ARCHITECT & ENGINEER SPECIFICATIONS

SECTION 28 23 29
VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS

SNC-CH160
High Definition (HD), Outdoor, Day/Night, Network Bullet Camera with Built-in IR illuminators and using Exmor Technology (Software version 1.78 or later)

PART 2 – PRODUCTS

2.01 NETWORK CAMERA SPECIFICATIONS

A. GENERAL SPECIFICATIONS:

1. The SNC-CH160 shall be a High Definition (HD) network Bullet camera supporting 3 codecs, JPEG, MPEG-4 and H.264, any 2 of which can be used simultaneously.
   The SNC-CH160 shall be capable of streaming 2 standard definition (VGA) images at the same time.
   The SNC-CH160 shall utilize a 1/3-type, Exmor CMOS sensor of approx. 1.4 Megapixels and have a day/night capability.

2. The dynamic range shall be more than 60 dB.

3. The SNC-CH160 shall have built-in IR illuminators which allow for capturing images in the complete darkness (0 lx). The camera shall have 2 modes: ‘Sync with Day/Night’ and ‘off’. When ‘Sync with Day/Night’ mode is selected, IR illuminators are automatically activated when the camera switches to night mode. There shall be 6 selectable ‘Maximum Strength’ levels to control the intensity of the IR illuminators.

4. The IR illuminators shall have a wavelength of 850 nm.

5. The IR illuminators shall be effective (50 IRE [IP]) at 25 m (82.0 ft) when the AGC level is 42 dB.

6. The SNC-CH160 shall have an Easy Focus function, which adjusts the camera focus by using the Easy Focus button on the camera unit or remotely via the GUI. When the camera is switched between day and night modes, the Easy Focus function is automatically activated to keep the camera focused.

7. The SNC-CH160 shall also have a zoom/focus adjustment capability via a zoom/focus control on the camera unit or remotely via the GUI.

8. The SNC-CH160 shall have a Smartphone viewer, which can display the camera image and operate Pan/Tilt/Zoom (PTZ) on the smartphone.
   For more details, refer to http://www.sony.net/IPELA/snc.

9. The network interface shall be via an 8-pin RJ-45 connector, 10Base-T/100Base-TX Ethernet.
   Both IPv6 and IPv4 are supported.

10. The maximum frame rate capability of the SNC-CH160 over LAN shall be 30 frames per second at 1280 x 720 resolution in any of the 3 codecs (H.264/MPEG-4/JPEG).
    The maximum frame rate at 1280 x 1024 resolution shall be 20 frames per second in H.264, 25 frames per second in MPEG-4 and 30 frames per second in JPEG.

11. The SNC-CH160 shall utilize JPEG, MPEG-4 and H.264 compression. There are 2 ‘resolution’ modes to choose from when installing a camera: 1280 x 720 (HD) (default) or 1280 x 1024 (SXGA).

    When 1280 x 720 mode (aspect ratio: 16:9) is selected, and resolutions in 4:3 aspect ratio are chosen, the displayed image will be stretched vertically. When 1280 x 1024 mode (aspect ratio: 5:4) is selected, and resolutions in 16:9 aspect ratio are chosen, the displayed image will be stretched horizontally.

12. The SNC-CH160 is compliant with the SMPTE 296M in terms of number of pixels (1280 x 720) and 16:9 format.

13. The SNC-CH160 shall support a letter box function in 1280 x 720 mode (aspect ratio: 16:9).
    When the letter box function is enabled and resolutions in 4:3 aspect ratio are chosen, the displayed image will have mattes (black bars) on the top and bottom of the image and will not be stretched vertically.

14. The supported resolutions in 1280 x 720 and 1280 x 1024 mode are shown in the following tables:

    When you set the different image size to Image 1 and Image 2, the available combinations are as follows:
    ○: Possible set
    △: Possible set if the resolution is the same as image1

×: Impossible set

Maximum image size [1280 × 720]

	Image 1	Image 2
1280 × 1024	×	×
1280 × 960	×	×
1280 × 800	×	×
1280 × 720	○	△
1024 × 768	×	×
1024 × 576	○	△
800 × 600	○	△
800 × 480	○	△
768 × 576	○	△
720 × 576	○	△
704 × 576	○	△
720 × 480	○	△
640 × 480	○	○
640 × 368	○	○
384 × 288	○	○
320 × 240	○	○
320 × 192	○	○

Maximum image size [1280 × 1024]

	Image 1	Image 2
1280 × 1024	○	△
1280 × 960	○	△
1280 × 800	○	△
1280 × 720	○	△
1024 × 768	○	△
1024 × 576	○	△
800 × 600	○	△
800 × 480	○	△
768 × 576	○	△
720 × 576	○	△
704 × 576	○	△
720 × 480	○	△
640 × 480	○	○
640 × 368	○	○
384 × 288	○	○
320 × 240	○	○
320 × 192	○	○

When SolidPTZ is set to On, selectable image sizes are as follows.
○: Configurable.
△: Configurable when SolidPTZ of Image 2 is set to Off.
×: Not configurable

Maximum image size [1280 × 720], [1280 × 1024]

	Image 1	Image 2
768 × 576	○	×
720 × 576	○	×
720 × 480	○	×
704 × 576	○	×
640 × 480	○	○
640 × 368	○	○
352 × 288	○	○
320 × 240	○	○
320 × 192	○	○

15. The SNC-CH160 shall have the capability of simultaneously encoding up to 2 of the following codecs in any combination: JPEG, MPEG-4, and/or H.264 including multiple instances of the same codec.

    The maximum frame rates of each combination are shown in the following tables:

(1280 x 1024)

	Image 1		Image 2	
	Codec	fps	Codec	fps
Single Codec Stream	H.264	20		
	MPEG-4	25		
	JPEG	30		
Dual Codec Stream	H.264	15	H.264	6
	H.264	15	JPEG	12
	H.264	15	MPEG-4	8
	MPEG-4	20	MPEG-4	8
	MPEG-4	25	JPEG	6
	JPEG	30	JPEG	12

(1280 x 720)

	Image 1		Image 2	
	Codec	fps	Codec	fps
Single Codec Stream	H.264	30		
	MPEG-4	30		
	JPEG	30		
Dual Codec Stream	H.264	25	H.264	5
	H.264	25	JPEG	10
	H.264	25	MPEG-4	6
	MPEG-4	30	MPEG-4	10
	MPEG-4	30	JPEG	16
	JPEG	30	JPEG	30

16. JPEG compression levels shall be user selectable in 10 levels of compression ratios, based on an image of 24 bits per picture element (8 bits each for YUV).

17. Constant bit rate algorithm for JPEG data:
    The SNC-CH160 shall be capable of equalizing JPEG data sizes to have stable bandwidth utilization. Data size for each compression level is as follows:

Level	Compression Ratio	Data Size (KB)			
		320x192	640x480	1280x720	1280x1024
1	1/60	3	15	44	62
2	1/50	3.5	18	53	75
3	1/40	4.4	22	55	94
4	1/35	5	25	75	107
5	1/30	5.8	29	89	124
6	1/25	7	35	110	150
7	1/20	8.7	44	130	188
8	1/15	12	59	180	262
9	1/10	17	87	270	384
10	1/6	30	150	480	673

18. Actual frame rate in JPEG shall be shown in the following table:

Resolution	1280× 1024	1280× 720	1024× 576	768× 576	640× 480	320× 192
Image quality level	Actual output frame rate (fps)					
1	20	30	30	30	30	30
2	20	30	30	30	30	30
3	20	25	30	30	30	30
4	16	25	30	30	30	30
5	15	20	30	30	30	30
6	12	16	25	30	30	30
7	10	12	20	30	30	30
8	6	10	16	20	30	30
9	5	6	10	15	20	30
10	3	4	6	8	12	30

19. The SNC-CH160 shall support electronic pan/tilt/zoom or e-PTZ, when 1280 x 1024 (SXGA) mode is selected. This function shall be supported in both dual streams; image 1 and image 2.

20. The SNC-CH160 shall support up to 8 preset e-PTZ positions for each of the 2 image codecs.

21. The SNC-CH160 shall support up to 16 preset position tours for each of the 2 image codecs. Up to 5 tours shall be supported.

22. The SNC-CH160 shall be capable of streaming 2 standard definition (VGA) images at the same time during e-PTZ mode, where one of the streams is a scaled down image, while the other is a cropped VGA image. Both images shall be selectable from any of the 3 compression schemes; H.264/MPEG4/JPEG.

23. The supported operating systems shall be Microsoft Windows 8 Pro* 32 bit and 64 bit, Microsoft Windows 7 32 bit and 64 bit

(Ultimate/Professional), Windows Vista 32 bit (Ultimate/Business), Windows XP 32 bit (Professional), and DirectX 9.0c or higher
*Software version 1.79 or later.
Minimum PC requirements shall be the Intel Core2 Duo Processor, 2 GHz or higher, with 1 GB RAM or more supporting 1600 x 1200 or higher resolution (2560 x 1600 resolution or higher is recommended), 24-bit True Color display capability with Ethernet 100Base-TX.

24. The SNC-CH160 shall incorporate a built-in web server, such that the standard web browser Windows Internet Explorer (version 6.0, 7.0, 8.0, 9.0 or 10.0* recommended) can be used to access the camera without need for special viewer software.
    *Firmware 1.79 or later

25. The following web browsers can also be used to access the camera with the 'Plug-in Free' viewer: Firefox version 3.5, Safari version 4.0 and Google Chrome version 4.0. When using these browsers, the video is displayed in JPEG format.

26. The 'Plug-in Free' viewer also supports the Flash plug-in and ActiveX viewer, the latter allowing for MPEG-4 and H.264 video streams.

27. The SNC-CH160 shall support ActiveX viewer which allows the camera image to be viewed in Internet Explorer.
    The ActiveX viewer allows for recording of video directly to the PC's hard drive.

28. The SNC-CH160 shall be capable of generating HTML code for the video image, allowing for easy web page integration.

29. The SNC-CH160 shall support Windows Desktop Gadgets and shall allow for the ActiveX viewer to be modified.

30. The SNC-CH160 web browser shall support the following languages: English, Japanese, Simplified Chinese, Traditional Chinese, Korean, Portuguese, French, Spanish, German, and Italian.

31. The SNC-CH160 shall be capable of supporting up to 5 users simultaneously over the network.

32. The SNC-CH160 shall have up to 6 user level settings.
    The administrator shall have complete access/control of the cameras. The other 5 levels of access can be set to limit user privileges to functions such as viewing, changing image size, etc. Access to functions shall be determined as shown in the following table:

Function	Administrator	User				
		Full	Pan/Tilt	Preset position	Light	View
Monitor a live image	●	●	●	●	●	●
View the date and time	●	●	●	●	●	●
Control the frame rate (JPEG mode only)	●	●	–	–	–	–
Control the image view size	●	●	●	●	●	–
Save a still image and movie in the computer	●	●	●	●	●	–
Send an image file to the FTP server	●	●	–	–	–	–
Send an image attached to an e-mail	●	●	–	–	–	–
Control the alarm output of the I/O port on the camera	●	●	–	–	–	–
Switch the Day/Night function mode	●	●	–	–	–	–
Switch the TCP/UDP transmission mode (Available in MPEG4/H.264 mode only)	●	●	–	–	–	–
Call the preset position	●	●	●	●	–	–
Perform the pan/tilt/zoom operation	●	●	●	–	–	–
Select the codec mode	●	●	●	●	●	–
Control the setting menu	●	–	–	–	–	–

● Usable function
– Not usable function

33. The SNC-CH160 shall have the capability to stream MPEG-4 and H.264 video in TCP protocol or MPEG-4 and H.264 in UDP (unicast/multicast) protocol.

34. The SNC-CH160 shall have an Adaptive Rate Control (ARC) function when using MPEG-4 and H.264 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.

35. The SNC-CH160 shall incorporate a built-in Intelligent Motion Detection (IMD) capability that supports Distributed Enhanced Processing Architecture (DEPA) technology.
    To minimize false triggers, the SNC-CH160 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.

36. The SNC-CH160 shall have a camera tampering detection function that alerts the operator if the camera is tampered with. Tampering can include spraying the camera lens, covering it with a cloth, or changing the mounting direction.

37. The SNC-CH160 shall be capable of image cropping in all codecs, such that only the area of interest is transmitted, to reduce bandwidth and file storage requirements.

38. The SNC-CH160 shall support the following network protocols: IPv4, IPv6, TCP, UDP, ARP, ICMP, IGMP, HTTP, HTTPS, FTP (client only), SSL, SMTP, DHCP, DNS, NTP, RTP/RTCP, RTSP (IPv4 only), and SNMP (v1, v2c, v3).
    Network security shall be via password (basic authentication) and IP filtering.

39. The SNC-CH160 shall support National Transportation Communications for ITS (NTCIP) protocol.

40. The SNC-CH160 shall support RTSP (IPv4) protocol based upon RFC 2326 and shall support the following options: DESCRIBE, SETUP, PLAY, TEARDOWN, and GET_PARAMETER.

41. The SNC-CH160 shall be capable of deterring brute force attacks. The camera shall recognize a brute force attack and refuse HTTP requests from an attacker's IP address for a preconfigured number of seconds. The camera shall determine that a brute force attack occurred when a client authentication error occurs 5 consecutive times.

42. The SNC-CH160 shall support QoS technology using Differentiated Services Code Point (DSCP).

43. The SNC-CH160 shall support HTTPS client authentication.

44. The SNC-CH160 shall support IEEE 802.1X.

45. The SNC-CH160 shall be compliant with the ONVIF Profile S (Open Network Video Interface Forum Profile S) conformance.

46. The SNC-CH160 shall have user configurable port settings.

47. The SNC-CH160 shall be capable of dynamic IP address change notification. It shall accomplish this via an email to a specified address or by HTTP when its IP address changes.

48. The SNC-CH160 shall have an email (SMTP) notification capability which allows the following:

    - Sending an email to pre-specified users when an alarm is triggered by either motion detection, camera tampering detection or sensor input. A JPEG image, which is linked with the alarm trigger, can be attached to the email.

- Periodically capturing a JPEG image and sending it via email.

49. The SNC-CH160 shall have an FTP client capability which allows the following:

    - Transferring a JPEG image to a pre-specified FTP server when an alarm is triggered by either motion detection, camera tampering detection or sensor input.

    - Periodically capturing a JPEG image and transferring it to the FTP server.

50. The SNC-CH160 shall be Power over Ethernet (PoE) capable, compliant to the IEEE 802.3af standard and shall be classified as Class 0.

51. The SNC-CH160 shall have an integral 2.9X (3.1 to 8.9 mm) F 1.2 (Wide end) to F2.1 (Tele end), IR compensated DC auto-iris type vari-focal lens.
    The SNC-CH160 shall also have 3X digital zoom capability.

52. The SNC-CH160 shall have privacy zone masking which blocks out unwanted or prohibited area within the video image to protect privacy. Mask colors shall be Black, any of 6 shades of Gray, White, Green, Yellow, Red, Cyan, Magenta, and Blue.
    The camera shall be capable of masking up to 4 areas. Such capability shall be via vendor supplied SNC toolbox utility software or the browser-based setup menu.

53. The SNC-CH160 shall be equipped with a built-in heater that is automatically activated when the internal temperature drops below a predefined threshold.

54. The SNC toolbox software includes the IP Setup (including group camera management) program, Firmware Upgrade Tool, Custom Homepage Installer, and Group Camera Setting Scheduler.
    The SNC toolbox shall be supplied with the camera as a standard accessory in the CD-ROM.

55. The SNC-CH160 shall have a superimpose capability for the following information:

    - Camera ID of up to 20 alphanumeric characters or logo in gif format

    - Date/Time data with selectable formats such as year-month-day, hour-minute-seconds; and day-month-year, hour-minutes-seconds

- Zoom or vari-focal ratio (optical and digital)

- Actual frame rate (fps) and bit rate (bps)

- Preset position name of up to 32 alphanumeric characters

- Event -- sensor IN, IMD, camera tampering detection

- Character string of up to 61 alphanumeric characters

Font size of the superimposed data shall be user configurable for large, medium or small. Superimpose position shall be 4 corners, top, bottom, or center of the screen for a total of 7 selectable positions.

56. The electronic shutter speed shall be set from 1 to 1/10,000 second.

57. The SNC-CH160 shall have an I/O interface that is accessible via a cable. There shall be 1 alarm input port, and 1 alarm/relay output port. The alarm input port shall be opto-isolated.

58. The SNC-CH160 shall support IP Filtering, whereby access to the camera can be restricted to one or more groups of selected users. Up to 10 different groups can be established by defining an IP address range for each group.

59. The SNC-CH160 shall be capable of limiting the bandwidth from 64 kbps to 8 Mbps in MPEG-4 or H.264, and from 0.5 Mbps to an unlimited bandwidth in JPEG.

60. The SNC-CH160 shall support IEEE 802.1X authentication, and shall:

    - comply with the IEEE 802.1X standards,

    - be capable of being integrated into an IEEE 802.1X network to achieve high network security,

    - support EAP-TLS mode to use a key pair from a Certificate Authority (CA),

    - support EAP-MD5 mode,

    - support PEAP mode.

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

62. The SNC-CH160 shall support an ON/OFF selectable NR (Noise Reduction) capability.

B. CAMERA LENS SPECIFICATIONS:

1. The SNC-CH160 shall have an integrated 2.9X IR compensated DC auto-iris type vari-focal lens.
   The SNC-CH160 shall also have 3X digital zoom capability.

2. The focal length shall be 3.1 to 8.9 mm with field of view coverage of 85.4˚ to 31.2˚.

3. The aperture range for the lens (F number) shall be F 1.2 (Wide end) to F 2.1 (Tele end).

C. VIDEO-ELECTRICAL SPECIFICATIONS:

1. The SNC-CH160 input power shall be PoE (IEEE 802.3af compliant) and the power classification shall be Class 0.

2. The SNC-CH160 shall have a composite analog MONITOR output in addition to streaming video via Ethernet.
   The composite analog video output can be used for monitoring while installing the camera to adjust the field of view and focus.

3. The analog MONITOR output of the SNC-CH160 shall be selectable from either the NTSC or PAL standards.

4. The SNC-CH160 shall require a minimum scene illumination at either 1280 x 720 or 1280 x 1024 resolution of:

   Color:
   0.50 lx (50 IRE [IP], F 1.2, AGC 42 dB)
   0.30 lx (30 IRE [IP], F 1.2, AGC 42 dB)

   B/W:
   0 lx (50 IRE [IP], F 1.2, AGC 42 dB, IR illuminators On)
   0 lx (30 IRE [IP], F 1.2, AGC 42 dB, IR illuminators On).

5. Camera synchronization shall be Internal.

6. The SNC-CH160 shall have an AGC capability of up to 42 dB.

7. The SNC-CH160 shall have the following 7 gamma compensation modes:

   -Standard: Can be used for various scenes.

   -Scene 1: Brings out dark areas without losing details in the bright portions of the scene with high contrast.

   -Scene 2: Similar to Scene 1 but more effective than Scene 1.

   -Scene 3: Brightens up dark areas of a scene with high contrast.

   -Scene 4: No gamma compensation (linear)

   -Scene 5: Prevents overexposure when shooting objects are extremely bright.

   -Scene 6: Is used when a 1.8 gamma display system is used.

8. The SNC-CH160 shall have a BLC (Backlight Compensation) capability.

9. The composite video output shall be 1.0 V peak-to-peak @ 75 ohms.

10. White balance shall be ATW (approx. 2000 K to 10000 K), ATW-PRO (approx. 3000 K to 5800 K), Fluorescent lamp, Mercury lamp, Sodium Vapor lamp, Metal Halide lamp, White LED, One push WB, or Manual.

11. Power consumption for the SNC-CH160 shall be 12.9 W maximum.

D. AUDIO SPECIFICATIONS:

None

E. MECHANICAL SPECIFICATIONS:

1. The SNC-CH160 camera lens shall be an integrated 3.1 to 8.9 mm F 1.2 (Wide end) to F2.1 (Tele end), IR compensated DC auto-iris type vari-focal lens.

2. The SNC-CH160 shall have built-in IR illuminators.

3. The SNC-CH160 shall have a built-in heater.

4. The camera shall support 1 optically isolated sensor inputs, and 1 relay outputs. They shall be accessible via a cable.

5. The SNC-CH160 shall provide sensor-in/relay-out ports for interfacing with external equipment. The sensor input shall be configurable for either ‘Normally Open’ or ‘Normally Closed’ configuration.

6. A relay output shall be rated at 24 V AC/24 V DC, 1 A or less.

7. The SNC-CH160 shall have a mounting bracket so that it can be mounted to a ceiling or wall.

8. The SNC-CH160 dimensions (Dia. x H) shall be approximately: 3 3/4 in. x 7 3/8 in. (93 mm x 186 mm) (without projecting parts and a mounting bracket).

9. The SNC-CH160 shall weigh approximately 3 lb. 14 oz. (1.75 kg) (not including cables and a bracket).

10. The SNC-CH160 shall have an RJ-45 socket accessible via pigtail.

11. The SNC-CH160 shall have an Easy Focus button on the camera control panel, which is used to adjust the camera focus.

12. The SNC-CH160 shall also have ZOOM and FOCUS buttons on the camera control panel, which are used for manual adjustments of the camera zoom and focus.

13. The SNC-CH160 camera shall be IP66 rated in accordance with the IEC 60529 standard.

F. ENVIRONMENTAL SPECIFICATIONS:

1. The SNC-CH160 operating temperature shall be within the following range:
   -22 ˚F to +122 ˚F (-30 ˚C to +50 ˚C)
   Cold start temperature must be greater than -4 ˚F (-20 ˚C).

2. The SNC-CH160 storage temperature shall be within the following range:
   -4 ˚F to +140 ˚F (-20 ˚C to +60 ˚C)

3. The SNC-CH160 operating humidity shall be within the range of 20 % to 80 % (non-condensing).

4. The SNC-CH160 storage humidity shall be within the range of 20 % to 95 % (non-condensing).

5. The SNC-CH160 shall have a built-in heater allowing the camera to operate in extremely cold environments as low as -22 ˚F (-30 ˚C).

G. SUPPLIED ACCESSORIES:

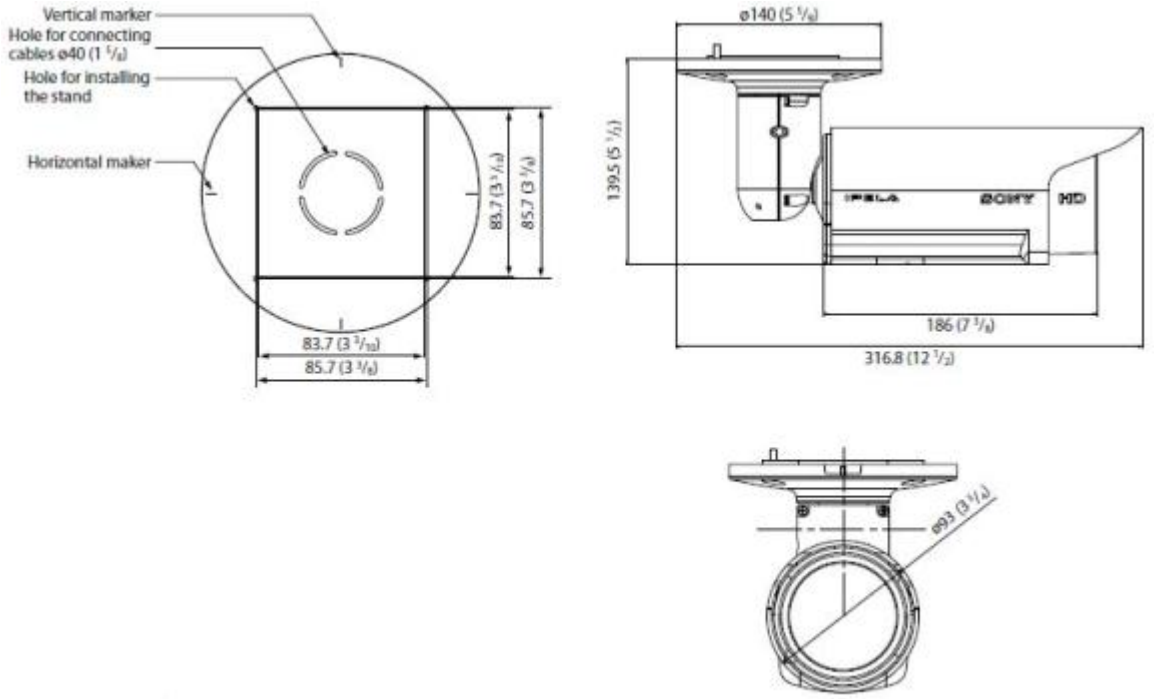
1. CD-ROM (User's Guide, SNC toolbox) (1)
2. Installation manual (1)
3. Template (1)
4. Shoulder screw M4 (1)
5. Wire rope (1)
6. Wrench (1)
7. Warranty booklet (1)

H. OPTIONAL ACCESSORIES:

None

I. Dimensions:

SNC-CH160



Units: mm (inches)

J. IO assignment:

I/O Port

Color of wire	Name
Red	Sensor In +
White	Sensor In – (GND)
Black	Alarm Out 1 +
Yellow	Alarm Out 1 –
Brown	Not used
Green	Not used

Features and specifications are subject to change without notice. Non-metric weights and measurements are approximate.