I-ONYX VN-855V4 IP Color Camera Series

- **Transmits high quality video across the network for remote viewing and recording**
- **Powered by ViconNet Version 4 software**
- **Maximum video transmission rate of 30 fps (25 fps PAL) at 720 x 488 pixels (4 CIF) (864 x 586 PAL)**
- **Uses ViconNet MPEG-4 compression that optimizes file size and maximizes picture quality**
- **Power over Ethernet (PoE) eliminates the need for separate power supply**
- **Transmits video across the LAN and WAN to connected Kollector Elite recorders and ViconNet workstations**
- **Remote configuration across the network (WDR version)**
- **Up to 10 simultaneous viewing/recording streams per camera**
- **Museum Search (Smart Search) feature scans hours of video in minutes**
- **Features video motion detection**
- **MD5 algorithm video authentication ensures data integrity**
- **Password protection for configuration**
- **Models include high-resolution, day/night and Wide Dynamic Range (WDR)**
- **Analog composite output for local setup and as a redundancy video source in case of network failure**
- **Camera features electronic iris, backlight compensation (BLC/WDR), and DC-drive autoiris functions**

The VN-855V4 I-Onyx™ Series of IP Cameras is a powerful IP video source for a complete digital video management system based on ViconNet® version 4 software. Three models are available. The VN-855 is a super-high-resolution camera; the VN-855DN is a day/night version; the VN-855WDR provides Wide Dynamic Range. The cameras are fully compatible with all ViconNet systems and is remotely managed and controlled from ViconNet workstations and Kollector® Elite recorders. All three versions deliver up to 30 fps of high-quality 4 CIF [720 x 488 (864 x 586 PAL)] video across the network. The camera provides a total nominal bandwidth of 1.7 Mbps at Q5 (360 x 244 pixels).

Equipped with a 100 Mbps LAN interface board, the cameras allow direct plug-in to a network switch. Images received from the IP cameras can be displayed, recorded or archived like any other ViconNet video component using the ViconNet management software.

The VN-855V4 cameras have 4 levels of video resolution, 4 CIF, 2 CIF, CIF and HCIF, with 2 levels of compression, Normal (optimized) MPEG-4 and Full (JPEG). These comprise 8 selectable quality levels.

As part of ViconNet, the cameras utilize an MD5 video authentication algorithm which is based on a 128-bit message used to identify data integrity. Viewing authenticated video can be configured from the software. In addition, the IP camera supports alarm reporting, macros, audio and alarm configuration through the ViconNet software interface.

The VN-855V4 cameras combine excellent picture quality with advanced features. The CCD device has over 380,000 pixels (440,000 PAL), providing a sharp color image with accurate color rendition.

The high-resolution and day/night versions have a horizontal resolution of 540 TV lines; the VN-855WDRV4 has a resolution of 480 TV lines. The high-resolution and WDR models have a sensitivity of 0.065 fc (0.7 lux) at high gain; the day/night version has a sensitivity of 0.0009 fc (0.01 lux) in night mode.

The VN-855V4 cameras accept DC-drive (CS-G) lenses. A 4-pin connector is provided. All controls and connectors are conveniently located either on the rear panel or side. Synchronization is internal. Additionally, the WDR version can be set up through ViconNet from an OSD menu.

The cameras accept CS-mount or C-mount lenses. Cameras may be powered by either PoE or a 24 VAC fully isolated power input that ensures stable images when the cameras are used on a common power supply with other cameras.

The VN-855V4 cameras comply with radiation requirements for an FCC Class A device.

Model Number	Product Code	Description
VN-855V4/ VN-855V4-C	9149-44/ 9149-43	1/3-in. format color high-resolution IP camera; 540 TVL; 24 VAC or PoE; NTSC/PAL; ViconNet version 4 software
VN-855DNV4/ VN-855DNV4-C	9149-54/ 9149-53	1/3-in. format day/night high-resolution IP camera; 540 TVL; 24 VAC or PoE; NTSC/PAL; ViconNet version 4 software
VN-855WDRV4 VN-855WDRV4-C	9149-64/ 9149-63	1/3-in. format color IP camera with Wide Dynamic Range; 480 TVL; 24 VAC or PoE; NTSC/PAL; ViconNet version 4 software

Table 1: Models and Product Codes

ASSOCIATED EQUIPMENT AND ACCESSORIES

ViconNet VN1000V4 Master Workstation Software, Product Code 9162-: Software CD for a PC for use with Kollector Elite and Pro series recorders and ViconNet IP video cameras and servers; registration required for use. Product Specification V113.

ViconNet VN-NVR Network Video Recorder, Product Code varies by model: PC preloaded with VN1000V3 Software for use with Kollector Elite and Pro series recorders and ViconNet IP video cameras and servers; registration required for use. Product Specification V113.

Kollector Elite Digital Video Recorder, Product Code varies by model: 16-channel networked digital video recorder for use with Kollector Pro Series recorders, ViconNet IP video cameras and servers and ViconNet VN-NVR systems. Product Specification V112.

NETSWITCH-16, Product Code 8495-00: 16-port network switch, includes 10/100Mbps ports, desktop/wall mount, 120 VAC. Product Specification 161.

NETSWITCH-24, Product Code 8495-10: 24-port network switch, includes 10/100/1000Mbps ports, rack mount, 120 VAC. Product Specification 162.

NETSWITCH-24POE Network Switch, Product Code 8495-20: 16-port, 10/100/1000 autosensing network switch with a choice of 24 VAC or PoE power source, stackable. Product Specification V162-20.

Uninterruptible Power Supplies: 725 and 1000 VA units with DB9 (RS-232) and USB ports; 120 VAC input/output. Product Specification V147.

Table 2: Power Supplies

Model	Product Code	Description
S24WPS-1	7028-10	Single-channel, indoor/outdoor, 2 amps, 120 VAC input, 24 VAC output
S24PS-230	7027-01	Single-channel, indoor, 2.5 amps, 120/230 VAC input, 24 VAC output
V248-300PS	6422-10	Eight-channel, indoor, 120 VAC input, 24/28C output, 12.5/10 A (total)
V2416-8PS	7669	Sixteen-channel, indoor, 120 VAC input, 24 VAC output, 0.5 A/channel (8 A total)
V2448-175PS	6410-20	Four-channel, indoor, 120 VAC input, 24/28 VAC output (jumper selectable), 7/6.25 amps (total)

Caution: *Note that on multi-channel units, the amperage stated is the total for all channels. To assure sufficient current to individual cameras, connect only the number of cameras that use less than the maximum supply current.*

Network Considerations

The VN-855V4 IP Cameras can be connected to any ViconNet network. Kollector Elite Recorders and ViconNet Workstations can be used for live viewing and recording of network-streamed video. A network can be as simple as a single camera connected to a ViconNet Workstation or can be complex with the addition of several networks interconnected via WAN.

When adding a VN-855V4 IP Camera to the ViconNet network, the following items must be considered:

- The number of cameras on a switch with respect to switch capabilities and system bandwidth mapping.
- Bandwidth limitations on ports connected to workstations (using 100 or 1000 Mbps).
- Workstation capabilities such as processing speed and disk write speed.
- Storage size and location types including local Workstation recording, attached SCSI RAID and integrated SAN devices.

Refer to the network diagrams on the next page for sample configurations.

Basic video bandwidth performance can be seen below. This chart shows a VN-855 single video channel at 30 FPS with varied quality settings and video motion environments. 30 FPS is the maximum video frame speed from the VN-855. Lower frame speeds can be attained down to 1 FPS. Bandwidth calculations can be scaled down from the chart data. For example:

A VN-855V4 set at 10 FPS would be expected to have a bandwidth of 0.5 Mbps at Q5 and in a High video motion environment.

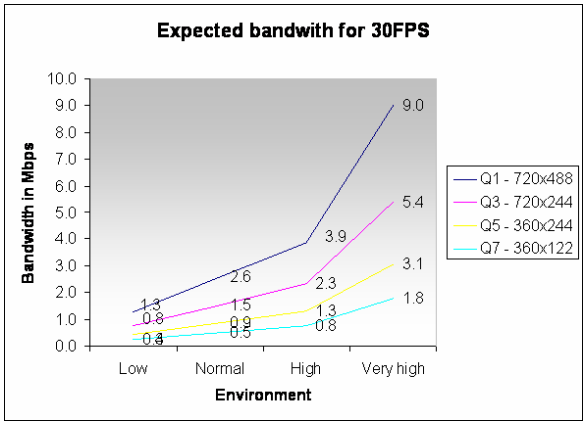


Table 3: Hard Drive Consumption Rate

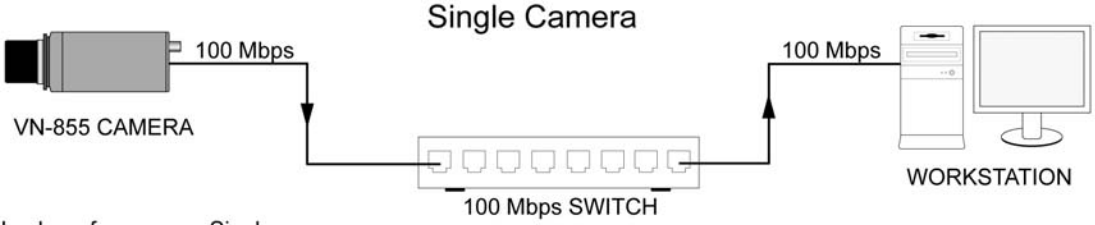
VN-855V4	Remote Hard Drive Storage (GB)								
	60	200	300	500	600	900	1000	2000	3000
Days Recording	22	73	110	183	220	330	366	732	1098

Note: This table is based on the following conditions:

- 24 hours normal activity with 50% detected movement over time, Normal compression and Quality Q5 (360 x 244 pixels NTSC, 432 x 293 pixels PAL)

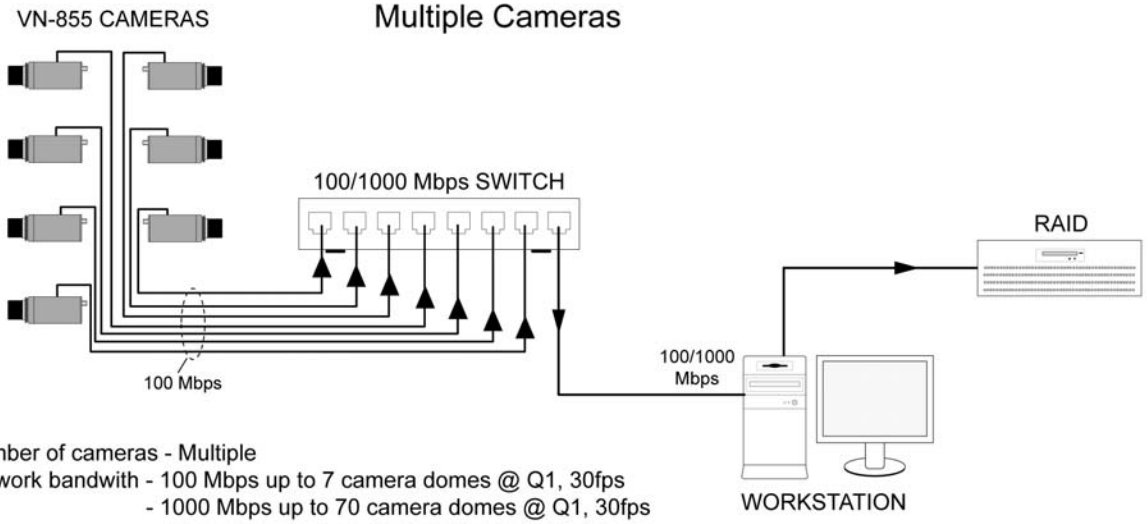
- Recording durations may vary based on actual scene activity.

Single Camera



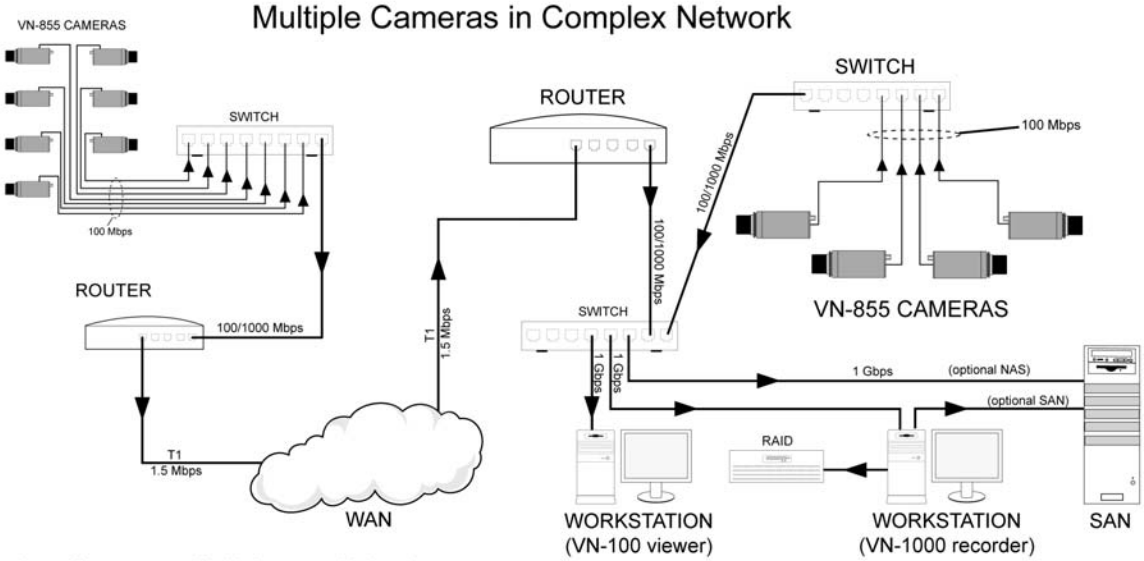
- Number of cameras - Single
- Network bandwith - 100 Mbps
- Storage method - Local workstation hard drive

Multiple Cameras



- Number of cameras - Multiple
- Network bandwith - 100 Mbps up to 7 camera domes @ Q1, 30fps
  - 1000 Mbps up to 70 camera domes @ Q1, 30fps
- Storage method - Local workstation hard drive or SCSI attached RAID

Multiple Cameras in Complex Network



- Number of cameras - Multiple on multiple sites
- Network bandwith - Each switch to its limit (as shown above), constrained only by the WAN (T1 @ 1.5 Mbps)
- Storage method - Local workstation hard drive, SCSI attached RAID or SAN storage
- In the basic configuration, workstation recording capability is approximately 25 cameras

ELECTRICAL

Input Power Source: 24 VAC, ±15%, or PoE (802.3af compatible).

Input Power Isolation: Internal fully isolated power input.

Current (@ 24 VAC): VN-855: 360 mA max.
VN-855DN: 410 mA max.
VN-855WDR: 380 mA max.
250 mA @48 VDC (PoE)

Power Consumption: VN-855: 5.8 W max.
VN-855DN: 6.5 W max.
VN-855WDR: 6.4 W max.

Heat Equivalent: 0.3 btu/min (0.09 kg-cal/min) nominal.
Note: These figures represent the conversion of 100% of the electrical energy to heat. Actual percentage of heat generated will be less and will vary from product to product. These figures are provided as an aid in determining the extent of cooling required for an installation.

Maximum Power Cable Distance: Refer to Table 4 (based on 24 VAC, standard camera).

Radio-Frequency Emission Standard: FCC Class A/CE.

VICONNET (IP)

Communication System: ViconNet Digital Video Management System Version 4.

LAN Interface: 10/100 Mbps, TCP/IP Unicast.

Number of Video Channels: 1, over LAN connection.

Video Formats Supported: NTSC and PAL, model dependant.

Video Transmission Rate: 30 fps (25 fps, PAL).

Number of Simultaneous Video Streams: Maximum of 10 viewing/ recording streams per camera.

Video Quality: ViconNet software quality 1-8, selectable on a 4-position bar with 2 compression level settings in resolutions 720 x 488 (864 x 586 PAL), 720 x 244 (864 x 293, PAL), 360 x 244 (432 x 293, PAL), 360 x 122 (432 x 146, PAL).

Audio: 1 line-level microphone input; 0 dbm, 32 KHz bandwidth, 600 ohm impedance, 2 V RMS (1 V p-p) output.

Alarm: 1, select N.O./N.C.

Video Bandwidth: 1.7 Mbps (per video stream), nom. See Bandwidth chart.

Hard Drive Consumption Rate: Refer to Table 3.

SOFTWARE OPERATION (ViconNet)

Network Setup: Standard network protocol type using IP addressing scheme and separate PC application software.

Site Authorization: Camera can be setup using remote recorder or workstation GUI. Permissions can be assigned for macro create & edit, alarm setup, Authentication, Reports and System Status. Supports up to 20 Groups and 100 Users.

Macro Create & Edit: System macros can be configured to use the camera's video. In addition, within macros, alarms can be sent and remote macros run.

Alarm Setup: An alarm can be triggered on video motion detection and loss. The alarm can be sent to remote units.

Authentication: The video from the camera can be set to view the Authentication status symbol (A) on the displayed video.

Picture Quality and FPS Priority: Camera video can be setup to prioritize recorded picture quality and video FPS. Priority can be assigned to user/macro recording for highest requested video quality or Master user control.

VIDEO CHARACTERISTICS

Image Device: 1/3-inch interline transfer CCD.

Active Picture Elements: NTSC: 768 (H) x 494 (V).
PAL: 752 (H) x 582 (V).

Sensitivity: VN-855/VN-855WDR
0.09 fc (1.0 lux) at standard gain;
0.07 fc (0.7 lux) at high gain.
VN-855DN
0.0009 fc (0.01 lux) in night mode; 0.07 fc (0.7 lux) in day mode.
Conditions: lens at f/1.2 and 40 IRE video output.

Horizontal Resolution: VN-855/ N-855DN: 540 lines
VN-855WDR: 480 lines.

Electronic Iris: NTSC: 1/60-1/100,000.
PAL: 1/50-1/100,000.

Scanning System: NTSC standard: 2:1 interlace, 525 lines, 30 frames/sec. PAL standard: 2:1 interlace, 625 lines, 25 frames/sec.

Backlight Compensation/wide Dynamic Range: ON/OFF select.

Signal-to-Noise Ratio: Better than 52 dB.

White Balance: Automatic.

Video Signal Output: 1.0 V p-p VBS @ 75 ohms composite video.

Synchronization In: Internal.

Gain Control: Automatic (AGC), ON/OFF select.

Output for Autoiris: DC-drive coil (CS-G) autoiris lenses.

CONTROLS AND CONNECTORS

External Controls: Power Indicator: Red LED.
Ethernet Indicators: Green LED (Network connectivity); Amber LED (Network activity).
Status Indicator: Blue LED (blinks when camera is live).
ALC Level: potentiometer.
Mode Select DIP Switch (model dependent):
- BLC (WDR) ON/OFF.
- ALC/ELC (AI/EE).
- AGC ON/OFF.
- FLICKERLESS ON/OFF*.
- DAY/NIGHT [TURBO (High Gain)] ON/OFF.
- WDR version: additional OSD menu through ViconNet.

Connectors: Power: 2-pin terminal.
Autoiris lenses (DC drive): 4-pin connector.
Analog Video Out: BNC.
Alarm in: screw terminal.
Network: RJ-45 CAT 5.
Audio: screw terminal.
See Rear Panel diagram.

Wire Size (AWG) Annealed Copper Wire	Maximum Distance ft (m)
20	534 (163)
18	853 (260)
16	1358 (414)
14	2153 (656)
12	3429 (1045)

Table 4: Maximum Power Cable Distances

*****Used in Japan only*

MECHANICAL

Dimensions: See Figure.
Height (H): 2.2 in. (56 mm).
Width (W): 2.9 in. (74 mm).
Length (L): 5.3 in. (135 mm).

Distance from Base to Optical Center of Lens (X): 1.1 in. (30 mm).

Weight: 0.88 lb (0.4 kg).

Flange Back Adjustment: CS mount: 12.5 mm.
C mount: 17.5 mm.

Lens Mount: C or CS mount.

Camera Mounting: 1/4-20 threaded hole in camera bottom and camera top.

Shipping Dimensions: Height: 3.6 in. (91 mm).
Width: 4.4 in. (111 mm).
Length: 6.9 in. (176 mm).

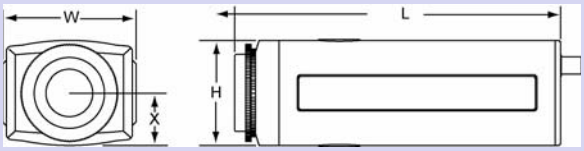
Shipping Weight: 1.85 lb (0.84 kg).

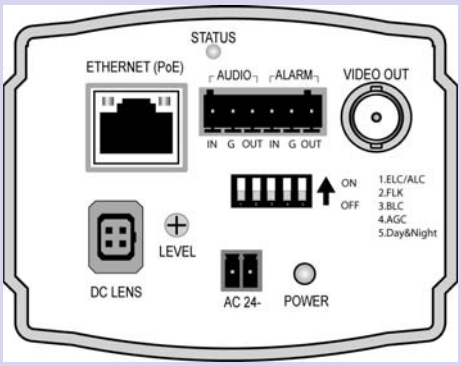
Shipping Volume: 0.06 ft^3 (0.002 m^3).

ENVIRONMENTAL

Operating Temperature Range: 14 to 122° F (-10 to +50° C).

Humidity: Up to 85% relative, noncondensing.





Typical Rear Panel