



SMART SUBSTATION SOLUTION FOR ELECTRICITY

-Smart
-Integrated
-Professional



Remote Surveillance

- Station surveillance
- Equipment checking
- Instrument checking



Production Safety

- Staff auto-tracking
- Accident analysis



Perimeter Protection

- Intrusion alarm
- Alarm linkage
- Access control



Thermal On-Line Detection

- Remote detection
- Equipment predictive maintenance

ELECTRICAL SYSTEM INTRODUCTION



Generation

Generation

Electricity is generated by hydro and other independent power producers.

Transmission

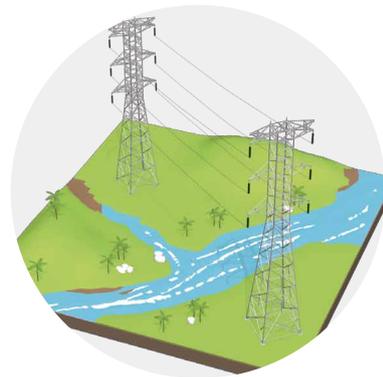
Electricity is moved from where it is produced to where it is used.

Substation

Voltage is changed for long distance power transmission.

Distribution

Low voltage electricity is provided to neighborhoods and businesses.



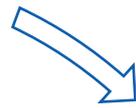
Transmission



Substation



Distribution



SOLUTION OVERVIEW

• Perimeter

Perimeter protection is the first and most important defense for a substation.



• Transformer

Transformers make up the heart of a substation. Thermal temperature analysis and video provide real-time monitoring capabilities.



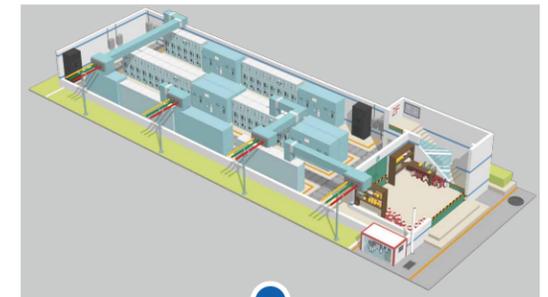
• Control Room

The control room houses critical hardware and needs to be monitored around-the-clock.



• Switchgear

The switchgear contains numerous circuit breakers which need to be protected from trespassers and destruction, and housed in a suitable environment.



• Switchyard

The switchyard includes a series of electrical equipment. Thermal temperature analysis and video provide real-time monitoring.



• Entrance

Video surveillance placed at the substation entrance provides efficient user and vehicle management capabilities.



CHALLENGES AND SOLUTIONS

• Unmanned Facilities

Substations are scattered and sometimes located in remote areas. Administrators need to constantly monitor the status of substations and ensure normal operation.



Remote video surveillance for administrators



• Accident Prevention

High voltage power poses a great danger to human safety, and in the process of maintenance and repair, accidents can be easily caused by improper operation.



Remote video surveillance for safety managers



• Trespassing and Damage

Substations are key components in the power infrastructure and must prevent the entry of trespassers or suspicious persons who could cause damage or be electrocuted.



Perimeter protection and access control



• Electric Equipment Malfunction

Malfunctions may occur in equipment after extended operation, especially power transformers. Transformer explosions could disrupt access to electricity or threaten lives.



Remote thermal detection



• Natural Disasters

Natural disasters such as typhoons and earthquakes can damage the substation and cause power outages.



Power rush-repair command



SOLUTION DETAILS

Remote Video Surveillance

- Complete station surveillance
- Staff auto-tracking and surveillance
- Electric equipment checking
- Electric instrument checking
- Accident analysis



Installing a complete station surveillance system provides remote status analysis of key equipment and instruments.



Auto-tracking enables the remote monitoring of station workers and accident analysis.

Perimeter Protection and Access Control

- Perimeter intrusion alarm
- Switchgear access control
- Perimeter video surveillance
- Control room access control
- Alarm linkage
- Station gate surveillance



Perimeter protection ensures substation security with an access control system, remote 24/7 surveillance and perimeter intrusion alarm.

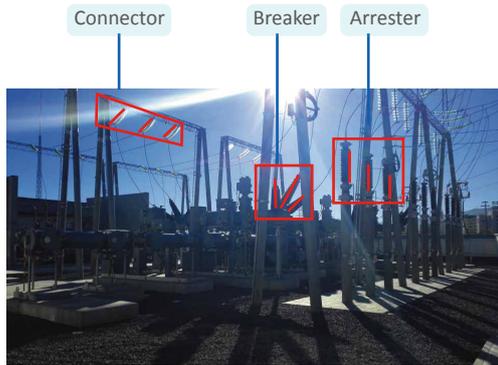
Thermal Remote On-line Detection

- On-line temperature measurement
- Equipment predictive maintenance
- 360° measurement
- Live HD video
- Remote and real-time detection
- Temperature threshold alarm



Thermal temperature measurement is the most effective means for real-time, remote on-line detection of high-voltage equipment.

• Typical Subjects of Thermal Temperature Measurement



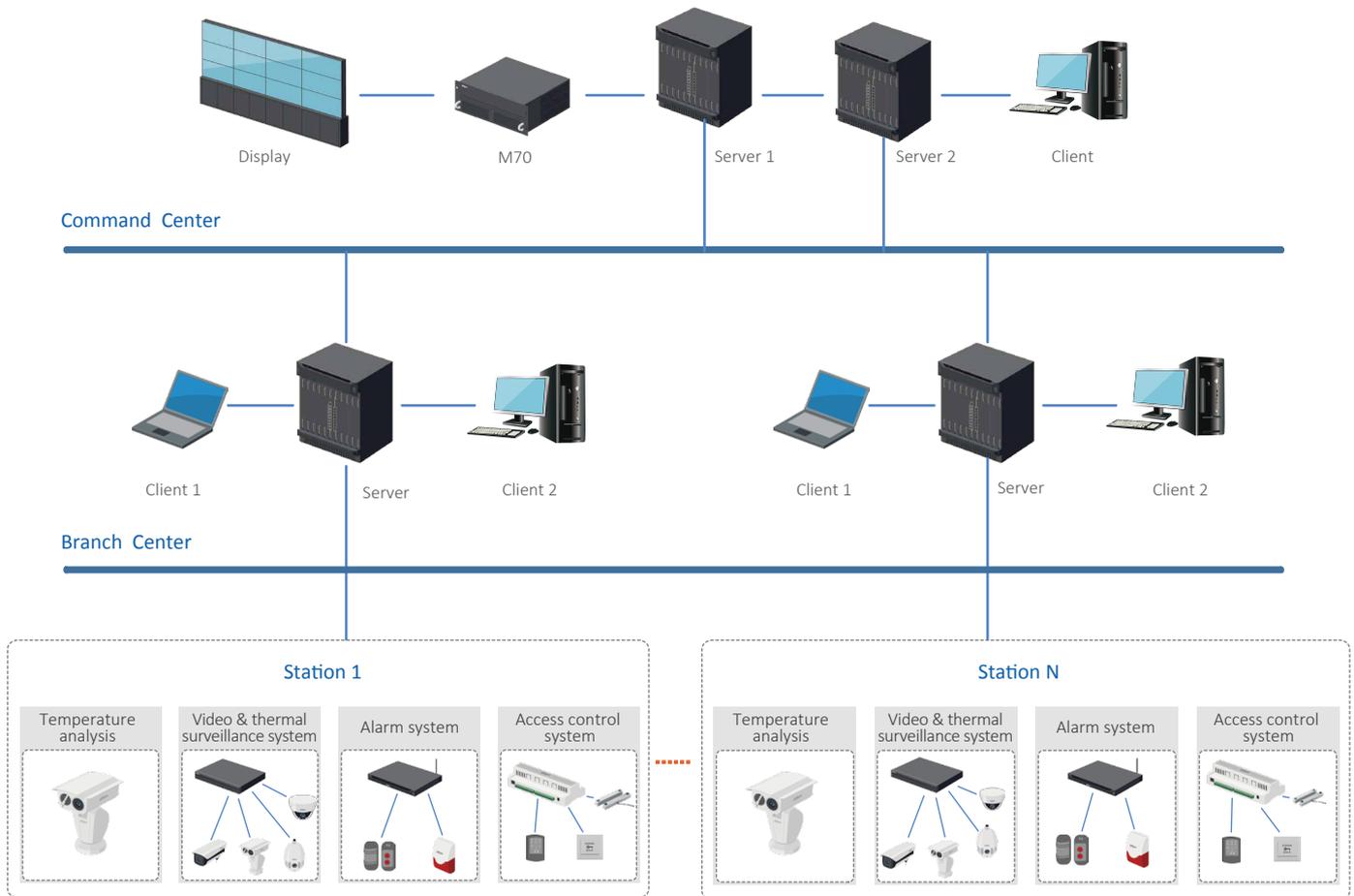
Power Rush-Repair Command

- Integrates with station devices
- Manage the video wall
- Make linkage between different devices
- Display video and information
- Remote management and control
- User management



Large screen display enabled by Dahua software allows you to better understand substation status and respond to emergencies more efficiently.

SYSTEM STRUCTURE



VMS Platform For Various Project Sizes

Smart-PSS	DSS4004/DSS7016	IAS
For small projects	For mid-size to large-scale projects	For entire electric companies
Stand alone software	All-in-one VMS platform	Software for smart-substation
No customization	Supports simple customization	Supports customization
Includes CCTV, Access control, Alarm, Video wall	Includes CCTV, Access control, Alarm, Video wall	Includes CCTV, Access control, Alarm, Video wall, Thermal analysis

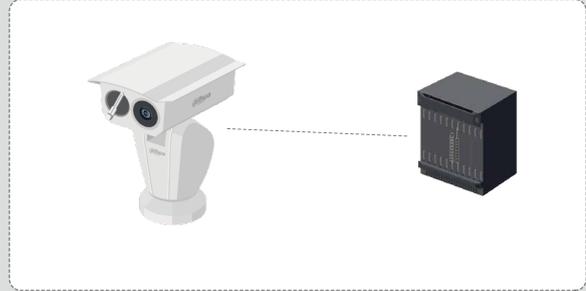
PRODUCT SHOWCASE

Video & Thermal Surveillance System



- Video and thermal surveillance system is comprised of NVR and several cameras, and accesses software through the internet.
- Cameras include IP camera, auto-tracking PTZ camera, indoor PTZ camera and thermal camera, for different applications.

Temperature Analysis



- Thermal cameras are connected directly to the server for professional analysis such as temperature curve analysis, automatic temperature measurement, reports, and historical analysis.

SD42212T-HN



- 1/2.7" 2Megapixel CMOS
- Powerful 12x optical zoom
- Supports triple-stream encoding
- Max. 25/30fps@1080P, 25/30/50/60fps@720P
- IVS
- Supports PoE+
- IP66, IK10

SD6AE830V-HNI



- 4K
- Powerful 30x optical zoom
- H.265 Encoding
- Max. 30fps@4K and 60fps@1080P
- Auto-tracking
- IR distance up to 200m
- IP67, Anti-electromagnetic interference

IPC-HFW8232E-Z



- STARVIS™ CMOS
- H.265&H.264 triple-stream encoding
- 50/60fps@1080(1920x1080)
- Smart Detection supported
- Linked to Alarm sensor
- 7mm ~35mm motorized lens
- Max. IR LEDs Length 100m
- IP67, Anti-electromagnetic interference

TPC-PT8620A-T



- 640*512 VOx uncooled thermal sensor technology
- 1/1.9" 2Megapixel CMOS
- Powerful 30x optical zoom
- Supports temperature measurement
- Max 160°/s pan speed, 360° endless pan rotation
- Up to 300 presets, 5 auto scan, 8 tour, 5 pattern
- IP66, Anti-electromagnetic interference

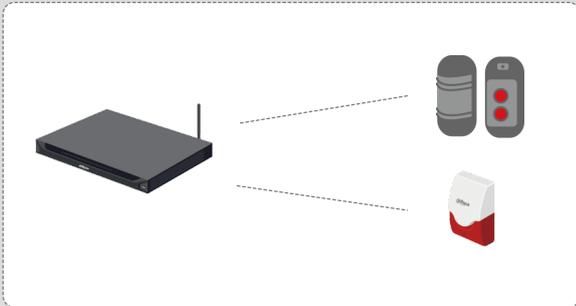
NVR608-32-4KS2



- Intel Processor
- Max 32 IP Camera & thermal camera Inputs
- Max 384Mbps Incoming Bandwidth
- Up to 12MP Resolution for Preview and Playback
- Supports RAID 0/1/5/6/10/50/60
- Smart Tracking and Intelligent Video

PRODUCT SHOWCASE

Alarm system



- Alarm system is comprised of an alarm controller, detector, and siren. Two types of alarm controllers, network controller and field surveillance unit (FSU), are also available. The field surveillance unit is customizable with temperature sensor, humidity sensor, smoke alarm, water sensor, SF6 sensor, etc.
- Dahua perimeter intrusion detector includes infrared beam detector and E-fence functionality. Third party devices are also supported out of the box.

ARC6416U-C



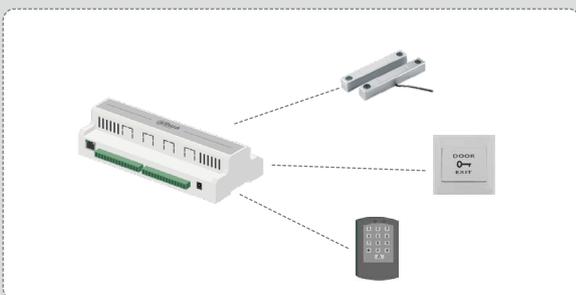
- 16 DI(dry contact) interface
- 8 AI (analog input 4~20mA) detectors, configurable threshold definitions
- 8 RS485 detectors
- 2 RS232 detectors
- 4 channel@1080P IPC
- 4 Channel alarm outputs
- Local storage, 2x3.5-inch HDD, up to 4TB for each HDD

ARC2008C



- 8 on-board zones
- 4 alarm out, expansion to 20 (ARM708,ARM716)
- 8 alarm keypad (ARK10C)
- Reliable power switch, compatible with storage battery
- Supports PSTN, IP to upload alarm signal

Access Control System



- Access control system is comprised of a controller, reader, magnetic lock, and exit button.
- The controller is the key component and accesses software through the internet. All accessories, such as ID cards, are included.

ASC1204B



- Supports multiple cards
- Supports card, password, fingerprint and combination
- TCP/IP interface to PC
- Wiegand or RS-485 interface to readers(2/4 door)
- Door time out alarm, intrusion alarm, duress alarm and tamper alarm
- Anti-pass back, multi-door interlock, multi-card open
- Surface mounted installation

SUCCESS STORIES



Kenya Power

Dahua provided a remote video surveillance system for a 220kV and 66kV power grid in Nairobi, Kenya to help improve the remote monitoring and management capabilities of Kenya's power grid, improving power supply reliability.



China Southern Power Grid

Dahua is responsible for the access and management of about 50,000 cameras on China southern power grid substations. Constructed video and environmental monitoring systems across approximately 1,000 substations ranging from 35kV to 500kV.



State Grid Corporation of China

Dahua began construction on the power grid remote surveillance system in the year 2000 and has made several rounds of upgrades since then. Performed construction and renovation on approx. 10,000 35kV- 1000kV substations. Constructed the first online thermal imaging diagnostics system for substations in China.

* Design and specifications are subject to change without notice.



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