INTEGRATED SECURITY SOLUTION FOR PUBLIC BUS

-More Secure
-More Efficient
-More Profits

Crime and Accidents Prevention
- Alarm system
- Crash detection system

Management Efficiency
- Fleet tracking
- E-fence

Profit Enhancement
- Fare printer integration
- Automatic Wi-Fi upload

CUSTOMER CHALLENGES IN PUBLIC BUS

Security Concerns

Crime and accidents (vandalism, pickpocketing, traffic incidents)
Irregular driving behavior (fatigue driving, over-speed, sharp turn, rapid acceleration, idling)
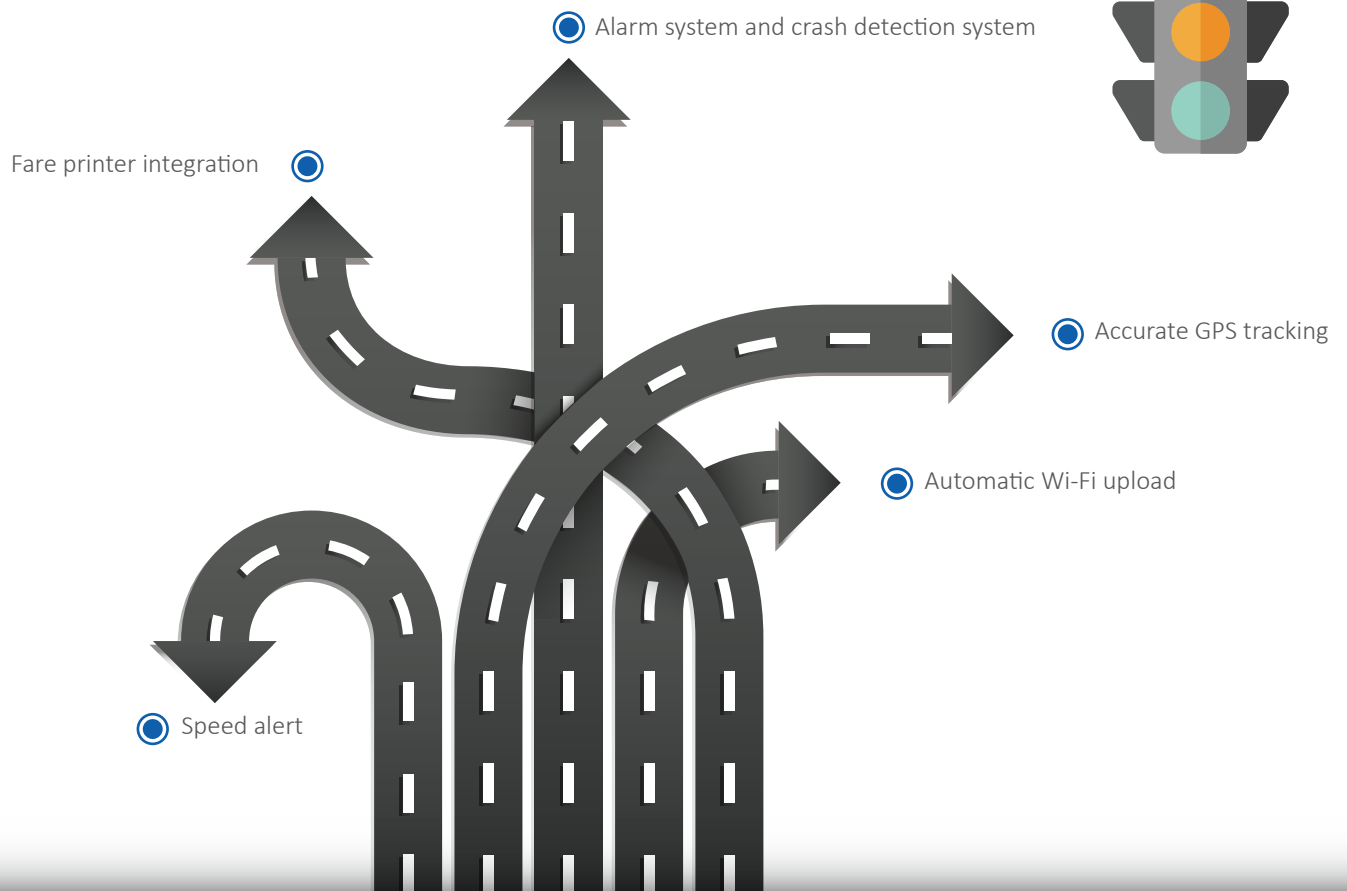
Management Efficiency
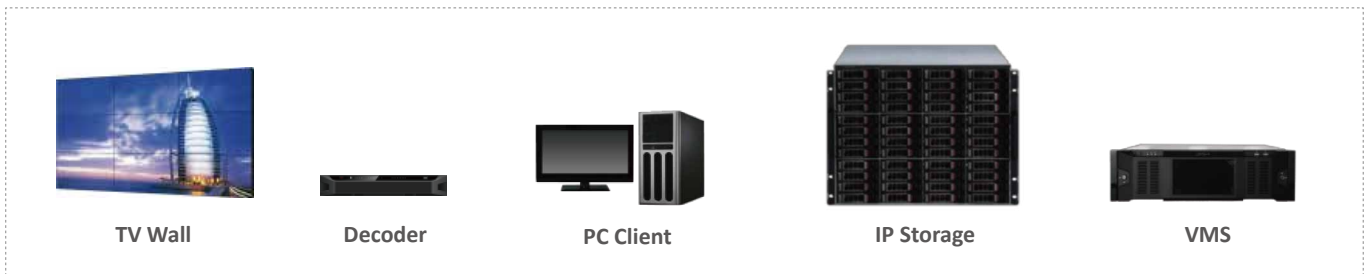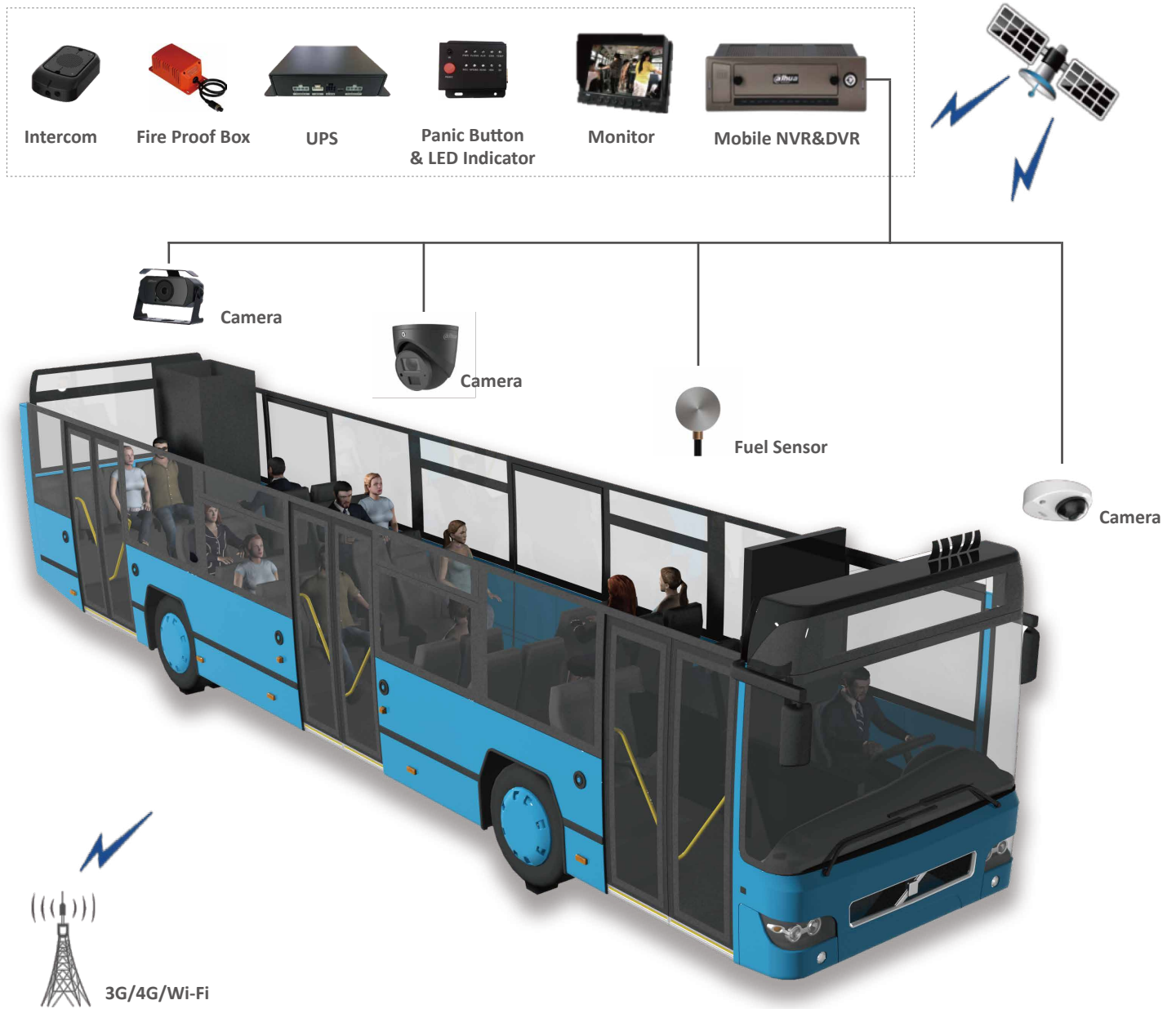
Fleet tracking
Bus scheduling

More Profits

Controlling measures of fare fraud
Reduce network traffic cost

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Challenges

CORRESPONDING SOLUTION

Alarm system and crash detection system

Fare printer integration

Accurate GPS tracking

Automatic Wi-Fi upload

Speed alert

PUBLIC BUS DEVICE LAYOUT

Overview

| Intercom | Fire Proof Box | UPS | Panic Button & LED Indicator | Monitor | Mobile NVR&DVR |

Camera

Camera

Fuel Sensor

Camera

3G/4G/Wi-Fi

| TV Wall | Decoder | PC Client | IP Storage | VMS |

- **Onboard surveillance:** IP/ HDCVI/ Analog camera and Mobile NVR/ DVR

- **Data transmission:** 3G/ 4G and Wi-Fi network

- **Control center:** VMS/ Central Storage/ TV wall

SOLUTION DETAIL

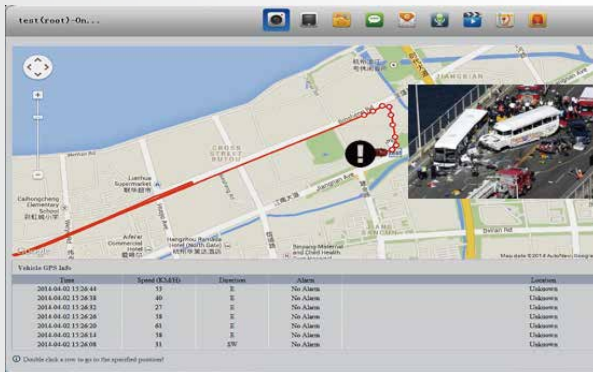## Alarm System and Crash Detection System

Various alarm detectors connected with mobile DVR help to safeguard passengers and driver against pickpocket, vandalism, robbery and crash accident.

• Alarm Report

Control center can be notified through the 3G or 4G network immediately once the onboard incidents happened.

3G/4G
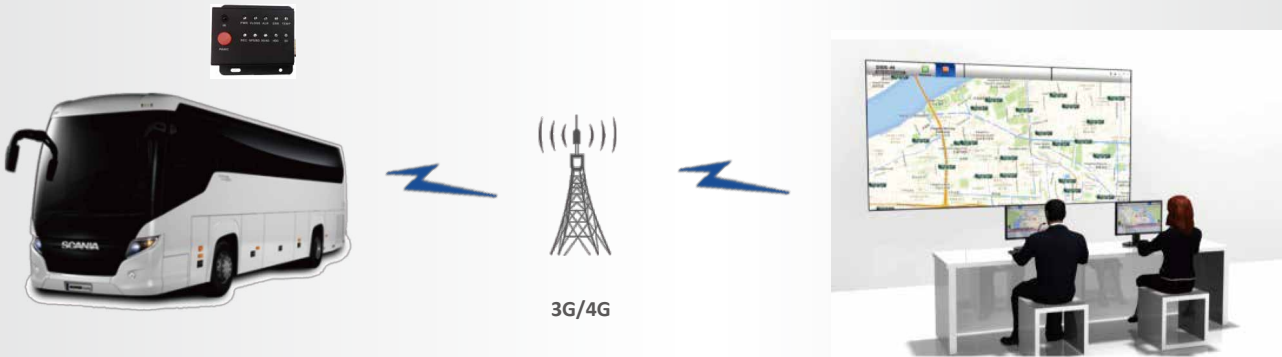
• Crash Detection System

Built-in 3 axis G-sensor

Mobile DVR equipped with G-sensor inside is able to detect vehicle collision or crash accident and push an alarm to notify the control center.

Fare Fraud

Fare printer integration and fare amount statistic report everyday automatically to avoid fare fraud.

Fleet Tracking

• Various zone like speed limit zone, driving zone, forbidden zone, departure zone and arrival zone can be set on the client e-map to correct limit driving route.

• **Support:** Google online map, Google offline map, Raster map.


Speed Alert

Getting updates and alerts on bus location , direction , speed so that control center can intervene driver immediately with audio talk once abnormal situation happens.

Cost Effective Network Transfer

Automatic Wi-Fi upload

When the vehicles arrive at the terminal station , the mobile NVR can switch from the 3G or 4G network to the Wi-Fi network and backup the data to the control center saving the network traffic cost.
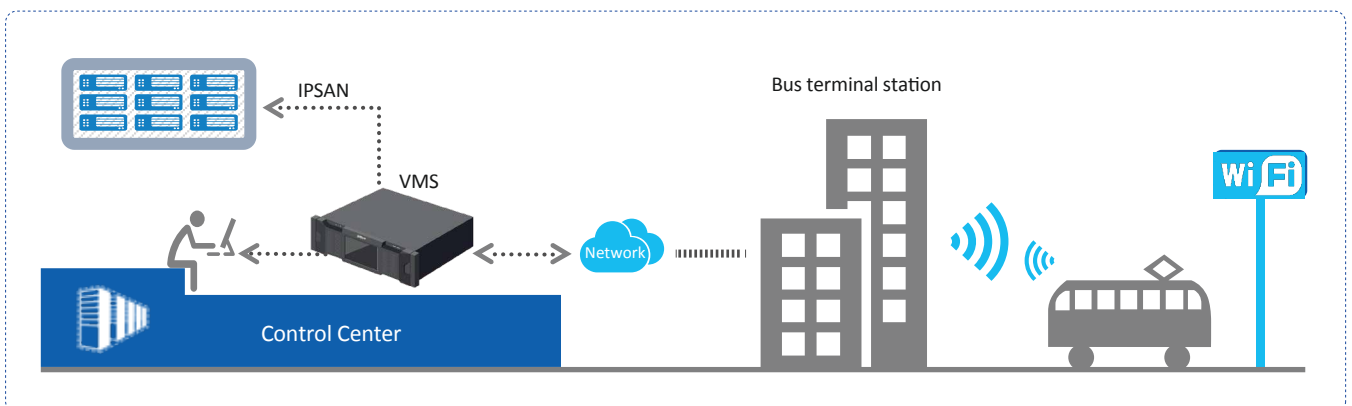
HIGHLIGHTED TECHNOLOGY

Anti-vibration

When the vehicle is running on the road, the onboard shock and vibration are the main causes of HDD damage and video footage loss. Dahua mobile devices comply with **ISO 16750-3** and **EN50155** to protect the system from electrical surge and vibration.
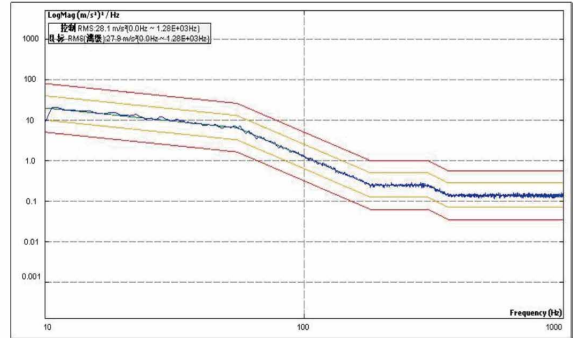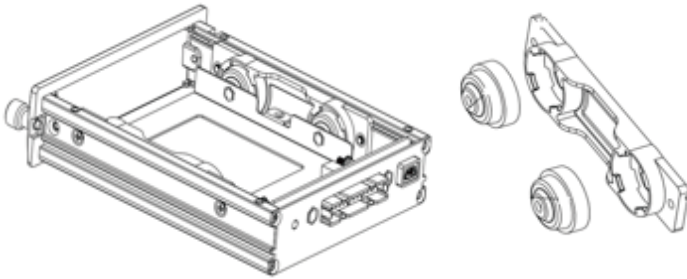
Power-off Protection

• Super-capacitor is applied to achieve smooth swith off in case of sudden system power down thus to avoid data loss and extend the hard disk lifespan.

• It keeps working about **5 sec after power off.**

• Dahua devices have already passed standards **ISO7637-2.**
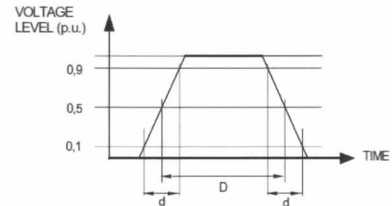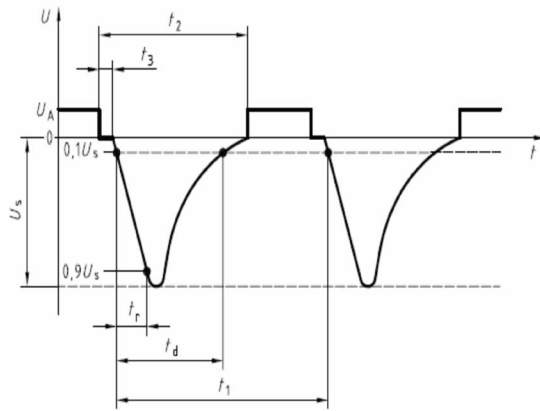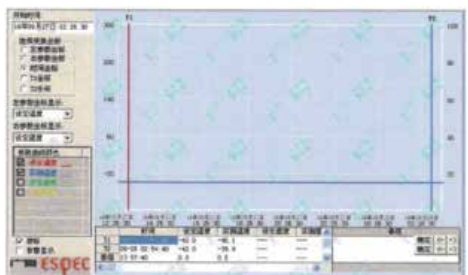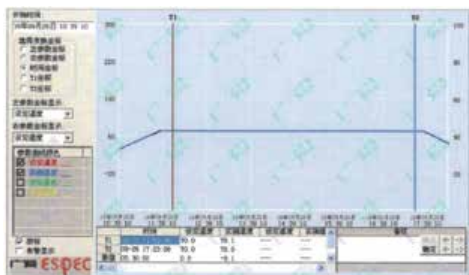
• Wide voltage input **6-36V.**

Figure 1: Test waveform

Table 1: Supply overvoltage($Un=24V$)

Voltage level min.	Duration d max.	Duration D max.	Series Resistor (Tol. ±10%)
1.4Un	0.1s	1.0s	1 Ω

Temperature Protection

Working temperature: **-30°C (heater optional) ~ +60°C** to cater extreme working conditions inside the vehicle.

Water and Dust Resistant

Dahua offers the cameras corresponding to water and dust resistant, with **IP6K9K-rating.**

G-sensor

Built-in G-sensor inside can help users to detect the vehicle turnover and collision immediately.
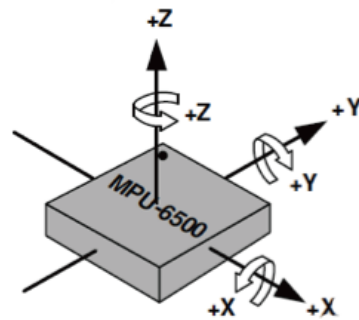
Smart Scene Adaptive

unique image processing technology makes the camera to suit different light conditions automatically .

WDR

• The WDR function is extremely useful in vehicle doors and spaces near windows to get clear enough images.
• Up to 120dB Wide Dynamic Range to capture a optimized image quality even in high contrast sunshine environment。

PRODUCTS

IPC-HDBW4231F-M/M12

- 1/2.8" 2Megapixel progressive scan STARVIS™ CMOS
- 50/60fps@2M(1920×1080)
- WDR(120dB), Day/Night(ICR), 3DNR,AWB,AGC,BLC,
- 2.8mm fixed lens (3.6mm, 6mm optional)
- Max. IR LEDs Length 20m
- Micro SD memory, IP67, IK10, PoE

MNVR1104

- Up to 4 channel with 1080P realtime live view
- VGA/TV simultaneous video output
- Support 1 SATA HDD, 2 USB2.0
- Aviation connectors adopted(Optional)
- Multiple monitoring: Web viewer, CMS(DSS) & DMSS

HAC-HDBW2231F-M

- WDR(120dB), 3DNR
- Max 30fps@1080P
- HDCVI output (Aviation connector)
- 3.6mm fixed lens (2.8mm, 6mm optional)
- Max. IR length 20m, Smart IR
- IP67, IK10, DC12V
- Shock-proof

HAC-HMW3200

- Max 30fps@1080P
- HDCVI output (Aviation connector)
- 3.6mm fixed lens (2.8mm optional)
- Max. IR length 20m, Smart IR
- IP67, DC12V
- Shock-proof

HAC-HDW1220G-M

- Max 30fps@1080P
- HDCVI output (Aviation connector)
- 3.6mm fixed lens (6mm optional)
- Max. IR length 20m, Smart IR
- IP67, DC12V
- Shock-proof

MCVR5104

- Support HDCVI/Analog Video input
- H.264 dual-stream video compression
- Support 2 ch 1080P+2 ch 720P realtime recording
- VGA/TV simultaneous video output
- Support 1 SATA HDD, 2 USB2.0
- Aviation connectors adopted
- Multiple monitoring: Web viewer, CMS(DSS) & DMSS

PRODUCTS

PFA201W

Camera Housing
- Weight:370g
- Material: Aluminum
- Color: White
- Dimension: 180 x 125.8 x 85mm

MP06

- Working Mode: Full duplex
- Support amplifier function to drive the loudspeaker on the vehicle
- Standard aviation port
- Pickup Range: 90cm
- Working Temperature: -30°C ~+70°C
- Dimension: 109.7 x 71.3 x 27mm

MLED_BOX

- 1 panic button
- 10 indicators to show status of the MNVR
- Standard aviation port
- Dimension: 70 x 68 x 28mm

MLCDF7-E

- Resolution: 800 x 480 (LCD)
- System Format: PAL/NTSC
- Video Input: 1-channel video input. Connect to DVR
- Audio: 1-channel audio input, speaker output
- Voltage: DC6V ~ DC36V
- Power Consumption: ≤7W
- Working Temperature: -20°C ~+65°C
- Screen Dimensions: 198.4 x 138.7 x 31mm

QE-AU

- Memory Particles: MLC
- Capacity: 64GB
- Interface: USB
- Dimensions: 137 x 70 x 56mm
- Refractory Period: 950°C@20min/1100°C@15min
- Waterproof: 100m@240hour

MUPS-02Li

- Cycle Life: ≥300 times
- Input Voltage: DC 6~36V
- Output Voltage: DC6~36V
- Capacity: 7.4V@5200mAh
- Working Environment: Charge(0~45°C) , Discharge(-20~60°C)
- Dimension: 122.4 x 32 x 132mm

PRODUCTS

DSS7016

• Support distribute and cascade deployment
• Support hot standby for master server
• Support N+M hot standby for slave server
• Up to 20 slave server can be managed per master server
• Support up to 5-level cascade
• Up to 300TB can be connected via ISCSI per server

EVS7048S-R

• Max 1536Mbps Incoming/recording Bandwidth
• 48 HDDs, SAS/SATA, Hot-Swap
• Supports RAID 0/1/3/4/5/6/10/50/60/JBOD, Hotspare
• iSCSI and Mini SAS for Expanded Storage Space
• Support standard iSCSI Protocol Storage
• Modular&Cableless Design
• Redundant Power

DHL460UCM-ES

Industrial level DID LCD panel, suitable for extensive 7×24 continuous works
• Ultra-narrow side LCD patchwork
• High contrast and high brightness greatly enhance the video layering, and present the details of the video
• High fidelity digital processing, brilliant and vivid video
• Built-in 3D COMB filter and 3D Noise Reduction
• Abundant interfaces HDMI, DVI, VGA, BNC, support video loop
• Built-in picture splicing function

NVD0405DH-4K

H.265/H.264/MPEG4 video decoding
• 4ch@12M/4ch@4K/16ch@1080P/64ch@D1 decoding ability
• 1ch HDMI input, 4ch HDMI/VGA/BNC output, HDMI support Ultra HD 4K output
• Support up to 4 video-wall display units, support configuration of 1×1,2×1,2×2
• Support audio, alarm, bi-directional talk, RS485

SUCCESS CASE

Mexico

The hybrid MCVR5104 developed by Dahua was used in Mexcio city public bus.

Dahua provides a full set of solution for video surveillance management, video storage management, vehicle location tracking, GPS positioning, emergency alarm and ticket counting, to meet the comprehensive needs of crime prevention and improve income.

Thailand

Dahua's public bus solution is deployed by the Bangkok Mass Transit Authroity(BMTA).During the first phase,the solution is deployed on 2600 of the 7000 buses operated by BMTA.

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