

Scallop Imaging D7-180 7 Megapixel 180° Panoramic Color Video Camera

1. Description

The 7 megapixel Digital Window® D7-180 video surveillance camera is a 180° panoramic video camera. The imaging task is distributed amongst five micro camera modules. The D7-180 synthesizes five image data streams into (1) 15 fps HD 720p frame that combines a seamless 180° field of view situational awareness view with up to four separate and quickly repositionable detail views. In addition, the camera has a full resolution 7 Megapixel video stream at 1 fps for recording and forensic viewing.

2. Manufacturer

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A.General Requirements:

1. The camera shall be a network enabled color camera utilizing (5) 1.3Megapixel CMOS image sensors.
2. The camera shall have output a resolution of 1280x1024 pixels per image sensor for a total of 5120x1280 pixels.
3. The camera shall produce panoramic images by synchronizing the 5 image sensors and fusing the output of the image sensors into a stitched 180° field of view.
4. The camera aggregate frame rate across all 5 image sensors shall be 75 frames/sec.
5. The camera shall be H.264 (MPEG4, Part 10) compliant. The camera shall provide six levels of H.264 compression quality selectable by the user for optimal viewing and recording.
6. The camera shall have a horizontal field of view of 180° and a vertical field of view of 48°.
7. The camera shall have multi-streaming capability and shall deliver up to two simultaneous video streams: [1] a high definition 720p (1280x720 pixels) stream where the video frame format is composed of a full 180° situational awareness view resampled to fit into the 720p HD frame within 1280x320 pixels, plus the balance of the frame (1280x400 pixels) allocated to display up to 4, full or half pixel resolution region of interest windows selected from anywhere within the 180° field of view at up to 15 frames/sec, and [2] a full pixel resolution 5120x1280 panoramic image at up to 1 frame/sec. Both the full 180° situational awareness view and the region of interest views shall be delivered simultaneously and be synchronized.
8. The camera shall support flexible formatting of the HD video frame to include the following options: 180° situational awareness view only, 180° situational awareness view plus two regions of interest, 180° situational awareness view plus three regions of interest, and 180° situational awareness view plus four regions of interest.
9. The camera shall be capable of displaying a rectangular overlay on the situational awareness view that indicates the position and size of a selected region of interest in the composite 720p video stream when selecting the window location .
10. The camera shall be capable of allowing the user to quickly reposition the regions of interest in the composite video 720p frame.
11. The camera shall have Auto Exposure with two exposure modes, Average mode and Independent mode. Average mode takes the exposure statistics for all of the image sensors and fixes the exposure for all of the camera modules based on the best average exposure. Independent mode allows each of the image sensors to set its own exposure based on its own exposure statistics.

12. The camera shall feature Auto White Balance, which automatically sets the color channel gains, based on estimating the illuminant using AWB statistics for all of the image sensors.
13. The camera shall allow the white balance to be set manually by the user.
14. The camera shall allow the user to set the frame rate of the sensors from 1 fps to 15 fps.
15. The camera shall allow the user to set the image sharpening level with 4 levels of sharpening.
16. The camera shall allow the user to set the image contrast with 4 contrast curves.
17. The camera shall allow the user to adjust the exposure target to adjust the average image brightness.
18. The camera shall feature user-selectable 50/60 Hz flicker control.
19. The camera shall allow the user to adjust the geometrical alignment of the field of view to compensate for parallax in certain scenes.
20. The camera shall be capable of streaming video over a network.
21. The camera shall support TCP/IP, HTTP, SMTP, DHCP, RTP/RTSP, DNS, and BONJOUR network protocols.
22. The camera network interface shall be via an 8-pin RJ-45 connector. 10Base-T/100Base-TX Ethernet.
23. The camera shall be Power over Ethernet capable, compliant to the IEEE 802.3af standard.
24. The camera shall include an embedded web server, such that the standard web browsers Microsoft Internet Explorer 8 and higher, and Mozilla Firefox 3.6.1 or higher can be used to configure the camera and remotely view and record the D7-180 video streams. The supported operating systems shall be Windows 7, Windows Vista, and Windows XP.
25. The minimum system requirements to install and run the camera shall be:
 - Windows® XP (SP3 or higher), Windows Vista, Windows 7
 - 2.0 GHz CPU (Dual-core 1.8GHz or higher CPU recommended)
 - 2 GB RAM or higher
 - 200 MB hard drive space
 - Display adapter capable of 32 bit color depth or higher, 256 MB or higher video memory
 - Minimum display resolution 1280 x 1024
 - 10/100 Mb Ethernet adapter
 - 10/100 Router (Gigabit router recommended)*
 - PoE Switch*
 - Internet Explorer 8 or higher or Mozilla Firefox 3.6.1 or higher*Optional depending on the deployed network topology
26. The camera shall have 2 user level settings. The Admin user level allows the user to configure and control the camera. The Viewer user level allows the user to view video streams.
27. The maximum frame rate capability of the camera over LAN shall be up to 15 frames per second at 1280x720 and 1 frame per second at 5120x1280 for H.264 compression. Both video streams shall be available simultaneously.
28. The camera shall have the capability to stream H.264 video in the following protocols: TCP/IP, HTTP, SMTP, DHCP, RTP/RTSP, FTP client, DNS, UPnP, and Bonjour.
29. The camera shall provide user authentication that allows a system administrator to prevent unauthorized access to the camera. Authentication shall consist of a challenge to provide the correct user name and password.
30. The camera shall have both FTP client and server capabilities.
31. The camera shall be capable of Date/Time superimposition on the video images. Additionally, a camera ID consisting of characters and numerals can be set by the user. Camera ID and Date/time shall be capable of being turned on or off independently.

32. The electronic shutter shall be able to record exposures in the range between 1/10,000 sec and 1/10 sec. The maximum sensor integration time is 1/15 sec.
33. The camera shall be capable of being installed outdoors in temperatures as low as -40°F using an optional heater/blower kit available from the manufacturer.

B. Camera Lens Specifications:

1. The camera shall be equipped with 5 fixed focus lenses with integrated IR cut filters.
2. The focal length of each of the 5 lenses shall be 2.75mm. The total field of view coverage of the camera shall be 180° horizontal by 48° vertical.
3. The camera shall have depth of field from 1 ft. to infinity.

C. Video-Electrical Requirements:

1. The camera's input power shall accept a power voltage of DC 12V, and shall be Power over Ethernet (PoE) IEEE 802.3af standard compliant.
2. The camera shall require a minimum scene illumination of 0.5 lux.
3. The camera shall have streaming video output of two streams over Ethernet.
4. The global auto white balance function shall work for illuminants in the range of 2000° K– 10000°K.
5. The power consumption of the camera shall be 8 watts maximum.
6. The camera shall be FCC Part 15, Class A, CE, CSA, and RoHS compliant.
7. The camera shall have a two year warranty.

D. Mechanical Requirements

1. The camera dimensions shall be approximately 3.28"W x 5.72"H x 2.49"D (83mm x 145mm x 63mm).
2. The camera shall weigh approximately 11.6 oz (329 g).
3. The camera body shall be constructed of impact resistant polycarbonate materials.
4. The network interface shall be via RJ-45 located on the rear of the camera.
5. The camera shall be capable of being mounted outdoors using an optional outdoor housing kit, DW02-100-010.
6. The camera shall be capable of being flush-mounted to a wall or ceiling using an optional Flush mount kit DW01-100-003.

E. Environmental Requirements

1. The operating temperature shall be within the range -40°F to 140°F (-40°C to 60°C).
2. The storage temperature shall be within the range -40°F to 185°F (-40°C to 85°C)

F. Supplied Accessories

1. The camera kit shall include a 12v DC power supply.
2. The camera kit shall include a surface mounting kit, and an angle mounting kit.