

(Project No.)  
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## **ARCHITECT & ENGINEER SPECIFICATIONS**

### **SECTION 28 23 29 VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS**

#### **SNC-CS20 Day/Night, Fixed-Type, CS mount Network Color Camera**

## **PART 2 – PRODUCTS**

### **2.01 NETWORK CAMERA SPECIFICATIONS**

#### **A. GENERAL REQUIREMENTS:**

1. The SNC-CS20 shall be a CS mount, network enabled, JPEG and MPEG-4 dual-stream, day/night, fixed-type color camera, utilizing a 1/4-type, 659 x 494 pixels, Progressive Scan CCD with ExwavePRO™ technology, which adopts a complementary color filter.
2. The SNC-CS20 shall have an analog video output producing 400 TV lines of horizontal resolution.
3. Network interface shall be via an 8-pin RJ-45 connector, 10Base-T /100Base-TX Ethernet.
4. The SNC-CS20 shall utilize JPEG and MPEG-4 compression. The maximum resolution for JPEG shall be 768 x 576 and the maximum resolution for MPEG-4 shall be 640 x 480 (VGA). JPEG Compression levels shall be user selectable in 10 levels of compression ratios, based on an image of 24bits per picture element (8bits each for YUV).
5. The SNC-CS20 shall incorporate a built-in web server, such that the standard web browser Microsoft® Internet Explorer (version 6.0 or higher recommended) can be used to view the camera view without need for special viewer software. The supported operating systems shall be Windows Vista® and Windows® XP. Minimum PC requirements shall be the Intel® Pentium® 4 Processor, 3 GHz or higher, or the Intel Core®2 Duo Processor, 2.4 GHz or higher, or the Intel Core®2 Duo Processor, 1.8 GHz or higher, with 1GB RAM or more supporting 1280 x 1024 resolution, 24-bit True Color display capability with Ethernet 100Base-TX.
6. The SNC-CS20 shall be capable of supporting up to 10 users simultaneously over the network.

7. The SNC-CS20 shall have up to 4 user level settings. Access to functions shall be determined as shown in the following table:

Function	Administrator	User		
		Full	Light	View
Monitor a live image	●	●	●	●
View the date and time	●	●	●	●
Receive the audio	●	●	●	●
Control the image view size	●	●	●	–
Zoom an image using the digital zoom	●	●	●	–
Save a still image in the computer	●	●	●	– <sup>1)</sup>
Control the frame rate (Available in JPEG mode only)	●	●	–	–
Send an image file to the FTP server	●	●	–	–
Send an image attached to an e-mail	●	●	–	–
Record an image in the memory	●	●	–	–
Control the alarm output of the I/O port on the camera	●	●	–	–
Switch the Day/Night function mode	●	●	–	–
Play an audio file (Voice alert)	●	●	–	–
Control the setting menu	●	–	–	–

● Usable –Not usable

1) This function is usable with the Java applet viewer.

8. Maximum frame rate capability of the SNC-CS20 over LAN shall be up to 30 frames per second at both 768 x 576 and 640 X 480 (VGA) resolution when JPEG compression is selected. Maximum frame rate shall be 30 frames per second at 640 x 480 (VGA) resolution when MPEG-4 compression is selected.
9. The SNC-CS20 shall have the capability of simultaneously streaming JPEG and MPEG-4 compressed video, as well as the capability to independently stream either JPEG or MPEG-4 compressed video.
10. The SNC-CS20 shall have a quick focus function, whereby the auto iris lens shall fully open to allow the installer to focus on specific areas of the image. To prevent over saturation, when the quick focus is activated, the electronic shutter shall automatically engage to high speed mode.

11. Codec, image size, frame rate, and function combinations and limitations are shown in the chart below:

Quality setting: JPEG @ Level 5 (1/30 compression),  
MPEG-4 @ 2,048 kbps

			JPEG			MPEG-4		
			Image size	Super-impose	Zone masking	Image size	Super-impose	Zone masking
Codec & Image Size Combination (Selectable from Pull Down Menu on Setup GUI)	1	Dual codec	768 x 576	Yes	Yes	640 x 480	No	No
	2		640 x 480	Yes	Yes	640 x 480	Yes	Yes
	3			No	No	384 x 288		
	4		320 x 240					
	5		384 x 288	Yes	Yes	640 x 480	No	No
	6		320 x 240					
	7		384 x 288	Yes	Yes	384 x 288	Yes	Yes
	8		320 x 240			320 x 240		
Hybrid Operation	Analog + IP	640 x 480	No	No	640 x 480	No	No	
Installation	Iris Open ON	640 x 480			640 x 480			

12. Constant bit rate algorithm for JPEG files:

The SNC-CS20 shall be capable of equalizing JPEG file sizes to have stable bandwidth utilization. File size for each compression level is as follows:

Level	Data Size @ VGA (640 x 480) (approx.)	Compression Ratio (approx.)
10	150 KB	1/6
9	90 KB	1/10
8	60 KB	1/15
7	45 KB	1/20
6	36 KB	1/25
5	30 KB	1/30
4	25.7 KB	1/35
3	22.5 KB	1/40
2	18 KB	1/50
1	15 KB	1/60

13. The SNC-CS20 shall have the capability to stream MPEG-4 video in TCP or UDP protocol.
14. The SNC-CS20 shall have an Adaptive Rate Control (ARC) function when using MPEG-4 compression. This function when enabled, shall allow the camera to maintain the frame rate at a reduced image quality when network congestion occurs. Should network bandwidth become further restricted, the frame rate shall then drop automatically to a suitable speed to maintain image integrity.
15. SNC-CS20 shall incorporate a built-in motion detection capability.
16. To minimize false triggers, the SNC-CS20 Intelligent Motion Detection (IMD) shall compare the current image with prior 15 frames within the camera. The IMD algorithm shall allow the camera to discriminate against some environmental noise such as shaking leaves or AGC noise.
17. The SNC-CS20 shall support the following Network protocols: TCP/IP, DNS, RTP/RTCP, UDP, ARP, HTTP, ICMP, SMTP, FTP, DHCP, NTP and SNMP (MIB2). Network security shall be via Password (basic authentication) and IP filtering.
18. The SNC-CS20 shall have both FTP client and server capabilities.
19. The SNC-CS20 shall have user configurable port settings.
20. The SNC-CS20 shall be capable of dynamic IP address change notification. It shall accomplish this via an email to a specified address when its IP address changes.
21. The SNC-CS20 shall have a CS-mount 2.7x (3.0 to 8.0 mm) F1.3 – F1.8, IR compensated DC auto-iris type vari-focal lens as a standard accessory.
22. The SNC-CS20 shall be Power over Ethernet capable, compliant to the 802.3af standard.
23. The SNC-CS20 shall have privacy zone masking which blocks out unwanted or prohibited area within the video image to protect privacy. Mask colors shall be Black, White, Gray, Red, Green, Blue, Cyan, Yellow, and Magenta. The camera shall be capable of masking up to seven (7) areas. Such capability shall be via vendor supplied utility software.
24. The SNC Privacy Masking Tool software shall be supplied with the camera as a standard accessory in the CD-ROM.

25. The SNC-CS20 shall have the capability for Camera ID as well as Date/Time data to be superimposed on the video image. Camera ID shall be up to 20 alphanumeric characters. Date/Time format shall be yyyy-mm-dd hh:mm:ss, mm-dd-yyyy hh:mm:ss, and dd-mm-yyyy hh:mm:ss, user selectable, and use shall have option to move the position to the four (4) corners of the video image. IMD shall not be effective in the selected superimposed areas.
26. The minimum electronic shutter setting shall be 1 second, and a maximum of 1/10,000 sec.
27. The SNC-CS20 shall have a 6-pin I/O interface located on the rear of the camera. There shall be an alarm input port, and 2 Alarm/relay output ports. The Alarm input port shall be opto-isolated.
28. The SNC-CS20 shall support IP Filtering, whereby access to the camera can be restricted to one or more groups of selected users. Up to ten different groups can be established by defining an IP address range for each group.
29. The SNC-CS20 access shall be capable of Password Protection. User names and passwords shall be assignable to allow 4 levels of access.
30. The administrator shall have complete access/control of the cameras.
31. The other three levels of access can be set to limit user privileges to functions such as viewing, changing image size, etc.
32. The SNC-CS20 shall be capable limiting the bandwidth from 64 kbps to 2048 kbps in MPEG-4 and 500 kbps to 4 mbps in JPEG.
33. The SNC-CS20 shall have an internal image memory size of 8MB for alarm buffering.
34. The SNC-CS20 shall support multi-casting in MPEG-4 mode and shall use UDP protocol.
35. The SNC-CS20 shall be capable of pre- and post- alarm buffering.
36. The SNC-CS20 Pre/post-alarm recording capabilities shall be as follows:
  - i. Capable of storing several seconds of pre-alarm and post-alarm images when an alarm is triggered by the motion detection or sensor input.
  - ii. Capable of recording image and sound files on the 8 MB of built-in memory or transferring the files to an FTP server.
  - iii. Record in the codec format selected for monitoring.

- iv. Have a maximum duration for pre- and post-alarm recording that shall be dependent on the bit rate setting (for MPEG-4) or the picture quality and frame rate setting (for JPEG) as shown in the following tables:

**MPEG-4**

bitrate[kbps]	2048	1536	1024	768	512	384	256	128	64
capacity[sec]	19	25	38	51	76	102	120	120	120

**JPEG 768 x 576**

Quality		10	9	8	7	6	5	4	3	2	1
Frame rate	30	1	1	2	2	3	4	4	5	6	7
	25	1	1	2	3	4	4	5	7	7	8
	20	1	2	2	4	4	6	7	8	9	10
	15	1	2	4	5	7	8	9	11	12	14
	10	2	4	6	8	10	12	15	17	19	21
	8	2	4	7	10	13	16	18	21	24	27
	6	3	7	10	14	18	21	25	29	32	36
	5	4	8	12	17	21	25	30	35	39	44
	4	4	10	16	21	27	32	38	44	49	55
	3	7	14	21	29	36	44	51	58	65	73
	2	10	21	32	44	55	65	77	88	99	110
1	21	44	65	88	110	120	120	120	120	120	

**JPEG 640 x 480**

Quality		10	9	8	7	6	5	4	3	2	1
Frame rate	30	1	2	2	4	4	6	7	8	9	10
	25	1	2	3	4	6	7	8	9	11	12
	20	1	2	4	6	7	9	10	12	14	15
	15	2	4	6	8	10	12	14	16	18	21
	10	2	6	9	12	15	18	21	25	28	31
	8	3	7	11	15	19	23	27	31	35	39
	6	4	10	15	21	25	31	37	42	47	52
	5	6	12	18	25	31	37	44	50	56	63
	4	7	15	23	31	39	47	55	63	71	79
	3	10	21	31	42	52	63	74	84	95	105
	2	15	31	47	63	79	95	111	120	120	120
1	31	63	95	120	120	120	120	120	120	120	

**JPEG 384 x 288**

Quality	10	9	8	7	6	5	4	3	2	1	
Frame rate	30	2	5	8	11	14	17	20	23	25	29
	25	3	7	10	14	17	21	24	28	31	35
	20	4	8	12	17	21	25	30	35	39	44
	15	5	11	17	23	29	35	40	46	52	58
	10	8	17	25	35	44	52	61	70	79	88
	8	10	21	32	44	55	65	77	88	99	110
	6	14	29	44	58	73	88	102	117	120	120
	5	17	35	52	70	88	105	120	120	120	120
	4	21	44	65	88	110	120	120	120	120	120
	3	29	58	88	117	120	120	120	120	120	120
	2	44	88	120	120	120	120	120	120	120	120
1	88	120	120	120	120	120	120	120	120	120	

**JPEG 320 x 240**

Quality	10	9	8	7	6	5	4	3	2	1	
Frame rate	30	4	8	12	16	21	25	29	33	37	42
	25	4	9	14	20	25	30	35	40	45	50
	20	6	12	18	25	31	37	44	50	56	63
	15	8	16	25	33	42	50	58	67	76	84
	10	12	25	37	50	63	76	88	101	114	120
	8	15	31	47	63	79	95	111	120	120	120
	6	21	42	63	84	105	120	120	120	120	120
	5	25	50	76	101	120	120	120	120	120	120
	4	31	63	95	120	120	120	120	120	120	120
	3	42	84	120	120	120	120	120	120	120	120
	2	63	120	120	120	120	120	120	120	120	120
1	120	120	120	120	120	120	120	120	120	120	

37. The SNC-CS20 shall support IEEE-802.1X authentication, and shall:
- i. comply with the IEEE-802.1X standards,
  - ii. be capable of being integrated into an IEEE.802.1X network to achieve high network security,
  - iii. support EAP-TLS mode to use a key pair from a Certificate Authority (CA).

Upon CGI command request, system log shall be recorded on a built-in flash memory (non volatile memory).

## B. CAMERA LENS SPECIFICATIONS

1. The SNC-CS20 shall have a CS-mount 2.7x IR compensated DC auto-iris type vari-focal lens as a standard accessory.
2. Focal length shall be 3.0 – 8.0 mm with a field of view coverage of 66.6° – 27.0°
3. The aperture range for the lens shall be F1.0 to F1.45.

## C. VIDEO-ELECTRICAL REQUIREMENTS

1. The SNC-CS20 input power shall be a power voltage of either AC 24V or DC 12V, and shall be Power over Ethernet (PoE) 802.3af standard compliant.
2. The power connection shall be by means screw down mini terminal connectors for AC 24V and DC 12V operation.
3. The SNC-CS20 shall have composite analog video output in addition to streaming video via Ethernet.
4. The video output of the SNC-CS20 shall be selectable from either the NTSC or PAL standards.
5. Horizontal resolution shall be 400 TV lines.
6. The SNC-CS20 color camera shall require a minimum scene illumination of: 0.2 lx at F1.0 (50 IRE, AGC ON 36dB) in color and 0.02 lx at F1.0 (50 IRE, AGC ON 36dB) in B/W.
7. Camera synchronization shall be Internal.
8. The SNC-CS20 shall have an ON/OFF selectable AGC up to 36dB, through the settings menu.
9. The composite video output shall be 1.0 V peak to peak @ 75 ohms.
10. The video signal to noise ratio shall be more than 50dB (AGC OFF, Weight ON).
11. The Auto Tracing White Balance (ATW) balance range shall be approximately 2,000 degrees to 10,000 degrees Kelvin and approximately 3,000 to 7,500 degrees Kelvin for ATW PRO.

12. Power consumption for the SNC-CS20 shall be 8 watts maximum.

#### D. AUDIO REQUIREMENTS

1. The SNC-CS20 shall support bi-directional audio, using G.711 (64kbps) and G.726 (40, 32, 24, 16 kbps) codecs.
2. The SNC-CS20 shall have a pigtail cable with mini-jack connectors to support external microphone and active speakers. Mic/line input shall be switchable. Mic input shall be monaural, 2.2 kilo ohms, 2.5V DC plug-in power, line input shall be monaural, and active speaker output shall have a maximum output level of 1 Vrms.
3. The SNC-CS20 shall be capable of storing up to three audio files. Audio files shall be generated and transferred to the camera using the manufacturer provided SNC Upload Tool Software.
4. The SNC-CS20 shall support Voice alert function, which can automatically play an audio file stored on the camera by an alarm trigger using motion detection or via a sensor input
5. The SNC-CS20 shall provide time stamp on the streaming audio. Time stamp shall be inserted in the header area of the audio data.
6. Audio data shall be interleaved with video and serially transmitted in a single session for synchronization.
7. User shall have the capability to activate the microphone input via the web interface

#### E. MECHANICAL REQUIREMENTS

1. The SNC-CS20 shall have a CS type camera lens mount.
2. The camera lens supplied with the SNC-CS20 camera lens shall be an integrated f3.0 to 8.0 mm F1.0 to F1.45, IR compensated, auto iris vari-focal lens.
3. Input/Output Alarm or sensor input and outputs, shall be via a 6-pin push type spring lock connector.
4. The camera shall support one optically isolated Alarm or sensor input, and two relay outputs.

5. The SNC-CS20 shall provide Sensor in/Alarm out ports for interfacing with external equipment. Sensor input shall be configurable for either Normally Open or Normally closed configuration.
6. Relay outputs shall be rated at 24V AC/24V DC, 1 Amp or less.
7. Video output from the SNC-CS20 shall be via a BNC type connector.
8. Top or bottom camera mounting shall be accomplished with a ¼" X 20 mounting screw hole, which is available on both the top and bottom of the camera body.
9. The SNC-CS20 dimensions shall be approximately 3-1/4 (W) x 2 1/2 (H) x 6 7/8 (D) inches, 82.5mm (W) x 63mm (H) x 172.7mm (D) with attached lens and without protruding parts,
10. The SNC-CS20 shall weigh approximately 1 lb 9 oz (700 grams).
11. Network interface shall be via RJ-45 located on the rear of the camera.

#### F. ENVIRONMENTAL REQUIREMENTS

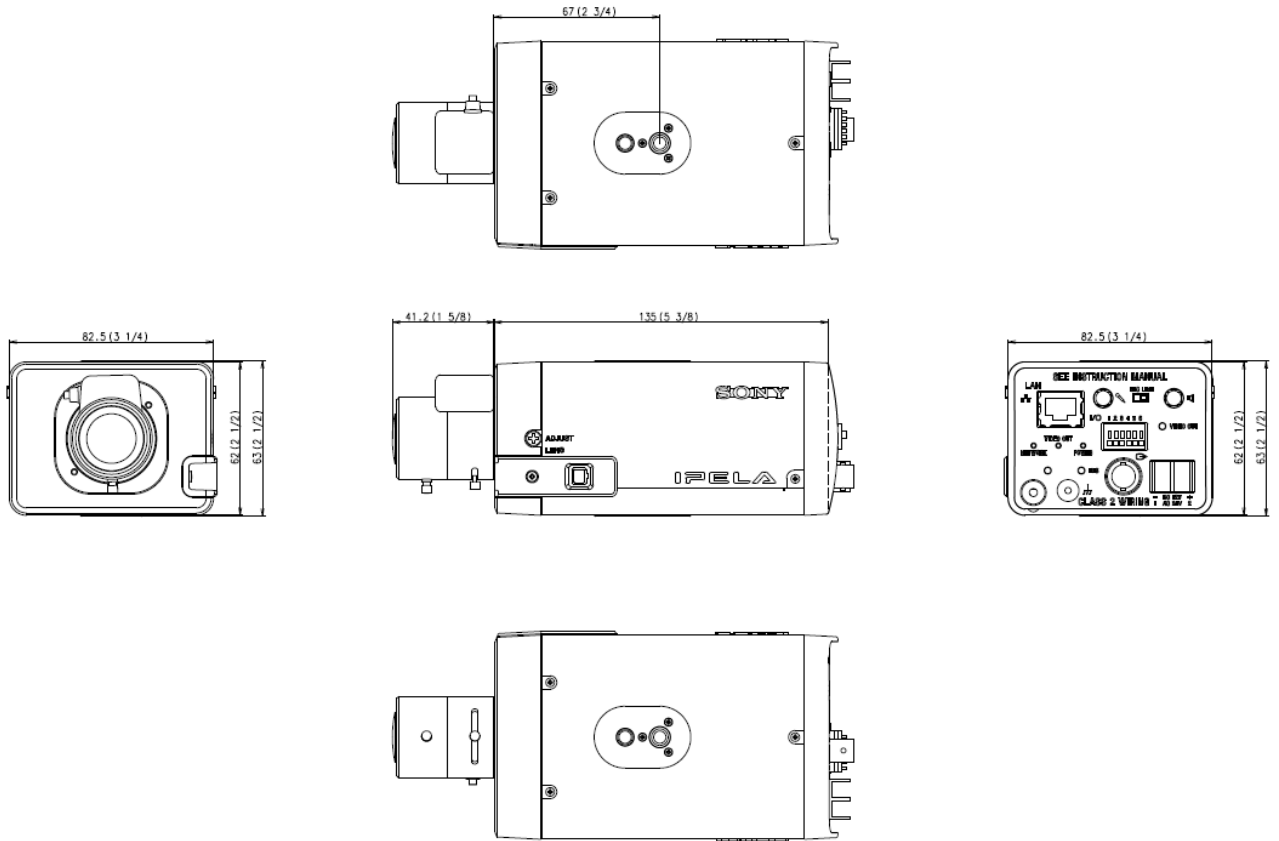
1. The operating temperature shall be within the range 14°F to 122°F (-10°C to +50°C).
2. Storage temperature shall be within the range -4°F to 140°F (-20°C to +60°C).

#### G. SUPPLIED ACCESSORIES

1. CD-ROM (User's guide, IP setup program, Audio Upload Tool, Privacy Masking Tool, Video Player, Custom Homepage Installer, Easy Setup Guide.)
2. Installation manual
3. Wire rope

## Dimensions

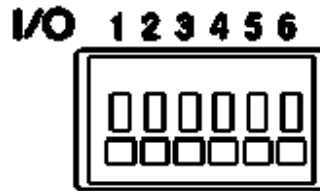
SNC-CS20



Units: mm (inches)

**Pin assignment / Connector  
I / O port**

Pin No.	Assignment
1	Alarm Out 1-
2	Alarm Out 1+
3	Alarm Out 2-
4	Alarm Out 2+
5	Sensor In - (GND)
6	Sensor In +



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