user's manual

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800 SERIES

NVDN-801C-2
NVDN-801C-3

NOVUS®

INFORMATION

EMC (2004/108/EC) and LVD (2006/95/EC) Directives

CE Marking

Our products are manufactured to comply with the requirements of the following directives and national regulations implementing the directives:

- Electromagnetic compatibility EMC 2004/108/EC.
- Low voltage LVD 2006/95/EC with further amendment. The Directive applies to electrical equipment designed for use with a voltage rating of between 50VAC and as well as 75VDC and 1500VDC.

WEEE Directive 2002/96/EC

Information on Disposal for Users of Waste Electrical and Electronic Equipment

This appliance is marked according to the European 1000VAC Directive on Waste Electrical and Electronic Equipment (2002/96/EC) and further amendments. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.
The symbol on the product, or the documents accompanying the product, indicates that this appliance may not be treated as household waste. It shall be handed over to the applicable collection point for used up electrical and electronic equipment for recycling purpose. For more information about recycling of this product, please contact your local authorities, your household waste disposal service or the shop where you purchased the product.

RoHS Directive 2002/95/EC

Out of concern for human health protection and friendly environment, we assure that our products falling under RoHS Directive regulations, regarding the restriction of the use of hazardous substances in electrical and electronic equipment, have been designed and manufactured in compliance with the above mentioned regulations. Simultaneously, we claim that our products have been tested and do not contain hazardous substances whose exceeding limits could have negative impact on human health or natural environment.

Information

The device, as a part of professional CCTV system used for surveillance and control, is not designed for self installation in households by individuals without technical knowledge.

The manufacturer is not responsible for defects and damages that result from improper or inconsistent with user's manual installation of the device in the system.

SAFETY REQUIREMENTS

WARNING!

THE KNOWLEDGE OF THIS MANUAL IS AN INDESPENSIBLE CONDITION OF A PROPER DEVICE OPERATION. YOU ARE KINDLY REQUSTED TO FAMILIRIZE YOURSELF WITH THE MANUAL PRIOR TO INSTALLATION AND FURTHER DEVICE OPERATION.

WARNING!

USER IS NOT ALLOWED TO DISASSEMBLE THE CASING AS THERE ARE NO USER-SERVICEABLE PARTS INSIDE THIS UNIT. ONLY AUTHORIZED SERVICE PERSONNEL MAY OPEN THE UNIT

INSTALLATION AND SERVICING SHOULD ONLY BE DONE BY QUALIFIED SERVICE PERSONNEL AND SHOULD CONFORM TO ALL LOCAL REGULATIONS

WARNING!

PRIOR TO UNDERTAKING ANY ACTION THAT IS NOT DESCRIBED FOR THE GIVEN PRODUCT IN USER'S MANUAL AND OTHER DOCUMENTS DELIVERED WITH THE PRODUCT, OR IF IT DOES NOT ARISE FROM THE USUAL APPLICATION OF THE PRODUCT, MANUFACTURER MUST BE CONTACTED UNDER THE RIGOR OF EXCLUDING THE MANUFACTURER'S RESPONSIBILITY FOR THE RESULTS OF SUCH AN ACTION.

IMPORTANT SAFEGUARDS AND WARNINGS

1. Prior to undertaking any action please consult the following manual and read all the safety and operating instructions before starting the device.
2. Please keep this manual for the lifespan of the device in case referring to the contents of this manual is necessary;
3. All the safety precautions referred to in this manual should be strictly followed, as they have a direct influence on user's safety and durability and reliability of the device;
4. All actions conducted by the servicemen and users must be accomplished in accordance with the user's manual;
5. The device should be disconnected from power sources during maintenance procedures;
6. Usage of additional devices and components neither provided nor recommended by the producer is forbidden;
7. Mounting the device in places where proper ventilation cannot be provided (e. g. closed lockers etc.) is not recommended since it may lead to heat build-up and damaging the device itself as a consequence;
8. Mounting the camera on unstable surface or using not recommended mounts is forbidden. Improperly mounted camera may cause a fatal accident or may be seriously damaged itself. The camera must be mounted by qualified personnel with proper authorization, in accordance with this user's manual;

SAFETY REQUIREMENTS

9. Device should be supplied only from a power sources whose parameters are in accordance with those specified by the producer in the camera technical datasheet. Therefore, it is forbidden to supply the camera from a power sources with unknown parameters, unstable or not meeting producer's requirements;
10. Signal cables (conducting TV or / and telemetric signal) should be placed in a way excluding the possibility of damaging them by accident. Special attention must be paid to cables getting from the camera and connecting the power supply;
11. To avoid equipment damage, whole TV circuit should be equipped with properly made discharge-, overload- and lightning protection devices. Usage of separating transformers is advised;
12. Electric installation supplying the device should be designed to meet the specifications given by the producer in such a way that overloading is impossible;
13. User cannot repair or upgrade the equipment himself. All maintenance actions and repairs should be conducted only by qualified service personnel;
14. Unplug the camera from the power source immediately and contact the proper maintenance department when the following occurs:

- Damages to the power cord or to the plug itself;
- Liquids getting inside the device or exposure to strong mechanical shock;
- Device behaves in a way not described in the manual and all adjustments approved by the manufacturer and possible to apply by user himself, seem not to have any effect;
- Camera is damaged;
- Atypical behaviour of the camera components may be seen (heard).

16. In necessity of repairs attention to using only original replacement parts (with their parameters in accordance with those specified by the producer) should be paid. Non-licensed service and non-genuine replacement parts may cause fire or electrocution;
17. After maintenance activities tests should be run to ensure proper operation of all the functional components of the device.

Attention!
Technical changes reserved without prior notice and printing errors possible.

FOREWORD INFORMATION

1. PACKAGE CONTENTS

- Video camera with plug in the lens mounting place
- Mount adapter for C type lens mount
- Mounting bracket adapter with 1/4" thread and two mounting screws
- L wrench
- 4 pin Mini-DIN connector (for video or DC-type auto-iris lens)
- External light sensor
- 4-pin connector
- User's manual

If any of the listed equipment has been damaged during transport or if the package is incomplete, the contents of package should be packed back in to the original box. Please contact your local NOVUS distributor for further assistance.

2. MAIN CHARACTERISTICS

- Mechanical IR cut filter
- IR operation capability
- Horizontal resolution: up to 700 TVL
- Min. Illumination: from 0.00002 lx/F=1.2 (DSS) (0 lx – IR On)
- Digital Slow Shutter (DSS)
- Digital zoom: 16x
- Wide dynamic range (SSDR)
- High Light Compensation (HLC)
- Digital Image Stabilizer (DIS)
- Digital Noise Reduction (DNR)
- Privacy zones: 12
- 1 alarm output triggered by motion detection
- External day light sensor
- Other functions: various picture effects, motion detection
- Full configuration (user friendly multi-lingual OSD):
  - directly from the camera
  - from the NV-KBD70, NV-KBD50 & NV-KBD40 keyboards
  - from NOVUS® video capture cards
  - directly from the front panel of selected NOVUS® DVR models
- Remote control: RS-485
- Protocols: PELCO-D, PELCO-P
- Power supply: 12 VDC/24 VAC (NVDN-801C-2)
  90 ~ 240 VACVAC (NVDN-801C-3)

FEATURES AND SPECIFICATION

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3. SPECIFICATION

Model	NVDN-801C-2	NVDN-801C-3
Pick-up element	1/3" SONY EXview HAD CCD II imager	
Horizontal resolution	650 TVL – color mode, 700 TVL – b/w mode	
Min. illumination	0.1 lx/F=1.2 – color mode (1/50 s), 0.01 lx/F=1.2 – b/w mode (1/50 s), 0.0002 lx/F=1.2 – DSS color mode, 0.00002 lx/F=1.2 – DSS b/w mode	
S/N Ratio	52 dB (AGC off)	
Electronic Shutter	Auto (AES): 1/50 s ~ 1/120 000 s	
Digital Slow Shutter (DSS)	1/25 s ~ 10.24 s	
Auto Gain Control (AGC)	On/Off (2 levels)	
White Balance	5 modes: Manual/AWC/Outdoor/Indoor/ATW	
Wide dynamic range (SSDR)	On/Off	
Backlight Compensation (BLC)	On/Off (3 modes)	
High light Compensation (HLC)	On/Off	
Synchronization	Internal	Internal/Line-lock with phase adjustment
Day/Night Switching	Auto/Manual/External	
Filter Delay	3 s/5 s/7 s/10 s/15 s/20 s/30 s/40 s/60 s	
Flickerless Function	On/Off	
Privacy Zones	12	
Iris Mode	V or D selectable	
Lens Mount	C/CS	
Video Output	1.0Vp-p/75 Ohm (BNC)	
Alarm Output	1, triggered by motion detection	
Remote Control	RS-485	
Protocol	Pelco-D, Pelco-P	
Digital Zoom	16 x	
Set-up	Multi-lingual On Screen Display (OSD)	
Other Functions	Digital Image Stabilizer (DIS), Digital Noise Reduction (DNR), Motion detection, Various picture effects: Mirror (horizontal) and 180˚ image rotation, Image sharpness adjustment	
Power Supply	12 VDC/24 VAC± 10%	90 ~ 240 VAC
Power Consumption	3.52 W	4.52 W
Operating Temperature	-10°C ~ 50°C	
Dimensions (mm)	60 (W) x 55 (H) x 120 (L)	
Weight	200 g	300 g

FEATURES AND SPECIFICATION

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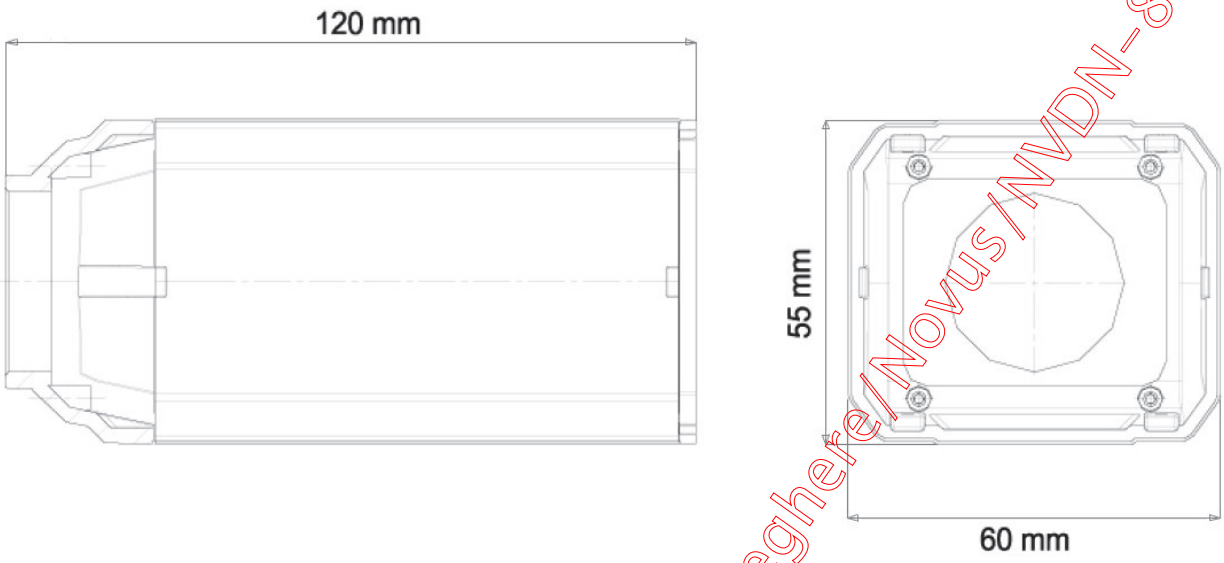
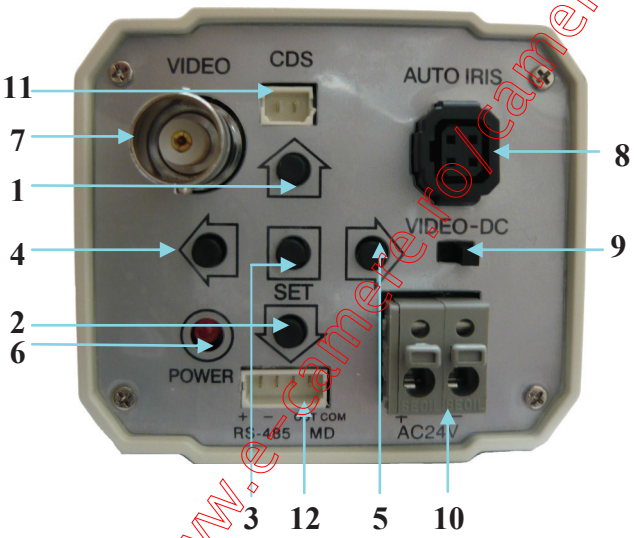
3.1 Dimensions

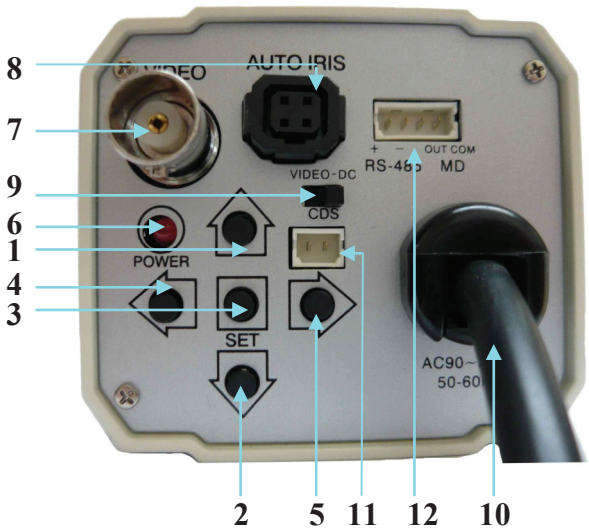


3.2. View of the camera, layout of the camera items

Rear view



NVDN-801C-2



NVDN-801C-3

1,2,4,5 - direction buttons LEFT, UP, RIGHT, DOWN
3 - SET button
6 - POWER supply diode
7 - BNC connector

INSTALLATION

8 - Auto Iris Lens Connector
9 - DC/VIDEO driver switch
10 - Power supply connector DC12V DC/24V AC (NVDN-801C-2) or 230VAC (NVDN-801C-3)
11 - External light sensor connector CDS
12 - RS-485 remote control port and alarm output

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4. INSTALLATION

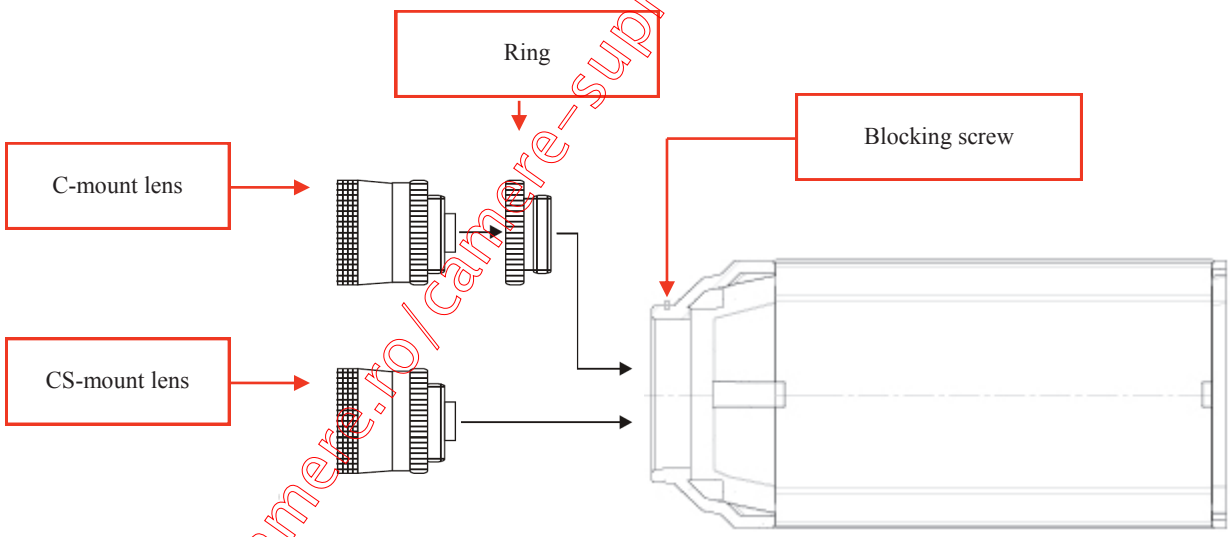
4.1 Lens installation

The NVDN-801C-2 and NVDN-801C-3 cameras support manual and auto iris lenses V and D type. It is recommended to use IR series lenses for day/night camera and for cooperation with IR illuminators. In case of operation with IR illuminators it is necessary to use IR series lenses.

Thanks to ring, application usage of C-mount lenses is possible.

Note: In case of using CS-mount lenses additional ring is not needed.

Side view



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4.1.1 Fixed iris lens installation

In order to install manual iris lens one should:

- Carefully remove the plug protecting the CCD pick-up element
- Carefully screw the lens to the end of the thread till slight resistance can be felt
- Supply power to the camera, adjust focal length and focus. In the ***MAIN SETUP*** menu set lens control as ***MANUAL*** and set appropriate mode of electronic shutter

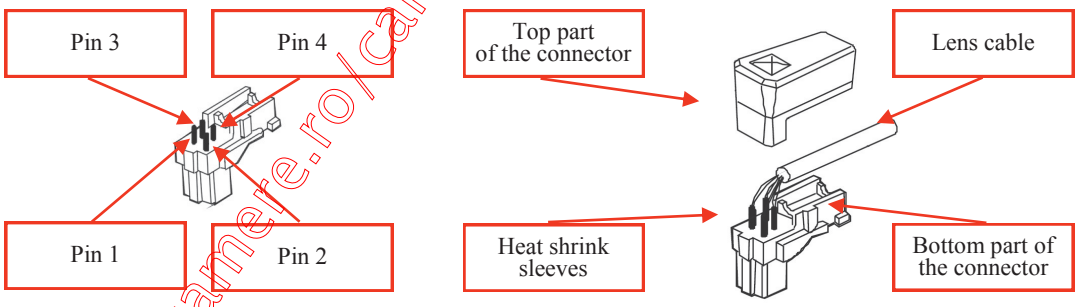
Note: For best results, perform focus adjustments at night (with iris fully opened) or while using a #6 or #8 welder's glass in front of the lens to avoid overexposure.

4.1.2 Auto iris lens installation (type D)

In order to install auto iris lens one should:

- Carefully remove the plug protected the CCD pick-up element
- Carefully screw the lens till slight resistance can be felt
- Plug the connector into the auto iris jack of the camera
- Set the DC/VIDEO driver switch on the DC position

Note: If lens cable does not end with a connector use the connector supplied with the camera. According to the lens manual and advices below, one should solder the cables to the connector and protect them against short circuit by the heat shrink sleeves.



Pin	Function
1	Dumping coil -
2	Dumping coil +
3	Drive coil +
4	Drive coil -

INSTALLATION

- In the camera menu set lens control as ***DC***
- Supply power to the camera, adjust focal length and focus

Note: For best results, perform focus adjustments at night (with iris fully opened) or while using a #6 or #8 welder's glass in front of the lens to avoid overexposure.

Note: The cameras are equipped with the circuit for iris control with the voltage level adjustment in the menu. Default settings are selected for the optimum quality of video signal. It is not recommended to make any changes if it is not necessary. In case of changes it is recommended to use #6 or #8 welder's glass in front of the lens and see the signal on the oscilloscope. During adjustment AGC feature should be switched off.

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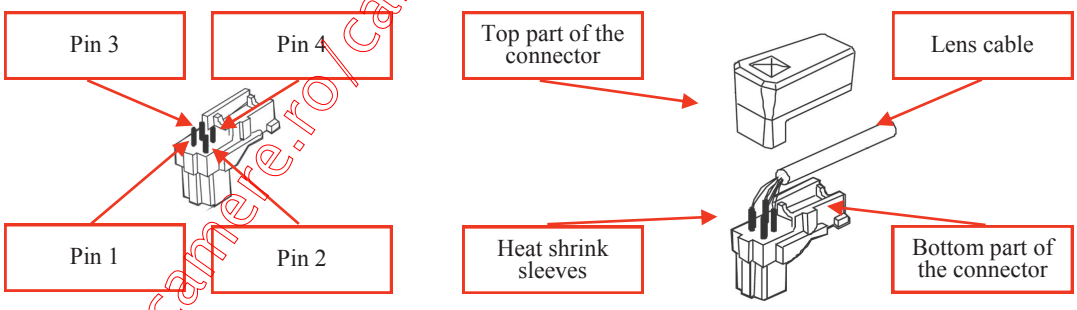
4.1.3 Auto iris lens installation (type V)

In order to install type V auto iris lens one should:

- Carefully remove the plug protecting the CCD pick-up element
- Carefully screw the lens till slight resistance can be felt
- Set the DC/VIDEO driver switch on the VIDEO position
- Plug the connector into the auto iris jack of the camera

Note: If the lens cable does not end with a connector use the connector supplied with the camera. According to the lens manual and advices below, one should solder the cables to the connector and protect them against short circuit by the heat shrink sleeves.



Pin	Funkcion
1	Voltage +
2	Not connected
3	Video
4	ground

- In the camera menu set lens control to ***VIDEO***
- Supply power to the camera, adjust focal length and focus

  Note: For best results, perform focus adjustments at night (iris is full open) or while using a #6 or #8 welder's glass in front of the lens to avoid overexposure.

4.1.4 Manual iris lens installation

In order to install manual iris lens one should:

- Carefully remove the plug protecting the CCD pick-up element
- Carefully screw the lens till slight resistance can be felt
- Supply power to the camera, adjust focal length and focus. In the ***MAIN SETUP*** menu set lens control as ***MANUAL*** and appropriate mode of electronic shutter.

  Note: For best results, perform focus adjustments at night (iris is full open) or while using a #6 or #8 welder's glass in front of the lens to avoid overexposure.

  Note: The level of iris opening should be adjusted with camera pointed to a scene with highest possible illumination (at its installation place). Please focus on obtaining a picture with highest illumination, but without overexposing the picture.

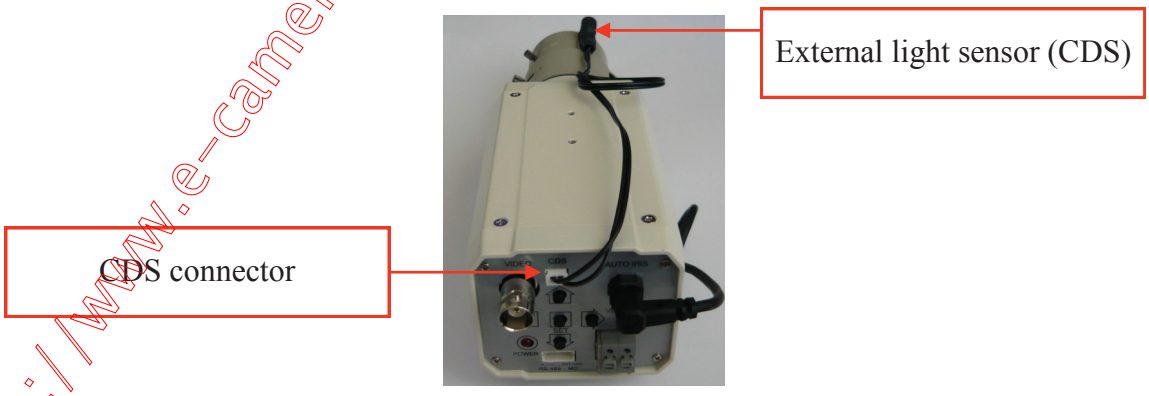
4.2 External light sensor installation

NVDN-801C-2 and NVDN-801C-3 cameras have the possibility to control the day/night switching using the external light sensor that is a part of the package. Contrary to the camera whose sensor is insensitive to the IR light. Thus using the external light sensor is recommended in case of using the IR light.

In case of using the external light sensor switching between day/night mode occurs immediately after it is detected by sensor sufficiency change of the white light intensity.

In order to install the external light sensor one should:

- Attach the external light sensor on the lens front position by the included sticker, as shown on the picture below.



- Connect the external light sensor wire to the CDS connector (like on the picture above)
- In the camera menu set ***DAY/NIGHT*** switching as ***EXTERNAL***

INSTALLATION

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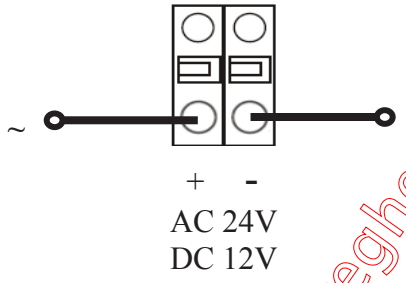
4.3 Power supply connection

Warning: Device should be supplied only from a power sources whose parameters are in accordance with those specified by the producer in the camera technical datasheet. Therefore, it is forbidden to supply the camera from power sources with their parameters unknown, unstable or not meeting the producer's requirements.

See the power supply terminal connections below.

- NVDN-801C-2 is 12 VDC ± 10% or 24 VAC ± 10% supplied.



- NVDN-801C-3 may be 90~240 VAC 50Hz powered.

4.4 RS-485 port

RS-485 port enables remote setup of the camera. Communication between remote controllers (such as keyboards, DVRs, PCs) via RS-485 utilizes PELCO-D or PELCO-P protocol. Usage of UTP cat. 5 cable is advised. One pair of wires is used in transmission process.

RS-485 485 (+) Remote control RS-485 connector, connect with corresponding RS-485 (+) output located on the keyboard or any other remote control device. Transmission speed depends on camera settings.

RS-485 485 (-) Remote control RS-485 connector, connect with corresponding RS-485 (-) output located on the keyboard or any other remote control device. Transmission speed depends on camera settings.

Remote control procedures using NOVUS KBD70, KBD50 or KDB40 keyboards with use PELCO-D protocol are described below:

95 + PRESET SET or FOCUS FAR (in PELCO-D), IRIS OPEN (in PELCO-P) - Display main menu screen, enter submenus, select highlighted position,

JOYSTICK MOVEMENT UP/DOWN - select particular menu positions,

JOYSTICK MOVEMENT LEFT/RIGHT - select function or change selected values

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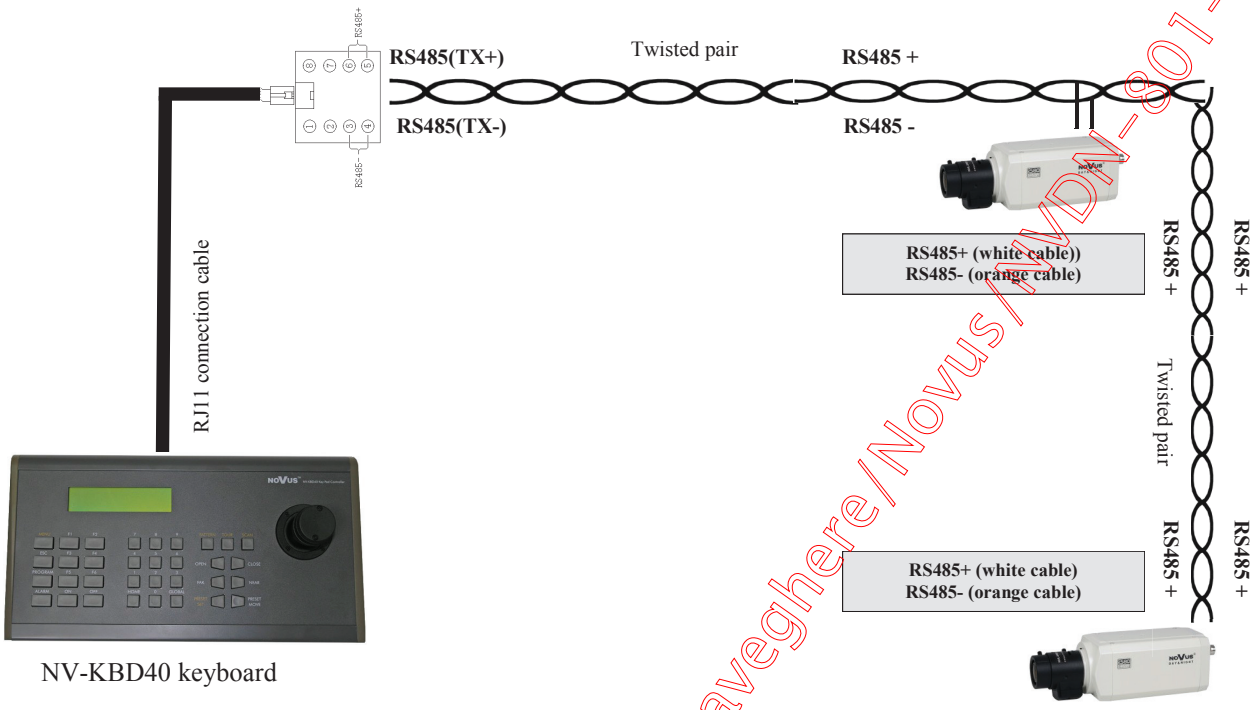
KBD-40 connections diagram.



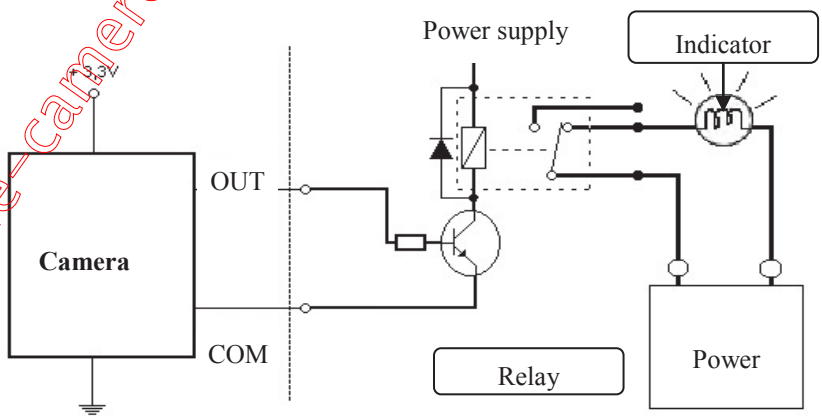
NV-KBD40 keyboard

Note:
If system supports more than two cameras depicted above, connections between them should be made analogically.

4.5 Alarm output

Cameras contain alarm output used for triggering external devices. After motion detection event has occurred, 3V DC is enabled on the output, with max current up to 10mA.

A scheme giving example of camera controlling an external device is given below:



SETTINGS

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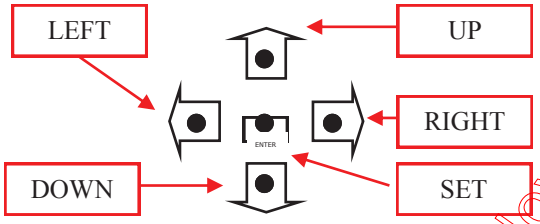
5. SETTINGS

NVDN-801C-2 and NVDN-801C-3 cameras feature the OSD menu. During camera standard operation status information may be displayed on the screen.

As it has been mentioned before, 5 buttons on the rear panel are dedicated to navigation and making changes:



In order to enter the menu press the *SET* button. For choosing the submenus please press the *UP, DOWN* buttons. Enter particular sub-menus by pressing the *SET* button. To change the parameters use the *LEFT* and *RIGHT* buttons.
In order to leave the menu select ***EXIT*** and press *SET*. Depending on the value of the parameter located to the right of the ***EXIT*** text, different actions are taken when exiting:

- selecting ***SAVE*** and pressing *SET* means that the changes that have been made are saved and are kept even when the camera restarts.
- selecting ***NOT SAVE*** and pressing *SET* means that the changes that have been made are temporary and will be cancelled once the camera restarts.
- selecting ***RESET*** and pressing *SET* results in restoring factory defaults.

To exit submenu please select ***RETURN*** position, and when ***Press SET to Return*** message is displayed at the bottom part of the screen press *SET* button to leave the menu .
After one minute of inactivity in the menu camera will automatically exit from the programming mode.

5.1 Main menu

In order to enter the menu press the *SET* button. The following main menu is displayed on the screen:

```
MAIN SETUP

▸1.LENS          DC↵
 2.EXPOSURE↵
 3.WHITE BAL     ATW
 4.SSDR          OFF
 5.BACKLIGHT     HLC↵
 6.DNR3          ON↵
 7.DAY/NIGHT     COLOR
 8.SPECIAL↵
 9.EXIT          SAVE
```

5.1.1 *LENS* submenu

This submenu allows for setting the lens parameters.

LENS Lens operating mode.

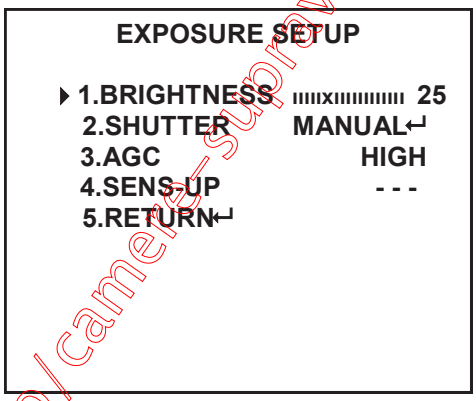
MANUAL Manual settings of the lens operating mode. For that setting a submenu that allows for adjusting the ***BRIGHTNESS*** level in the range from 1 to 70 is available.

DC Automatic lens mode. For that setting a submenus that allow for adjusting the BRIGHTNESS level in the range from 1 to 70, the iris speed ***IRIS SPEED*** and the precise setting of image sharpness ***FOCUS ADJ*** are available.

VIDEO Video-driven lens mode. This option is available when iris control switch located at the rear of the camera is set to VIDEO. A submenu that allows for adjusting the ***LEVEL*** in the range from 1 to 70 and image sharpness (***FOCUS ADJ***) is also available.

5.1.2 *EXPOSURE* submenu

This submenu allows for choosing and changing the settings of the parameters connected with AE and controlling the iris.



BRIGHTNESS Sets brightness level in the range from 1 to 70.

SHUTTER Selection of shutter mode.

- - - Automatically sets the shutter speed according to the present illumination conditions. This option is available when ***DC*** or ***VIDEO*** option is selected in the main menu ***LENS*** submenu.

A.FLK (FLICKERLESS) The mode of flicker reduction in variable light conditions is equal to the shutter speed of 1/120s. This mode is available for any setting selected in the ***LENS*** position.

ESC Controls the shutter speed automatically depending on the illumination conditions. For that setting a submenu that sets ***MIN*** and ***MAX*** shutter speed is available.

SETTINGS

MANUAL Manual setting of the shutter speed. Setting the shutter speed (***SHUTTER)*** in the range from 1/120000s to 512x(1/50s) is possible.

AGC Automatic Gain Control function. When ***OFF*** is selected, the function is switched off. When ***NORMAL*** is selected, the function is working with camera sensitivity smaller than the light intensity changes. When ***HIGH*** is selected, the function is providing bigger camera sensitivity than the light intensity changes. Please remember that increasing gain results in increasing brightness and noise level as well.

SENS - UP Low shutter mode function. ***OFF*** - the function is switched off, ***AUTO*** - in low light conditions function automatically sets low shutter speed. After pressing ***SET*** button in this mode it is possible to set the multiplier of the basic shutter speed (1/50s in ***AUTO*** mode) in the range from x2 to x512.

This function is switched off when AGC is off or shutter mode is ***A.FLK*** or ***MANUAL.***

Please remember that together with selecting higher values from the low shutter range the image becomes brighter but simultaneously the noise level goes up and moving objects become blurred.

5.1.3 *WHITE BAL* submenu

This feature allows for setting appropriate color settings in various color temperature conditions.

WHITE BAL White balance mode

ATW This mode (Auto Tracking White Balance) can be used in the 1700°K ~ 11000° color temperature range.

MANUAL Manual mode settings. In case of inappropriate color settings for ***ATW, AWC*** modes it is possible to set ***RED*** and ***BLUE*** color values manually . The range of changes is from 0 to 900 and is displayed as a line. The changes are seen immediately. The lines of changes are active only in WB manual mode.

AWC→SET This mode (Auto White balance Control) allows for adaptive setting of white balance. In order to obtain the optimum state under the current illumination, direct the camera at a sheet of white paper and press ***SET*** button. When lighting parameters change (e.g. light bulbs changed to halogen lamps, daylight to artificial light etc.), procedure mentioned above should be repeated.

OUTDOOR This mode (Auto Tracking White Balance) can be used in the 1700°K ~ 11000°K color temperature range (e.g. when using sodium vapour lamps).

INDOOR This mode (Auto Tracking White Balance) can be used in the 4500°K~8500°K color temperature range (e.g. when using the camera inside the house).

5.1.4 *SSDR* submenu (Wide Dynamic Range)

This function allows to effectively observe the scene with different illumination levels. Function can be enabled (***ON***) or disabled (***OFF***). When *ON* is selected, a submenu that allows for setting the function intensity level in the range from 1 to 15 becomes available.

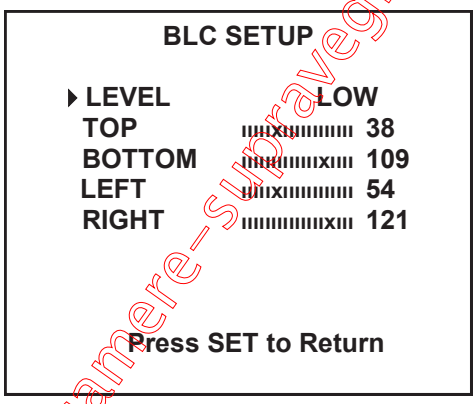
5.1.5 *BACKLIGHT* submenu

These compensation functions allow for enhancing visibility of the objects located in the foreground, surrounded by strongly illuminated background (BLC) or for enhancing visibility of the objects located near the strong light source (HLC).

BACKLIGHT Backlight compensation mode.

OFF Function OFF.

BLC BLC function allows for enhancing visibility of the objects located in the foreground, surrounded by strongly illuminated background. After pressing *SET* button in this mode submenu depicted below appears.



Submenu presented above allows for setting the size and location of the area where the function will be active, furthermore it allows for setting the sensitivity of the function.

LEVEL Select the intensity of the function from available: ***LOW, MIDDLE, HIGH***

TOP Move upper part of the area up or down.

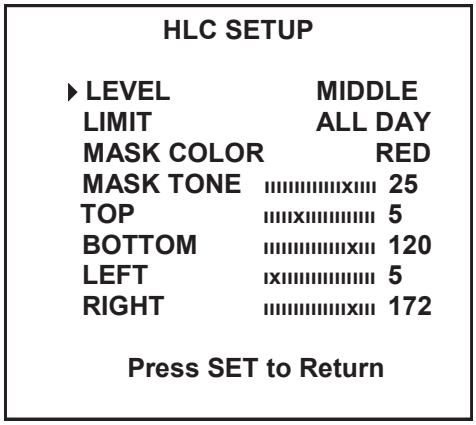
BOTTOM Move bottom part of the area up or down

LEFT Move left part of the area left or right side.

RIGHT Move right part of the area left or fight side.

HLC High light compensation function. Allows for enhancing visibility of the objects located near the strong, point light source. If a strong, point light source appears on the screen , function will mask it allowing for effective observation of the scene itself (this function is best used to, for example, observe licence-plates of the cars). Press the *SET* please, to display below submenu.

SETTINGS



Submenu allows to set the size and location of the area in which the HLC function analyzes the level of illumination and sets the other HLC function options described below.

LEVEL Adjusts level of the HLC function from available: ***LOW, MIDDLE HIGH***.

LIMIT Sets the lighting threshold that, when exceeded, activates the function.

ALL DAY Threshold is set to low variations in illumination level.

NIGHT ONLY Threshold is set to high variations in illumination level.

MASK COLOR Select the colour of the masking area from available: ***RED, BLUE, CYAN, MAGENTA, BLACK.***

MASK TONE Adjusts opacity of masking area.

TOP Moves upper part of the area up or down.

BOTTOM Moves bottom part of the area up or down

LEFT Moves left part of the area left or right side.

RIGHT Moves right part of the area left or right side.

Note: ***HLC*** function works only in the low-light conditions. It is activated automatically when level of the light is low enough for the function to execute properly and when a strong point light source appears on the screen.

Because the effectiveness of *HLC* function relies mostly on the amount of illuminated area in the screen, optimize the installation angle for the best *HLC* performance.

5.1.6 *DNR3* (Digital Noise Reduction) submenu

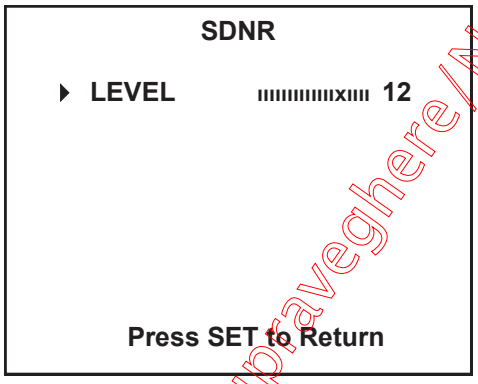
This submenu allows for changing digital noise reduction settings.

DNR Digital Noise Reduction function.

ON Digital Noise Reduction function ON.

OFF Digital Noise Reduction function OFF.

After selecting ***ON*** press the *SET* please, to display submenu allowing for adjustment of the digital noise reduction level, as depicted below.



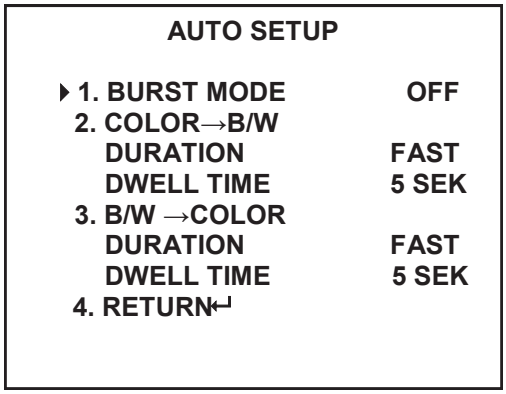
Note: While working in DNR mode, image quality might slightly worsen. Digital noise reduction function is disabled when the ***AGC*** function is off.

5.1.7 *DAY / NIGHT* submenu

DAY / NIGHT Selects operating mode of the IR cut filter.

AUTO Camera switches between night (b/w) and day (color) mode automatically, depending on current illumination conditions.

After pressing *SET* button in this mode submenu depicted below appears.



BURST MODE Enables (***ON***) or disables (***OFF***) the BURST (color burst) signal.

SETTINGS

COLOR→B/W Allows for configuring the switching from b/w to color mode.

DURATION Selects color to b/w switching speed from available: ***FAST***, ***SLOW***

DWELL TIME Sets the delay between color and b/w mode switching. Values range from 3 to 60 sec.

B/W→COLOR Allows for configuring the switching from b/w to color mode.

DURATION Selects b/w to color switching speed from available: ***FAST***, ***SLOW***

DWELL TIME Sets the delay between b/w and color modes switching. Values range from 3 to 60 sec.

EXTERN Camera automatically switches between color and b/w mode, depenging on readouts from external illumination sensor connected to the CDS socket. Usage of this function is advised when using external IR illuminators.

COLOR Camera works permanently in color mode.

B/W Camera works permanently in B/W mode. For that setting a submenu that allows for enable or disable the ***BURST MODE*** is available.

5.1.8 *SPECIAL* submenu

This submenu allows for setting the additional functions available in the camera.

```
SPECIAL
1. IMAGE ADJ↵
2. CAM TITLE      OFF
3. SYNC           INT
4. MOTON          OFF
5. PRIVACY        OFF
6. DIS            OFF
7. PROFILE        USER
8. COMM ADJ↵
9. RETURN↵
```

IMAGE ADJ. Allows for enabling the additional picture effects.

MONITOR Allows for configuring camera picture parameters, depending on the type of monitor used.

LCD Allows for configuring the camera to enhance its LCD monitor cooperation capabilities, pressing *SET* displays additional submenu which allows for adjustment the LCD monitor display settings.

USER Allows for configuring the camera to enhance its monitor (of non-standard types) cooperation capabilities, pressing *SET* displays additional submenu which allows for adjustment the display settings.

CRT Allows for configuring the camera to enhance its CRT monitor cooperation capabilities, pressing *SET* displays additional submenu which allows for adjustment the CRT monitor display settings.

REVERSE flips the picture:

OFF - Function off.

V - REV Flips the picture vertically,

H - REV Flips the picture horizontally (Mirror)

HV - REV Rotate 180 degree the picture;

PIP - (Picture in Picture) Function displays a full-size image in the thumbnail. Used in digital zoom mode. The position of the thumbnail is adjustable.

D - ZOOM Digital zoom function. After selecting ***ON,*** pressing the SET displays additional submenu which allows for adjusting the digital zoom level, ranging from x0.1 to x16, ***OFF*** - function off.

FONT COLOR Selects the OSD font color

SHARPNESS Screen sharpness function. After selecting ***ON,*** pressing SET displays additional submenu which allows for sharpness level adjustment, ranging from 1 to 20. ***OFF*** - function off. If the ***SHARPNESS*** level is too high the picture may become distorted or noisy.

LANGUAGE Selects OSD language from available: ENGLISH, GERMAN, ITALIAN, FRENCH, SPANISH, RUSSIAN, CZECH, ROMANIAN, SERBIAN, SWEDISH, DANISH, TURKISH, PORTUGUESE, THAI.

CAM TITLE After selecting ***ON*** and pressing *SET,* a sub-menu appears, allowing for entering a string of characters that later is displayed on the screen, e.g. as camera title. Title may consist of up to 15 characters. Please select desired characters from the virtual keyboard, which becomes available after pressing *SET*.

Screen contains mainly alphanumerical characters, which may be used in camera's title. Select desired character and please apply it by pressing *SET* key. Currently edited title is visible at the bottom of the screen. A line just above it contains buttons for editing the title. To enable particular functions, please highlight them as normal characters and confirm by pressing *SET* key. Button functions are described below:

← Moves character highlight cursor left.

→ Moves character highlight cursor right

POS Allows for adjusting the position of entered characters.

CLR Erases the whole title.

END Exits title editing menu.

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SETTINGS

SYNC Selects synchronization mode.

- ***INT*** Internal synchronization.
- ***L / L*** Line synchronization (only for 230 VAC/24VAC power supply). Pressing *SET* displays additional submenu allowing for adjusting ***PHASE*** level from 0 to 359 degrees. ***MODE*** position additionally allows to switch the synchronization between luminance and chrominance.

MOTION This menu allows (provided, that ***ON*** option is selected) for turning a built-in motion detection feature on or off. Motion detection may simultaneously be conducted in eight independent zones (with their size and location selectable by user). Detection of motion with ***MOTION DET*** turned on results in *Motion Detected* message being displayed on the screen.

After selecting ***ON*** and pressing SET the submenu below is displayed, which allows for adjusting the motion detection function parameters.

MOTION DET

1. SENSITIVITY	AREA1
2. AREA MODE	OFF
3. SEL POS	R_BOTTOM
4. YPOS	IIIIIIIIIIIIxIIII 5
5. XPOS	IIIIIIIIIIIIxIIII 5
6. FILL→SET	
8. RETURN↵	

SENSITIVITY Selects one of eight available motion detection zones (***AREA1, AREA2, AREA3, AREA4***). Each zone has different sensitivity level. The higher number, the higher sensitivity.

AREA MODE Turns motion detection in selected zone on or off.

SEL POS Selects edge of the area so its position can be changed.

- ***L_BOTTOM*** Left bottom area corner.
- ***R_BOTTOM*** Right bottom area corner.
- ***L_TOP*** Left top area corner.
- ***R_TOP*** Right top area corner.

YPOS Change the selected area corner position toward vertical axis.

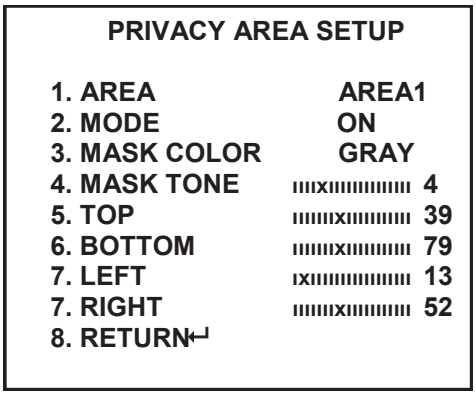
XPOS Change the selected area corner position toward horizontal axis.

FILL→SET After pressing *SET* button actually selected area will appear on the first plan.

Note: Disabling privacy zones prior to setting motion detection parameters is advised.

PRIVACY Allows for enabling privacy zones (when turned ***ON***). If this option is turned on, desired part of the screen is masked using four rectangular zones.

Pressing *SET* displays submenu which allows for adjusting privacy settings.



AREA SEL Selects one of twelve available privacy zones: ***AREA1, AREA2… AREA12***.

MODE Turns selected privacy zone displaying on or off. After selecting ***ON*** and pressing *SET* displays submenu allowing for selected privacy zone location and size adjustment.

MASK COLOR Allows for setting the color of all privacy zones. Available colours: ***GREEN, RED, BLUE, BLACK, WHITE, GRAY.***

MASK TONE Allows for adjusting brightness of masking zones in the range from 1 to 10.

TOP Moves upper part of the area up or down.

BOTTOM Moves bottom part of the area up or down

LEFT Moves left part of the area left or right side.

RIGHT Moves right part of the area left or right side.

DIS Digital image stabilization function. It eliminates any picture movement which may occur due to external factors, such as wind. ***ON -*** function on***, OFF*** function off.

Note: Turning on the ***DIS*** function narrows the camera's field of view. When using ***DIS*** function a decrease in resolution is possible, due to fact that the function uses digital zoom

PROFILE Predefined mode according to the picture condition

BASIC - Profile optimized to the most common environment condition.

DAY/NIGHT - Profile optimized to the day or night conditions, respectively.

BACKLIGHT - Profile optimized to distinguish the object from the background in a backlighting scene.

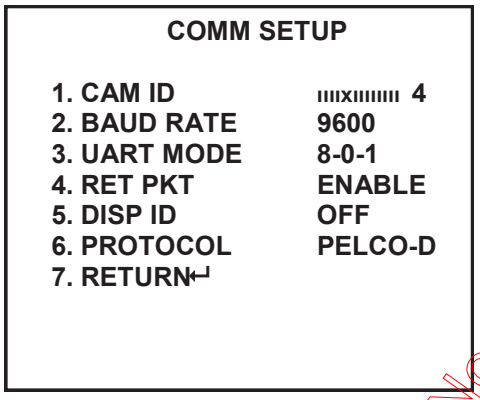
ITS - Profile optimized to the traffic conditions.

INDOOR - Profile optimized to a regular indoor lighting condition.

USER - Profile for custom user settings.

SETTINGS

COMM ADJ Function allows for configuring the RS-485 communication settings of the camera.



CAM ID Allows for setting unique ID number for the camera, ranging from 1 to 255, enabling the device to communicate through RS-485

BAUD RATE Allows for setting data transfer speed for RS-485 protocol. Values range from 2400 to 57600 bps

UART MODE Configures the parameters of the RS-485. *8-0-1* mode presented above means that 8 data bits are sent in one packet, *0* meaning bit oddity (with possibility of setting *E* meaning parity and *N* meaning lack of parity) and 1 meaning stop bit.

RET PKT Enables confirmation of receiving sent packets (enable/disable).

DISP ID Allows for turning the camera number displaying (enable/disable).

PROTOCOL Allows for selecting the RS-485 communication protocol