SurveyorVFT High-Performance PTZ Dome Series

- Coaxial and TCP/IP (ViconNet) video transmission
- 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
- Color 22X, day/night 23X and 36X camera options, maximum 432X optical/digital zoom
- EIS (image stabilizer) on 36X model
- High-resolution in 23X and 36X versions (540 TVL)
- Indoor or outdoor, ceiling or pendant configurations
- Digital Slow Shutter feature for enhanced low-light applications
- Wide Dynamic Range (23X and 36X) provides best contrast for high quality images
- Outdoor version provides environmental protection, pressurized (PRS) and maximum security (M) versions available
- Convenient integration into any existing CCTV matrix system
- GUI provides configuration of all features
- 23X/36X version provides Digital Noise Reduction (DNR) and enhanced sensitivity
- Enhanced autofocus

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®II 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.* An option is available that provides TCP/IP (ViconNet®) video transmission.

The ViconNet provides support for network connection to Kollector Digital Video Recorders and ViconNet Workstations via ViconNet software. A pre-installed network interface board allows direct plug-in to a system network switch. Video from the camera is available to all network recorders and workstations for live view and recording.

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

There are three camera types available, each with NTSC and PAL versions. The basic model is a 22X high-resolution camera/lens. The second version is a 23X day/night camera/lens and the third is a 36X day/night camera/lens. The day/night models feature wide dynamic range (WDR) and noise reduction (DNR/FNR). See Technical Information and Table 3 for camera features.

Outdoor 23X and 36X models are available with fiber or UTP (twisted pair) video transmission.

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 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.
Current:	Indoor: Coax: 1.0 A; ViconNet: 1.4 A. Outdoor: Coax: 1.8 A; ViconNet: 2.3 A.
Power Consumption:	Indoor: Coax: 24 W maximum; ViconNet: 34 W. Outdoor: Coax: 44 W maximum; ViconNet: 54 W.
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: IP66, NEMA 4X. Indoor Pendant: IP62. In-Ceiling: IP51.

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.
Relay 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:	On-screen, menu-driven system allowing full configuration of the dome.
Privacy Masks:	16 programmable, zoom-scalable. Not available in 22x version.
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.
23X/36X 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:	Available in RS-422/RS-485 mode. Pan/tilt: 0.125°; zoom: 0.125X.
Competitive Protocols:	DIP switch selectable.
Control Protocol Hardware:	Vicon control system or keypad. NTCIP: 1103 compatible hardware.
PTZ Functions:	Auto Home: Can program to go to a set home location after a set time duration of no activity or to its home upon power-up. Scalable PTZ: Can enable to adjust the pan and tilt speed relative to the amount of magnification. PTZ Route: Takes shortest distance to preset PTZ selection. Overload: Software control to prevent movement beyond limits. Lens Speed: Selectable Low, medium, high from control station. Iris Protection: Autoiris and auto shutter adjustment for amount of light.

Camera/Lens

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

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.**)**	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 Pelco: Pelco D Protocol (3/2/99); RS-485 N.8.1, simplex 2400 bps, duplex 4800 bps. 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. Ultrak: KD6, KD6-Z control protocols; RS-485 simplex E.8.1, 9600 bps. Philips: Receiver/Driver/Auto Dome control code protocol; RS-232 simplex N.8.1, 2400 or 9600 bps. Kalatel: Non-repeating transmit commands; RS-422 simplex N.8.1, 9600 bps. Cohu: MPC System RS-422 interface; RS-422 duplex N.8.1, 9600 bps. Panasonic: Panasonic conventional and new camera protocol. NTCIP: 1103 protocol compatible.
Connector Types:	Video Out: Coax: BNC-F. UTP: 3-position removable screw terminal block. Control Input/Output: 8-position removable screw terminal block. Relay Output: 8-position removable screw terminal block.

ViconNet Version (LAN/TCP/IP)

Communication Protocol Hardware:	Vicon's Kollector Digital Recorders and ViconNet Workstations.
LAN Interface:	100 Mbps, TCP/IP Unicast.
Connector Types:	Video Out: RJ-45 jack. Network: Ethernet 100Base-T RJ-45 jack. 10/100 Mbps required for network connection. Relay Output: 3-position removable screw terminal block. Audio: 2 1/8-in. phono jacks

Video Transmission

Maximum Distances:	Coax: 1100 ft (350 m), cable dependant. Vicoax: 1500 ft up to 140° F (60° C); 1000 ft up to 165° F(74° C). UTP: up to 3000 ft (915 m), model dependant. Fiber: 1 mile min.; longer distances available dependant on cable quality. ViconNet: 100 meters without repeater.

Maximum Power Cable Distances

Wire Size (AWG) Annealed Copper Wire	Distance ft (m)							
	Indoor				Outdoor			
	24 VAC		28 VAC		24 VAC		28 VAC	
	Coax	ViconNet	Coax	ViconNet	Coax	ViconNet	Coax	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)

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:
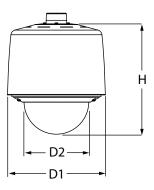-40 to 150° F (-40 to 65° C).

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.

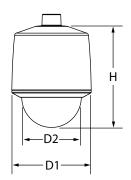## Outdoor Pendant

- Die-cast aluminum enclosure, molded plastic sunshield
- Clear acrylic 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)
- Height (H): 10.3 inches (262 mm)
- Weight: 7.7 lb (3.5 kg)

Indoor Pendant

- Molded plastic enclosure
- Smoked acrylic dome
- Standard 1-1/2 inch male NPT fitting or metric equivalent
- Diameter (D1): 8.0 inches (203 mm)
- Lower Dome Diameter (D2): 5.9 inches (150 mm)
- Height: 10.0 inches (254 mm)
- Weight: 4.7 lb (2.1 kg)

Indoor In-Ceiling

- Black anodized aluminum
- Smoked acrylic dome
- Diameter (D1): 7.1 inches (180 mm)
- Lower Dome Diameter (D2): 5.9 inches (150 mm)
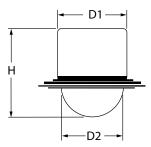- Height: 9.7 inches (246 mm)
- Weight: 5.1 lb (2.3 kg)

Specifications	Model Number				
	SVFT-C22CA, SVFT-P22CA, SVFT-W22CA	SVFT-C22CA-C, SVFT-P22CA-C, SVFT-W22CA-C	SVFT-C23, SVFT-P23, SVFT-W23	SVFT-C23C, SVFT-P23C, SVFT-W23C	SVFT-W36/ SVFT-W36-C
	Formats				
	NTSC	PAL	NTSC	PAL	NTSC/PAL
Type	Color	Color	Color	Color	Color
Optical Zoom	22X	22X	23X	23X	36X
Digital Zoom	12X	12X	12X	12X	12X
Total Zoom	264X	264X	276X	276X	432X
Image Device	1/4-inch interline transfer CCD	1/4-inch interline transfer CCD	1/4-inch interline transfer CCD	1/4-inch interline transfer CCD	1/4-inch interline transfer CCD
Picture Elements	768(H) x 494 (V), 380,000 pixels	752(H) x 582 (V), 438,000 pixels	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
Scanning System	2:1 interlace, 525 lines 60 fields/sec	2:1 interlace, 625 lines 50 fields/sec	Progressive scan	Progressive scan	Progressive scan/ normal or high-sensitive
Sensitivity	0.2 fc (2 lux), 1/60s	0.2 fc (2 lux), 1/50s	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, IR ON (NTSC; 1/3s, 1/50s - PAL)
Horizontal Resolution	470 TV lines	470 TV lines	540 TV lines	540 TV lines	540 TV lines
S/N Ratio	More than 50 dB	More than 50 dB	More than 50 dB	More than 50 dB	50 dB
Synchronization	Internal/External (line lock on AC line)	Internal/External (line lock on AC line)	Internal/External (line lock on AC line)	Internal/External (line lock on AC line)	Internal/External (line lock on AC line)
Automatic Gain Control (AGC)	N/A	N/A	Adjustable to 30 dB	Adjustable to 30 dB	Adjustable to 30 dB
Backlight Compensation	ON/OFF	ON/OFF	Software adjustable background video level	Software adjustable background video level	ON/OFF
Iris Control	Automatic/Manual	Automatic/Manual	Automatic/Manual	Automatic/Manual	Automatic/Manual
Wide Dynamic Range	N/A	N/A	OFF/ON (Auto or Manual)	OFF/ON (Auto or Manual)	OFF/ON (Auto or Manual)
Digital Noise Reduction	N/A	N/A	Yes	Yes	Yes
EIS (Image Stabilizer)	N/A	N/A	N/A	N/A	Yes
Video Focus	Automatic/Manual	Automatic/Manual	Automatic/Manual 1.0 m (tele) - 0.01 m (wide)	Automatic/Manual 1.0 m (tele) - 0.01 m (wide)	Automatic/Manual
White Balance	Automatic/Manual; Red/Blue Gain Level	Automatic/Manual; Red/Blue Gain Level	Automatic/Manual Red/Blue Gain Level	Automatic/Manual Red/Blue Gain Level	Automatic/Manual; Red/Blue Gain Level
Shutter Speed (sec)	1/60 - 1/30K	1/50 - 1/30K	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

Specifications	Model Number				
	SVFT-C22CA, SVFT-P22CA, SVFT-W22CA	SVFT-C22CA-C, SVFT-P22CA-C, SVFT-W22CA-C	SVFT-C23, SVFT-P23, SVFT-W23	SVFT-C23C, SVFT-P23C, SVFT-W23C	SVFT-W36/ SVFT-W36-C
	Formats				
	NTSC	PAL	NTSC	PAL	NTSC/PAL
Lenses					
Focal Length (mm)	4 - 88	4 - 88	3.6 - 82.8	3.6 - 82.8	3.3 – 119
Aperture max	f/1.6	f/1.6	f/1.6	f/1.6	f/1.4
Horizontal Angle of View	47.3° wide, 2.2° tele	47.3° wide, 2.2° tele	54° wide, 2.5° tele	54° wide, 2.5° tele	60.2° wide, 1.8° tele

SurveyorVFT Model Feature Summary

Features	SVFT-22CA	SVFT-23X	SVFT-36X
Digital/Total Zoom	12/264X	12/276X	12/432X
Focal Length	4-88 mm	3.6-82.8 mm	3.4-119 mm
Horizontal Resolution	470 TVL	540 TVL	540 TVL
Wide Dynamic Range (WDR)	N/A	Yes	Yes
Image Stabilization	N/A	N/A	EIS
Digital Noise Reduction	N/A	Yes	Yes
Pan View	360° continuous	360° continuous	360° continuous
Tilt View	-2.5° - 92.5°	-2.5° - 92.5°	-2.5° - 92.5°
Pan Speed	Variable, 0.1 - 120°/sec	Variable, 0.1 - 360°/sec	Variable, 0.1 - 360°/sec
Tilt Speed	Variable, 0.1 - 90°/sec	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	<1.8 sec, end to end
Preset Capability	79 programmable	79 programmable	79 programmable
Tours/Autotours	4/NA	8/2	8/2
Privacy Mask	N/A	16	16
Alarms	4 inputs/1 relay output	4 inputs/1 relay output	4 inputs/1 relay output
In-Ceiling/Indoor/Outdoor Rating	IP51/IP52/IP66	IP51/IP52/IP66	IP51/IP52/IP66

www.vicon-security.com

SurveyorVFT Models (NTSC/Coax*)

Environment*	Mount Type	Optical Zoom/ Total Zoom	Camera Type	Lower Dome	Model Number
Indoor	In-Ceiling	22x/264x	Color	Smoked	SVFT-C22CA
		23x/276x	Color (day/night; WDR; DNR)		SVFT-C23
		36x/432x	Color/ (day/night; WDR; DNR, image stabilizer)		SVFT-C36
	Pendant	22x/264x	Color		SVFT-P22CA
		23x/276x	Color (day/night; WDR; DNR)		SVFT-P23
		36x/432x	Color/ (day/night; WDR; DNR, image stabilizer)		SVFT-P36
Outdoor	Pendant	22x/264x	Color	Clear	SVFT-W22CA
		23x/276x	Color (day/night; WDR; DNR)		SVFT-W23
		36x/432x	Color/ (day/night; WDR; DNR, image stabilizer)		SVFT-W36

For the PAL version, add a C (or P in 36X models) to the model number; for ViconNet option, add -V 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
	Soffit mount for outdoor dome	SVFT-SOF

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

Lower Domes

Model Number	Description
SVFT-SMK	Ceiling/Pendant, indoor, smoked (gray) tint
SVFT-CHR	Ceiling/Pendant, indoor, chrome
SVFT-GLD	Ceiling/Pendant, indoor, gold