NiteDevil CAM950/955/960 Covert Modules

This **NiteDevil Camera** is a miniature covert camera measuring only 36.5mm wide x 36.5mm high and includes a free fixing bracket.
Available in three lens options.

CAM950 - 3.6mm board lens,
CAM955 - 3.7mm flat pinhole lens
CAM960 - 3.7mm cone pinhole lens.

CAM950

All 3 cameras provide a resolution of **600TVL** in colour and **700TVL** in b/w. These cameras come with many of the NiteDevil features including an OSD menu, the SENS-UP feature allowing minimum illumination down to an incredible **0.00019 Lux** and a **WDR** option. The cameras run on a 12V DC supply and only draw 90mA allowing it to be used effectively in covert systems.

Features

- ✓ 1/3" Sony Super HAD CCD 600/700 TVL
- ✓ Wide Dynamic Range setting
- ✓ 3 Lens Options
- ✓ Built-in OSD menu
- ✓ Miniature covert camera
- ✓ Free mounting bracket

- ✓ Low Light 0.00019Lux
- ✓ 12V DC 90mA power consumption
- ✓ SENS-UP auto function 2x – 256x
- ✓ Built-in 3DNR function
- ✓ Auto BLC function
- ✓ Electronic Shutter

Powering the Camera

The dome requires a 12v DC regulated power supply providing a minimum of 120mA. When connecting to 12v DC power supply, always use a regulated supply. The camera has a 2.1 power jack plug.

Connecting Video

Connect a BNC cable to the BNC connector on the camera and connect cable to monitor or DVR as required. You will need a female to female BNC connector when connecting to a DVR

CAM955

CAM960

Precautions

Do not install the camera in extreme temperature conditions. Only use the camera where temperatures are between –20 degrees centigrade and +50 degrees centigrade.
Never install the camera in damp or humid conditions. This can affect image quality.
This camera requires stable lighting conditions to operate effectively.
Do not touch the front lens of the camera. Fingerprints can stain the lens glass.
The camera must not be placed directly facing the sun or strong light. This may damage the camera CCD.
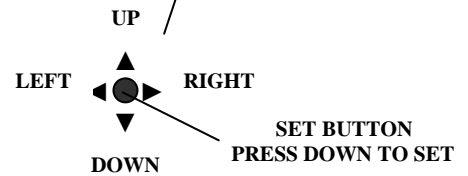Never expose the camera to rain or liquids. These will corrode the camera electronics.
Do not subject the camera to vibration as it may cause camera malfunctions.
Only use this camera internally.

Menu Settings

1. LENS   DC
2. EXPOSURE   ⬑
3. WHITE BAL   AWB
4. DAY NIGHT   AUTO
5. 3DNR   ON ⬑
6. SPECIAL   ⬑
7. ADJUST   ⬑
8. RESET   ⬑
9. EXIT   ⬑

To display the OSD menu press the SET button down for 3 seconds. Menu closes when no operation.

WDR ✓
DNR ✓
OSD ✓

UP

LEFT ◀ ▶ RIGHT

DOWN

SET BUTTON
PRESS DOWN TO SET

SET BUTTON: Displays menu on the screen. Press button down to confirm status or after changing a selected item.

UP/ DOWN BUTTON: Used to move cursor up and down to select a menu item.

LEFT & RIGHT BUTTONS: Moves cursor left and right or change the value of a selected item.

FUNCTION MENU STRUCTURE			
LENS	■DC	■MANUAL	
EXPOSURE	■SHUTTER ■SENSE-UP	■BRIGHTNESS ■BLC / HSBLC	■AGC ■D-WDR	
WHITE BAL	■AWB ■INDOOR	■AWC- SET ■OUTDOOR	■MANUAL ■ATW	
DAY NIGHT	■COLOUR	■AUTO	■EXT	■B/W
3 DNR	■ON	■OFF		
SPECIAL	■CAM TITLE ■PRIVACY	■D-EFFECT ■SYNC	■RS485 ■LANGUAGE	■MOTION
ADJUST	■SHARPNESS	■BLUE	■RED	
RESET	■FACTORY			
EXIT				

NOTE: All menu items with the ⬑ icon require the SET button to be depressed.
  If - - - is displayed then feature is unavailable on this camera.

```
        Menu Settings

1. LENS              MANUAL
2. EXPOSURE          ⬅
3. WHITE BAL         AWB
4. DAY NIGHT         AUTO
5. 3DNR              ON ⬅
6. SPECIAL           ⬅
7. ADJUST            ⬅
8. RESET             ⬅
9. EXIT              ⬅
```

LENS

When the SETUP menu screen is displayed, select LENS by using the UP & DOWN buttons so that the arrow selects LENS.

Select the connected type by using the LEFT & RIGHT buttons.

Selecting MANUAL selects manual lens

Selecting DC selects Auto Iris Lens. When DC is selected you can select the brightness control by pressing the SET button. Set range between 0 ~ 100.

```
        MENU SETTINGS

1. LENS              MANUAL
2. EXPOSURE          ⬅
3. WHITE BAL         AWB
4. DAY NIGHT         AUTO
5. 3DNR              ON ⬅
6. SPECIAL           ⬅
7. ADJUST            ⬅
8. RESET             ⬅
9. EXIT              ⬅
```

```
          EXPOSURE

SHUTTER         1/250
BRIGHTNESS      - - -
AGC             MIDDLE
SENSE-UP        OFF
BLC             OFF
D-WDR           INDOOR

RETURN          RET ⬅
```

SHUTTER AUTO, 1/50, FLK, 1/250, 1/500, 1/2000, 1/5000, 1/10000, 1/100000, x256, x128, x64, x32, x16, x8, x4, x2
Select EXPOSURE by using UP & DOWN buttons and then select desired mode.
AUTO Select this mode to control the shutter speed automatically.
FLK   Select this mode if flickering occurs on screen.

BRIGHTNESS (1 – 100) You can control the brightness by using the LEFT & RIGHT buttons in Manual lens mode.

AGC OFF / LOW / MIDDLE / HIGH
Set AGC from low to high gain. Note that the higher the gain level, the brighter the screen but the higher noise level.
Note that if AGC shows - - - then RESET the camera.

SENSE-UP OFF / AUTO ⬅ **x2 / x4 / x8 / x16 / x32 / x64 / x128 / x256**
When it is dark the camera automatically detects the light level and tries to compensate by maintaining a clear picture.
OFF The option is deactivated when the OFF option is selected or when AGC is OFF or DAY&NIGHT is OFF.
AUTO You can adjust brightness by increasing/decreasing the shutter speed (x2 ~ x256)
Note that noise can be amplified as SENSE-UP in increased.

BLC OFF / BLC ⬅ **/ HSBLC** ⬅
Backlight compensation allows you to get a clear picture even when objects are in a strong backlight.
BLC ⬅
Selecting BLC and pressing SET button enters the BLC menu.

BLC / HSBLC MENUS

GAIN	LOW
DEFAULT	⬅
LEFT/RIGHT	___I___
WIDTH	__I___
TOP/BOTTOM	___I__
HEIGHT	__I___
RETURN	

This menu allows a selected area of the picture to be viewed more clearly in varying light conditions.

GAIN   LOW / MIDDLE / HIGH
Select the level of gain by selecting low, middle or high.

DEFAULT Press SET button to select default option.

The **LEFT/RIGHT, WIDTH, TOP/BOTTOM** and **HEIGHT** are used to create a window and place it in the picture view using BLC. When there is a bright light e.g headlights on a car, using the **HSBLC** menu may compensate for this condition so allowing you to view a car number plate that would otherwise be obliterated by the light level.

D-WDR   OFF / INDOOR / OUTDOOR
Digital Wide Dynamic Range allows de-saturation of light in a single pixel so providing the mean light level overall. This allows a scene that may include for example objects that show light and shade and then compensates by providing an overall balanced light view. WDR can be set to INDOOR, OUTDOOR or OFF.

MENU SETTINGS	
1. LENS	
	MANUAL
2. EXPOSURE	⬅
3. WHITE BAL	**AWB**
4. DAY NIGHT	AUTO
5. 3DNR	ON
⬅	
6. SPECIAL	⬅
7. ADJUST	⬅
8. RESET	⬅
9. EXIT	⬅

WHITE BAL   ATW / AWB / AWC ➤ SET / MANUAL / INDOOR / OUTDOOR

ATW Auto Tracking White Balance. Suitable for viewing objects with changing colour temperature. Select when colour temperature between 2,500°K and 9,800°K.

AWB Auto White Balance. This uses stored settings for white balance and is most suitable where there is little change in light source.

AWC ➤ SET The auto white-balance control analyses the incoming light and estimates the best camera setting for pleasing colors.

MANUAL ⬅ This option allows the blue and red colours to be manually set.

INDOOR Select this when the colour temperature is around 3,100°K.
OUTDOOR Select this when the colour temperature is around 5,100°K.

SPECIAL NOTE:
In the event that problems are found with the white balance settings, it is recommended that the AWC mode is selected. These problems can be:-
(i)   When the colour temperature in the environment is beyond the control range.
(ii)   If the camera is situated close to a fluorescent light white balance may become unstable.

```
          MENU SETTINGS

  1. LENS
                          MANUAL
  2. EXPOSURE               ⬅
  3. WHITE BAL             AWB
  4. DAY NIGHT             AUTO
  5. 3DNR                  ON
      ⬅
  6. SPECIAL                ⬅
  7. ADJUST                 ⬅
  8. RESET                  ⬅
  9. EXIT                   ⬅
```

DAY NIGHT COLOUR / AUTO ⬅ / EXT / BW

COLOUR The option will always display in colour.

AUTO ⬅ This option allows colour mode during day and b/w at night or when ambient light levels are low. To setup the switching time or speed press the SET button.

```
          DAY NIGHT AUTO

  DELAY         _____   8

  S-LEVEL       _____   63

  E-LEVEL       _____   55

  RETURN
```

DELAY The seconds before the switch from one mode to the next mode.
S-LEVEL The setting of the brightness illumination before switching from colour to b/w
E-LEVEL The setting of the brightness illumination before switching from b/w to colour

EXT This deactivates the EXT function.

BW This option will always display in black and white.

SPECIAL NOTE: You cannot control the DAY/NIGHT menu when AGC in the EXPOSURE menu is set to OFF. If it is, then DAY and NIGHT mode will operate only in COLOUR mode.

```
          MENU SETTINGS

  1. LENS                 MANUAL
  2. EXPOSURE               ⬅
  3. WHITE BAL            AWB
  4. DAY NIGHT            AUTO
  5. 3DNR                 ON  ⬅
  6. SPECIAL                ⬅
  7. ADJUST                 ⬅
  8. RESET                  ⬅
  9. EXIT                   ⬅
```

3DNR OFF / ON ⬅
Digital Noise Reduction reduces the background noise in a low light environment.

Select ON and press SET button to enter 3DNR menu.

```
              3DNR

  LEVEL          _____|____  56

  RETURN              RET  ⬅
```

OFF   Deactivates 3DNR. Noise is not reduced.
ON   Activates 3DNR so that noise is reduced.

SPECIAL NOTE:
You cannot set the 3DNR to ON or OFF when the AGC mode in the EXPOSURE menu is set to OFF.
When adjusting the noise reduction level in this mode, the higher the setting the more the noise level will be reduced but the more likely ghosting will occur.

```
             MENU SETTINGS

     1.  LENS              MANUAL
     2.  EXPOSURE          ←
     3.  WHITE BAL         AWB
     4.  DAY NIGHT         AUTO
     5.  3DNR              ON  ←
     6.  SPECIAL           ←
     7.  ADJUST            ←
     8.  RESET             ←
     9.  EXIT              ←
```

```
                SPECIAL

     1.  CAM TITLE         OFF / ON  ←
     2.  D-EFFECT          ←
     3.  RS485             ←
     4.  MOTION            OFF
     5.  PRIVACY           OFF
     6.  SYNC              INT
     7.  LANGUAGE          ENGLISH
     8.  RETURN            ←
```

CAM TITLE Allow the display of a 15 character camera title displayed on the monitor.

```
                CAM TITLE

           0 1 2 3 4 5 6 7 8 9
           A B C D E F G H I J K
           L M N O P Q R S T U V
           W X Y Z |>  ► ◄ ▲ ▼ ( )
             _
              _
               _  □ / = & " ~ , ..

          ←    →    CLR   POS   END

        ———————————————————————
```

CAM TITLE
If you wish to display the camera title you must switch camera title to ON.
Note that if the CAM TITLE is OFF no title is displayed on the monitor even if one is entered.
Move up and down buttons to select CAM TITLE and switch it ON. Then press the SET button and move to the required character using the direction buttons and press the SET button to select. Repeat to select up to 15 characters. If you move to CLR and press the SET button all characters are cleared. To edit a character select the character bottom left arrow and press SET button, move the cursor over the character to be edited, then select the character required and press the SET button. Then select POS to position cam title, press SET, move to the position required and select END. Press SET again to return to SPECIAL menu.

```
                SPECIAL

     1.  CAM TITLE         OFF / ON  ←
     2.  D-EFFECT          ←
     3.  RS485             ←
     4.  MOTION            OFF
     5.  PRIVACY           OFF
     6.  SYNC              INT
     7.  LANGUAGE          ENGLISH
     8.  RETURN            ←
```

```
                D-EFFECT

     FREEZE        OFF / ON
     MIRROR        MIRROR / V-FLIP / ROTATE
                   OFF
     D-ZOOM        OFF / ON  ←
     GAMMA         0.45
     NEG IMAGE     OFF / ON
     RETURN        RET  ←
```

D-EFFECT
This option covers the display effects that can be selected.

FREEZE   **OFF / ON**
This option if set to ON will freeze current picture. Select OFF to revert to normal video

MIRROR   **MIRROR / ROTATE / V-FLIP / OFF**
This option allows the normal video displayed to be switched to vertical flip, horizontal flip, both or none.

MIRROR	This flips the camera view vertically on the screen.
ROTATE	This flips the camera view horizontally on the screen.
V-FLIP	This flips the camera horizontally and vertically on the screen.
D-ZOOM	**OFF / ON** ⬅ This option switches on digital zoom
GAMMA	The standard value is O.45 The values 0.05 ~ 1.00 can be set.
NEG IMAGE	**OFF / ON** A colour negative image can be set.
RETURN	Returns to the SPECIAL menu.

```
┌─────────────────────────────┐
│         D-ZOOM              │
│                             │
│  DZOOM        x1 ~ x32      │
│  PAN        ___|___  0      │
│  TILT       ___|___  0      │
│  RETURN       RET ⬅         │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│          SPECIAL            │
│                             │
│  1. CAM TITLE     OFF / ON ⬅│
│  2. D-EFFECT          ⬅     │
│  3. RS485             ⬅     │
│ ┌─────────────────────┐     │
│ │4. MOTION      OFF   │     │
│ └─────────────────────┘     │
│  5. PRIVACY       OFF       │
│  6. SYNC          INT       │
│  7. LANGUAGE      ENGLISH   │
│  8. RETURN            ⬅     │
│                             │
└─────────────────────────────┘
```

RS485 This option is not available on this camera.

MOTION This option allows motion detection to be set and although it does not output an alarm on this camera it can be used to display MOTION DETECTION on the monitor.

```
┌─────────────────────────────┐
│           MOTION            │
│                             │
│  AREA SELECT     AREA 1 ~ 4 │
│  AREA DISPLAY    ON / OFF   │
│  LEFT / RIGHT    _____  51 │
│  WIDTH          ___|___  42 │
│  TOP / BOTTOM   ___|__   38 │
│  HEIGHT         __|___   30 │
│  SENSITIVITY    _|_____  34 │
│  MOTION VIEW     OFF / ON   │
│  RETURN          END ⬅      │
└─────────────────────────────┘
```

MOTION
Motion can be detected in 1 – 4 areas. You can select 1-4 areas in SENSITIVITY setting. To see the MOTION DETECTION message displayed on the monitor, MOTION VIEW must be set.

AREA SELECT	**1 ~ 4**	Select the area required.
AREA DISPLAY	**ON / OFF**	Determines whether to use the motion area selected in SENSITIVITY.

LEFT/RIGHT	Determines the vertical axis for area.
WIDTH	Adjusts the selected vertical area.
TOP/BOTTOM	Determines the horizontal axis for area.
HEIGHT	Adjusts the selected horizontal area.
SENSITIVITY	You can select up to 4 areas. The higher the sensitivity the smaller the change to initiate motion detection.

MOTION VIEW	If you set this option to ON you can select an area colour and display MOTION DETECTION on the monitor.
RETURN	Return to SPECIAL menu.

```
            SPECIAL

1.  CAM TITLE        OFF / ON  ⬅
2.  D-EFFECT                   ⬅
3.  RS485                      ⬅
4.  MOTION           OFF
5.  PRIVACY          OFF
6.  SYNC             INT
7.  LANGUAGE         ENGLISH
8.  RETURN                     ⬅
```

PRIVACY ON / OFF
Allows an area on screen to be hidden.

```
            PRIVACY

AREA SELECT          AREA 1 ~ 8
AREA DISPLAY         ON / OFF
LEFT / RIGHT         _____  51
WIDTH                _____  42
TOP / BOTTOM         _____  38
HEIGHT               _____  30
COLOUR               _____  34
RETURN               END  ⬅
```

AREA SELECT   1 ~ 8   Select the area required.
AREA DISPLAY ON / OFF   Determines whether to use the area selected in AREA SELECT.

LEFT/RIGHT   Determines the vertical axis for area.
WIDTH   Adjusts the selected vertical area.
TOP/BOTTOM   Determines the horizontal axis for area.
HEIGHT   Adjusts the selected horizontal area.
COLOUR   You can select area colour from 0 ~ 15.

RETURN   Return to SPECIAL menu.

```
            SPECIAL

1.  CAM TITLE        OFF / ON  ⬅
2.  D-EFFECT                   ⬅
3.  RS485                      ⬅
4.  MOTION           OFF
5.  PRIVACY          OFF
6.  SYNC             INT
7.  LANGUAGE         ENGLISH
8.  RETURN                     ⬅
```

SYNC INT
This option is not selectable.

LANGUAGE
English, Chinese or Japanese.

If you change this you can work out how to return to English by selecting option 7.

RETURN   Returns to SPECIAL menu.

```
           MENU SETTINGS

1.  LENS              MANUAL
2.  EXPOSURE            ⬅
3.  WHITE BAL         AWB
4.  DAY NIGHT         AUTO
5.  3DNR             ON   ⬅
6.  SPECIAL              ⬅
7.  ADJUST              ⬅
8.  RESET               ⬅
9.  EXIT                ⬅
```

```
               ADJUST

SHARPNESS       ⎯⎯┼⎯ 21
BLUE            ⎯⎯⎯┼ 81
RED             ⎯⎯┼ 88
RETURN          END  ⬅
```

ADJUST
This option is used to improve the sharpness of the picture and balance the blue and red colour.

SHARPNESS
This sets the sharpness by moving the direction keys to right or left. Parameter ranges from 0 ~ 31.

BLUE
This sets the overall blue hue. Parameter ranges from 0 ~ 100.

RED
This sets the overall red hue. Parameter ranges from 0 ~ 100.

RETURN
This returns to the main menu.

```
           MENU SETTINGS

1.  LENS              MANUAL
2.  EXPOSURE            ⬅
3.  WHITE BAL         AWB
4.  DAY NIGHT         AUTO
5.  3DNR             ON   ⬅
6.  SPECIAL              ⬅
7.  ADJUST              ⬅
8.  RESET               ⬅
9.  EXIT   ⬅
```

```
               RESET

FACTORY          RESET  ⬅
RETURN           RET  ⬅
```

RESET
This option resets the camera to factory defaults.

RETURN
Returns to main menu

EXIT
This saves the changes made and exits the main menu.

TECHNICAL SPECIFICATIONS

FUNCTION	CAMERA MODEL		
Camera Model	**CAM950**	**CAM955**	**CAM960**
Imaging Sensor	1/3" SONY Super HAD CCD 11		
Signal System	NTSC: 525 Lines / PAL: 625 Lines		
Scanning System	2:1 Interlace		
Scanning Frequency	H:15.625Hz / V:50Hz		
S/N Ratio	More than 52dB (AGC Off)		
Horizontal Resolution	600 TVL (Colour) / 700 TVL (B/W)		
Video Output Level	1.0 vp~p (75 ohm, composite)		
Lens	3.6mm Board (92°)	3.7mm Flat (92°)	3.7mm Pinhole (92°)
Minimum Illumination	Colour: 0.03Lux(@F1.), 0.00019(Sens-up 256x)		
Sync System	Internal		
On Screen Display	Built-in (Multi-language support)		
Electronic Shutter Speed	Auto/FLK PAL: 1/50sec ~ 1/100,000sec		
White Balance	AWB / AWC-Set / Manual / Indoor / Outdoor / ATW		
Backlight Compensation	BLC / HSBLC / Off		
D-WDR	Indoor / Outdoor / Off		
Gain Control	Low / Middle / High / Off		
Adjust	Contrast / Sharpness / CB_Gain / CR_Gain (Level Adjustable)		
Language	Korean / English / Chinese / Japanese (selectable)		
Camera Title	On / Off (Selectable)		
Day & Night	Auto / B.W / Colour (selectable) / EXT		
Digital Zoom	On / Off (0x ~ 32x)		
Motion Detection	On / Off (4 zone selectable)		
Privacy Masking	On / Off (8 zone selectable)		
3DNR Digital Noise Reduction	On /Off (Selectable)		
Sens-up (Frame Integration)	On / Off (Selectable limit ~ 256x)		
D-Effect	Freeze / Mirror / D-Zoom / Gamma / Neg. Image		
Supplied Voltage	12v DC		
Power Consumption	90 mA / 1.6W		
Infra Red Sensitive	Yes		
Dimensions	**36.5(W) x 36.5(H) x 30(D)mm**	**36.5(W) x 36.5(H) x 19.7(D)mm**	**36.5(W) x 36.5(H) x 19.7(D)mm**
Weight	Approx. 50g		

This symbol on the products and/or accompanying documents means that used electronic equipment must not be mixed with general household waste. For treatment, recovery and recycling please return this unit to your trade supplier or local designated collection point as defined by your local council.

WEE/CG0783SS