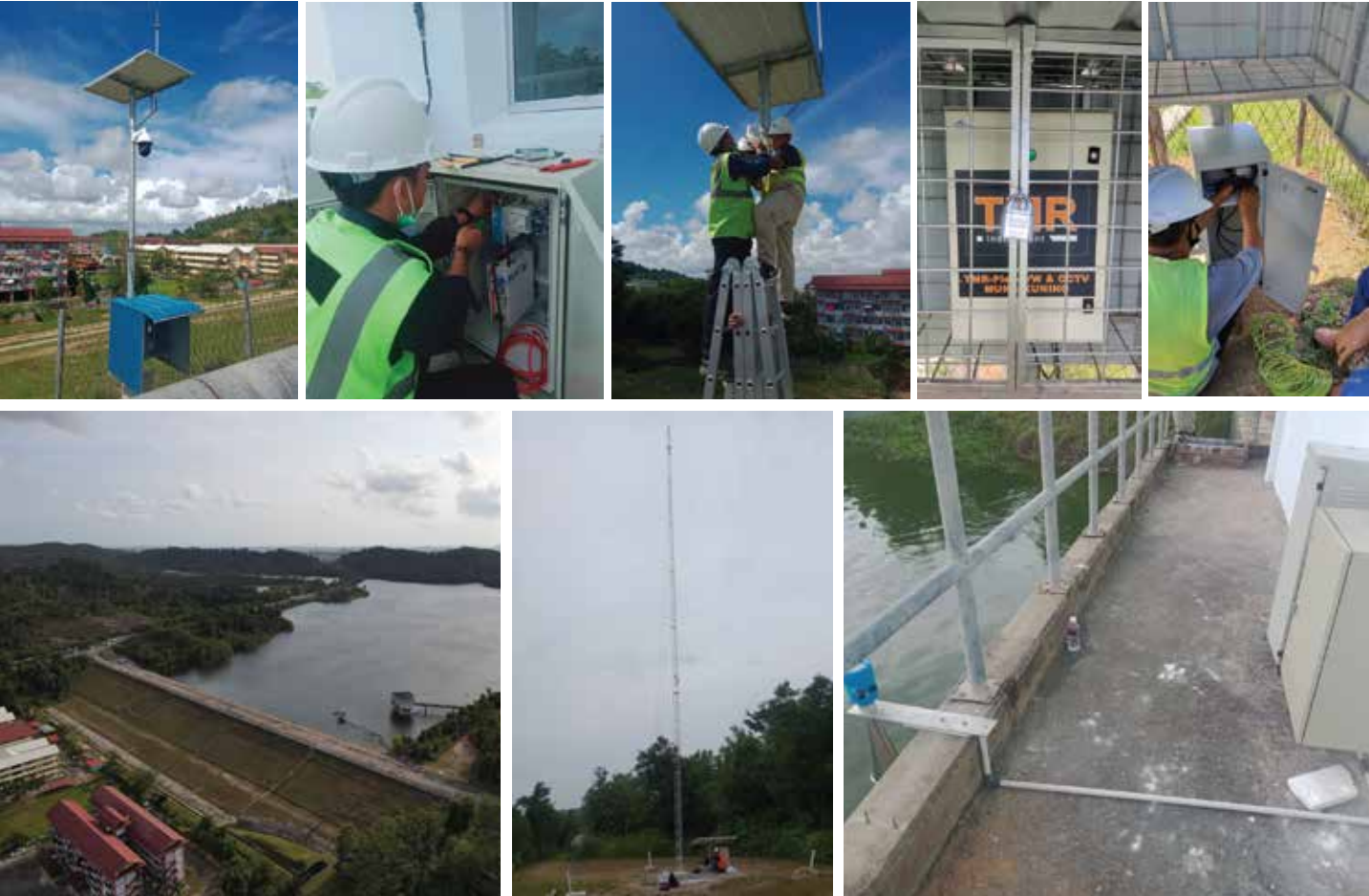
5. Project Monitoring Bendungan Sidan



6. SISTEM MONITORING & TELEMETRI BENDUNGAN NONGSA BATAM



**7. SISTEM MONITORING & TELEMETRI
BENDUNGAN MUKA KUNING BATAM**



**8. SISTEM MONITORING & TELEMETRI
BENDUNGAN DURIANGKANG**



9. Bendungan Tilong Kupang NTT



10. Bendungan Marangkayu Samarinda Kalimantan Selatan



11. Reklamasi Lotte Merak



12. Project Cirebon Power II



13. Project Gedung Sampurna Balikpapan



14. Project Monitoring Inclinator Bor Pile PT PP Lombok



15. Project Monitoring Landslide Gunung Salak PT STAR ENERGY



16. Project Jalan Tol Akses Bandara Kertajati ACSET





PT TESTINDO

Office : Jl. Radin Inten II No. 61B Duren Sawit, Jakarta Timur 13440 - INDONESIA
Phone : +62-21-29563045-49, 29563051
Mobile : +62-823-1234-7066 (Official Whatsapp PT Testindo)
Email : sales@testindo.com
Website : <http://www.testindo.com> | <http://www.testindo.co.id>

DAM MONITORING SYSTEM

