PARK ASSIST®

REALLY SMART PARKING

Park Assist Proposal for City of Hollywood Nebraska Garage

Automated Parking Guidance System

Proposal presented to
City of Hollywood
April 21st, 2021

CITY OF Hollywood FLORIDA

April 21st , 2021

City of Hollywood
Hal King
2600 Hollywood Blvd, Annex Suite 17
Hollywood, FL 33022

Dear Hal,

Thank you for the opportunity to submit a budget estimate to the City of Hollywood for the Nebraska parking garage in Hollywood, FL**.** We greatly appreciate the opportunity and are confident that our solution and organization will be the best fit for parking at the City of Hollywood.

Park Assist is the pioneer of imaging technology in the parking industry and invented the first camera-based parking guidance solution. Today, Park Assist is the industry leader with successful installations of its patented solution with over 100 projects in the US. Park Assist currently has the largest portfolio of projects in South Florida with projects that include: Fort Lauderdale Airport, Miami Airport, Aventura Mall, the City of Delray Beach, Port of Miami, Sawgrass Mall, CityPlace West Palm Beach, Shops at Midtown Miami, People's Trust Office HQ, and Bal Harbour Shops.

In this proposal response you will find why Park Assist has the best parking guidance solution with features that include:

- Proven, patented camera-based guidance technology with industry-leading accuracy, including *Find Your Car*™ functionality
- Innovative camera detection technology & license plate inventory
- 99%+ vehicle detection accuracy with monthly verifiable reports
- Cloud-based software, *INX*™, enabling a seamless integration of sensors installed on site to the dashboards and reports delivering rich data analytics
- Real-time alerts to assist operations staff with enforcement
  Find your Car software and Mobile API access

On behalf of Park Assist, I want to assure you of our steadfast commitment to make parking at the Golden Glades parking garage just as enjoyable and profitable as the asset itself. Equally important to us is your complete satisfaction. We appreciate the opportunity to work with A&P Engineers and we look forward to the next steps!

Sincerely,

Thomas Alexander

Thomas Alexander
National Channel Manager
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(954) 816-9888

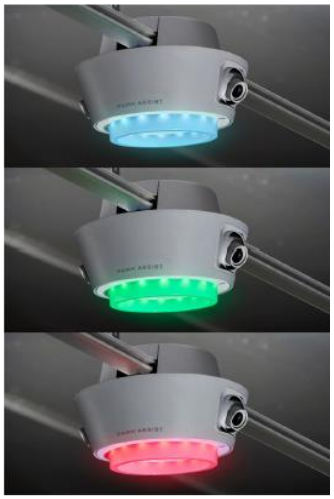
Proposed Solution

Park Assist M4 Camera Solution

The M4 Camera System is a patented network of sensing, processing, and displaying elements. The array of sensors collect data about parking status across the facility and then distribute that information to the network for use in guiding drivers and assisting operations staff.

The M4 Camera Sensor offers the ability to sense, identify and count vehicles per individual parking space**.** Configured with one or two CMOS digital cameras, the M4sensor can monitor up to four parking spaces simultaneously. Captured images are continuously processed to detect parking space occupancy changes using proprietary image processing software.

The sensor sends parking status and images to the site's Core Server for management and reporting. Because the M4 sensor is based on digital imaging, it is the key enabling element for license plate recognition.



To indicate parking status to visitors, a highly visible Light Emitting Diode (LED) indicator is built into the M4 Camera Sensor, capable of displaying thousands of different colors. Each M4 Camera Sensor autonomously manages its own occupancy status and indicator color, providing visitors with real-time parking information.

Indication LED

Park Assist's light rings are on average 8 times the size of the indicator lights used by other parking guidance solutions. With Park Assist's ring design, the Nebraska parking garage will have a brighter indicator light and more color options to choose from.

- Park Assist's ring display is an RGB LED which can display thousands of colors
- Each indicator can cover up to 4 parking stalls and are installed down the center of the drive aisle
- Due to fewer indicator lights, it is significantly easier for visitors to find an available parking space
- Park Assist's reporting platform, *INX*, will aggregate data and communicate with all dynamic signage, to provide real-time space counts for visitors

Installation of the M4 System

The M4 system is installed down the center of the drive aisle. Each sensor is capable of monitoring up to four (4) parking spaces. Bright LED lights will remain green if one of the four (4) monitored spaces are available and it will turn red if all of the spaces are taken. The M4 sensors operate on low voltage power and connect to the level garage controller via Ethernet cable.
Park Assist's proprietary channel is designed to work with all garage designs for a clean installation. Our channel uses specially designed joiners to maneuver around beams and obstacles inside the garage. We are able to install our camera sensors with minimum affect to clearance height.

Park Assist understands the difficulty and unpredictable cost involved in clearing sections of an operating garage for installation. Since Park Assist's installation is down the center of the drive aisle, we do not require parked cars to be removed during installation. We will select slow traffic hours for installation to minimize disruption to operations.

The main reason for the installation of an APGS is to enhance guest experience. We know that when an APGS installation requires closure of sections of the garage for long periods of time, it can have a negative effect on guest parking experience- we have designed a system to ideally prevent this from ever occurring.

Dynamic Signage

For the City of Hollywood, the parking experience makes a crucial first impression on visitors and employees. To complement our revolutionary camera based smart-sensor system for parking guidance, Park Assist has developed a diverse portfolio of leading-edge wayfinding signage elements. This wealth of advanced options helps provide parkers with assurance and peace-of-mind from the moment they arrive, creating a positive experience that encourages repeat visits in a brand-building way. Park Assist offers our dynamic signage as a standalone signage offering as well as the option to incorporate the dynamic signage into custom enclosures to offer a seamless and consistent message to your customer.

Server and System Controls

All Park Assist installations include a license to our cloud-based platform, *INX*. *INX* is the central computer collecting, managing and storing all parking data from the sensors. *INX* equips operations staff with a browser-based dashboard. This intuitive and customizable platform provides cloud-empowered access to system parameters across a site or a network of sites, including:

- Data in real time from our smart sensing system to drive quicker and better decisions
- Dashboards and automated alerts keep you up to date on the latest site operations
- Charts and reports to elevate customer experience, drive revenue opportunities

Workstations are not required for any Park Assist system. Designated users with a password can access *INX* to view, search, and export reports. Users with administrative access can control signage displays, reset, or manually adjust garage availability. In the scenario that no computer is located onsite, we will price one as an alternate.

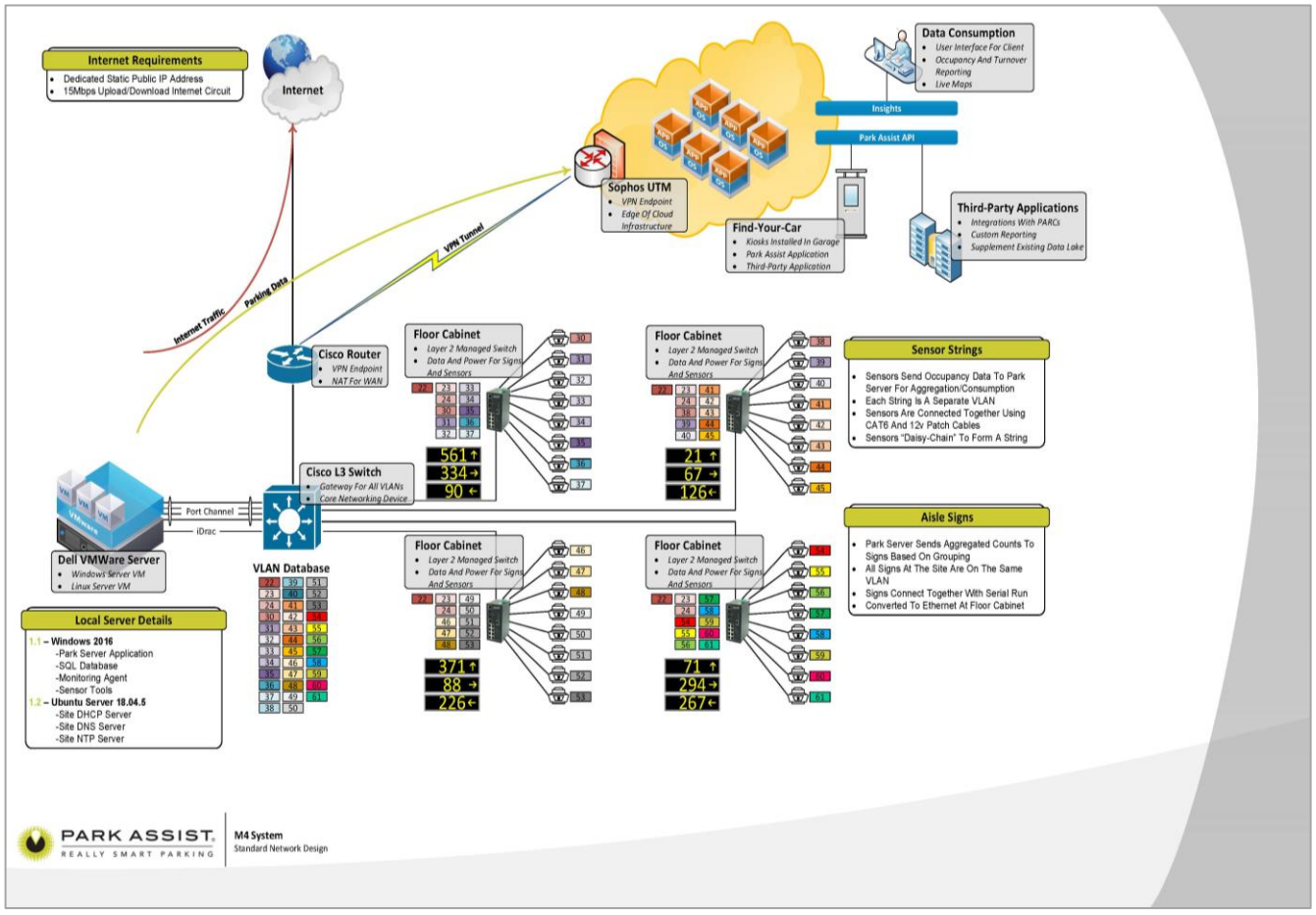
Offline Functionality

Each M4 sensor houses its own processing unit for vehicle detection and memory for data storage. During server offline or connectivity disruptions, the M4 sensor will still be able to detect vehicles, change the LED light color accordingly and store parking data. When connection is restored, the M4 sensors will then transmit stored data to the server.

Networking/Head End Equipment

Each floor or region of a Park Assist System installation includes at least one Floor Cabinet, housing a network switch and power supplies supporting our sensors and signage. Floor Cabinets are typically linked via fiber optic cable to the network head end of our detection system.

This Network Topology fully describes our software interface:



System Hardware

Setting the standard for digital networks for parking, the Park Assist M4 System empowers a parking structure with knowledge and capabilities never before possible. This section provides system-level description and specifications, to understand overall system traits and behavior.

The M4 System consists of a network of camera sensor units providing image-based surveillance of every space in a parking garage. Each unit contains one or two cameras, a bright, multicolor LED indicator light, and Ethernet network communication capabilities. The collection of camera sensors in the network communicates with the Core Server, a central management system. This server provides centralized management of the sensor network, updates connected signage for driver guidance, performs advanced processing steps, and responds to external inquiries for information.

Designed from the beginning for adaptability, the network architecture is expandable to support a large number of spaces. Camera sensors are grouped into daisy-chained ‘strings’; a Floor Cabinet, acting as a network concentrator and central power supply, hosts multiple strings. All Floor Cabinets at an installation connect to a core switch, completing the network. *INX*™ can drive signage external to its immediate network,

and is accessible remotely for reporting and basic configuration. For direct customer guidance, *INX* can also provide information to customer kiosks, enabling features such as *Park Finder™*.

Some system functions are distributed, whereas others are centralized. For example, camera sensors individually perform detection of a vehicle in a space and setting LED color from unoccupied to occupied. The Core Server performs license plate recognition. Regardless of where the function occurs, driver guidance via LED indicators and adjustments to signage are provided in real time. The system is extensible, with future updates adding new capabilities to the system.

Camera sensor units use machine vision processing to determine if a vehicle is present in a parking space. Upon system installation, a four-sided polygon is defined in the camera sensor's software for every space. The cameras capture images constantly, each being processed within the camera sensor for activity within the polygons. When a valid change in the state of a space is detected, the camera sensor follows its assigned rules for changing the color of the LED indicator (for example, green to red), and also reports the event to *INX*.

Next-Gen Software Platform – INX™

Reporting Tools

INX, a cloud-based interface provides Management, Operators and Marketing teams with real-time data using dashboards, historical reports and comparative analyses to seamlessly improve the parking experience, operational efficiencies and create new revenue opportunities. Offering a simple, single point of access to parking garage data, it helps asset owners measure the performance of their garage and gather insights into user behavior. Live maps capture the current state of the facility, and in-progress and historic visitor patterns can be analyzed to drive staffing for parking, security, and customer service staff. All reports can be accessed remotely via the public web through unique secure user logins. *INX* securely connects to each M4site's Core Server installation via an encrypted HTTPS connection at 1 AM local time daily. Data from each site is analyzed, aggregated, and distributed to the *INX* reporting system.

INX is installed in a private, dedicated, and load-balanced server farm, offering a 99.9% availability guarantee with twice daily secure back-ups. Furthermore, the centralized architecture for *INX* allows for the controlled release of new software upgrades, maintenance services, and new innovations seamlessly. As a privacy and security measure, *INX* does not collect or store any images from sites' Core Servers. *INX* is fully complaint with industry security standards, including ISO 27001. Data in *INX* is fully encrypted to enhance security and data protection. This includes:

- Data and images encrypted communication enforced with certificates between sensors and the cloud.
- Multi-factor authentication (MFA) for all data administration and platform development.

Real Time Dashboards and Reports

Data is reported in real time, with information typically less than 5minutes old. The home page dashboard contains moveable widgets, displaying a variety of data. These widgets can also be embedded in other end-user applications. Widgets include:

- A site summary, with total number of spaces and total number of visits today
- Site occupancy as a percentage, with statistics for occupancy by space type and by level
- Available parking spaces per level
- Occupancy by region
- Available spaces per level
- Space turnover (how many times during the day a space is occupied)
- Weather forecast

More detailed reports are also possible with *INX*™, including:

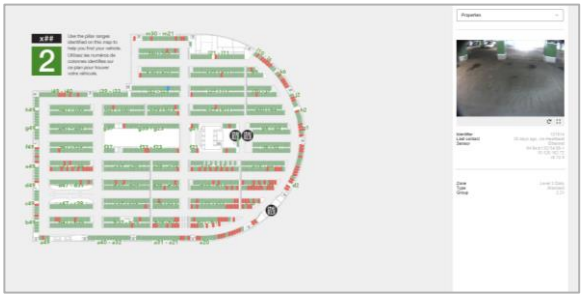
- Occupancy reports covering total average occupancy, daily occupancy, average number of daily visits, and hourly occupancy.
- Dwell time reports for understanding total average dwell time (length of stay in a space), daily occupancy, and average number of daily visits.
- Turnover reports showing total average turnover, daily turnover, and hourly turnover.
- License plate reports: Most common license plates, license plates detected by day, log of license plates detected by day (Note: Available with LPR-based Software Applications).
- *Find Your Car*™ via *INX*'s search tool and Visits History Report. In seconds, the Park Assist core system scours a database of currently parked vehicles – which were identified through our integrated License Plate Recognition (LPR) when they entered a space.

INX is compatible with these modern browsers:

- Microsoft Internet Explorer 7+
- Google Chrome auto-updated to latest version
- Apple Safari 8+ (not recommended)
- Mozilla Firefox auto-updated to latest version (not recommended)

With *INX*, your data view can be as expansive or granular as you need. You can also create custom charts and graphs – fine-tuned to display exact timeframes, types of spaces, and other data categories.

Examples Include:



- Daily-occupancy line graphs with separate curves for each day of the week
- A month's worth of afternoon and evening data, comparing weekdays to weekends
- Unique-visitor frequency reports, including graphs showing how the proportion of weekly, monthly and infrequent visitors is changing over time
- Visualization graphs for vehicle entry and exit counts
- Data for an individual vehicle visits complete with duration, entry/exit timestamps, parking location, and specific vehicle ID through integrated License Plate Recognition (LPR)

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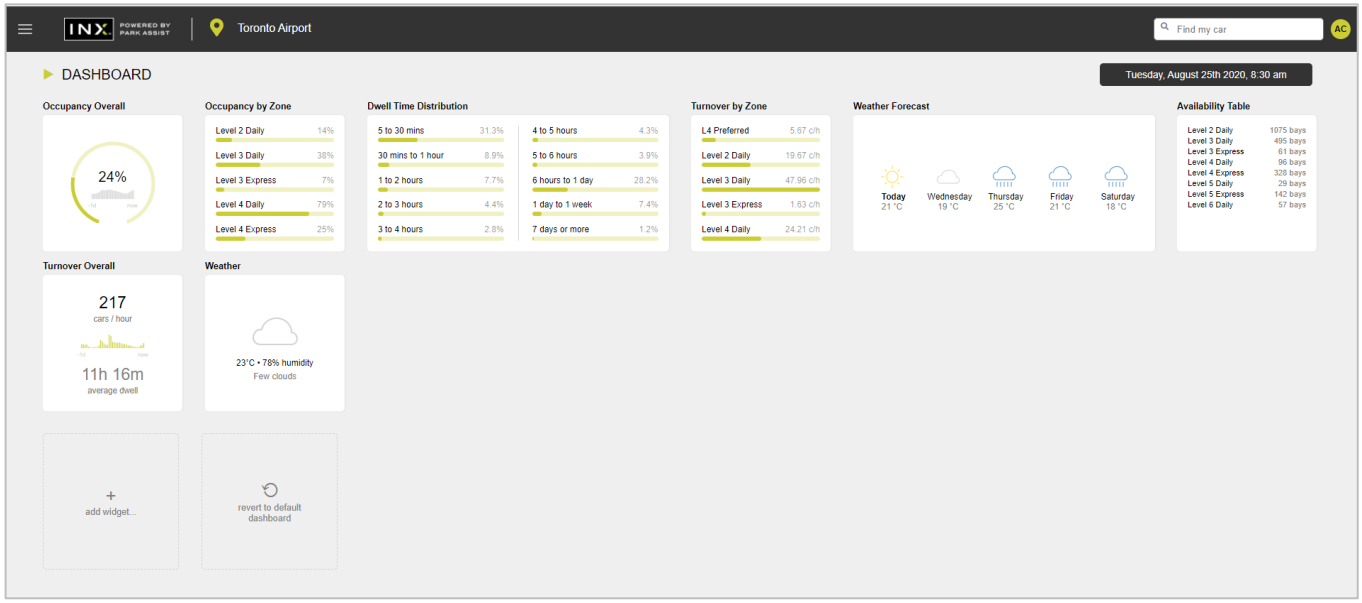
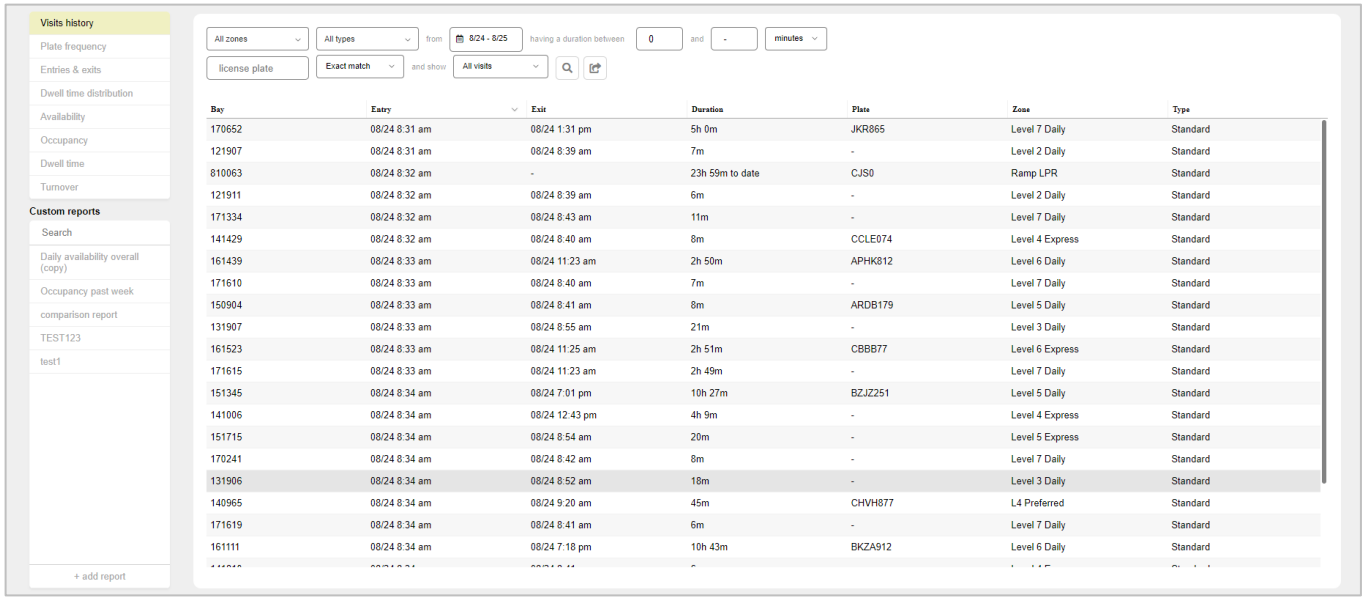
Interactive Dashboard



Visit History



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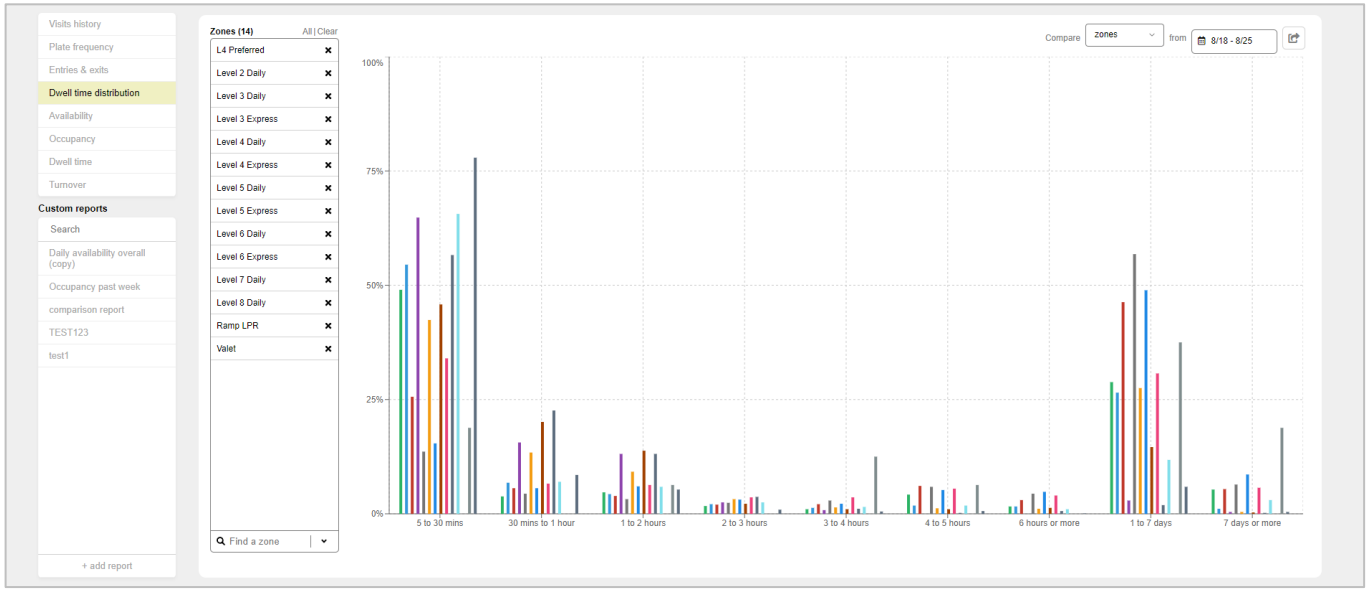
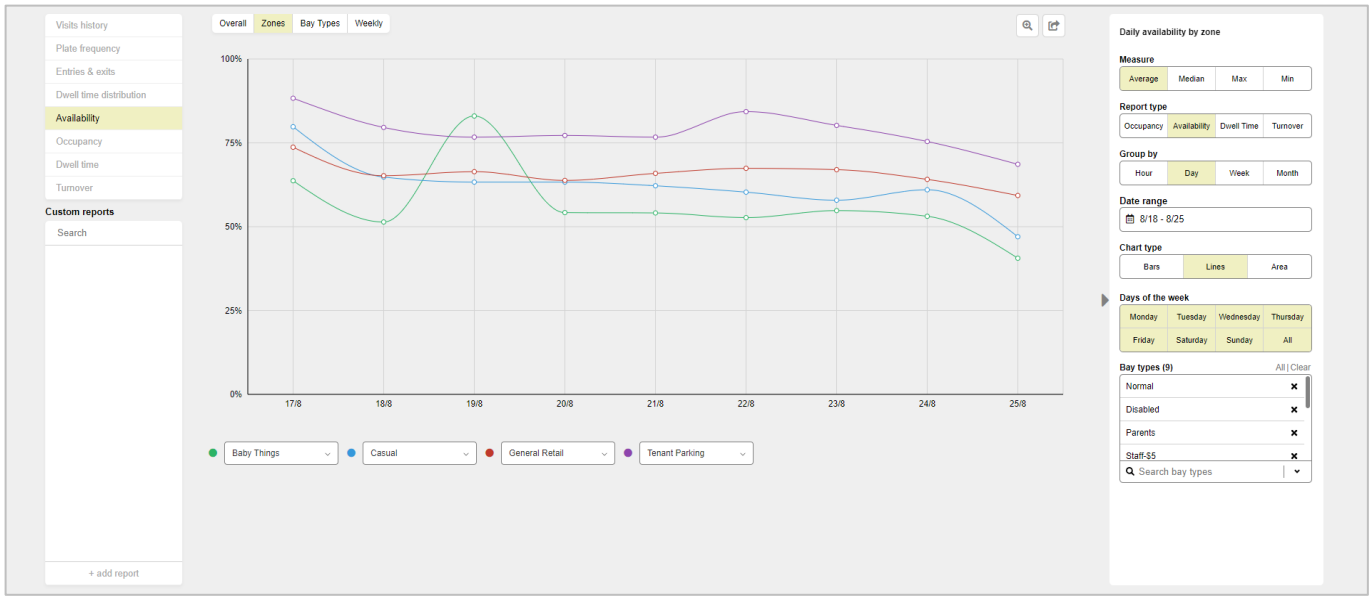
Dwell Time



Availability



Live Mapping Capabilities

INX™'s My Site module enables the user to view and configure their site by map level, signs and regions. This includes:

- Create & edit Maps & floors plans to suit their facility
- Ability to create & edit device configuration
- View live images & space history/state

Park Alerts™ Available via INX

Park Alerts taps into the integrated License Plate Recognition (LPR) technology already built into the core Park Assist parking guidance system – while enabling you to set automated rules and alerts that bring important events to your attention. Users can view the list by event type (location, license plates, dwell and much more) and by action leveraging an "IF THIS, THEN THAT" conditional logic engine.

Park Alerts integrates seamlessly with some of the well-known PARCs and mobile payment platforms.

Park Assistant™

A knowledge base of Park Assist's client and product support resources to address your needs:

- Client & Product Support
    - Log and track service requests
    - Review and respond to ticket history
    - Provide product feedback & feature requests
- User Guide, FAQs and tutorials
- Terms of Service and Global Policies

API Packages

With the increased importance of the use of data and integration of system, Park Assist has developed cutting edge Application Programming Interfaces (APIs) to create a cohesive business intelligence system. The operational needs of a parking operation rely on quality information being available as needed and Park Assist APIs work with multiple different systems to work as one.

Ops Command+

Empowers functionalities that heighten operational efficiencies and control to enable:

- Building systems management
- Digital signage control
- Alerts & notifications: i.e. compliance/rules enforcement
- Website integration
- Additional ops functionalities

CX+

Designed to further elevate the customer experience (CX) in a myriad of ways to enable:

- Advanced mobile apps customizable to suit your brand and needs
- Palm-of-the-hand and vehicle-connected wayfinding
- The ability of drivers to check availability before leaving – get personalized navigation to open spaces – and locate their vehicles upon exit
- *Find Your Car*™ integration with PARCS through our *Park Finder*™ add-on
- Empowers additional CX functionalities such as valet parking

Business Development+

Adding capabilities that further boost revenue and profitability to enable:

- Tiered & frictionless parking
- Reserved & permit parking
- Fine-detail data and insights on parker behaviors and preferences

Support & Maintenance

Park Assist has a full in-house team dedicated to support and maintenance. Unique only to Park Assist's system is a quarterly accuracy reading report breaking down accuracy, occupancy, trends by zones, levels and garage. Every M4 sensor will be constantly monitored for connectivity, performance and accuracy. For systems under our service and maintenance agreements, the City of Hollywood can have peace of mind that the large majority of issues can be detected and resolved before they impact system performance and customer experience. With different plan levels, Park Assist will be proactive in monitoring and troubleshooting any and all issues before they affect operations.

Park Assist maintenance goes far beyond a basic check on system operation; rather, it follows a detailed, holistic approach to every aspect of the sensor network, from hardware to software. With Park Assist taking numerous proactive measures to ensure system operation, your network will provide years of trouble-free operation and high performance. Our Inspection program is customized for each site, which assures complete coverage for each system's unique aspects.

Software maintenance is a key component of Park Assist's maintenance package. At its foundation are basic information technology maintenance practices, with remote inspections for the entire network. Using modern, secure remote access technology, Park Assist monitors and adjusts your sensor network without the need for intervention or presence. Software updates for sensing components and head-end gear are also applied using this approach.

Another advantage of Park Assist's software design is the built-in capacity for customization. If parking conditions or site design change in the future, Park Assist can create customized detection patterns tailored to the unique aspects of a site.

Warranty

This proposal includes **One Year warranty** on parts and labor for defects in materials or manufacture. Park Assist will repair or replace all work delivered under the Contract and correct any defect within the Warranty Period at no additional cost. Software updates to the current installed version of our software are also included as required. This warranty does not apply to situations where damage or malfunctions resulting from fire, flood, earthquakes, elements of nature or acts of God, strikes, riots, collision, vandalism, misuse, electrical surges, power failure, use of non-manufacturer approved parts, or any other similar cause beyond the reasonable control of Park Assist.

Bill of Materials – Budget Proposal

The Park Assist M4 system is highly adaptable to fit any parking structure and usage needs. This Bill of Materials lays out the base system and options recommended by Park Assist's expert teams for the Nebraska parking garage in Hollywood, FL. Pricing is based on the City of Delray Beach RFP 2018-033.

Base System – M4 Installation One Time Costs (Primary Equipment)

Item No.	Description	Unit of Measure	Unit Price	Estimated Qty	Optional (Yes/No?)
1	M4 Sensors	Each	$274.86	91	No
3	Loop Detectors	Each	$605.01	2	No
4	Network and Head End Equipment (server, floor cabinet, router, etc.)	Lump Sum	$47,070.54	1	No
5	Cable and Channel	Lump Sum	$10,270.28	1	No
6	Entrance Monument Signage	Lump Sum	$24,110.00	1	No
7	Installation, Project Management, CAD Design, Logistics, Commissioning and Networking	Lump Sum	$68,919.74	1	No
9	Alerts Software	Each	$0.00	1	Yes
10	Software Maintenance Year 1	Year	$0.00	1	Yes
11	Software Maintenance Year 2	Year	$3,354.71	1	Yes
12	Software Maintenance Year 3	Year	$3,455.35	1	Yes
13	Software Maintenance Year 4	Year	$3,559.01	1	Yes
14	Software Maintenance Year 5	Year	$3,665.78	1	Yes
15	Software Maintenance Year 6	Year	$3,849.07	1	Yes

*Software Maintenance begins after initial one-year warranty period.

Grand Total = $181,507.04 (excluding applicable sales tax)

Packages for the M4 System (Annual fee starts after year one)

Models	Type	Price
Customer Experience+ (Find my Car & Mobile Application)	Annual license/fee	$1,250.20
INX Core Software Suite	Annual license/fee	$1,938.25

Standard Payment Schedule:

Phase	Amount
*Deposit due upon order	50%
*Upon delivery	35%
**As installed	15%

*Invoice due upon receipt, **Net 30 days

Proposal Terms

General

1. The specifics of timing and pricing in this proposal are valid for a period of 90 days from issue date. Pricing beyond this period is subject to change.
2. Assumes access to restrooms and waste container.
3. Any insurance requirements outside of standard coverage carried by Park Assist are not included in this proposal and shall be provided at an additional charge based upon additional requirements and terms of coverage.
4. Project is subject to a 25% restocking fee plus shipping for any material deduct post contract execution.
5. Owner to provide minimum/maximum ceiling heights and posted clearance heights for each level utilizing the M4 System.

Park Assist Responsibilities

1. Install as defined a Park Assist M4 camera based parking guidance system for the Nebraska parking garage in Hollywood, FL.
2. Commission the M4 system in accordance with the project schedule.
3. M4 channel system is to be installed at a maximum height above floor to be determined upon further garage details such as the presence of beams, pipes, and sprinkler systems. This Contractor shall meet minimum clearance heights provided throughout the garage.
4. Final termination of low voltage power and data wiring connections.
5. Park Assist shall provide all head-end equipment required to operate the system. This includes 2-D design and software setup, server hardware, server licenses and core switch.
6. All areas of work will be cleaned and debris free at the end of each shift.

Exclusions Include

1. Any 120V, dedicated 30 amp power feeds for cabinets and exterior signage, at Park Assist final termination points.
2. Owner to provide conduit, cabling, and termination for data feeds from cabinets, exterior signage, at Park Assist demarcation points.
3. Owner to provide a dedicated static public IP address for PARK server. Speed should be 15 Mbps upload/download at minimum, prior to commence of installation.
4. Any permits needed to execute the installation will be charged back via Billable Change Order to the client at Contractor's markup rates.
5. Owner to provide a secure area for material storage on site. Area of storage to be dictated by project size and will be confirmed by Park Assist PM prior to project commencement.
6. Owner to provide a temperature controlled room to house Park Assist head-end equipment
7. Costs to integrate the Park Assist technology with other platforms or customized reports not specified in the proposal.
8. Any type of civil work, X-ray and/or GPR scanning work

9. Traffic management costs
10. Costs associated with any deviation from Park Assist's standard network design
11. 3-D representations of the design are not provided. Park Assist provides 2-D design files, which can be read by Revit, AutoCAD and other programs.
12. Costs or schedule impacts associated with vandalism.

Client Acceptance

By signing below, the client accepts the quotation and terms in this document, and signals their intent to proceed to contract and purchase.

Client representative signature: _____

Client representative printed name: _____

Client representative's title: _____

Exhibit A: Park Assist Cutsheets

M4 Smart-Sensor

The M4 camera based Smart-Sensor has the ability to sense, identify, and count vehicles for individual parking spaces. Configured with one or two CMOS digital cameras, each smart-sensor can monitor up to four parking spaces simultaneously.

Camera images are continuously processed by the onboard computer to detect parking space occupancy changes using proprietary image processing software. For surveillance purposes, the output of the cameras can be streamed over the network. The M4's housing has a seal rating of IP64, preventing the ingress of water and dirt.

Built into the M4 Smart-Sensor is a Light Emitting Diode (LED) indicator, configurable to any of thousands of colors to indicate the status of the spaces it monitors. In a typical configuration, the indicator is green when at least one monitored space is unoccupied, and red when all monitored spaces are occupied. Status colors can be set remotely via software to meet local standards and/or address special needs.

Each M4 Smart-Sensor is autonomous, managing its own occupancy status and indicator color. Data and images flow from sensors to the core server for the system via standard TCP/IP Ethernet network. An internal Ethernet switch and power pass-throughs enable daisy-chain installation. The smart-sensors also feature network-accessible interfaces for remote configuration and maintenance.

PART NUMBER	DESCRIPTION
M4-100	Camera Sensor, 4th Generation, single camera
M4-200	Camera Sensor, 4th Generation, dual camera

M4 Smart-Sensor Specifications

ARCHITECTURE:

- Processor	800 MHz Cortex A9 dual-core processor
- Imaging	One or two 5.0 megapixel CMOS cameras
- Network	RJ45 Ethernet connection designed for daisy chained installation

INDICATOR:

- Technology	16 RGB LEDs; color mixing for thousands of possible colors

INTERFACES:

- Network	TCP/IP
- Video	640 x 480 Streaming up to 10 fps H.264 via RTSP

ENVIRONMENT:

- Operating Temperature	-30° to 50°C (-22° to 122°F)
- Environmental sealing	IP64

MECHANICAL:

- Mounting	Spring-loaded mounting clip
- Material	ABS and polycarbonate plastic

ELECTRICAL:

- Voltage	7-30V DC
- Power Draw	6W typical
- Product Safety	Conforms to ANSI/UL Std 60950-1
	Certified to CSA Std C22.2 NO. 60950-1
- Power Connector	(2) TE Connectivity 1982295-2 sockets for CBL-P01-xx cable

DIMENSIONS:

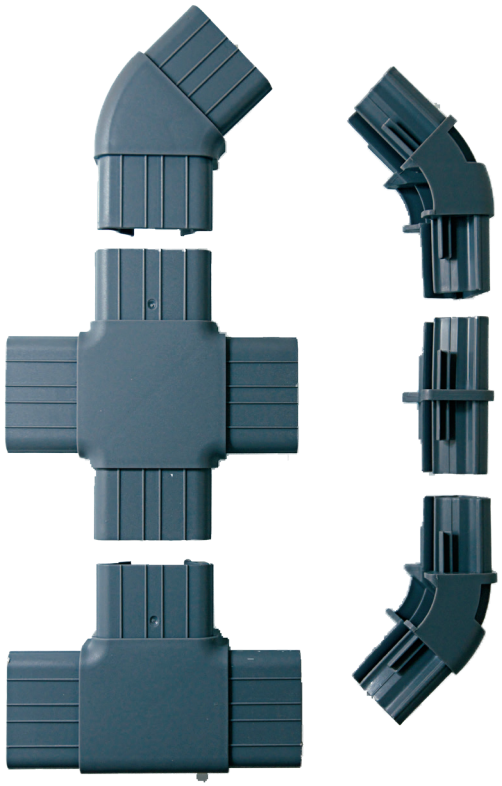
- Height	142 mm (5.6")
- Width	228 mm (9.0")
- Depth	228 mm (9.0")
- Weight	1.0 kg (2.2 lbs)

Channel System

The specially-designed aluminum mounting channel simplifies the installation of the Park Assist smart-sensor system. From initial hanging to mounting smart-sensors, the channel reduces the time to get a system up and running.

Park Assist smart-sensors attach to the channel without tools. The open channel holds the wiring that connects each unit to the high-speed network. Channel sections can be assembled into long straight runs, or junction pieces can be used to alter the channel's path in height and direction. The channel hangs from the ceiling using standard anchors, threaded rods, and nuts attached to Park Assist hanger clips that fit inside the channel.

PART NUMBER	DESCRIPTION
CS-CHNL-3	Channel system, channel, standard aluminum, 10' / 3.05 m
CS-HANGER-0	Channel system, hanger clip, short profile
CS-JS	Channel system, Straight duct junction
CS-JH90	Channel system, 90 degree connector (*not pictured)*
CS-JH45	Channel system, 45 degree junction
CS-JT	Channel system, T Junction
CS-JX	Channel system, X Junction
CS-JV45U	Channel system, 45 degree up junction
CS-JV45D	Channel system, 45 degree down junction *(not pictured)*
CS-CAP	Channel system, Conduit end-caps *(not pictured)*



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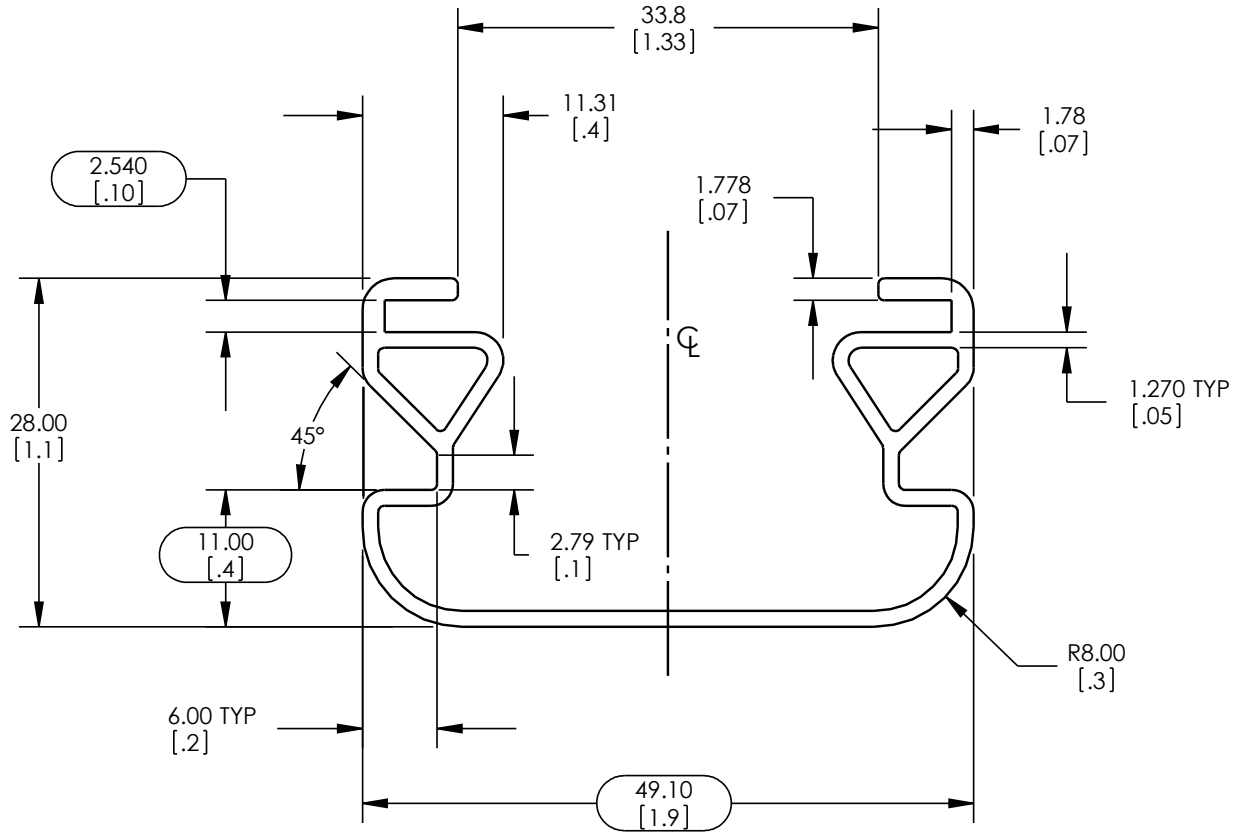
Channel System Specifications

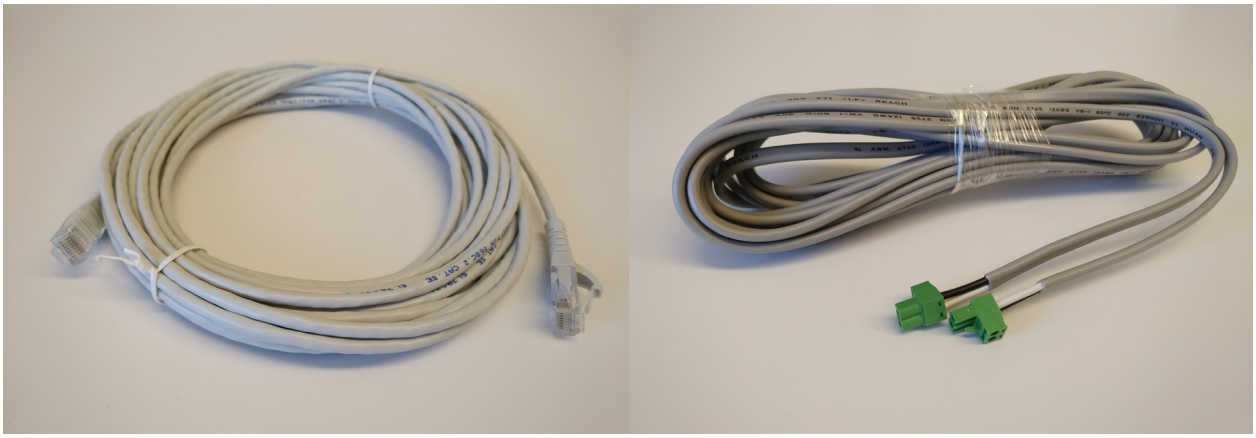
CHANNEL:

- Material	Aluminum 6063-0
- Finish	Iridite per MIL-C-5541E, Class 3
- Drainage	Two 5 mm (0.2") weep holes, centered on width, 1016 mm (40") from each end of a standard 3 m (10') length
- Wall Thickness	1.25 mm (0.05") ± 0.125 mm (0.005")
- Length	3.05 m (10') ± 3.175 mm (0.125")
- Width	49.1 mm (1.9") ± 0.125 mm (0.005")
- Height	28 mm (1.1") ± 0.125 mm (0.005")
- Weight	1.7 kg (3.7 lbs) per piece
- Packaging	Bundle of 16
- Shipping Weight	26.7 kg (58.9 lbs) per bundle



Cabling

Park Assist cables for power and data create connections between smart-sensor units. Ends are pre-terminated with proper connectors to speed installation. Each cable is roughly 8 m (26') in length, designed for typical sensor spacing in most facilities.



PART NUMBER	DESCRIPTION
CBL-P00-8	Cable, power, 12 AWG, 8 m / 26' length
CBL-D00-8	Cable, data, Cat5e, 8 m / 26' length

Specifications

POWER CABLE:

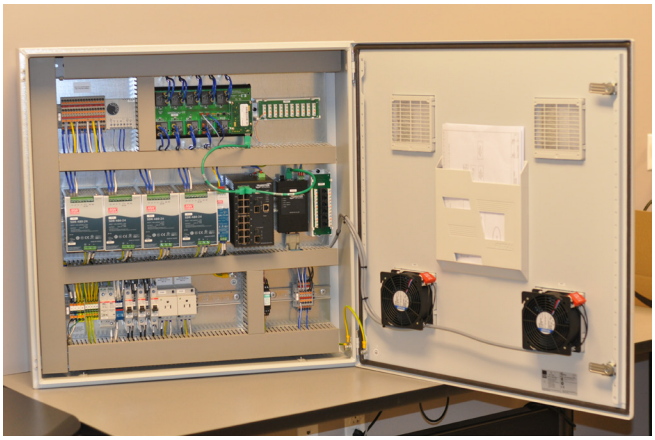
- Length	7.9 m +/-0.1 m (26' +/- 4")
- Connector type	TE Connectivity 796640-2
- Wire gauge	12 AWG (3.3 mm^2)
- Wire type	Stranded
- Number of conductors	2
- Insulation material	Polyvinyl Chloride (PVC)
- Cable rating	NEC type CL3R, FPLR
- Flame Test	UL 1666

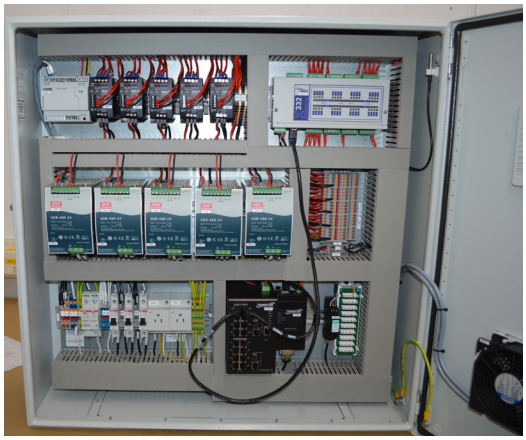
DATA CABLE:

- Length	7.9 m +/-0.1 m (26' +/- 4")
- Connector type	RJ45
- Wire type	Category 5e
- Wire sequence	EIA/TIA-568B
- Insulation material	Polyvinyl Chloride (PVC)

Floor Cabinet

Each floor or region of a Park Assist installation includes at least one Floor Cabinet. The equipment housed in the cabinet includes a network switch for the camera based smart-sensor network, along with supplies used to distribute power to the smart-sensor units. Power and data for the digital wayfinding signage on each floor are also routed through the Floor Cabinet.





Floor Cabinets are linked via copper twisted-pair or fiber optic cable to the core switch, which manages the entire network.

The managed Ethernet switch can control up to 300 smart-sensors. The terminal block can accommodate up to 31 interior digital signs.

Optional ventilation allows for operation in warmer climates.

PART NUMBER	DESCRIPTION
CAB-C300-110	Cabinet, Camera system, 110V AC Input, 24V DC Output
CAB-C300F-110	Cabinet, Camera system, 110V AC, 24V DC Output, with active ventilation
CAB-C300-110-CLASS2	Cabinet, Camera system, 110V AC Input, 24V DC NEC Class 2 Output
CAB-C300F-110-CLASS2	Cabinet, Camera system, 110V AC Input, 24V DC NEC Class 2 Output, with active ventilation
CAB-C300-230	Cabinet, Camera system, 230V AC Input, 24V DC Output
CAB-C300F-230	Cabinet, Camera system, 230V AC Input, 24V DC Output, with active ventilation

Floor Cabinet Specifications

COMMUNICATIONS:

- Ethernet	Contains Layer 2 managed Ethernet switch with (16) 10/100 Mb RJ45 ports and (2) 10/100/1000 Mb combo RJ45 / SFP ports
- RS485	Contains Ethernet-to-serial bridge with internal connection to managed switch, and serial punchdown block

ENVIRONMENT:

- Operating temperature	-25° to 40°C (-13° to 104°F) -25° to 50°C (-13° to 122°F) (CAB-C300F-xxx models)
- Sealing	IP66 / NEMA 4 IP54 / NEMA 12 (CAB-C300F-xxx models)

ELECTRICAL:

- Power Input	110V AC 50/60 Hz 21A 110V AC 50/60 Hz 16A (CLASS2 models) 230V AC 50/60 Hz 11A
- Power Output	24V DC 1920W total, (8) 240W circuits 24V DC 1780W total, (20) NEC Class 2 circuits (CLASS2 models)
- Surge Protection	Type 2, 40kA surge protection
- Product Safety	UL 508A

CONSTRUCTION:

- Body	1.5 mm (16 ga) Powder-coated steel
- Door	2 mm (14 ga) Powder-coated steel with PU seal
- Color	Light gray (RAL 7035)

DIMENSIONS:

- Height	760 mm (29.9")
- Width	760 mm (29.9")
- Depth	210 mm (8.3")
- Weight	53.6 kg (118 lbs) (CAB-C300-230) 57.6 kg (127 lbs) (CAB-C300F-110-CLASS2)

Core Server

PART NUMBER	DESCRIPTION
IT-CSERV-300	IT head end, Core server, standard, 1RU

Specifications

HARDWARE:

- CPU	Dual Intel Xeon Silver 4114
- DRAM	64 GB
- Storage	3 x 300 GB HDD with RAID5
- Network	4 x Gigabit Ethernet
- Mounting	1U height rack mount

SOFTWARE:

- Operating Systems	Windows Server 2016 Ubuntu Linux
- Database	SQL Server Standard
- Virtualization	VMware®

ELECTRICAL:

- Power Input	100-240 V AC, 50-60 Hz
- Power Supply	Redundant 750W
- Thermal Output	2891 BTU/hr (max)

The Park Assist Core Server is the central manager of the entire camera based smart-sensor system. It consists of an industry-standard rackmount server running multiple virtual machines, each tasked with a different aspect of system operation. At the heart of the Core Server is our Park Server software, occupying one of the virtual machines. In total, the responsibilities of the Core Server include:

· Receiving and processing transactional data from smart-sensors

· Updating information displayed on signage: interior and exterior

· Processing images from smart-sensors with License Plate Recognition (LPR) software

· Network management (e.g. IP addressing, time synchronization)

· Supporting advanced optional software features

· Communication with other onsite systems being used (e.g. kiosks for *Park Finder*, PARCS or other systems)

· Time-limited local storage of all data

· Transmitting data (excluding images) to *Park Insights*: a cloud-hosted portal to access the parking data gathered by the system

· Presenting a web-accessible interface for commissioning, configuration and ongoing administration of the camera based smart-sensors

Core Switch

Specifications

NETWORK:

- Switch type	Managed layer 3
- Ports	24x 1G RJ45 4x 1G SFP network module 8x 10G SFP network module

ELECTRICAL:

- Input Voltage	100-240V AC, 50-60 Hz 350W Power Supply
- Input Current	2-4A
- Thermal Output	1207BTU/hr

REGULATORY:

- Product Safety	UL 60950-1, CSA-C22.2 No. 60950-1, EN 60950-1, IEC 60950-1, CCC, CE Marking
- EMI	FCC Part 15 Class A, ICES-003 Class A, EN 55022 Class A, CISPR 22 Class A, AS/NZS 3548 Class A, others

DIMENSIONS:

- Mounting	1U height rack mount

At the center of the Park Assist network is the Core Switch. Data from all types of sensors is concentrated at the Core Switch, which features ample ports and room for expansion via network modules. All switch configuration is controlled by Park Assist to manage traffic, ports, and security protocols.

For installations with high bandwidth requirements, this switch can be used for distribution within parking structures to allow dedicated 1G links to each floor cabinet. Uplink from the distribution switch to the core switch at the head end would be via 10G network module.

PART NUMBER	DESCRIPTION
IT-CISCO-C9300-24T-E	IT head end, Core Switch, 24x 1G RJ45 ports, support for 4x 1G SFP or 8x 10G SFP network module
IT-CISCO-C9300-NM-4G	Network module, 4x 1G SFP (optional)
IT-CISCO-C9300-NM-8X	Network module, 8x 10G SFP (optional)

Core Router

The Core Router allows the Park Assist network to securely connect to the internet for a variety of purposes including Park Assist's data mining applications, API access, and remote support. It includes a firewall, providing robust security coming in and out of the network, access control for users via IPsec VPN, and NAT of local subnets for internet access.

Specifications

NETWORK:

- WAN Ports	2x 1Gb Ethernet RJ45 1x 1Gb SFP
- LAN Ports	8x 1Gb Ethernet RJ45
- Security	50x IPsec VPN tunnels MAC filtering & port security Stateful inspection transparent firewall Dynamic and static port security

ELECTRICAL:

- Input Voltage	100-240V AC, 50-60 Hz
- Power Supply	12V DC 60W
- Heat Output	205 BTU/hr (max)

REGULATORY:

- Emission	FCC Part 15, CISPR22, EN55022, others
- Immunity	CISPR24, EN55024, others

DIMENSIONS:

- Mounting	1U height rack mount
- Weight	2.5kg (5.5lbs)

PART NUMBER	DESCRIPTION
IT-CISCO-892-FSP	IT head end, Core Router, 2x 1Gb RJ45 WAN, 1x Gb SFP WAN, 8x 1Gb RJ45 LAN, managed switch, rack mount kit not incldued
IT-CISCO-ACS-890-RM-19	1U rack mount kit for IT-CISCO-892-FSP

Tripp Lite
1111 W. 35th Street
Chicago, IL 60609 USA
Telephone: 773.869.1234
www.tripplite.com

SmartPro 120V 2.2kVA 1.92kW Line-Interactive Sine Wave UPS, 2U, Network Card Options, LCD Display, USB, DB9, ENERGY STAR

MODEL NUMBER: **SMART2200RM2U**





Highlights

- 2.2kVA / 2200VA / 1920W line interactive 2U rack/tower UPS, Sine Wave
- 120V output, Corrects brownouts and overvoltages from 83V to 145V
- 0.9 Power Factor, Interactive LCD interface
- 96% line-mode efficiency, 2 switched load banks
- USB, RS232, EPO and slot for Network Card options
- 120V NEMA 5-20P input, 4 NEMA 5-15R & 4 NEMA 5-15/20R outlets
- ENERGY STAR qualified

Package Includes

- SMART2200RM2U UPS system
- USB, Serial & EPO cabling
- 4 post rackmount installation kit
- Instruction manual

Description

Tripp Lite SmartPro Line Interactive UPS with enhanced LCD interface offers network-grade power protection for critical server, network and telecommunications equipment. Line Interactive Uninterruptible Power Supply (UPS) with built-in Auto-Voltage Regulation (AVR) actively corrects brownouts and overvoltages back to usable levels while maintaining a full battery charge in case of power failure. Tripp Lite's unique configuration excels in exceptionally poor-power environments with two separate levels of voltage boost to correct both slight undervoltages and severe brownout conditions. Interactive LCD interface reports UPS operating mode, detailed UPS and site-power data, plus enables a variety of UPS setup and configuration options. Super-fast switchover from line to battery power occurs within milliseconds to maintain operation of connected equipment without interruption or reboot. 96% line-mode efficiency offers reduced heat emissions and operating costs. Network management interfaces support communications via USB, RS-232 and slot for network management accessory card. HID-compliant USB port enables integration with built-in power management and auto shutdown features of Windows and Mac OS X. Network communications ports enable detailed monitoring of equipment load levels, self-test data and utility power conditions. PowerAlert UPS monitoring software is available via free download. Switched output load banks enable scheduled and real-time remote reboot and load shedding of select outlets. Emergency Power Off (EPO) interface. LCD display panel easily rotates for viewing in rackmount or tower configurations. Audible alarm with push-button momentary alarm-cancel and silent-mode configuration options. Programmable self-test. Field-replaceable, hot-swappable battery modules.

Features

- Tripp Lite SMART2200RM2U line interactive 2U rack/tower UPS with 2200VA / 2.2kVA / 1920W capacity
- Line interactive UPS with Automatic Voltage Regulation (AVR) corrects brownouts and overvoltages from 83 to 145V

- NEMA 5-20P input plug; 4 NEMA 5-15R & 4 NEMA 5-15/20R output receptacles, Two independently switchable output load banks
- Maintains uninterrupted operation of connected networking equipment during blackouts, surges, brownouts and overvoltages
- High 96% efficiency rating in line-power mode offers reduced power consumption and BTU emisssions
- Internal batteries offer 12 minutes at 50% load (960W) and 4.5 minutes at 100% load (1920W)
- Hot-swappable, user-replaceable internal batteries can be replaced with no disruption to connected equipment
- Intelligent battery management system extends battery life
- Front panel LCD monitoring screen with MODE and ENTER buttons reports operating mode with 5-bar battery charge graphic, plus 7 selectable screens of detailed UPS and site power information
- LCD interface also supports a number of advanced user setup and operating preferences
- Ships with 4 post rackmount installation hardware; Optional 2POSTRMKITWM enables 2 post rackmount/wallmount installation; Optional 2-9USTAND enables tower placement
- Built-in USB, RS-232 and slot for network management accessory cards; Compatible with Tripp Lite UPS management card options TLNETCARD, WEBCARDLX, SNMPWEBCARD and RELAYIOCARD
- HID-compliant USB port enables integration with built-in power management and auto shutdown features of Windows and Mac OS X
- USB & Serial ports enable data-saving unattended shutdown when used with Tripp Lite's PowerAlert software, available via FREE download from www.tripplite.com/poweralert
- Built-in Emergency Power Off (EPO) interface with cable
- This product is ENERGY STAR qualified for its ability to save customers money while helping to protect the environment

Specifications

OVERVIEW	
UPC Code	037332150622
OUTPUT	
Output Volt Amp Capacity (VA)	2200
Output kVA Capacity (kVA)	2.2
Output Watt Capacity (Watts)	1920
Output kW Capacity (kW)	1.92
Power Factor	.87
Nominal Output Voltage(s) Supported	110V; 115V; 120V
Nominal Voltage Details	120v nominal output in battery mode

Frequency Compatibility	60 Hz
Output Voltage Regulation (Line Mode)	-14%, +6%
Output Voltage Regulation (Battery Mode)	+/- 5%
Output Receptacles	(4) 5-15R; (4) 5-15/20R
Load Management Receptacles	Two switchable single-outlet load banks
Output AC Waveform (AC Mode)	Pure Sine wave
Output AC Waveform (Battery Mode)	Pure Sine wave
Individually Controllable Load Banks	Yes
INPUT	
Rated input current (Maximum Load)	16A (120V)
Nominal Input Voltage(s) Supported	120V AC
UPS Input Connection Type	5-20P
Input Circuit Breakers	20A
UPS Input Cord Length (ft.)	10
UPS Input Cord Length (m)	3.1
Recommended Electrical Service	20A 120V
Input Phase	Single-Phase
BATTERY	
Full Load Runtime (min.)	4.5 min. (1920w)
Half Load Runtime (min.)	12 min. (960w)
DC System Voltage (VDC)	48
Battery Recharge Rate (Included Batteries)	Less than 4.5 hours from 10% to 90% (typical, full load discharge)
Internal UPS Replacement Battery Cartridge	RBC94-2U
Battery Access	Front panel battery access door
Battery Replacement Description	Hot-swappable, user replaceable batteries
Expandable Runtime	No
VOLTAGE REGULATION	
Voltage Regulation Description	Automatic voltage regulation (AVR) maintains line power operation with an input voltage range of 83 to 145
Overvoltage Correction	Input voltages between 127 and 145 are reduced by 12%
Undervoltage Correction	Input voltages between 108 and 96 are boosted by 12%
Severe Undervoltage Correction	Input voltages between 83 and 95 are boosted by 24%

USER INTERFACE, ALERTS & CONTROLS	
Front Panel LCD Display	Front panel LCD information and configuration screen offers detailed UPS and site power status and operating data, plus configuration of voltage, operating mode, alarm function and a variety of additional options (see manual for detailed LCD configuration and monitoring options)
Switches	3 pushbutton switches control OFF / ON power status, MODE selection and MUTE / ENTER control functions
Alarm Cancel Operation	Power-fail alarm can be temporarily silenced using alarm-cancel switch; silent mode alarm configuration option available
Audible Alarm	Audible alarm indicates UPS startup, power-failure, low-battery, overload, UPS fault and remote shutdown conditions
SURGE / NOISE SUPPRESSION	
UPS AC Suppression Joule Rating	570
UPS AC Suppression Response Time	Instantaneous
EMI / RFI AC Noise Suppression	Yes
PHYSICAL	
Included Mounting Accessory Description	4 post rackmount installation accessories included
Installation Form Factors Supported with Optional Accessories	2 post rackmount (2POSTRMKITWM); Wallmount (2POSTRMKITWM); Tower (2-9USTAND); 2-4 post front rail rackmount (UPSHDEARKIT)
Primary Form Factor	Rackmount
UPS Power Module Dimensions (hwd, in.)	3.43 x 17.32 x 19.46
UPS Power Module Dimensions (hwd, cm)	8.71 x 43.99 x 49.43
Rack Height (U Spaces)	2
Minimum Required Rack Depth (inches)	24.46
Minimum Required Rack Depth (cm)	62.13
UPS Power Module Weight (lbs.)	57.6
UPS Power Module Weight (kg)	26.13
Shipping Dimensions (hwd / in.)	8.90 x 24.30 x 21.30
Shipping Dimensions (hwd / cm)	22.61 x 61.72 x 54.10
Shipping Weight (lbs.)	71.80
Shipping Weight (kg)	32.57
Cooling Method	Fan
UPS Housing Material	Steel
Primary UPS Height (mm)	87
Primary UPS Width (mm)	440
Primary UPS Depth (mm)	494

ENVIRONMENTAL	
Operating Temperature Range	+32 to +104 degrees Fahrenheit / 0 to +40 degrees Celsius
Storage Temperature Range	+5 to +122 degrees Fahrenheit / -15 to +50 degrees Celsius
Relative Humidity	0 to 95%, non-condensing
AC Mode BTU / Hr. (Full Load)	306
Battery Mode BTU / Hr. (Full Load)	1157
AC Mode Efficiency Rating (100% Load)	96%
COMMUNICATIONS	
Communications Interface	USB (HID enabled); DB9 Serial; EPO (emergency power off); Slot for SNMP/Web interface
Network Management Cards	SNMPWEBCARD; TLNETCARD; WEBCARDLX; RELAYIOCARD
Network Monitoring Port Description	Supports detailed monitoring of UPS and site power conditions
PowerAlert Software	For local monitoring via the UPS's built-in communication ports, download PowerAlert Local software at http://www.tripplite.com/poweralert
Communications Cable	USB, DB9 and EPO cabling included
WatchDog Compatibility	Supports Watchdog application, OS and hard-reboot restart options for remote applications
Network UPS Tools Compatibility	NUT compatible. See the full list of Tripp Lite NUT compatible UPS systems at http://www.networkupstools.org/stable-hcl.html?manufacturer=Tripp Lite
LINE / BATTERY TRANSFER	
Transfer Time	5 milliseconds (AC to battery mode), 1 millisecond (Battery to AC mode)
Low Voltage Transfer to Battery Power (Setpoint)	83
High Voltage Transfer to Battery Power (Setpoint)	145
SPECIAL FEATURES	
Grounding Lug	Back panel grounding lug
Cold Start (Startup in Battery Mode During a Power Failure)	Cold-start operation supported
High Availability UPS Features	Hot swappable batteries
Green Energy-Saving Features	Greater than 95% efficiency - GREEN UPS; Individually controllable load banks
CERTIFICATIONS	
UPS Certifications	ENERGY STAR Qualified; Meets FCC Part 15 Category A (EMI); ROHS (Restriction of Hazardous Substances); Tested to CSA (Canada); Tested to NOM (Mexico); Tested to UL1778 (USA)
WARRANTY	

Tripp Lite
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Product Warranty Period (Worldwide)	2-year warranty, 3 year with registration. Note: Registration is required for 3-year warranty.
Connected Equipment Insurance (U.S., Canada & Puerto Rico)	$250,000 Ultimate Lifetime Insurance

Equipment Rack

The Equipment Rack provides a mounting frame for Park Assist head-end hardware. Designed for standard 19" rack-mount equipment, racks are available with vertical capacity of 12U, 25U, or 42U depending on project-specific requirements.

Rack rails are adjustable to accommodate different sizes of equipment. Ventilation on multiple sides facilitates cooling by convection. Removable side panels are lockable, and the front door is lockable and reversible.

PART NUMBER	DESCRIPTION
IT-RACK12	IT head end, Enclosed equipment rack, 12RU
IT-RACK25	IT head end, Enclosed equipment rack, 25RU
IT-RACK42	IT head end, Enclosed equipment rack, 42RU

Specifications

DIMENSIONS:

- Rack height	12U	25U	42U
- Unit height	637.5 mm (25.1")	1245 mm (49")	2000 mm (78.5")
- Unit width	600 mm (23.6")	600 mm (23.6")	600 mm (23.6")
- Unit depth	851 mm (33.5")	1092 mm (43")	1092 mm (43")
- Maximum rack depth	826 mm (32.5")	940 mm (37")	940 mm (37")
- Unit weight	47.6 kg (105 lbs)	88.5 kg (195 lbs)	128 kg (281 lbs)
- Weight capacity (stationary)	453.6 kg (1000 lbs)	1360 kg (3000 lbs)	1360 kg (3000 lbs)
- Weight capacity (rolling)	453.6 kg (1000 lbs)	1020 kg (2250 lbs)	1020 kg (2250 lbs)
- Color	Black	Black	Black