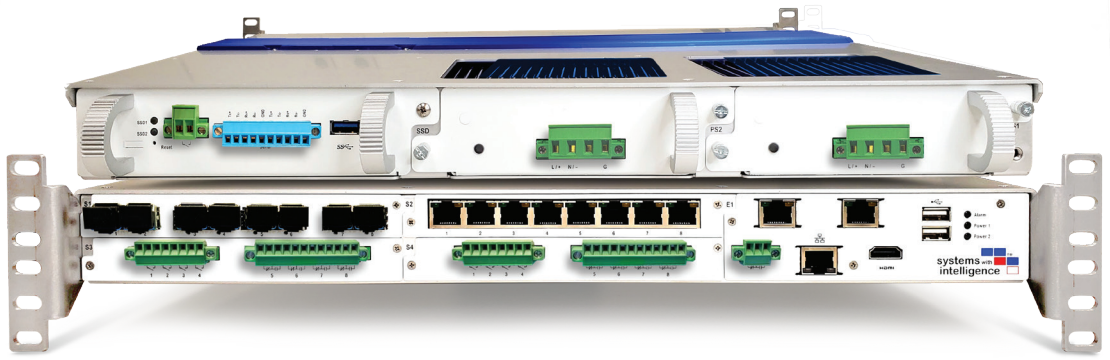
systems with intelligence™

TOUCHLESS™ MONITORING SOLUTIONS



DVS3000 SUBSTATION HARDENED DIGITAL VIDEO SERVER

FEATURES

- Designed for harsh substation environments (IEC61850-3, IEEE1613)
- Industrial rated power supply with dual power supply option
- Wide operating temperature (- 40°C to +85°C), no fans
- Integrated analytics for automatic detection of events
- Alarm and event notification

KEY BENEFITS

- Monitor critical infrastructure and remote sites
- Reduce theft and damage to physical assets
- Comply with regulatory requirements
- Easy integration with existing equipment
- Connects with existing SCADA systems

The Systems With Intelligence Digital Video Server (DVS3000) is the center piece of the solution. It is a powerful platform that records from multiple cameras and incorporates a suite of sophisticated video and thermal analytic algorithms for automated monitoring. The DVS features flexible networking capabilities and provides automated alarm and event notification to reduce the need for continuous monitoring. Local archiving up to 4 Terabytes allows for over 30 days of local storage.

The DVS3000 is easy to use, with simple “plug-n-play” functionality that minimizes installation time and costs. It can be used in new or existing installations and connects directly to most IP video cameras. The DVS3000 is ideal for applications with remote sites that are managed from a central location.

The DVS3000 has been designed specifically for harsh environments found in electric utility applications, taking into account the presence of high levels of EMI, voltage fluctuations and wide temperature ranges.

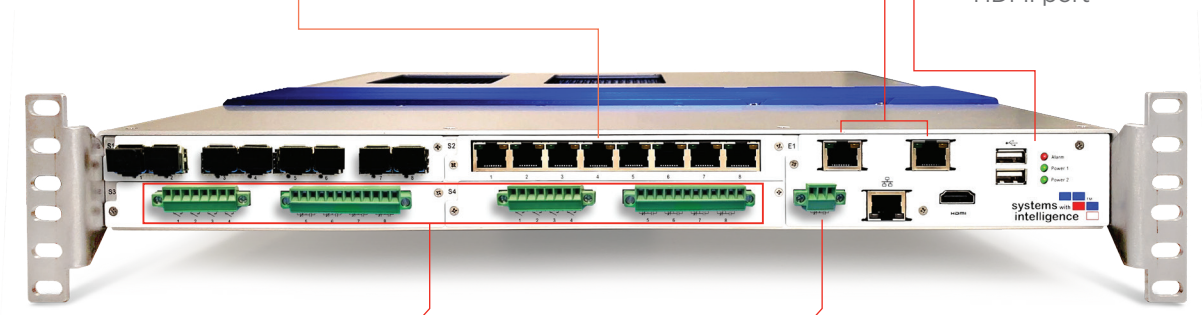
FRONT & REAR DIAGRAM

FRONT VIEW

Expansion Ports
- Ethernet Ports for IP Camera support

Dual Ethernet Ports
- Dual "switched" Ports available for redundant loops
- Multiple types of Interfaces & Connectors (Copper, Fiber)

Standard Interfaces
- 10/100/1000 Base Tx /2.5G Ethernet Port
- 2 USB Ports
- HDMI port



Digital I/O
- 4 Inputs: dry contact
- 4 Outputs: Form-C relay

Additional Features
- Fail Safe Relay

REAR VIEW

Storage
- Up to 2TB SSD
- Field replaceable

Substation Hardened
- IEC 61850-3, IEEE 1613, C37.90
- -40°C to +85°C

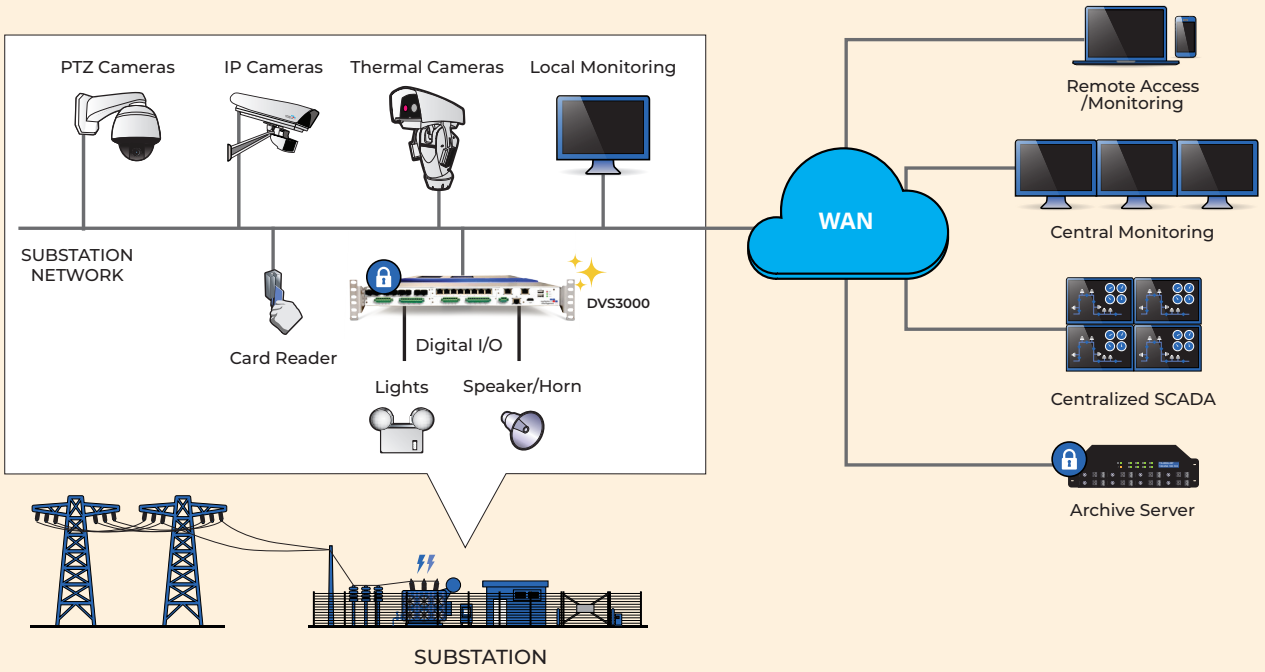
Dimensions
- 19" rack mount
- 1U height

Additional Features
- Remote Reset

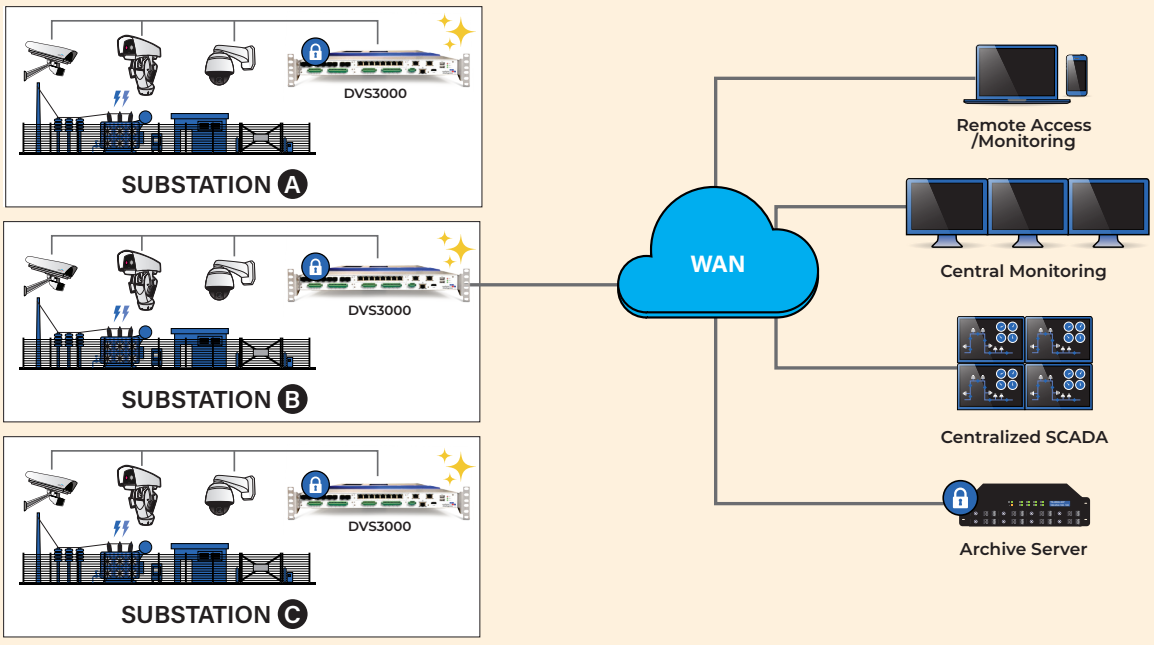
Standard Interface
- USB port
- Serial interface (RS485)

Power Supply
- Industrial rated for substations
- 20-60VDC, 105-300VDC or 85-250VAC
- Optional dual redundancy

SUBSTATION MONITORING ARCHITECTURE



DISTRIBUTED ARCHITECTURE



SMARTVMS™ VMS2000 SERVER SOFTWARE

The VMS2000 Video Management System is the software behind the video surveillance solution that consists of Server software on the Digital Video Server and Client software on a remote Windows PC. VMS2000 Server software records video images, analyzes them using unique analytics, determines if a rule has been broken, then sends real-time alerts with an image to the operator. The video is also stored in the DVS for archiving and investigation. The VMS Server software is also responsible for streaming the video feeds to the VMS Client, providing PTZ control and managing serial and digital I/O interfaces to allow integration of physical security devices.

KEY FEATURES INCLUDE:

Real-time camera monitoring and remote control over network • The VMS2000 can capture live video from up to 16 cameras that can be monitored over any IP network. Graphical web based management interface to remotely control and configure cameras.

H.264 Compression Technology • The VMS2000 supports H.264 AVC/SVC and JPEG encoding. H.264 compression provides the best image quality at the lowest possible bandwidth and storage requirement.

Alarm and Event Notification • The VMS2000 has a comprehensive set of configurable video analytic alarms and can be configured for up to ten rule sets per camera. An extensive set of system event and alarms are provided to help in the overall system management. When an alarm event occurs, the VMS2000 performs one or more of the following actions:

VMS2000 Client Main Screen.

1. Update the alarms database with a record of the time, alarm message and event image.
2. Send an alarm notification to the VMS clients.
3. Send an email notification with JPEG attachment of the event.

SCADA Integration • DNP and IEC 61850 configuration interface to enable seamless integration of alarms into third party SCADA applications.

Serial Interfaces • Up to 2 interfaces RS485 10-pin connector) .

Digital I/O • Utilize up to 16 of the various types of digital I/O available on the DVS. The user can then incorporate control logic into the video surveillance system. Inputs from the video analytics can be included in the rule sets, while outputs can be used to control other devices (such as turning on lights or sounding a horn).

VIDEO ANALYTICS

The Systems With Intelligence solution incorporates sophisticated, easy-to-use video and thermal analytics algorithms that allow for automated and unattended monitoring of critical infrastructure. These algorithms can identify various types of incidents, such as motion detection, perimeter violations and loitering. Thermal cameras can monitor the operating temperatures of assets. Temperature analytics monitor defined regions in the field of view for absolute or comparative temperature values and send alerts for out-of-range events.

For electric utility applications, where much of the critical infrastructure is dispersed over a wide geographic area, the use of video analytics makes it possible to monitor many remote sites simultaneously without placing undue burden on operators or other staff.

The analytics developed by Systems With Intelligence work on fixed cameras, PTZ cameras and thermal cameras. Thermal analytics include the following:

- Temperature is out of the specified range
- Temperature differential between two regions is out of range
- Temperature rate of change is out of range
- Three-phase temperature differential

OTHER BENEFITS WITH VIDEO ANALYTICS

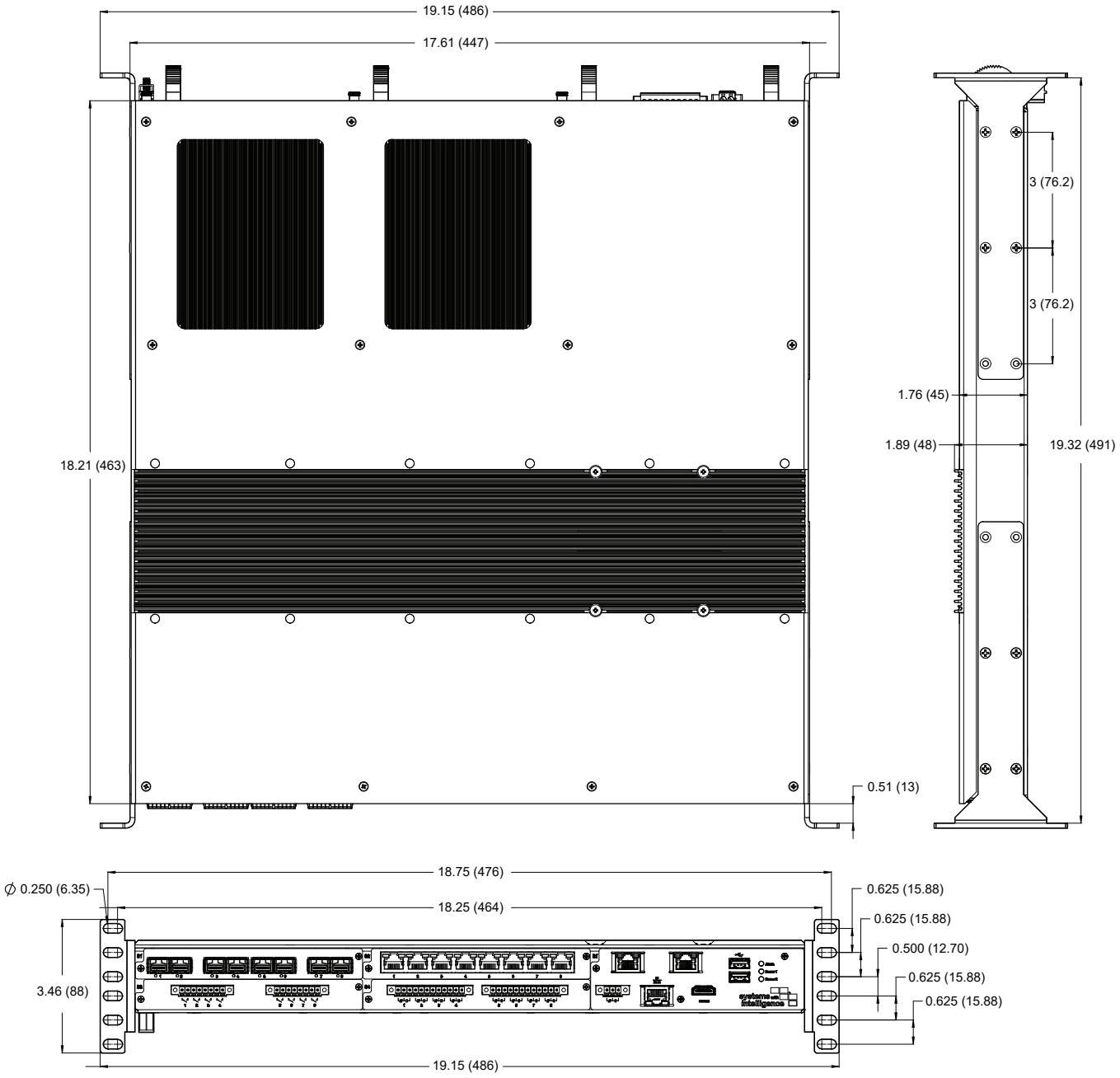
Reduce Network Bandwidth • Streaming video over a network gives rise to many bandwidth and network resource issues. In many cases, and in particular for remote locations, continuously streaming video over a wide area network is not practical. In this case, video analytics can be used to decide when to transmit video. For example, when a person enters a field of view where no one should be present, a small video clip can be transmitted to an operator for remote viewing. Bandwidth and network resources are preserved and only used when an event of interest occurs. Video analytics can provide effective monitoring of remote locations that may only have limited network connectivity available.

Reduce Video Storage Requirements • Storage optimization is a common use for video analytics. In its simplest form, video analytics examine video feeds to identify changes in motion. Based on the presence or absence of motion, the video management system can decide not to store video or to store video at a lower frame rate or resolution. Since surveillance video captures long periods of inactivity, like at unmanned substations, using video analytics can reduce storage consumption by 60% - 80% relative to continuous recording. Recording only when an event has occurred also results in the ability to quickly search and retrieve specific security events in post-event analysis.

TECHNICAL SPECIFICATIONS

SPECIFICATIONS	
IP Cameras	• Up to 16 IP cameras can be connected to the DVS • H.264 video streaming • HD and megapixel images supported
Video Output	• 1 HDMI interface for monitor
USB Ports	• 2 USB ports 2.0 + 1 USB port 3.0
AI Support Hardware	• Edge TPU ML Accelerator
Serial Ports	• 2 Serial interfaces RS485 via 10 pin connector
Storage	• Up to 2TB using solid state drives
LAN Interface	• Included: 1-port 10/100/1000TX RJ45 Interface/2.5Gbs • Optional: 2-ports 10/100/1000TX RJ45 or 100FX Fiber Interface
CPU	• Intel® Core™ i3-1115GRE Processor, 6MB Cache, 3.90 GHz
Power Supply	• 20-60VDC, 105 -300VDC or 85-250VAC; Optional dual redundant power supplies
Power Requirement	• 100W(max)
Operating Temperature	• -40˚C to +85˚C; no cooling fans
EMC/EMI	• IEC 61850-3; IEEE 1613; IEC 61000-6-2; IEC 61800-3
Mounting/Dimensions	• 19” Rack Mount; 1U height
Warranty	• 2 Years

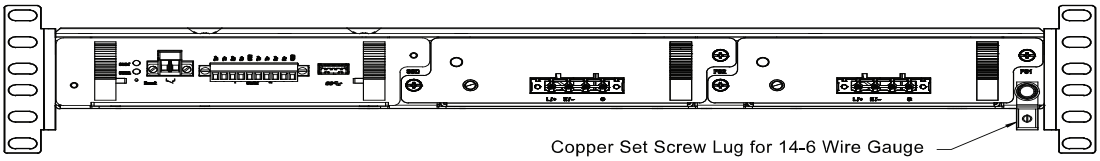
DIMENSIONS Unit: inches (mm)



***Note:** Minimum rack depth required to install the DVS3000 is 22 inches.

CONFIGURATION

SmartDVS™ DVS3000 DIGITAL VIDEO SERVER



BASE UNIT

DVS3000	Base Unit - I3 1115GRE, 4 Core, 2.2 GHz Processor, 8GB DDR4 Memory

PS1, PS2 - Power Supply

HIS	105-300VDC or 85-250VAC, Phoenix connectors
LDC	20-60VDC, Phoenix connectors
XXX	None

E1 - Switched Ethernet Port

2C10	2 x 10/100/1000Tx, RJ45
2LC1	2 x 100FX - Multimode, 1310nm, LC
2LC2	2 x 100FX - Singlemode, 1310nm, LC
EXXX	Empty

HD - Flash Drive for Storage

HD01	1TB SSD (approximate size)
HD02	2TB SSD (approximate size)
HD04	4TB SSD (approximate size)
HDXX	Empty

S1, S2 - Camera Input Module

8C01	8x 10/100TX Port IP Camera Input Card, RJ45 Interface
8LC1	8x 100FX Port IP Camera Input Card (LC, Multimode, 1300nm)
8LC2	8x 100FX Port IP Camera Input Card (LC,Singlemode, 1300nm)
8F00	8x 100FX Port IP Camera Input Card (SFP - Blank)
SXXX	Empty

***Note:** SSD Flash Drive sizes are approximate and subject to change without notice. Contact factory for exact size.

ORDER CODE EXAMPLE

DVS3000-HIS-HIS-2C10-HD002-8LC1-SXXX-4D01-4D01

SmartVMS™ VMS2000 SERVER SOFTWARE

VIDEO MANAGEMENT SOFTWARE

VMS2000S	VMS2000 Server Software that resides on the DVS

Contact Systems With Intelligence for VMS2000 Server software camera licensing options.

(1) **IP CAMERA NOTES:**

- The IP Camera Input Modules in the S1, S2 option slots will provide direct connection from an IP camera directly to the DVS which will reduce overall network bandwidth requirements.
- Contact Systems With Intelligence for the latest list of supported IP cameras.

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