

## SURVEYORVFT HIGH-PERFORMANCE PTZ DOME SERIES



### System Overview

SurveyorVFT Camera Dome System is a compact, lightweight and intelligent security device comprised of a camera, pan/tilt drive, receiver and CPU-based electronics all in an attractive and covert enclosure. SurveyorVFT can be programmed and operated using any Pilot or NOVA™ control systems and enhanced Vicoax® protocol. It is available in a variety of indoor and outdoor versions and can be configured with a variety of camera and lower dome types. Refer to Table 1.

The basic SurveyorVFT provides video transmission over coaxial cable. Models are available that provide fiber-optic and twisted-pair (UTP) video transmission. Each of these options includes an interface board that allows the specific type of video transmission. An appropriate receiver is required.

The Vicon SurveyorVFT camera dome can be used in conjunction with competitive PTZ drivers through DIP-switch selection.

Two camera types available, each with NTSC and PAL versions, a 23X and a 36X day/night camera/lens. These day/night models feature wide dynamic range (WDR) and noise reduction (DNR/FNR). See Technical Information and Table 3 for camera features.

- Coaxial video transmission, fiber and UTP video transmission versions
- DIP-switch selectable competitive camera dome protocols eliminate the need for external translators
- On-board memory retained in housing; designed for easy installation and servicing
- 360° continuous rotation pan-and-tilt drive with a variety of color domes available
- Day/night 23X and 36X camera options, maximum 432X optical/digital zoom
- EIS (image stabilizer) on 36X model
- High-resolution (540 TVL)
- Indoor or outdoor, ceiling or pendant configurations
- Digital Slow Shutter feature for enhanced low-light applications
- Wide Dynamic Range provides best contrast for high quality images
- Outdoor version provides environmental protection, pressurized (PRS) and maximum security (M) versions
- GUI provides configuration of all features
- Digital Noise Reduction (DNR) and enhanced sensitivity
- Enhanced autofocus

### Construction and Installation

Vicon has a variety of hardware available to install the SurveyorVFT in almost any environment. For indoor applications, an in-ceiling and pendant style camera is offered; for outdoor installations, a pendant configuration is available with a standard, pressurized, or high-impact housing. The pressurized and impact-resistant versions of the lower dome are constructed of impact-resistant, polycarbonate and are secured by tamperproof screws. The outdoor units are provided with a blower and thermostatically-controlled heater. Several mounting accessories are available to fit almost any installation need. Refer to Table 1 for specific SurveyorVFT models and mounting options.

The SurveyorVFT is designed for easy snap-in installation. The drive simply snaps into the housing. When removed, the housing retains all programmed functions in its on-board memory. The customer interface board snaps down for easy access and the PCB provides removable terminal blocks for simple wiring connections. The SurveyorVFT has one of the lowest current draws compared to other domes in its class.

## Electrical

Input Voltage:	18-30 VAC. (Will operate within spec on voltages up to 32 VAC. For voltages between 30-32 VAC, use a Class 3 indoor/dry or outdoor/wet power supply.)
Maximum Operating Distances:	Refer to Table.
Power Consumption:	Indoor: Coax/Fiber/UTP: 24 W maximum; Outdoor: Coax/Fiber/UTP: 50 W maximum;
Fuse:	F1: 5x20 mm, 1.6 A 250 VAC slo-blo. F2: 5x20 mm, 2.5 A 250 VAC slo-blo.
Connector Types:	Video Out: See version type. Power: 2-position removable screw terminal block. Control Input/Output: See version type. Relay Output: See version type. Alarm Input: 8-position removable screw terminal block.
Video Output Impedance:	75 ohms.
Certifications:	CE: FCC Class A. International Protection (IP) Ratings: Outdoor/Impact-Resistant: IP66. Pressurized: IP67 Indoor Pendant: IP62. In-Ceiling: IP51. NEMA.

## Operational

Drive Type:	Electrical motorized pan and tilt with electronic control.
Pan View:	360°.
Tilt View:	-2.5 to 92.5°.
Pan Speed:	Variable, 0.1 to 360°/sec (120°/sec in 22X).
Autopan Speed:	Variable, 0.1 to 42°/sec; enable/disable.
Tilt Speed:	Variable, 0.1 to 150°/sec (90°/sec in 22X).
Zoom/Focus Speed:	Less than 1.8 sec. tele to wide.
Preset Capability:	79 individually programmable.
Preset Solving Speed:	1 second nominal.
Preset Accuracy (Pan and Tilt):	0.1° maximum.
Tour Capabilities:	8 tours (22X, 4 tours). 32 programmable events per tour. Events may be preset positions with speed control, alarm acknowledge, dwell time control, relay control, call autotours, tour repeat or another tour, save/recall camera status.

Autotour Capabilities:	2 autotours available with 256 pan, tilt and zoom functions per autotour. Programming is done in real time with joystick and push buttons. Not available in 22x version.
Sectoring:	16 maximum, programmable for size and titling. Sectors have the capability to be blanked out. Not available in 22x version.
Alarm Capabilities:	4 alarm inputs, individually programmable. Functional state enable/disable. Report state (report on/off). Active state (high/low). Mode (manual, momentary or automatic) with programmable dwell time control. Set and reset action (preset solve, relay on/off, tour, autotour). Alarm titling.
Alarm Output:	1 relay, momentary or latching. Power-on state definition (on/off). Relay function status titling. Resistive Load: 0.3A @125 VAC; 1.5A @ 30 VDC. Inductive Load: 0.15A @125 VAC; 0.75A @ 30 VDC.
Control Display:	<b>On-screen, menu-driven system allowing full configuration of the dome.</b>
Privacy Masks:	16 programmable, zoom-scalable. Not available in 22x version. Not available in 22x.
Scheduling:	Real-time clock allows scheduling of up to 64 events, including presets, relays, alarms, tours or autotours.
Multi-Language Menu:	English, Spanish, French, Italian and German.
Camera Features:	6 motion detection zones with 3 sensitivity levels; image freeze during preset solve; flip (invert) image.
Screen Titling Capabilities:	Programmable On/Off for camera, preset, sector, relay and alarms; date/time enable/disable. Compass/azimuth, 8 compass headings (N, NE, E, SE, S, SW, W, NW). 20 characters maximum; selectable position. Three text sizes for top 2 lines. 20 characters. Fade capability.
Auto Baud:	Auto baud detection in RS-422/ RS-485 mode; 4800, 9600, 19,200 bps baud rates supported.
Absolute Position Control:	<b>Available in RS-422/RS-485 mode.</b> Pan/tilt: 0.125°; zoom: 0.125X.
Competitive Protocols:	DIP switch selectable.
Control Protocol Hardware:	Vicon control system or keypad. NTCIP: 1103 compatible hardware.

## Camera/Lens

Day/night cameras (NTSC/PAL) in a variety of zoom and feature capabilities. Refer to Table 3 for complete specifications.

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Specifications subject to change without notice.

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## Coaxial/UTP Version

Control Protocol Software:	Vicon's Surveyor Direct Control program run on a standard PC type computer with an RS-422/485 half duplex protocol interface.
Control Protocol Format: (Note on Competitive Protocols: All companies make changes and improvements in their products. Because this product can interface with equipment not manufactured by Vicon, there is a possibility that the interface protocols may have changed since Vicon tested this product with the interfacing equipment. Vicon recommends purchasing a single unit for bench testing prior to purchasing and installing this product in quantity.)	<p>Vicon: RS-422 or RS-485 protocol. Communication is simplex or half duplex operation at 4800, 9600 or 19,200 baud or Vicon's enhanced VicoaxII protocol (superimposed data on composite video signal) automatically detected upon power up. RS-485 protocol utilizes full tri-state outputs for daisy chain capability</p> <p>Pelco: Pelco D Protocol (3/2/99); RS-485 N.8.1, simplex 2400 bps, duplex 4800 bps.</p> <p>Sensormatic/AD: RS-422/RS-485 communication protocols user's guide Rev. A (csd 05/00); RS-422/RS-485 duplex N.8.1 4800 bps. May require RS-422 converter, RCSN422.</p> <p>Ultrak: KD6, KD6-Z control protocols; RS-485 simplex E.8.1, 9600 bps.</p> <p>Philips: Receiver/Driver/Auto Dome control code protocol;</p> <p>RS-232 simplex N.8.1, 2400 or 9600 bps.</p> <p>Kalatel: Non-repeating transmit commands; RS-422 simplex N.8.1, 9600 bps.</p> <p>Cohu: MPC System RS-422 interface; RS-422 duplex N.8.1, 9600 bps.</p> <p>Panasonic: Panasonic conventional and new camera protocol.</p> <p>NTCIP: 1103 protocol compatible.</p>
Connector Types:	<p>Video Out:</p> <p>Coax: BNC-F.</p> <p>UTP: 3-position removable screw terminal block.</p> <p>Control Input/Output: 8-position removable screw terminal block.</p> <p>Relay Output: 8-position removable screw terminal block.</p>

## Fiber-Optic Version

Receiver Specs:	<p>I/O Level: 1 V p-p.</p> <p>I/O Impedance: 75 ohms.</p> <p>Bandwidth: 8 MHz.</p> <p>Differential Gain: 5%.</p> <p>Differential Phase: 5°.</p> <p>SNR: 60dB.</p> <p>Data:</p> <p>Data Rate: Up to 19.2 Kbps.</p> <p>Optical:</p> <p>Wavelength: 850/1300 nm.</p> <p>Loss Budget (62.5u): 12 dB.</p> <p>Connector: ST.</p> <p>Fiber: One multimode, 62.5u</p>
Connector Types:	<p>Video Out: ST type.</p> <p>Control Input/Output: ST type.</p> <p>Relay Output: 8-position removable screw terminal block.</p>

## Video Transmission

Maximum Distances:	<p>Coax: 1100 ft (350 m), cable dependant.</p> <p>Vicoax: 1500 ft up to 140° F (60° C); 1000 ft up to 165° F(74° C).</p> <p>UTP: up to 3000 ft (915 m), model dependant.</p> <p>Fiber: 1 mile min.; longer distances available dependant on cable quality.</p>
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## Environmental

**Operating Temperature Range:** Indoor units: 32 to 132° F (0 to 55° C).  
Outdoor units: -29 to 165° F (-34 to 74° C) in accordance with NEMA 2.1.5.1 STD 2; -40 to 132° F (-40 to 55° C), continuous rotation.

**Operating Humidity Range:** Indoor: 0 to 90% relative, non-condensing.  
Outdoor: 100% relative, non-condensing.

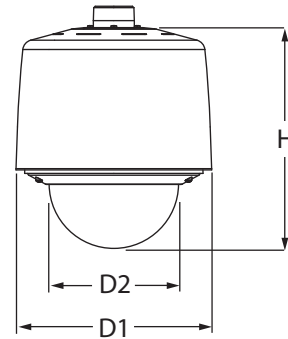
**Storage Temperature Range:** -40 to 150° F (-40 to 65° C).

**Storage Humidity Range:** 0 to 90% relative, non-condensing.

**Rain/Wind:** Outdoor: Heavy rain up to 4 in./hr at winds up to 90 mph, when mounted on standard Vicon wall mount.

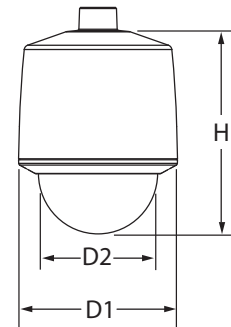
## Outdoor Pendant

- Die-cast aluminum enclosure, molded plastic sunshield
- Vandal-proof clear acrylic/polycarbonate dome
- Standard 1-1/2 inch male NPT fitting or metric equivalent
- Unit Diameter (D1): 9.0 inches (228 mm)
- Lower Dome Diameter (D2): 5.9 inches (150 mm)



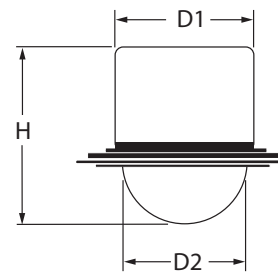
## Indoor Pendant

- Molded plastic enclosure
- Vandal-proof smoked acrylic dome
- Standard 1-1/2 inch male NPT fitting or metric equivalent
- Diameter (D1): 8.0 inches (203 mm)



## Indoor In-Ceiling

- Black anodized aluminum
- Vandal-proof smoked acrylic dome
- Diameter (D1): 7.1 inches (180 mm)
- Lower Dome Diameter (D2): 5.9 inches (150 mm)



Specifications	SVFT-C23, SVFT-P23, SVFT-W23	SVFT-C23C, SVFT-P23C, SVFT-W23C	SVFT-W36/SVFT-W36P
	NTSC		PAL
	NTSC		PAL
<b>Type</b>	Color Day/Night	Color Day/Night	Color Day/Night
<b>Optical Zoom</b>	23X	23X	36X
<b>Digital Zoom</b>	12X	12X	12X
<b>Total Zoom</b>	276X	276X	432X
<b>Image Device</b>	1/4-inch interline transfer CCD	1/4-inch interline transfer CCD	1/4-inch interline transfer CCD
<b>Picture Elements</b>	768(H) x 494 (V), 380,000 pixels	847(H) x 532 (V), 490,000 pixels	768(H) x 494 (V), 380,000 pixels/752(H) x 582 (V), 438,000 pixels
<b>Scanning System</b>	Progressive scan	Progressive scan	Progressive scan/normal or high-sensitive
<b>Sensitivity</b>	0.0009 fc (0.01 lux) auto 1/4s, IR OFF 0.009 fc (0.1 lux) auto 1/4 s, IR ON 0.09 fc (1 lux) auto 1/60s, IR ON	0.0009 fc (0.01 lux) auto 1/3s, IR OFF 0.009 fc (0.1 lux) auto 1/3s, IR ON 0.09 fc (1 lux) auto 1/50s, IR ON	0.0009 fc (0.01 lux) auto 1/4s, IR OFF 0.05 fc (0.5 lux) auto 1/60s, I R ON (NTSC; 1/3s, 1/50s - PAL)
<b>Horizontal Resolution</b>	540 TV lines	540 TV lines	540 TV lines
<b>S/N Ratio</b>	More than 50 dB	More than 50 dB	50 dB
<b>Synchronization</b>	Internal/External (line lock on AC line)	Internal/External (line lock on AC line)	Internal/External (line lock on AC line)
<b>Automatic Gain Control (AGC)</b>	Adjustable to 30 dB	Adjustable to 30 dB	Adjustable to 30 dB
<b>Backlight Compensation</b>	Software adjustable background video level	Software adjustable background video level	ON/OFF
<b>Iris Control</b>	Automatic/Manual	Automatic/Manual	Automatic/Manual
<b>Wide Dynamic Range</b>	OFF/ON (Auto or Manual)	OFF/ON (Auto or Manual)	OFF/ON (Auto or Manual)
<b>Digital Noise Reduction</b>	Yes	Yes	Yes
<b>EIS (Image Stabilizer)</b>	N/A	N/A	Yes
<b>Video Focus</b>	Automatic/Manual 1.0 m (tele ) - 0.01 m (wide)	Automatic/Manual 1.0 m (tele ) - 0.01 m (wide)	Automatic/Manual
<b>White Balance</b>	Automatic/Manual Red/Blue Gain Level	Automatic/Manual Red/Blue Gain Level	Automatic/Manual; Red/Blue Gain Level
<b>Shutter Speed (sec)</b>	Auto (default): 1/60-1/4K Auto (DSS): 1/2-1/4K Man:1/2-1/30K	Auto (default): 1/50-1/4K Auto (DSS): 1/1.5-1/4K Man:1/1.5-1/30K	Auto (default): 1/60-1/4K Auto (DSS): 1/2-1/4K Man:1/1-1/30K /Auto (default): 1/50-1/4K Auto (DSS): 1/1.5-1/4K Man:1/0.75-1/30K
<b>Lenses</b>			
<b>Focal Length (mm)</b>	3.6 - 82.8	3.6 - 82.8	3.3 – 119
<b>Aperture max</b>	f/1.6	f/1.6	f/1.4
<b>Horizontal Angle of View</b>	54° wide, 2.5° tele	54° wide, 2.5° tele	60.2° wide, 1.8° tele

SurveyorVFT Model  
Feature Summary

Features	SVFT-23X	SVFT-36X
Digital/Total Zoom	12/276X	12/432X
Focal Length	3.6-82.8 mm	3.4-119 mm
Horizontal Resolution	540 TVL	540 TVL
Wide Dynamic Range (WDR)	Yes	Yes
Image Stabilization	N/A	EIS
Digital Noise Reduction	Yes	Yes
Pan View	360° continuous	360° continuous
Tilt View	-2.5° - 92.5°	-2.5° - 92.5°
Pan Speed	Variable, 0.1 - 360°/sec	Variable, 0.1 - 360°/sec
Tilt Speed	Variable, 0.1 - 150°/sec	Variable, 0.1 - 150°/sec
Optical Zoom Speed	<1.8 sec, end to end	<1.8 sec, end to end
Preset Capability	79 programmable	79 programmable
Tours/Autotours	8/2	8/2
Privacy Mask	16	16
Alarms	4 inputs/1 relay output	4 inputs/1 relay output
In-Ceiling/Indoor/Outdoor Rating	IP51/IP52/IP66	IP51/IP52/IP66

Maximum Power Cable Distances

Wire Size (AWG) Annealed Copper Wire	Distance ft (m)							
	Indoor				Outdoor			
	24 VAC		28 VAC		24 VAC		28 VAC	
	Coax, Fiber, UTP	ViconNet	Coax, Fiber, UTP	ViconNet	Coax, Fiber, UTP	ViconNet	Coax, Fiber, UTP	ViconNet
20	300 (91)	215 (66)	500 (152)	350 (107)	165 (65)	130 (40)	280 (85)	217 (66)
18	469 (143)	336 (102)	781 (238)	547 (167)	258 (102)	203 (62)	438 (134)	340 (104)
16	750 (229)	538 (164)	1250 (381)	875 (267)	413 (126)	325 (99)	700 (213)	544 (169)
14	1200 (366)	860 (262)	2000 (610)	1400 (427)	660 (262)	520 (159)	1120 (341)	870 (265)
12	1875 (572)	1344 (410)	3125 (953)	2188 (667)	1031 (314)	812 (248)	1750 (533)	1359 (414)






SurveyorVFT Models  
(NTSC/Coax)

Environment*	Mount Type	Optical Zoom/ Total Zoom	Camera Type	Lower Dome	Model Number
Indoor	In-Ceiling	23x/276x	Color (day/night; WDR; DNR)	Smoked	SVFT-C23
	Pendant	23x/276x	Color (day/night; WDR; DNR)	Smoked	SVFT-P23
Outdoor	Pendant	23x/276x	Color (day/night; WDR; DNR)	Clear	SVFT-W23
		36x/432x	Color/ (day/night; WDR; DNR, image stabilizer)	Clear	SVFT-W36

For the PAL version, add a P to the models number, for Fiber Optic option, add -F to the model number; for the UTP option, add -T to the model number. \*Outdoor units include a blower and thermostatically-controlled heater.

## Accessories

### Mounts

	Description	Model Number
	Indoor or outdoor wall mount	SVFT-UWM
	Indoor or outdoor ceiling mount	SVFT-UCM
	Indoor or outdoor short wall mount	SVFT-WM
	Outdoor parapet mount	SVFT-UPM-1
	Outdoor roof mount	SVFT-URM-1

### Power Supplies

Description	Model Number
24 VAC output, 120 VAC input, single-channel	S24WPS-1
24 VAC output, 230 VAC input, single-channel	S24PS-230
28 VAC output, 120 VAC input, single-channel	S28PS-1
24/28 VAC output 120/230 VAC input, single-channel	S28WPS-1/ S28WPS-230
24/28 VAC output 120 VAC input, four-channel	V2448-175PS
24 VAC output 120 VAC input, eight-channel	V248-600PS
24/28 VAC output 120 VAC input, eight-channel	V248-300PS
28 VAC output 120 VAC input, sixteen-channel	V2416-600PS

### UTP Options

Description	Model Number
Tranceiver, transmits or receives video and Vicoax data up to 1000 ft; used as receiver for UTP dome	V-VID-BAL

### Fiber Optic Options

Description	Model Number
Receiver, for SurveyorVFT transmission, simplex video and duplex RS-422 data	VF-1400R
Receiver, for SurveyorVFT transmission, simplex video and duplex RS-422 data	VF-1400RR
Card cage with power supply	VF-SR-20/2