



**Countywide ATMS – DMS Phase 1 –
Seminole County RFP**

**Reference Document 6:
*Proprietary Product Certifications***



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
PROPRIETARY PRODUCT CERTIFICATION

630-020-07
PROGRAM MANAGEMENT
05/16

To: Mario Bizzio, P.E.
Design Engineer

Date: 10/10/2018

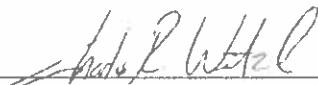
Financial Project ID: 441211-1-32-01 New Const. RRR
Federal Aid Number: D518-025-B
Project Name: Countywide ATMS - DMS Phase 1 - Seminole County
State Road Number: Various Roadways Co. / Sec. / Sub: Seminole County - Countywide
Begin Project MP: N/A End Project MP: N/A
Full Federal Oversight: No Yes Note: If Yes, submit to FHWA Director

A justification and all supporting documents must be attached to this document.
Mark the appropriate certification:

"I, Charles Wetzel, County Traffic Engineer of the Seminole County
Print Name of Initiator Position Title Name of Agency

do hereby certify that in accordance with the requirements of 23 CFR 635.411(a)(2),
Mark appropriately (choose only one option):

- that this patented or proprietary item is essential for synchronization with existing highway facilities
- that no equally suitable alternative exists for this patented or proprietary item.

Signature  Date 10/10/18

For Department Use Only

"I, JAMES S. STROZ, JR., DIST. TRAFFIC OPS ENGINEER
Print Name Position Title

of the Florida Department of Transportation, do hereby approve this certification request made in accordance with the
requirements of 23 CFR 635.411(a)(2).
Mark appropriately (choose only one option)

- that this patented or proprietary item is essential for synchronization with existing highway facilities.
 - that no equally suitable alternative exists for this patented or proprietary item."
- Identify any conditions and limitations.

Signature  Date 10/29/18

Financial Project ID: 441211-1-52-01

Federal Project Number: D518-025-B

Name of Initiator: Charles Wetzel P.E., Seminole County Traffic Engineer

ITEM	Patented or Proprietary Item is Essential for Synchronization with Existing Highway Facilities	No Equally Suitable Alternative Exists for this Patented or Proprietary Item	APPROVED	NOT APPROVED	IN SEMP
Cyber Key Electronic Keys, Cylinders, and Keyparts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bosch CCTV Cameras, Autodome VG5-ITS720P-30X4 and VG5-ITS1080P-30X4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Daktronics Dynamic Message Signs, Full Color Vanguard VF-2420-80x240-20-RGB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



James S. Stroz, Jr, P.E.

District Traffic Operations Engineer

PUBLIC WORKS DEPARTMENT
TRAFFIC ENGINEERING DIVISION



October 10, 2018

Mr. Mario Bizzio, P.E.
FDOT District Five Design Engineer
719 South Woodland Boulevard
Deland, Florida 32720

Subject: Proprietary Product Certification Justification Letter & Backup Documentation
FPID: 441211-1-32-01
Countywide ATMS-DMS Phase 1 – Seminole County
(CyberLock electronic key and lock system for ITS Cabinets)

Dear Mr. Bizzio,

Please see the attached Proprietary Product Certification Form 630-020-07 completed in accordance with Procedure 630-020-005 adopted on August 20, 2014. Please also see the required justification below:

1) Description of the project need for the proprietary product.

- a. Project Description: The 441211-1-32-01 project includes the installation of an Intelligent Transportation System (ITS) at various locations in Seminole County. Much of the proposed high value technical equipment will be installed in metallic cabinets along the roadside.
- b. Equipment Security: Typical cabinet locking systems include only a generic key (No. 2). Unfortunately this is a very common key which many unauthorized personnel own and carry. The use of an electronic key system greatly reduces, if not completely eliminates, unauthorized access to Seminole County owned equipment on the roadways.
- c. Compatibility with Existing Electronic Key Systems: Seminole County has already installed the CyberLock product by CyberLock, Inc. included in this Proprietary Product Certification request, as shown in the attached Exhibit A. In order to utilize the existing infrastructure (i.e., key programming software and hardware, existing electronic keys, and existing spare part inventory), it is imperative to use the same product on this project.
- d. Proprietary Product Description: The Cyberlock electronic key and lock system includes the following primary components:
 - i. Electronic Keys
 - ii. Electronic Cylinders (Locks)
 - iii. Electronic Keypoints (Remote key programming access points)
 - iv. Software

2) Factual and technical supporting evidence for Synchronization.

- a. Function: the proprietary product is necessary for the satisfactory operation of the existing facility.
 - i. The proposed product sheets are included with this letter as Exhibit A.

- ii. This product is the same product already in use and is guaranteed to be compatible with the existing infrastructure.
- b. Logistics: the proprietary product is interchangeable with products in Seminole County's existing maintenance inventory.
 - i. This product is the same product already in use, and is guaranteed to be interchangeable with the existing maintenance inventory.
- c. Training costs for staff, such as significant training required to effectively maintain and operate an unfamiliar product.
 - i. The current Seminole County staff are familiar and trained to use the existing product. By proposing the same product, no additional training costs are anticipated.

3) Explanation how the evidence links it to the project need.

- a. This Cyberlock system has been implemented by Seminole County on all ITS cabinet locations and electronic keys have been distributed to Seminole County ITS Maintenance employees and contractors for tracked use in accessing existing field cabinets. The Project Manager confirmed that Cyberlock is the Manufacturer of the existing electronic key and lock system currently in use.
- b. Exhibit A, the attached product specifications sheet for Cyberlock, details the proposed electronic key and lock system.

4) Factual and technical supporting evidence that no alternatives are available.

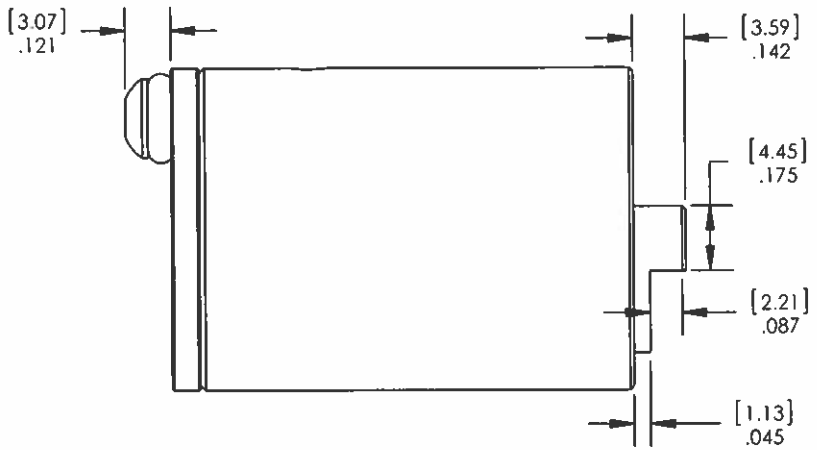
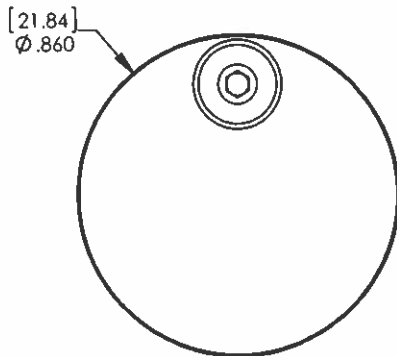
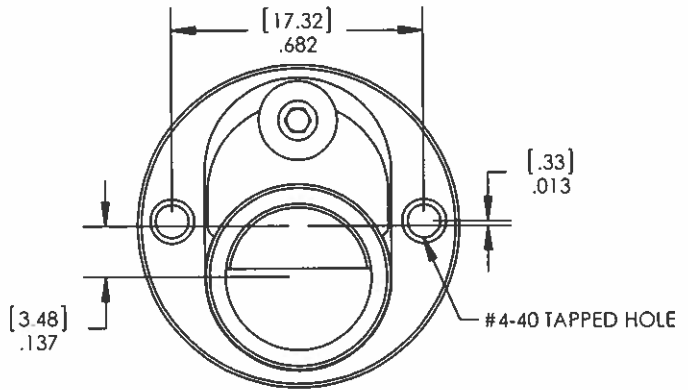
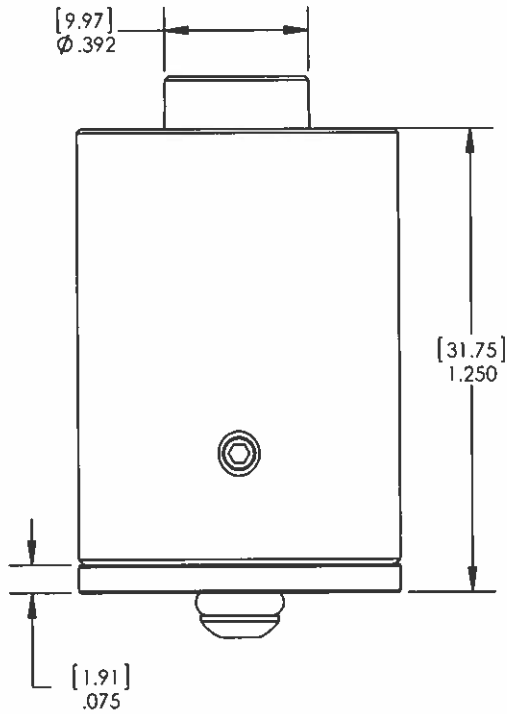
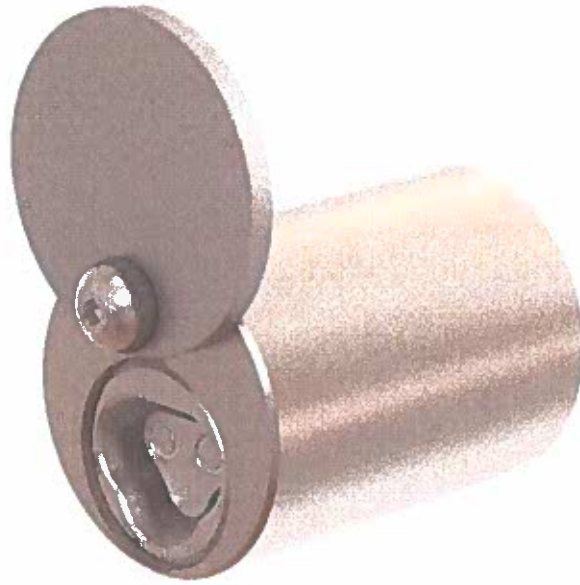
- a. In order to be compatible with the existing CyberLock electronic key and lock system, a CyberLock electronic key and lock system must be used on this project.
- b. There are no alternatives that are compatible with the existing CyberLock electronic key and lock system currently being utilized by the Department for ITS cabinet security.

If you have any questions please feel free to contact me at (407) 665-5686 or via email at cwetzels@seminolccountyfl.gov.

Sincerely,



Charles R. Wetzel, P.E., PTOE
County Traffic Engineer
Seminole County Public Works / Traffic Engineering
140 Bush Loop
Sanford, FL 32773



D:\AWING\LAST SAVED: Tuesday, May 08, 2012 10:25:37 AM MODEL LAST SAVED: Friday, March 30, 2012 5:40:21 PM

PART NUMBER	CL-TC1
1105 NE CIRCLE 31-2 CORVALLIS, OR 97330 (541) 738-6500	Proprietary Information of Videx Unauthorized copying, reproduction, or disclosure to others by any means without express written consent.

DESCRIPTION
TRAFFIC CABINET LOCK

DATE CREATED	REV
5/8/2012	A

Electronic Cylinder Features

- Contains a unique ID that cannot be changed or duplicated
- Has the ability to store over a thousand access events
 - Key ID
 - Date & Time
 - Event Type
- Retains encrypted access codes that bind the lock to a specific system
- Contains a list of blocked keys
- Can be installed indoors or outdoors

CyberLock is a revolutionary electronic key-centric locking system designed to track and control access.

Step 1

Replace existing mechanical cylinders with CyberLock cylinders. Each CyberLock is an electronic version of a standard mechanical lock cylinder. Installation is as simple as removing the original cylinder and replacing it with a CyberLock cylinder. Installation requires no wiring nor batteries, making installation quick and easy.



Step 2

Assign a CyberKey to a user. Keys are programmed with access privileges for each user. A standard key holds a list of locks the user may open, with a schedule of days and times when access is allowed. For instance, the key can be programmed to allow access from 8 a.m. to 6 p.m. on weekdays and 10 a.m. to 4 p.m. on Saturdays. It can also be programmed to expire on a specific date at a specific time for increased security.



Step 3

Access locks. When a CyberKey meets a CyberLock, the cylinder is energized and an information exchange occurs to determine if the key has access to that specific cylinder. The event and time is stored in both the lock and key. Lock cylinders and keys also record when an unauthorized attempt to open a lock occurred.

Step 4

Download audit trails and update keys via Communicator devices. Expiring keys regularly ensures users frequently update their keys. When validating keys, the system downloads the audit trail and uploads new access privileges to the key. An expired key will not work until it is updated.



Step 5

View audit trail. The CyberLock system is managed centrally through CyberAudit software. Customized audit reports and automatic notifications on suspicious activities can be automatically generated via email.

Key Name	Lock Name	Date/Time	Status
Joe Wilson	East Entrance	8/20/2016 06:14:22 AM	Denied
Abby Chaney	West Entrance	8/20/2016 07:28:03 AM	Key Authorized
Pete Sussman	Records Room	8/20/2016 07:59:15 AM	Out of Schedule
John Michaels	Computer Room	8/20/2016 08:00:03 AM	Key Authorized
Evelyn Lefler	West Entrance	8/20/2016 08:12:16 AM	Key Authorized
Juanita Banks	Computer Room	8/20/2016 08:18:52 AM	Key Authorized
Andy Dunsmore	Computer Room	8/20/2016 08:27:12 AM	Denied



CyberLock is an innovative lock system that seamlessly converts existing mechanical locks into a full-featured access control system consisting of:

- CyberLock cylinders
- CyberKey smart keys
- Communication devices
- CyberAudit management software

CyberLock Electromechanical Cylinders – High security electronic lock cylinders provide beyond-the-door capabilities.

Design

Over 370 electromechanical cylinders have been designed for doors, cabinets, padlocks, containers, equipment, safes, and more.

- Cylinders retrofit into existing mechanical hardware.
- No wiring or battery required at the lock.
- Controlled access with audit trails provided even during power outages.
- The most recent 1100 access events are saved to cylinder memory.

Security

Unlike mechanical pin-based locks, CyberLock cylinders have a unique design that negates standard lock picking tools.

- Encrypted access codes bind cylinder to one system.
- Unchangeable unique ID within each cylinder cannot be duplicated.
- Multiple high-security options are available.

CyberKey Programmable Smart Keys – Electronic keys store individual key holder access permissions.

Design

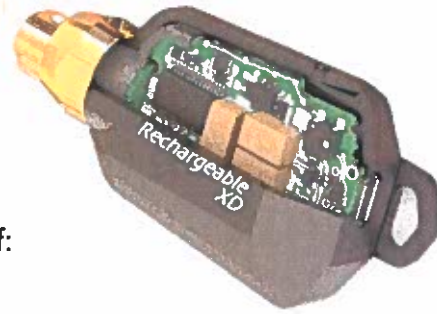
Efficiently packaged in highly durable fiberglass-reinforced cases.

- Power from key energizes cylinders.
- Rechargeable or replaceable battery options are available.
- Saves thousands of access events to key memory.

Security

Administrators may set expirations to minimize risk due to lost or stolen keys.

- Keys contain encrypted access codes that bind key to one system.
- Scheduling can range from standard to custom schedules.
- Keys cannot be duplicated.



CyberLock[®] Flex System

The Flex System enhances the CyberLock product line by adding the capability to control a variety of access control and security elements using both Flex System modules as well as third party access devices:



Open a door



Activate a light



Sound an alarm



Activate a camera

How does Flex work?

The Flex System is comprised of a variety of modules that can be mixed and matched to create a custom access control system. The modules are plugged into a Hub which is directly connected to CyberAudit management software.

The Flex System Hub

The Flex System Hub connects with CyberAudit software and provides power to the Flex System modules. Embedded memory in the Hub stores access permissions and saves audit trail information, enabling continuous operation even when a network connection to the software is interrupted. Moreover, power outages can be mitigated by connecting a back up battery or auxiliary power source directly to the Hub.



The Flex System Modules

There are a variety of Flex System modules available for a customized access control system:

- Input modules such as RFID readers and Keypad Displays can be used individually or combined for dual-credential door access.
- Weather resistant key vault modules can be installed in the field to securely store CyberKeys for convenient remote employee access.
- The multi-function Keypoint module simultaneously activates electric door strikes and updates CyberKeys.



The Flex System Door & I/O Module

The Door & I/O module expands the capabilities of the Flex System even further. As a door controller, it provides power to an electric door strike and unlocks it when an approved key card is presented. It has additional inputs and outputs that can control relay devices such as alarms, speakers, cameras, or sensors. Finally, it can connect to compatible third party Wiegand devices such as HID readers and biometric scanners.



CyberLock® in Action



Increasing Service, Efficiency, and Quality

New Zealand Post uses subcontractors to collect mail from 5000 street receiver boxes throughout the country. Collections are to be done on a set daily schedule, but New Zealand Post had no way to determine if and when the mail was being collected. In addition, any lost key required that all locks in that series of street boxes had to be replaced, at great expense. CyberLock was chosen as a cost-effective way to provide the accountability and key control they needed.

"The CyberLock system has greatly enhanced the security of our customer mail and allows us to manage subcontractor service performance."

Ian - Letter Acceptance Network Manager



Protecting Critical Infrastructures

Water treatment facilities have diverse access control requirements that include main entrances, storage areas, office doors, gates, computer cabinets, and restricted chemical areas. To meet EPA water security guidelines and increase facility security, Collier County Water Department selected CyberLock for its versatility, increased security features, and ease of installation.

"With CyberLock, we can provide substantial proof to the Health Department and EPA that we are diligent in our efforts to secure our facilities and keep the public water supply safe." James - Technical Support Professional



Accounting for the Cash

The transit authority in the greater Cleveland area had a problem with misplaced keys to the fare boxes on their buses. A review of the collection reports indicated that a significant amount of money was not making it to the bank. Although there was no way to detect if these missing keys were being used to raid the fare boxes, their absence provided a wide hole in loss prevention efforts. The CyberLock system was selected because it addressed their primary concerns of key control.

"The bottom line is that the collected revenue ratio has increased and employee productivity has improved." Scott - Transit Police Officer

CyberLock, Inc.

1105 N.E. Circle Blvd., Corvallis, OR 97330

541-738-5500 • Fax 541-738-5501

www.cyberlock.com • sales@cyberlock.com

[CyberLock](#)[Flex System](#)[CyberKey Vault](#)[CyberPoint](#)[FlashLock](#)[Software](#)[Photos & Specs](#)[Overview](#)[Smart Keys](#)[Standard Cylinders](#)[Custom Cylinders](#)[Standard Padlocks](#)[Custom Padlocks](#)[Safe Locks](#)[CyberPoint](#)[Communicators](#)[CyberKey Vault](#)[Flex System](#)[Accessories](#)[Software Devices](#)

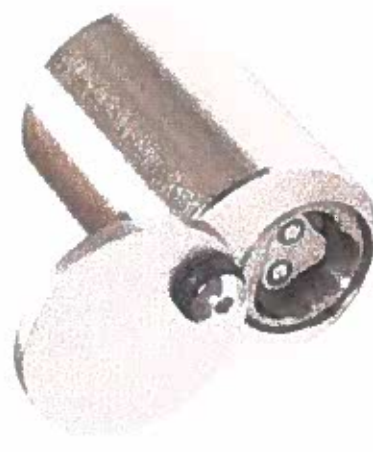
CyberLock Products

Traffic cabinet lock

CyberLock electronic cylinders are manufactured to the exact dimensions of the mechanical lock cylinders they replace. The absence of a conventional keyway means it is not vulnerable to traditional lock picking techniques. The cylinders are powered by CyberKey smart keys and require no power or wiring for installation.

Electronic Cylinder Features

- Installs without power or wiring
- Contains a unique ID that cannot be changed or duplicated
- Has the ability to store over a thousand access events
 - Key ID
 - Date & Time
 - Event Type
- Retains encrypted access codes that bind the lock to a specific system
- Contains a list of blocked keys
- Can be installed indoor or outdoor



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PUBLIC WORKS DEPARTMENT
TRAFFIC ENGINEERING DIVISION



October 10, 2018

Mr. Mario Bizzio, P.E. – District Design Engineer
Florida Department of Transportation
719 South Woodland Boulevard
DeLand, Florida 32720

Subject: Proprietary Product Certification Justification Letter & Backup Documentation
FPID: 441211-1-32-01
Countywide ATMS – DMS Phase I – Seminole County
(Bosch CCTV Cameras)

Dear Mr. Bizzio,

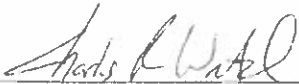
Please see the attached Proprietary Product Certification Form 630-020-07 completed in accordance with Procedure 630-020-005 adopted on August 20, 2014. Please also see the required justification below:

- 1) **Description of the project need for the proprietary product.**
 - a. Project Description: The 441211-1-32-01 project includes the installation of CCTV cameras at various intersections in Seminole County.
 - b. Compatibility with Existing Bosch Systems: Seminole County has already installed Bosch products included in this Proprietary Product Certification request, as shown in the attached Exhibit A. Seminole County currently utilizes Bosch Video Management Systems (BVMS) software to operate their cameras. It is imperative to use the same product on this project.
- 2) **Factual and technical supporting evidence for Synchronization.**
 - a. Function: the proprietary product is necessary for the satisfactory operation of the existing facility.
 - i. The proposed product sheets are included with this letter as Exhibit A.
 - ii. This product is the same manufacturer as products already in use by Seminole County and is guaranteed to be compatible with the existing infrastructure.
 - iii. The proposed product is manufactured to work with BVMS, allowing Seminole County to easily operate the camera with the existing video management software.
 - b. Logistics: the proprietary product is interchangeable with products in Seminole County's existing maintenance inventory.
 - i. This product is the same product already in use and is guaranteed to be interchangeable with the existing maintenance inventory.
 - ii. Seminole County staff is familiar with the equipment, software and hardware for Bosch CCTV cameras allowing them to quickly replace, program and troubleshoot problems allowing them to maintain camera coverage.
 - c. Training costs for staff, such as significant training required to effectively maintain and operate an unfamiliar product.

- i. The current Seminole County staff are familiar and trained to use the existing product. By proposing the same product, no additional training costs are anticipated.

In summary, Seminole County is respectfully requesting that this proprietary product be furnished for this project. If you have any questions please feel free to contact me at (407) 665-5686 or via e-mail at cwetzel@seminolecountyfl.gov.

Sincerely,



Charles R. Wetzel, P.E., PTOE
County Traffic Engineer
Seminole County Public Works / Traffic Engineering
140 Bush Loop
Sanford, FL 32773

AUTODOME VG5-ITS720P-30X4 and VG5-ITS1080P-30X4 for Transportation Applications

www.boschsecurity.com



BOSCH
Invented for life



- ▶ Choice of HD model (720p50/60 or 1080p25/30), NTCIP-conformant, compass direction and absolute AZ/EL position readings
- ▶ Allows upload of a customer logo
- ▶ Intelligent Tracking and alarm rules engine with on-board Intelligent Video Analytics (IVA)
- ▶ Enhanced system flexibility with dual recording options (iSCSI, SD card) and dual power source options (High Power over Ethernet (High PoE) / 24 VAC)
- ▶ Fully configurable quad streaming with individually configurable streams, based on Bosch's Common Product Platform (CPP4)

The AUTODOME ITS Series is an easy-to-install, high-speed PTZ HD dome camera in a field-proven indoor/outdoor housing. The camera delivers unmatched picture quality and network performance day/night and has full built-in support for the NTCIP protocol used in transportation applications.

The camera provides complete network-based control of all dome functionality including pan/tilt/zoom operation, presets, tours and alarms as well as web-based configuration of all dome settings. It also provides direct network video streaming using H.264 compression / bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.

The AUTODOME ITS Series conforms to the National Transportation Communications for ITS Protocol (NTCIP) specification. NTCIP conformance ensures that the AUTODOME camera integrates with transportation management devices.

Functions

High-performance PTZ day/night camera

The HD model has a large sensor area that contributes to high camera sensitivity. The camera can be configured to operate in 720p50/60 mode for capturing fast motion (for example, in traffic or gaming scenarios). The default 1080p25/30 mode delivers high-resolution images with six times more details than a standard definition (SD) camera.

The camera features Wide Dynamic Range (WDR) technology that allows for the capture of clear image reproduction from both bright and dark areas in the same frame. WDR ensures that bright areas are not saturated and that dark areas are not too dark. Day/night capabilities and outstanding sensitivity make the IP model an exceptional performer in all lighting conditions. In low light, the camera switches automatically from color to monochrome by removing

the IR filter to boost the infrared illumination sensitivity while maintaining superior image quality. For operation in the darkest conditions, the SensUp control feature automatically reduces the shutter speed to as little as one second. This increases sensitivity by more than 50 times.

Progressive scan

The camera is ideally suited for IP imaging applications. The progressive scan technology in the camera provides smooth and clear images when viewing images from the camera.

Sodium vapor lamp white balance

The camera is an exceptional performer when capturing video under a sodium vapor lamp (a street lamp or tunnel lamp, for example). Images under these conditions may have a yellowish tint, which can make identification difficult. In the Sodium Vapor White Balance mode, the camera automatically compensates for the light from a sodium vapor lamp to restore objects to their original color.

Intelligence

With built-in Intelligent Video Analysis (IVA), the camera reinforces the concept of Intelligence at the Edge. IVA is Bosch's state-of-the-art intelligent video content analysis technology. With IVA, the camera reliably detects and analyzes moving objects while suppressing unwanted alarms from spurious sources in the image. IVA also allows the camera to detect multiple object behaviors including idle and removed objects, loitering, multiple line crossing, and trajectories. IVA supports BEV (Bird's-Eye-View) People Counter and Assisted Self-Calibration. Configurable detection filters improve reliability and reduce operator work load.

Intelligent Tracking

The camera utilizes the built-in Intelligent Video Analytics (IVA) to follow an individual or an object continuously. Objects detected by IVA in a stationary position activate the Intelligent Tracking feature, which controls the pan/tilt/zoom actions of the camera to keep the tracked object in the scene. The new tracking feature is based on robust flow detection algorithms which can reliably track moving objects even under challenging scenes. The tracking and detection reliability can be enhanced further with virtual masking for scenes with a lot of background "noise" such as trees or other objects creating constant motion in the scene. The camera supports three modes for Intelligent Tracking.

- **Auto mode:** When configured in this mode, the camera actively analyzes the video to detect any moving object. If it detects movement, it begins to track the object. This mode is most useful for scenarios where no motion is expected in the scene.

- **Click mode:** In this mode, users can click an object moving in the live video image to enable the camera to track the movement of the selected object. This mode is most useful for scenarios where normal scene activity is expected.
- **IVA-triggered mode:** In this mode, the camera continuously analyzes the scene for IVA alarms or IVA rule violations. If an IVA rule is violated, it triggers the advanced tracking feature of the camera to start following the object / person that triggered the alarm. This unique combination of robust IVA and Intelligent Tracking allows the camera to track moving objects of interest without getting distracted by other moving objects in the scene.

PTZ drive and mechanism

The camera supports 256 pre-positions and two styles of Guard Tours: Preset and Record/Playback. Users can configure the preset standard tour with as many as 256 sequential pre-positions, with a configurable dwell time between pre-positions. The camera also provides support for two recorded tours, which are recorded macros of an operator's movements, including pan, tilt, and zoom activities, and can be played back with the click of a button.

Pan and tilt preset repeatability are accurate to within ± 0.1 degrees to ensure that the correct scene is captured every time. The camera delivers variable pan/tilt speeds from a crawl speed of only 0.1 degrees per second to a full 400 degrees per second. The camera is capable of pan speeds of 400 degrees per second and tilt speeds of 300 degrees per second between prepositions. The camera provides a tilt angle 18 degrees above the horizon, and a pan range of up to 360 degrees continuous rotation.

The AutoScaling (proportional zoom) and AutoPivot (automatically rotates and flips the camera) features ensure optimal control.

Five pre-programmed but configurable user modes, optimized with the best settings for a variety of typical applications, make on-site programming easy and user-friendly. Users select from the menu the mode that best defines the environment in which the camera is installed:

- **Outdoor** – General day-to-night changes with sun highlights and street lighting
- **Indoor** – Ideal mode for indoor applications where lighting is constant and not changing
- **Low light** – Optimized for sufficient details at low light
- **Motion** – Monitoring traffic or fast moving objects; motion artifacts are minimized
- **Vibrant** – Enhanced contrast color reproduction and sharpness

Users have the ability to customize these modes, if necessary, for the specific requirements of the site.

Superior privacy masking

The camera provides 24 individual, easy to configure privacy masks, with up to 8 displayed in the same scene. As the camera is zoomed, each mask changes size smoothly and quickly, ensuring that the covered object cannot be seen in most cases.

Comprehensive streaming capabilities on Bosch's Common Product Platform (CCP4)

The camera has an advanced, efficient H.264 encoder (CPP4) embedded for high-quality streaming video and very efficient streaming and network capabilities. The new platform supports simultaneous streaming of individually configurable streams [SD (H.264 and M-JPEG) or HD] and allows a choice of resolution [SD, or HD in combination of SD resolutions].

Recording and storage management

A memory card (SD (Secure Digital), SDHC (Secure Digital High Capacity), or SDXC (Secure Digital eXtended Capacity)) can be used for local alarm recording or for scheduled local recording to improve the overall recording reliability. Recording management can be controlled by the Bosch Video Recording Manager (VRM), or the camera can use iSCSI targets directly without any recording software. The camera offers Quality of Service (QoS) configuration options to ensure fast network response to PTZ data and images. Quality of Service (QoS) is the set of techniques to manage network resources. QoS manages the delay, delay variation (jitter), bandwidth, and packet loss parameters to guarantee the ability of a network to deliver predictable results. QoS identifies the type of data in a data packet and divides the packets into traffic classes that can be prioritized for forwarding.

Dual power options

The HD model can be powered by a High Power-over-Ethernet (Bosch High PoE)-compliant network using a Bosch High PoE Midspan (sold separately) over a single network cable and/or a 24VAC power supply. The Midspan is required to operate the heater inside the camera. See the Midspan datasheet for additional details.

When powered using High PoE or PoE+ (IEEE 802.3at class 4) configuration, only a single cable connection is required to power and to control the camera while also viewing images from the camera. For additional system reliability, users also have the option to connect the 24 VAC power supply to the camera while using High PoE.

Ease of installation and servicing

The camera has been designed for quick and easy installation; a key feature from Bosch CCTV products. All housings feature recessed screws and latches for increased tamper resistance. Indoor/outdoor pendant housings are rated to provide IP66 protection and offer an operating temperature range down to -40 °C (-40 °F). The indoor/outdoor pendant comes fully assembled with a sunshield and

ready for wall or pipe applications with the proper mounting hardware (sold separately). You can easily convert the outdoor pendant for indoor applications by removing the sunshield.

Bosch offers a full complement of hardware and accessories (sold separately) for wall, corner, mast, roof, and pipe mounts for indoor and outdoor environments, which allow the camera to be adapted easily to individual site requirements.

Video management system support

The camera ships with Bosch Video Client (BVC), an easy-to-use software from Bosch that is suitable for midsize installations. For large enterprise systems, AUTODOME cameras can be used with Bosch Video Management System (BVMS), which allows enhanced video management and viewing capabilities. In addition, the camera is supported/integrated into all of the leading third party video management systems.

ONVIF conformant

The AUTODOME Series conforms to the ONVIF Profile S specification allowing easy integration with the conformant devices and VMS.

For more information about ONVIF, visit www.onvif.org.

The camera conforms to the ONVIF (Open Network Video Interface Forum) specification which guarantees interoperability between network video products regardless of manufacturer. ONVIF conformant devices are able to exchange live video, audio, metadata and control information. They are automatically discovered and connected to network applications such as video management systems.

Fiber Optic Kit

Bosch offers the optional VG4-SFPSCKT, a unique media converter module for use with various Bosch devices. This media converter module is designed to accept a wide-range of 10/100 Mbps SFP modules for use with Multimode or Single-mode optical fiber with LC or SC connectors.

The media converter module along with the SFP module is user-installed directly into the camera's power supply box to provide an integrated fiber optic solution.

As with all Bosch products, the camera is designed using the industry's best design process and is subjected to the most stringent testing standards such as HALT (highly accelerated life testing), which pushes the limits of products to ensure reliability throughout their lifetime.

Access security

Various security levels are available for accessing the network, the camera, and the data channels. As well as password protection with three levels, 802.1x authentication using a RADIUS (Remote Authentication Dial In User Service) server is supported. To secure Web browser access, use HTTPS with a SSL certificate stored in the camera. For total data protection, the

video and audio communication channels can be independently AES encrypted with 128-bit keys by installing the optional encryption site license.

Easy upgrade

Remotely upgrade the camera whenever new firmware becomes available. This ensures up-to-date products, thus protecting investment with little effort.

Certifications and approvals

HD standards

- Complies with the SMPTE 274M-2008 Standard in:
 - Resolution: 1920x1080
 - Scan: Progressive
 - Color representation: complies with ITU-R BT.709
 - Aspect ratio: 16:9
 - Frame rate: 25 and 30 frames/s
- Complies with the 296M-2001 Standard in:
 - Resolution: 1280x720
 - Scan: Progressive
 - Color representation: complies with ITU-R BT.709
 - Aspect ratio: 16:9
 - Frame rate: 25, 30, 50 and 60 frames/s

Electromagnetic Compatibility (EMC)	Complies with FCC Part 15, ICES-003, and CE regulations, including latest versions of EN 50130-4, EN 55022:2006 inc. AL:2007, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, and EN 50121-4 (Railway applications)
Product Safety	Complies with UL, CE, CSA, EN, and IEC Standards 60950-1 & 22
Environmental	IP66, NEMA 4X
ONVIF Conformance	EN 50132-5-2
NEMA TS 2-2003	Complies with: Section 2.2.7: Transients, Temperature, Voltage and Humidity tests Section 2.2.8: Vibration test Section 2.2.9: Shock test



Notice

Conformity to EN 50130-4
One of the following power supply units is required to conform to the EN 50130-4 standard: VG4-A-PSU0, VG4-A-PSU1, VG4-A-PSU2, VG4-A-PA0, VG4-A-PA1, or VG4-A-PA2.

Parts included

- AUTODOME ITS series pendant camera (IP or HD model) with clear acrylic bubble and sunshield
- Product DVD with operation manual and Bosch Video Client (BVC) software
- Packet of printed Safety literature

Notes:

- The pendant can be converted to an indoor pendant by removing the sunshield.
- Mounting hardware and accessories are available separately.

Technical specifications

VG5-ITS720P-30X4

Imager	1/3-type Exmor CMOS sensor
Effective Picture Elements (Pixels)	1305 x 1049 (1.37 MP)
Lens	30x Zoom 4.3 mm to 129 mm F1.6 to F4.7
Field of View (FOV)	2.1° to 59°
Focus	<i>Automatic with manual override</i>
Iris	<i>Automatic with manual override</i>
Digital Zoom	12x

Sensitivity / Minimum Illumination (typical)	30 IRE	50 IRE
Day Mode (Color)		
Fixed shutter 1/30, High Sensitivity mode On	0.052 lux	0.166 lux
Fixed shutter 1/30, High Sensitivity mode Off	0.26 lux	0.66 lux
SensUp On (max. ¼), High Sensitivity mode On	0.0082 lux	0.033 lux
Night Mode (Black and white)		
Fixed shutter 1/30, High Sensitivity mode On	0.0103 lux	0.041 lux
Fixed shutter 1/4, High Sensitivity mode On	0.00129 lux	---
SensUp On (max. ¼), High Sensitivity mode On	0.00065 lux	0.00205 lux

SH-VG5-ITS1080P-30X4

Imager	1/2.8-type Exmor CMOS sensor
Effective Picture Elements (Pixels)	1944 x 1224 (2.38 MP)
Lens	30x Zoom 4.3 mm to 129 mm F1.6 to F4.7
Field of View (FOV)	2.3° to 65°
Focus	<i>Automatic with manual override</i>
Iris	<i>Automatic with manual override</i>
Digital Zoom	12x

Sensitivity / Minimum Illumination (typical)	30 IRE	50 IRE
Day Mode (Color)		
Fixed shutter 1/30, High Sensitivity mode On	0.066 lux	0.209 lux
Fixed shutter 1/30, High Sensitivity mode Off	0.26 lux	0.83 lux
Fixed shutter ¼, High Sensitivity mode On	---	0.026 lux
Fixed shutter ¼, High Sensitivity mode Off	---	0.104 lux
SensUp On, High Sensitivity mode On	0.0103 lux	0.033 lux
SensUp On, High Sensitivity mode Off	0.041 lux	0.104 lux
Night Mode (Black and white)		
Fixed shutter 1/30, High Sensitivity mode On	0.033 lux	0.104 lux
Fixed shutter ¼, High Sensitivity mode On	0.0026 lux	---
SensUp On, High Sensitivity mode On	0.00129 lux	0.0041 lux

Additional Camera Settings

Gain Control	Auto/Manual/Max
Aperture Correction	Horizontal and vertical
Electronic Shutter Speed (AES)	1/1 sec to 1/10000 sec (22 steps)
Dynamic Range	90 dB typical
Signal-to-Noise Ratio (SNR)	>50 dB
Backlight Compensation (BLC)	On/Off
White Balance	2000 K to 10,000 K ATW, AWB Hold, Extended ATW, Manual, Sodium Lamp Auto, Sodium Lamp
Day/Night	Monochrome, Color, Auto
Defog mode feature	Improves visibility when viewing foggy or other low-contrast scenes.

Mechanical

Pan Range	360° cont.
Tilt Angle	18° above horizon
Pre-position Speed	Pan: 400°/s Tilt: 300°/s
Pan/Tilt Modes	<ul style="list-style-type: none"> Turbo Mode (Manual Control) Pan: 0.1°/s – 400°/s Tilt: 0.1°/s – 300°/s

• Normal Mode	0.1°/s-120°/s
Preset Accuracy	± 0.1° typ.

Electrical

Input Voltage	21-30 VAC, 50/60 Hz; (class II) High PoE (with Bosch NPD-6001A Midspan)
Power Consumption, typical	60 W / 69 VA (heaters on) or 24 W / 44 VA (heaters off) †

Surge Suppression

Protection on Alarm Inputs	Peak current 17 A, peak power 300 W (8/20 µs)
Protection on Alarm Outputs	Peak current 2 A, peak power 300 W (8/20 µs)
Protection on Relay Output	Peak current 7.3 A, peak power 600 W (10/1000 µs)
Protection on Power Input (Dome)	Peak current 7.3 A, peak power 600 W (10/1000 µs)
Protection on Power Output (Arm Power Supply)	Peak current 21.4 A, peak power 1500 W (10/1000 µs)
10/100 Ethernet Data Lines	Peak current 14 A, peak power 200 W (8/20 µs)

Software Control

Camera Setup/Control	Via web browser (such as Internet Explorer version 7.0 or later), Bosch Configuration Manager, Bosch Video Management System (BVMS), Bosch Recording Station (BRS), or Bosch Video Client (BVC)
Software Update	Network firmware upload

Network

HD model: Video compression H.264 (ISO/IEC 14496-10), M-JPEG

		Encoding / Streaming			
		H.264		MJPEG	
		Scenario			
		Stream 1	Stream 2	Stream 3	Stream 4
1	Full HD 1080p30	Full HD 1080p5	I-frame only from Stream 1		1080p
2	Full HD 1080p30	HD 720p10	I-frame only from Stream 1		1080p
3	Full HD 1080p30	Downscaled stream	I-frame only from Stream 1		1080p

4	Full HD 1080p30	Copy of Stream 1	I-frame only from Stream 1	1080p	Encryption	TLS 1.0, SSL, DES, 3DES, AES
5	HD 720p60	HD 720p8	I-frame only from Stream 1	720p	GOP Structure	IP, IBP, IBBP
6	HD 720p30	HD 720p30	I-frame only from Stream 1	720p	Data Rate	9.6 kbps to 6 Mbps
7	HD 720p30	Downscaled stream	I-frame only from Stream 1	720p	Overall IP Delay	240 ms
8	Downscaled stream	Downscaled stream	I-frame only from Stream 1	1080p	Signal-to-Noise	>50 dB

Resolutions (H x V)

HD Resolutions

- 1080p HD 1920 x 1080
- 720p HD 1280 x 720

Down-scaled SD streams

- 432p SD 768 x 432
- 288p SD 512 x 288
- 144p SD 256 x 144
- Corridor mode 400 x 720
- D1 4:3 cropped 704 x 480

Both models:

Protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, SNTP, SNMP (v1, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selftHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox, CHAP, digest authentication
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NTCIP Protocols

CCTV Camera Control	NTCIP 1205
Application Layer	SNMP per NTCIP 1101:1996 & NTCIP 2301
Transport/Network Layers	TCP/IP per NTCIP 2202:2001
Sub-network Layer	PMPP (Point to Multi-Point Protocol) per NTCIP 2101:2001 & NTCIP 2102:2003
Advanced Networking	IPv6, QoS
Ethernet	10-Base T/100 Base-TX, auto-sensing, half/full duplex, RJ45

Audio

- Standard	G.711, 8 kHz sampling rate L16, 16 kHz sampling rate AAC, 16 kHz sampling rate
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- Signal-to-Noise Ratio	>50 dB
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- Audio Streaming	Bidirectional (full-duplex)
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Local Storage

Memory Card Slot	User-supplied SD/SDHC/SDXC memory card (maximum 2TB – SDXC)
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Recording	Continuous recording of video and audio, alarm/events/schedule recording
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Fiber Optic Kit

VG4-SFPCKT

Description	Fiber Optic Ethernet Media Converter kit ⁵ . Requires a small form-factor pluggable (SFP) module (sold separately).
-------------	--

Data Interface	Ethernet
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Data Rate	10/100 Mbps IEEE 802.3 Compliant Full Duplex or Half Duplex Electrical Port Full Duplex Optical Port
-----------	--

Compatible Receiver	CNFE2MC
---------------------	---------

Installation	Installed inside a VG4-A-PA0, VG4-A-PA1, VG4-A-PA2, VG4-A-PSU1, or a VG4-A-PSU2 power supply box with supplied mounting hardware
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⁵ Kit is available separately and must be installed inside the AUTODOME power supply box.

SFP Modules

Description	Interchangeable modules available for use with MMF or SMF optical fiber.
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Data Interface	Ethernet
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Data Rate	10/100 Mbps IEEE 802.3 Compliant
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Mechanical

Dimensions (LxWxH)

- SFP-2 and SFP-3 55.5 x 13.5 x 8.5 mm (2.2 x 0.5 x 0.3 in.)
- SFP-25, SFP-26 63.8 x 13.5 x 8.5 mm (2.5 x 0.5 x 0.3 in.)

Weight (all SFP modules)	0.23 kg (.05 lb)			
	Type	Connector	Wavelength (transmit / receive)	Max. Distance
SFP-2	MMF	Duplex LC	1310 nm / 1310 nm	2 km (1.2 miles)
SFP-3	SMF	Duplex LC	1310 nm / 1310 nm	20 km (12.4 miles)
SFP-25	MMF	Single SC	1310 nm / 1550 nm	2 km (1.2 miles)
SFP-26	MMF	Single SC	1550 nm / 1310 nm	2 km (1.2 miles)

Fiber Compatibility

Optical Fiber Compatibility, MMF	50/125 µm MMF. For 50/125 µm fiber, subtract 4 dB from the specified optical budget value. Must meet or exceed fiber standard ITU-T G.651.
Optical Fiber Compatibility, SMF	8–10/125 µm SMF. Must meet or exceed fiber standard ITU-T G.652.
Optical Distance Specifications	Specified transmission distances are limited to the optical loss of the fiber and any additional loss introduced by connectors, splices, and patch panels. The modules are designed to operate over the entire optical loss budget range, so they do not require a minimum loss in order to operate.

Miscellaneous

Sectors/Titling	16 independent sectors with a 20-character title/sector
Masking	24 individually configurable privacy masks
Pre-positions	256, each with a 20-character title
Guard Tours	Two (2) types of tours: <ul style="list-style-type: none"> Recorded tours – two (2) Preset tour – one (1), consisting of up to 256 scenes, consecutively
Supported Languages	English, Chinese, Dutch, French, German, Italian, Japanese, Polish, Portuguese, and Spanish
Protocol Support	Bosch (OSRD), ONVIF, NTCIP
Compass Direction	8 direction points, on/off
Absolute Position	Displays in 0-359° AZ and +17° to -95° EL, on/off
Custom logo	File format: .bmp; 8 bit (256 colors), 128x128 pixels maximum

Camera titles Twenty-character, two-line and three-line camera titles (on the OSD), with configurable text colors, that display either the options for Azimuth/Elevation/Compass/Zoom, or the camera title and compass data

User Connections

Power, Camera	RJ-45 10/100 Base-TX Ethernet (High Power-over-Ethernet (High PoE)) or PoE+ (IEEE 802.3at, class 4 standard) 21-30 VAC, 50/60 Hz
Power, Heater	RJ-45 10/100 Base-TX Ethernet (High Power-over-Ethernet (High PoE)) 21-30 VAC, 50/60 Hz
Video and Control	RJ-45 10/100 Base-TX Ethernet
Alarm Inputs (7)	2 supervised; 5 non-supervised Programmable for "normally open" or "normally closed"
Alarm Outputs (4)	1 dry contact relay; 3 open collector/transistor outputs 32 VDC @ 150 ma max.
Audio	1 x mono line in, 1 x mono line out <ul style="list-style-type: none"> Signal line in 12 kOhm typical, 1 Vrms max Signal line out 1 Vrms at 1.5 kOhm, typical

Environmental

Ingress Protection Rating/Standard	IP66†
NEMA 4X	<ul style="list-style-type: none"> Access to Hazardous parts Ingress of solid foreign objects (falling dirt, circulating dust, settling dust) Ingress of water (dripping and light splashing, hosedown and splashing) Corrosive agents
Operating Temperature	-40 °C to +55 °C (-40 °F to +131 °F) or -10 °C to +55 °C (+14 °F to +131 °F)‡
	Compliant to -34 °C to +74 °C (-30 °F to +165 °F) based on NEMA TS-2 Section 2.2.7.
Storage Temp.	-40°C to 60°C (-40°F to 140°F)
Humidity	0% to 100% relative, condensing

Construction

Dimensions	See dimensional drawings
Weight	3.06 kg (6.75 lb)
Bubble Size	153.1 mm diameter (6.03 in.)
Construction Material	

- Housing Cast aluminum
 - Bubble Pendant: High-resolution acrylic or rugged polycarbonate
- Standard Color White (RAL 9003)
- Standard Finish Powder coated, sand finish

Mounts/Accessories

Bubbles

Clear high-resolution acrylic (Included with pendant camera models.) VG4-BUBBLE-PCLA

Note: Polycarbonate bubbles are not recommended for use with HD products because of optical degradation.

Pendant Arm Mounts

- Wall Arm (No Transformer) VG4-A-PA0
- Wall Arm (120/230 VAC Transformer) VG4-A-PA1 / VG4-A-PA2
- Pendant Arm with Wiring VG4-PEND-ARM
- Mounting plate for VG4-PEND-ARM VG4-PEND-WPLATE
- Trim skirt for VG4 Series Power Supplies VG4-A-TSKIRT

Optional Mounting Plates for Arm Mounts

- Corner Mounting Plate VG4-A-9542
- Mast (Pole) Mounting Plate VG4-A-9541

Pendant Pipe Mounts

- Pipe Mount Cap VG4-A-9543

Pendant Roof Mounts

Roof (Parapet) Mount VG4-ROOF-MOUNT
(VG4-A-9543 Pipe Mounting Cap required. Available separately.)

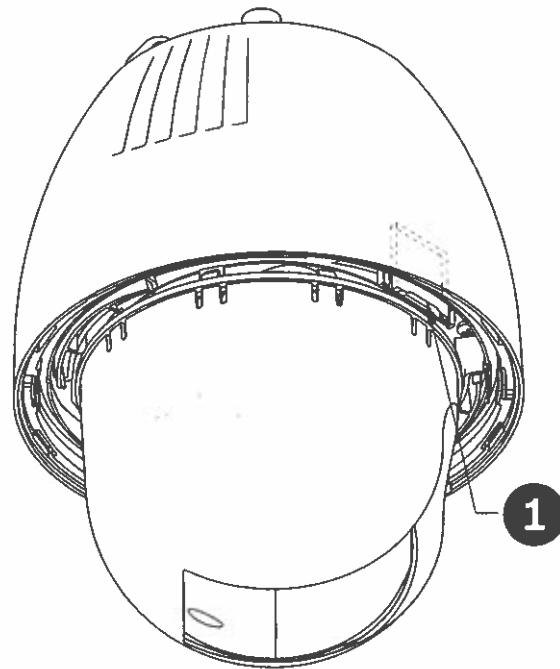
Optional Mounting Plates for Roof Mounts

- Flat Roof Adapter for Parapet Mount LTC 9230/01

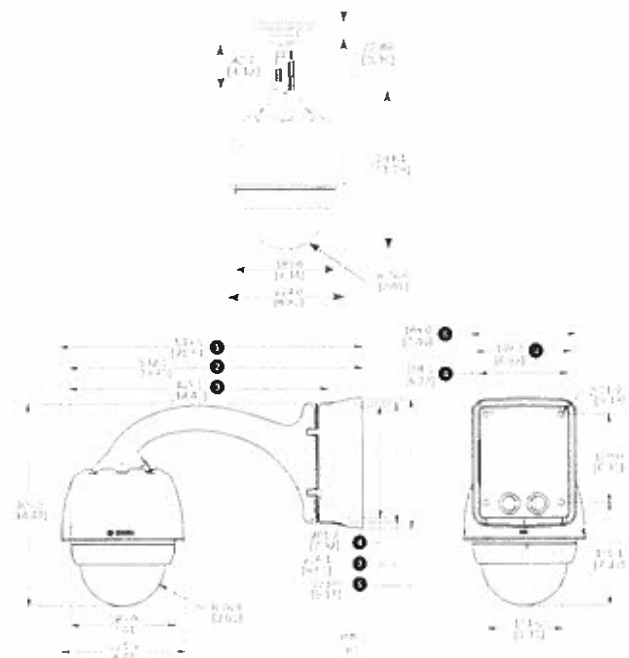
Power Supplies

- High PoE Midspan 60W, single port, AC in NPD-6001A
- Outdoor Power Supply Box, no transformer VG4-A-PSU0
- Outdoor Power Supply Box (120/230 VAC Transformer) VG4-A-PSU1 / VG4-A-PSU2
- Fiber Optic Kit VG4-SFPCKT

Dimensional Drawings



SD card slot (1)



Dimensions - Pendant, Pipe mounts

- 1 Power supply box and sunshield
- 2 Sunshield removed
- 3 Mounting plate
- 4 Power supply box
- 5 Trim skirt
- 6

PUBLIC WORKS DEPARTMENT

October 10, 2018

TRAFFIC ENGINEERING DIVISION



Mr. Mario Bizzio, P.E. – District Design Engineer
Florida Department of Transportation
719 South Woodland Boulevard
Deland, Florida 32720

Subject: Proprietary Product Certification Justification Letter & Backup Documentation
FPID: 441211-1-32-01
Countywide ATMS – DMS Phase 1 – Seminole County
(Daktronics Dynamic Message Signs)

Dear Mr. Bizzio,

Please see the attached Proprietary Product Certification Form 630-020-07 completed in accordance with Procedure 630-020-005 adopted on August 20, 2014. Please also see the required justification below:

1) Description of the project need for the proprietary product.

- a. Project Description: The 441211-1-32-01 project includes the installation of Arterial Dynamic Message Signs (ADMS) at various US 17/92, SR 436, and Lake Mary Blvd. intersections in Seminole County.
- b. Compatibility with Daktronics Systems: Seminole County has already installed Daktronics products included in this Proprietary Product Certification request, as shown in the attached Exhibit A. In order to utilize the existing infrastructure (i.e., Daktronics Vanguard software and hardware, it is imperative to use the same product on this project.

2) Factual and technical supporting evidence for Synchronization.

- a. Function: the proprietary product is necessary for the satisfactory operation of the existing facility.
 - i. The proposed product sheets are included with this letter as Exhibit A.
 - ii. This product is the same manufacturer for products already in use by Seminole County and is guaranteed to be compatible with the existing infrastructure.
- b. Logistics: the proprietary product is interchangeable with products, such as LED modules, controllers, control boards, fans and filters in Seminole County's existing maintenance inventory.
 - i. This product is the same product already in use and is guaranteed to be interchangeable with the existing maintenance inventory.
 - ii. Seminole County staff is familiar with the equipment, software and hardware for Daktronics DMS allowing them to quickly replace, program and troubleshoot problems reducing impacts to the traveling public.
- c. Training costs for staff, such as significant training required to effectively maintain and operate an unfamiliar product.

- i. The current Seminole County staff are familiar and trained to use the existing product. By proposing the same product, no additional training costs are anticipated.

In summary, Seminole County is respectfully requesting that this proprietary product be furnished for this project. If you have any questions please feel free to contact me at (407) 665-5686 or via e-mail at cwetzel@seminolecountyfl.gov.

Sincerely,



Charles R. Wetzel, P.E., PTOE
County Traffic Engineer
Seminole County Public Works / Traffic Engineering
140 Bush Loop
Sanford, FL 32773

VANGUARD® VF-2420-80x240-20-RGB

Full-Color (RGB)

Display Technology

Cabinet Access

Cabinet Enclosure

Face Panel

Weight

Dimensions¹

Operating Temp. Range

Humidity Range

Ventilation

Controller Location

Display Type

Active Area

Top/Bottom Border Width

Left/Right Border Width

Pixel Matrix

Pixel Pitch

Viewing Distance

Sign Intensity

LED Color

Power Requirements

Communications Protocol

Communications Options

Structural Design Standard

NEMA Standards

High-intensity LED

Front access

NEMA 3R

Aluminum mask over polycarbonate face panel

126.0 lbs. (57.2 kg)

61.9" x 17.7" x 1.4" (2.06 m x 5.38 m x .38 m)

-30° F to +165° F (-34° C to +74° C)

0 to 99%, non-condensing

Pressurized, forced-air ventilation system

Sign cabinet or equipment cabinet

Full-matrix (variable text and graphics)

5.5" x 16.3" (1.65 m x 4.95 m)

8" (203 mm)

8" (203 mm)

80 rows x 240 columns

20mm (.81")

300' (9) m using 6" characters

12,400 candelas/m² minimum (white)

Full color (32,000 distinct colors using red, green and blue LEDs)

120/240 VAC, single-phase power (3-wires plus ground)

NITCIP 1203 v02

Cellular, fiber optic, direct Ethernet and radio Ethernet

AASHTO

NEMA TS 4 Section 2 Environmental Requirements

Power Specifications

Model	Viewing Angle (HxV)	Amps Per Leg ²	Typical Power ¹
VF-2420-80x240-20-RGB	30° x 30°	23	1634 W

Sample Character Capacity²

Character Height	Lines/ Characters	Example Font Size	Interline Spacing	Character Spacing
18"	2/12	23x15_3	12	4
12"	3/18	15x10_2	8	3
9"	4/24	12x8_2	6	2
6"	8/40	7x5_1	4	1



NOTES

1. Display cabinet depth measurement includes 2" mounting brackets on the rear of the cabinet
2. Many other font sizes are available
3. Amps per leg calculation is based on the maximum load of a typical DMS, including a fully-loaded 15A convenience outlet. This value is measured for a 120/240 3W+G system and will vary with auxiliary options installed in the DMS
4. Typical power includes a partially-illuminated LED sign (58% of the pixels at full intensity), the sign controller and ventilation system
5. Sign front face paint color is semi-gloss black. Other sides are mill finish aluminum
6. With the continuous improvement of all Daktronics products, the features and measurements on this page are subject to change without notice
7. The product illustration on this page is for conceptual purposes only and may not represent the actual dimensions of the specified display

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