

(Project No.)
(Date)

(Project Name)
(Project Location)

ARCHITECT & ENGINEER SPECIFICATIONS

SECTION 28 23 19

Digital Video Recorders and Analog Recording Devices

NSR-100, NSR-50, NSR-25 Sony Network Recorders

PART 2 – PRODUCTS

2.01 NETWORK VIDEO RECORDER SPECIFICATIONS

A. GENERAL REQUIREMENTS:

1. The NSR series network video recorder (called “recorder” as described below) shall be a Linux-based server, capable of recording streaming JPEG or MPEG-4 video, G.711 or G.726 audio as well as metadata, decode and display in multi-screen or single screen the decoded streams, and have I/O terminal interface to accept alarm triggers.
2. The recorder shall be capable of registering up to 64 non-megapixel cameras on NSR-100. NSR-50 shall support up to 32 non-megapixel cameras, and NSR-25 shall support up to 20 cameras. The NSR-100 shall support up to 8 megapixel cameras and the total number of cameras when megapixel and non-megapixel cameras are mixed, shall be 64. The NSR-50 and NSR-25 shall support up to 4 megapixel cameras and when megapixel and non-megapixel cameras are mixed, shall be 32 and 20, respectively.
3. The recorder shall support analog CCTV cameras through Sony SNT-V704 Video Network Server.
4. The recorder shall have an easy configuration function with a simple wizard. The function shall help automatically set the following:
 1. Detect any Sony IP cameras or Sony video server (encoder) installed on the same network segment automatically.
 2. Detect camera type.
 3. Assign IP address to cameras or user can define it manually if need be.
 4. Provide camera titling.
 5. Register the cameras to the recorder.

6. Generate appropriate monitoring layout based on number of registered cameras.
5. The recorder shall be capable configuring simultaneously, a group of cameras, by which various parameters such as frame rate, image quality and video codec can be set.
6. The recorder shall be capable of setting recording schedules for a group of cameras.
7. Other than specific listed models, the recorder shall support newer or future Sony models by listing them as "Generic Cameras" The recorder shall automatically obtain camera registration information from these cameras, to allow connection.
8. The recorder shall support monitoring, recording, and playback of camera images with the following resolutions:
90 x 60, 90 x 72, 160 x 120, 176 x 112, 174 x 144, 180 x 121,
180 x 144, 192 x 144, 224 x 168, 256 x 192, 320 x 240, 352 x 240,
352 x 264, 352 x 288, 360 x 243, 360 x 288, 384 x 288 , 416 x 312,
448 x 336, 480 x 360, 512 x 384, 544 x 408, 576 x 432, 640 x 480,
704 x 480, 704 x 576, 736 x 544, 720 x 243, 720 x 288, 720 x 480,
720 x 486, 720 x 576, 768 x 576, 960 x 720, 1280 x 960.
9. The recorder shall be capable of simultaneously viewing, playing back, recording, and exporting video.
10. The recorder shall support simultaneous Video and Audio export.
Video files shall be in Sony CAM file format and audio shall be in Sony AUD file format.
11. The recorder shall provide 4 levels of user permissions for managing the system as described below:
 - Level 1: Allows a user to perform monitoring and reference the option window.
 - Level 2: In addition to Level 1 privileges, this level allows a user to perform camera controls such as pan, tilt, and zoom and to search and play back recorded images.
 - Level 3: In addition to level 2 privileges, this level allows users to perform option window operations other than starting, stopping, exporting, and referencing recorded images.

Level 4: Administrator level which allows a user to perform any setting or operation.

12. The recorder shall have a function for sending email notification message to the registered SMTP client address when an event occurs. E-mail notification shall be effective when action settings are configured to perform upon detection of events such as sensor input, Video Motion Detection (VMD), Video Motion Filter (VMF), hardware failures, system alerts, and manual triggers.
13. The recorder shall recover the system data such as the Linux OS, the application program, and the configuration data quickly using DOM (Disk on Module) without the need for a system recovery disk in case the system failure.
14. The recorder shall be RAID capable on NSR-100 and NSR-50 to prevent data loss in case of HDD failures. NSR-100 shall have RAID0, RAID1 (1+0), and RAID5. NSR-50 shall have SPAN (JBOD) and RAID1 (software RAID). The recorder shall be capable of Hot Swap on NSR-100 when configured for RAID1 and RAID5.
15. The recorder shall support Uninterrupted Power Supply (UPS) controlled via RS-232C.
16. The recorder shall be capable of creating user defined actions upon triggers generated by following events.
 - a. Event source:
 1. Sensor input
 2. Video Motion Detection on recorder side
 3. Video Motion Filter
 4. Hardware failure on HDD, fan, voltage and abnormal
 5. System alert such as video loss and disk full
 6. Manual trigger
 - b. User defined actions shall be:
 1. Report by email
 2. Start beep
 3. Stop beep
 4. Change monitor layout
 5. Activate alarm out
 6. Deactivate alarm out
 7. Recall camera preset
17. The recorder shall be capable of locking the monitoring window to prevent changes.

18. The recorder shall support multi languages as follows:
 - a. English
 - b. Japanese
 - c. French
 - d. German
 - e. Italian
 - f. Spanish
 - g. Simplified Chinese

19. The recorder shall be capable of receiving external sensor input alarms over http.

20. The recorder shall incorporate Sony's Distributed Enhanced Processing Architecture (DEPA™), in which a series of Sony IP cameras send pre-processed video related metadata.

21. The recorder shall have the following 6 Video Motion Filters (VMF):
 1. Appearance filter: - detects the objects that match the detection criteria for objects entering into a user defined area.
 2. Disappearance filter: - detects objects that match the detection criteria for objects exiting a user configured area.
 3. Existing filter (Loitering filter):- detects objects that match the detection criteria for objects loitering within a user defined area based on a configured duration (time).
 4. Capacity filter: - detects objects that match the detection criteria for number of objects within the configured area.
 5. Passing filter: - detects objects that match the detection criteria for objects crossing the configured virtual passing borderline based on collision setting.
 6. Unattended/Removed- detects objects that are left unattended or removed by comparing the retained background video data and live video data.

22. The recorder shall receive and store the metadata for intelligent post video motion filter search and intelligent live video motion filter alarm in conjunction with 6 filters.

23. The recorder shall be capable of applying up to three filters (parallel mode), on a scene simultaneously.

24. The recorder shall be capable of applying up to three filters on a scene in a sequence or cascade fashion, whereby an alarm will only be triggered based upon events that violate the rules or filters one at a time, in a predefined order.
25. The recorder shall be capable of setting the minimum and maximum object size for detection.
26. The recorder shall be capable of setting the minimum object speed or the maximum object speed for detection.
27. The recorder shall have the ability to apply temporary filters to recorded images that have been recorded in conjunction with metadata, to limit searches to stored video based on these parameters. Cameras supported shall be the following Sony models: SNC-RX530N, SNC-RX550N, SNC-RX570N, SNC-RZ50N, SNC-CS50N, SNC-DF50N, and SNC-DF80N cameras and with the exception of the unattended/removed VMF, are available with the following cameras: SNC-CM120, SNC-DM110, SNC-DM160, SNC-DS10, SNC-DS60, and SNC-CS20.

B. VIDEO REQUIREMENTS:

1. The recorder shall support cameras that are encoded in MPEG-4 or JPEG.
2. Recorded image streams in either JPEG or MPEG-4 shall be in Sony's CAM file format.
 - a. The NSR-100 recorder shall support a high frame rate recording of up to 480 fps (frames per second) at JPEG VGA at 1/30 compression ratio (Picture Quality Level 5) quality, without local or remote monitoring, and support up to 240 fps when using local monitoring (using the built-in HD-15 VGA interface)/remote client access.
 - b. The NSR-50 recorder shall support recording rates of up to 240 fps (frames per second) at JPEG VGA at 1/30 compression ratio (Picture Quality Level 5) quality without local or remote monitoring, and support up to 120 fps when using local monitoring (using the built-in HD-15 VGA interface)/remote client access.
 - c. The NSR-25 recorders shall support recording rates of up to 120 fps (frames per second) at JPEG VGA at 1/30 compression ratio (Picture Quality Level 5) quality without local or remote monitoring, and support up to 100fps when using local monitoring (using the

built-in HD-15 VGA interface)/remote client access.

3. The maximum recording frame rate for megapixel cameras shall be 120 fps, 60 fps, and 30 fps for the NSR-100, NSR-50, and NSR-25, respectively. Refer to the table below:

Maximum recording frame rate

	JPEG LEVEL5 VGA (640 x 480)	JPEG LEVEL2 MEGA (1280 x 960)
NSR-100	480	120
NSR-50	240	60
NSR-25	120	30

Note: Above figures are based on no fragmentation of the HDD

4.
 - a. The NSR-100 recorder shall have internal hard drive storage capacity of 1 terabyte (1TB).
 - b. The NSR-50 recorder shall have internal hard drive (HDD) storage capacity of 500 GB.
 - c. The NSR-25 recorder shall come pre-installed with a 250GB HDD drive. Additional 250GB HDD shall be available from the manufacturer to increase the total capacity to 500GB. Optional 250GB drive model shall be NSBK-250.
5. The recorder shall have the ability to independently set record rates for each camera, not to exceed the global frame rate described above.
6. The recorder shall have default layout such as 1 x 1, 2 x 2, 3 x 3, 4 x 4, 5 x 5, 6 x 6, 7 x 7, 8 x 8, and pre-customized layout.
7. The recorder shall be capable of displaying live images and playing back images in any monitor window of a selected monitoring layout. Playback of any camera in a particular window in a multi-camera display configuration, shall not stop live viewing of cameras in the other windows.
8. Each monitor window shall be capable of indicating, but not necessarily be limited to, the following items:
 - a. Camera name
 - b. Status (recording type, playback status and speed)
 - c. Bandwidth used for transferring images via network connection
 - d. Number of frames received (camera image capture rate)
 - e. Number of frames displayed (picture refresh rate), labeled as DIPS
 - f. Live/Record image (a live or a recorded image)

- g. Time (current date and time of live images or the recording date and time of play back images)
 - h. Video Motion Filter (VMF) windows or objects detected for cameras that support this function.
 - i. VMD(Recorder) objects frames ON/OFF
- 9. The recorder shall provide a function of sequence mode for displaying multiple monitor layouts in sequence during a specified time period, which shall allow for monitoring numbers of cameras in desired sequences and layout patterns.
- 10. The recorder shall provide auxiliary function area on a simple graphic interface to select numbers of function options, which shall include, but not necessarily be limited to, the following items:
 - a. Camera Control such as Pan Tilt Zoom, preset, focus and brightness
 - b. Recording Status
 - c. Recording List
 - d. Alarm Log
 - e. System Log
 - f. Alarm Output status
 - g. Sensor Input status
 - h. Manual Trigger actions
- 11. The recorder shall have two (2) VGA outputs via HD-15 connectors. Monitor 1 shall be the main monitor window. Monitor 2 output shall be capable of showing the same view as the Monitor 1 output, or used as a Spot monitor output. When used as a spot monitor output, this second monitor shall provide a monitor layout specified as 1x1 or full view, 2x2, or 3x3, to call up the image of a specific camera if there is a sensor input or motion detection. Selected images or images from cameras triggered via sensor input or motion detection shall be displayed in the monitor windows sequentially.
- 12. The recorder shall provide search functions to search recorded images by Camera, REC Type (Normal, Alarm, manual) and Video Motion Filter (VMF).
- 13. The recorder shall have dynamic masking capability, which masks sensitive areas from both live display and recording. User shall have the option of changing the shape and type of masking such as mosaic, Gaussian or solid colors at a minimum.
- 14. The recorder shall have pre-alarm and post-alarm recordings upon detection of events such as sensor input, VMD and VMF. Pre and Post alarm durations shall be user configurable.

15. The recorder shall be capable of exporting recorded CAM files to various media such as CD-R/RW, DVD+/-R (only NSR-100/50), USB memory, and CF memory (NSR-50/100) only.
16. The recorder shall be capable to export JPEG still image to various media such as DVD, CD-R/RW, USB memory, and CF card. (Exporting to CF card is only for NSR-50/100 only.)
17. The recorder shall be capable to save configuration data as backup into various media such as CD-R/RW, DVD+/-R (NSR-100/50 only), USB memory, and CF card (NSR-100/50 only).
18. The recorder shall be capable to restore configuration data from various media such as CD-R/RW, DVD+/-R (NSR-100/50 only), USB memory, and CF card (NSR-100/50 only).
19. The recorder shall be capable to export the log files to various media such as CD-R/RW, DVD+/-R (only NSR-100/50), USB memory, and CF card (NSR-100/50 only).
20. The Media File Player application software shall be bundled with the recorder to allow playback of exported video on a Windows PC.

C. AUDIO REQUIREMENTS:

1. The recorder shall be capable of audio recording, monitoring, and playing back with G.711 / G.726 compression.
2. The recorder shall support up to 64 audio channel inputs on NSR-100. NSR-50 shall support up to 32 audio channel inputs, and NSR-25 shall support up to 20 audio channel inputs.
3. The recorder shall be capable of exporting audio files in the Sony AUD format.

D. NETWORK REQUIREMENTS:

1. a. The NSR-100 and NSR-50 recorder shall have 3 Gigabit-Ethernet ports.
b. The NSR-25 recorder shall have a single Gigabit Ethernet port
2. Each NSR recorder shall support up to four (4) external Network Attached Storage (NAS). Recommended NAS shall be the HP Proliant DL100.

3. The recorder shall be capable of changing port numbers for client access.
4. The recorder shall support FTP server function.
5. The recorder shall support CIFS protocol for the NAS configuration.
6. The recorder shall have both NTP server as well as an NTP client functionalities.
7. The recorder shall support SNMP ver 2 (MIB-2 system) protocols. Available traps shall be for notification of the following: temperature, voltage, UPS, power, fan, RAID and HDD events.
8. The recorder shall provide alarm relay output when the recorder finds any video loss caused by the network interruption. The alarm relay shall be electrically isolated from the recorder.

E. SYSTEM REQUIREMENTS:

1. The recorder shall require the following user provided hardware for system setup and operation:
 - a. Sony network cameras
 - b. XGA, SXGA or UXGA Monitor with D-sub high density 15 pin connector
 - c. USB keyboard
 - d. USB mouse
 - e. Network switch
 - f. 1000Base-T/100Base-TX/10Base-T cable(s)
 - g. CF(Compact Flash) card or USB memory device (required for backing up system information such as logs).
2. The recorder shall provide the following selection of monitor as generic monitor type:
 - a. Generic LCD Display; LCD Panel 1024 x 768; 40 – 70 Hz
 - b. Generic LCD Display; LCD Panel 1280 x 1024; 50 – 75 Hz
 - c. Generic LCD Display; LCD Panel 1600 x 1200; 60 Hz
 - d. Generic CRT Display; Monitor 1024 x 768; 50 – 70 Hz
 - e. Generic CRT Display; Monitor 1280 x 1024; 50 – 90 Hz
 - f. Generic CRT Display; Monitor 1600 x 1200; 50 – 90 Hz

3. The recorder shall be capable of specifying the following display resolutions:
 - a. XGA (1024x768)
 - b. SXGA (1280x1024)
 - c. UXGA (1600x1200)
4. The recorder shall be capable of backing up system information as logs:
 - a. For CF, recorder shall require a card that has been formatted in advance with VFAT – for NSR-100 and NSR-50 only.
 - b. For USB, memory, the recorder shall require a device that supports general USB Mass Storage Class specifications.
5. The recorder shall be capable of using an optional remote control unit (RM-NS10), which allows users simple operation by the joystick and the dedicated buttons such as recording, playing back, searching, recalling preset, changing monitor layout, zooming, focusing, and controlling brightness. The interface shall be USB2.0.

F. MECHANICAL REQUIREMENTS

1. The recorder shall provide the capabilities to indicate the operational status by LEDs such as power, network, HDD, errors and recording status.
2. The NSR-100 or NSR-50 recorder shall provide Compact Flash card slot to save configuration data from the system.
3.
 - a) The NSR-100/NSR-50 recorder shall have a DVD/CD recorder drive to write data from the hard disks to DVD and CD media.
 - b)–The NSR-25 recorder shall have a CD recorder drive, to write data from the hard disk to a recordable CD media
4. The NSR-100/NSR-50 recorder shall be capable of exporting recorded images to Compact Flash, USB memory or CD/DVD. The NSR-25 recorder shall be capable of exporting recorded images to a CD media or USB memory.
5. The recorder shall be capable of controlling uninterruptible power supply (UPS) through RS-232C serial connection.

6. The recorder shall provide the connection to up to 8 channel sensor input lines from external sensors, that are electrically isolated from the unit.
7. The recorder shall provide up to 8 channel alarm output lines through the dedicated alarm output connector, that are electrically isolated from the unit.
- ~~8.~~ The recorder shall require a mechanical key lock to physically access the HDD.
9. The recorder shall have a standard 19" optional rack mount kit (NSR-RM1).

G. REMOTE CLIENT REQUIREMENTS:

1. The recorder shall include support for Remote Configuration and Management Software (RealShot Manager [IMZ-RS Series] client software, called "client software" as below description) to allow a user to remotely configure the unit, view live images, play back and search the desired recorded images.
2. The client software shall be capable of running on the following Windows based systems:
 - a) Microsoft Windows Vista (Business, Enterprise)*
 - b) Microsoft Windows XP® Professional (except x64 edition) *
 - c) Microsoft Windows Server 2003 (except x64 edition) *
 - d) Microsoft Windows 2000 Server *
 - e) Microsoft Windows 2000 Professional *
3. The client software shall be capable of following items as similar as the recorder:
 - a. Flexible customizable layout and mapping editor
 - b. Layout tour (monitor sequence mode)
 - c. Hotspot monitor
 - d. Easy search of recording images using DEPA technology
 - e. Search by alarm type
 - f. Dynamic privacy masking
 - g. Camera pan / tilt / zoom control
 - h. Audio monitoring
 - i. Alarm notification by e-mail with image
 - j. AVI video export

H. REGULATORY REQUIREMENTS:

1. Safety standard:
 - a. UL / cUL 60950
 - b. EN60950 / IFC60950
 - c. JATE
 - d. LVD

2. EMC/EMI:
 - a. FCC 47 CFR Part 15 Class A
 - b. IC ICES-003 Class A (IC statement)
 - c. EU/EFT
 1. EN55022
 2. EN61000
 3. EN55024
 - d. EU/EFT
 - e. JEITA
 - f. VCCI
 - g. MIC
 - h. C-tick

I. SUPPLIED ACCESSORIES:

1. Front panel key (2)
2. Installation Guide (1)
3. Remote Control Unit Operation Card (1)
4. NSR Series Recovery CD (1)
5. NSR Series Manual, Tool & Source Codes CD (1)
6. Important Safeguards (1)
7. Safety Notice (1)
8. Warranty booklet (1)
9. Rubber feet (4)

J. OPTIONAL ACCESSORIES:

1. RM-NS10 Remote Control Unit
2. NSR-RM1 Rack Mount Kit
3. NSBK-250 Hard Disk Drive

K. SUPPORTED CAMERAS/VIDEO SERVERS:

1. SNC-RZ30
2. SNC-Z20
3. SNC-CS3
4. SNC-P1
5. SNC-DF40
6. SNC-DF70
7. SNC-RZ25
8. SNC-P5
9. SNT-V304
10. SNT-V501
11. SNT-V704
12. SNC-RX530
13. SNC-RX550
14. SNC-RX570
15. SNC-RZ50
16. SNC-CS50
17. SNC-CS10
18. SNC-CS11
19. SNC-DF50
20. SNC-DF80
21. Generic camera (SNC-DS10, SNC-DM60, SNC-DS110, SNC-DM160, SNC-CS20, SNC-CM120)

L. SPECIFICATIONS:

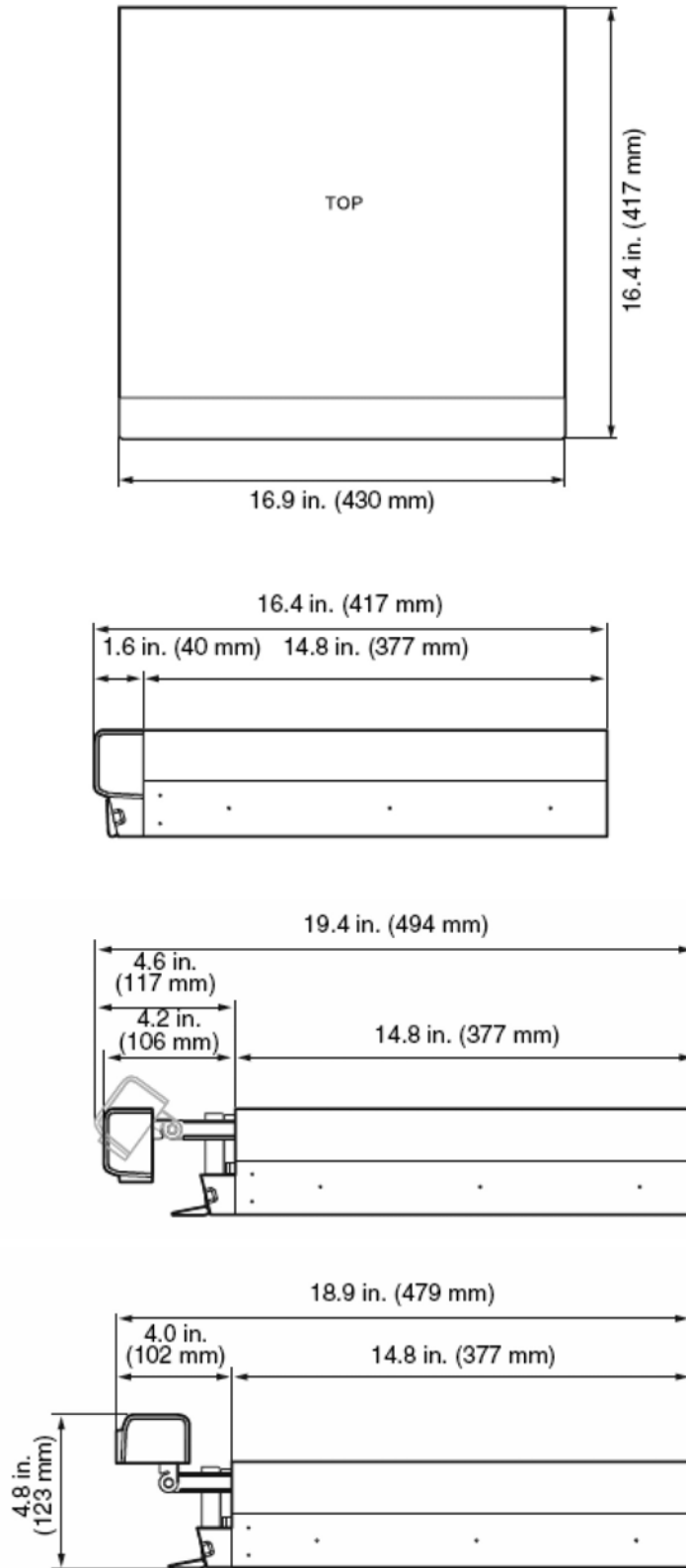
Item		NSR-100	NSR-50	NSR-25
Mass(Approx.)	Net	14kg	12kg	11kg
Dimension (box size)		430 (W) x 87 (H) x 417 (D) mm		
Form Factor		2U : rack mountable in a standard universal pitch EIA-19 rack		
Power supply unit		AC100-127V / 50/60Hz, 200-240V / 50/60Hz, Max. 8A / 4A, 350W		
Power Consumption (Typical)	Idle (Approx)	180W	120W	100W
	Operating (Approx)	300W	200W	170W
Operating temperature		41°F to 104°F (5°C to +40°C)		
Storage temperature		-4°F to 140°F (-20°C to +60°C)		
Operating humidity		Humidity range for operation: 20 to 80% relative humidity (maximum wet-bulb temperature 30 (Celcius)/86 (Fahrenheit), no condensation)		
HDD physical capacity		1,000GB (SATA 250GB x 4)	500 GB (SATA 250GB x 2)	250 GB (SATA 250 GB x 1)
RAID availability		Pre-installed H/W 5*, 1+0, 0	S/W SPAN(JBOD)*, 1	N/A
Capacity of usable area for recording (Max.) (Approx.)		RAID 5 : 670GB RAID 1+0 : 450GB RAID 0 : 900GB	SPAN : 430GB RAID 1 : 210GB	210GB
Analog RGB output		Ch1 : Front Ch1 & 2 : Rear		Ch1 & 2 : Rear
Resolution		1600 x 1200 (Maximum), 1024 x 768 (Minimum)		
S-Video output**		x1 : Rear		N/A
Composite Video output**		x1 : Front, x1 : Rear		N/A
Audio line output		L / R x1 : Front L / R x1 : Rear		L / R x1 : Rear
MIC input***		x1 : Front x1 : Rear		x1 : Rear
Network Interface (Rear only)		1000Base-T/100Base-TX/10Base-T x3 (automatic switching)		1000Base-T/100Base-TX/10Base-T x1 (automatic switching)
Sensor input		x8 (DC3.3-24V device supported) (photo-coupler inputs, electrically isolated from the unit)		
RS232C		x1 : Rear (for APC UPS)		
Alarm output		x8 (Up to 24V DC or less) (1A mechanical relay outputs are electrically isolated from the unit.)		
SCSI		x1 : Rear ***		N/A
CF slot		x1 : Front		N/A
Optical Drive		DVD+/-R, CD-R/RW, DVD-ROM		CD-R/RW, DVD-ROM
USB 2.0 connector		x2 : Front x2 : Rear		x2 : Rear

*: default

** : S-Video and composite output cannot be available simultaneously
Analog RGB ch1 picture is streamed out for S-Video and composite output

***: Not Available for NSR V4 application

M. DIMENSION



N. PIN ASSIGNMENT:

Sensor In

Pin No	Pin name
1	3.3 v
2	IN_8 -
3	IN_8 +
4	IN_7 -
5	IN_7 +
6	IN_6 -
7	IN_6 +
8	IN_5 -
9	IN_5 +
10	IN_4 -
11	IN_4 +
12	IN_3 -
13	IN_3 +
14	IN_2 -
15	IN_2 +
16	IN_1 -
17	IN_1 +
18	GND

Alarm Out

Pin No	Pin name
1	GND
2	OUT_8 -
3	OUT_8 +
4	OUT_7 -
5	OUT_7 +
6	OUT_6 -
7	OUT_6 +
8	OUT_5 -
9	OUT_5 +
10	OUT_4 -
11	OUT_4 +
12	OUT_3 -
13	OUT_3 +
14	OUT_2 -
15	OUT_2 +
16	OUT_1 -
17	OUT_1 +
18	3.3 v

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