

SD-xxx-5 SERIES

Cameras

motorized

AHD / analog





INTRODUCTION

Speed dome cameras are fully remotely controllable cameras. They allow an operator to rotate the camera in all directions and zoom in on the most interesting scenes as desired. They can also perform pre-programmed automatic movements based on specific surveillance needs.

What is PTZ

The remote controlled cameras also call themselves PTZ, which stands for PAN / TILT / ZOOM. PAN is the

horizontal movement, TILT the vertical movement and ZOOM the control of the focal length of the objective.

Control of PTZ cameras

The speed-dome cameras can be controlled with special control consoles or through DSE digital video recorders. Digital video recorders also allow remote control of cameras via network or the Internet, using both PCs and smartphones or tablets.

The cameras are controlled on a twisted pair with Pelco D protocol, today a consolidated industry standard. These cameras also allow control over coaxial cable with UTC protocol.

INSTALLING THE CAMERA

The SD series cameras are carefully packed to prevent damage during transport. First of all, it is necessary to check the material received. The speed dome camera you purchased is protected by packaging elements that must be carefully removed before using it.

Realization of the wiring with RS485 command

A cable with the following connections comes out of a SD series Speed Dome camera:

- 1 12VDC power supply with 5.5 mm plug.
- **Video output** BNC female
- 2 Cables BUS RS485 YELLOW (A +) / ORANGE (B-)



To structure a system of Speed Dome cameras, 3 types of cabling must be provided:

- **Supply.** It is possible to power the camera locally with a 220VAC / 12VDC adapter of at least 3A (not supplied) or set up a 12VDC network with cables of adequate section in order to avoid excessive voltage drops.
- **Video connection.** It is realized as for any traditional analog CCTV camera. The video signal produced by this camera can be set to CVBS or AHD / CVI / TVI composite video depending on the DVR to be connected to, but there are no differences in the type of wiring of these two technologies. In general, RG59 coaxial cable is used for distances up to 2-300 meters. It is also possible to carry the video signal on twisted pairs using special converters (RE-BNCRJ1) up to about 200 m. The twisted cable converters are also available in an active version to reach distances greater than 200 m.
- **Telemetry.** This is the serial connection that leads the movement commands to the camera. The SD series cameras use an RS485 serial line (RS485 BUS) which must be made with a pair of twisted cables. It is essential that the 2 cables are wound together and not parallel. In theory, the RS485 serial line can extend up

to 1200 meters in length and the devices are connected in cascade along it. The section of the cables strictly depends on the length of the connection: for medium distances a section of 0.5 mm is sufficient, while if it is necessary to reach considerable distances (max. 1200 m.), Upper sections of 1 mm or even 2.5 mm must be used. When wiring, it is advisable, but not essential, to use shielded cable. The CAT5 network cable, The cameras and consoles must be connected in cascade or by entering and leaving the 2 terminals RS485A and RS485B. It is important not to invert the two cables (AB) when connecting the equipment. The order in which the equipment is connected to the BUS is irrelevant. Each appliance will be identified by its own unique address, which can be set by means of microswitches, which will allow instructions to be correctly addressed. Up to 256 cameras can be connected to the same BUS. The consoles do not require any addressing, while for the cameras it is necessary to set a different address for each camera, as described below.

Wiring with UTC command on video cable

If you have a DVR with UTC control, like our RK Series DVRs, you can send the commands to the camera on the video cable without having to wire the control pair. To use this command, UTC must be selected as the protocol in the NVR instead of Pelco D. The RS485 connectors are left unused.

Note that if the camera receives commands via UTC, some functions may not be usable with respect to the RS485 connection.

Command bodies

The movements of these cameras are controlled through the common PELCO P / D protocol, now a consolidated industry standard. It is possible to send the commands with the appropriate consoles for speed dome cameras or via the DVRs equipped with RS485 port.

DVRs with UTC command can control these motorized cameras with only the video cable

Address, protocol and Baud Rate

After connecting the camera, it is necessary to set the communication parameters so that it is able to communicate with the control elements.

All the elements of the RS485 BUS, both cameras and control devices must use the same protocol (PELCO D

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standard) and the same transmission speed (2400,4800,9600 baud)

Each camera must have an address different from the others in order to be identified along the BUS.

These 3 parameters: Protocol, Baud rate and Address are set in the camera's OSD menu.

Set the factory protocol data in the control unit

The cameras support the standard PELCO P and PELCO D control protocols, supported by most consoles and DVRs. Protocol recognition is automatic.

The communication parameters of speed (baud rate) and address of the camera are set in the OSD menu of the camera. To access the menu, you must set, at least initially, your control unit (DVR or console) on the factory parameters of the camera, which are:

The factory setting is:

BAUD RATE: 2400 BPS

ADDRESS 1

The communication data set in the camera are superimposed on the image

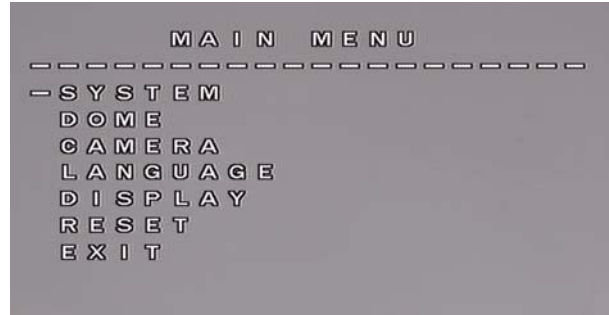


Set the final protocol data of the camera

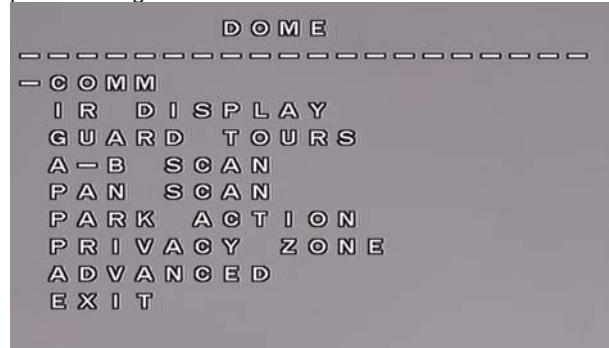
Once the control unit has been set on the PelcoD / 2400 / ID1 communication parameters, the final ID and speed of the camera can be set. In fact, if you only have one PTZ camera, you can keep the Factory ID, but if there are more than one, you must assign different addresses to it.

It proceeds as follows:

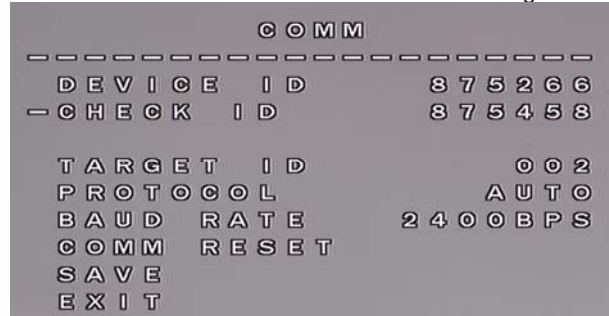
1 - Call PRESET 95 to open the OSD menu



2 - Move to DOME with the up and down arrows, then press the right arrow to enter the dome menu



3 - Enter the COMM menu with arrows on the right



4 - In order to modify the communication parameters, it is necessary to write the CHECKID identical to the DEVICE ID. This procedure is to avoid that the communication parameters are changed unconsciously. Move to CHECKID and press right arrow to then change the value with the arrows up to bring it equal to the DEVICE ID

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```
          COMM
-----
DEVICE ID      875266
CHECK ID       875266

TARGET ID      002
PROTOCOL       AUTO
BAUD RATE      2400BPS
COMM RESET
SAVE
EXIT
```

5 - Change the TARGET ID (camera ID) and the BAUD RATE (protocol speed) as desired

6 - Go to SAVE and save with the arrow on the right

7 - Exit with the left arrow several times

Once the protocol address or speed has been changed, the camera will no longer respond to commands and it will be necessary to change the settings of the control unit in a manner consistent with the new settings.

Select the video format AHD CVI TVI CVBS

These cameras support AHD technology with 5MP resolution



AHD technology is the latest evolution in analogue CCTV. These AHD cameras, combined with the latest generation AHD video recorders, provide megapixel resolution, without latency, while maintaining all the simplicity of installation of an analog system. In order to use the AHD 5MP video signal, you need a VCR that supports this technology and this resolution.

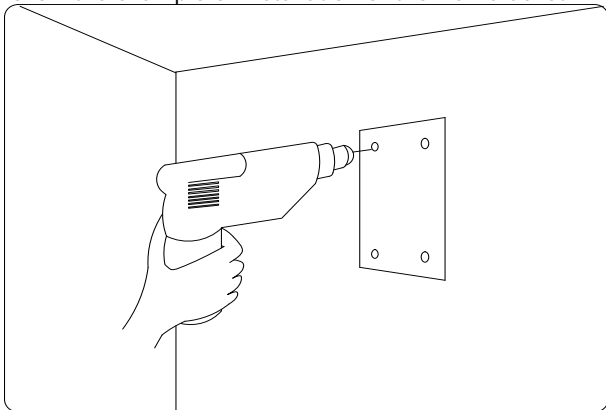
If your DVR supports AHD 5MP there is no need to change the video format of the camera. If not, you can change the video format of the camera to CVI, TVI or even CVBS which is traditional analog video.

It is possible to switch by recalling the following presets twice in succession:

| | |
|------|--------------------------|
| CVBS | Call up preset 140 twice |
| AHD | Call Preset 137 twice |
| TVI | Call preset 138 twice |
| CVI | Double call preset 139 |

Wall mounting

The SD series speed dome cameras are equipped with a bracket for wall mounting. The camera cable in this case must pass through the bracket. In the photos that follow the example of installation of the wall bracket



- Fasten the bracket to the wall using dowels, taking care to leave the cable exit in the center between the fixing holes.



- The connecting cables pass through the bracket



- Connect the camera and fix it to the bracket with the screws provided.



Other types of brackets are available optionally.

BASIC OPERATIONS

Once the camera is correctly installed and at least one control unit (keyboard or DVR) is set up, the first operating commands can be tested. Below we list the main commands through which it is possible to control speed dome cameras.

Ignition and Self test

Powering on the camera starts a sequence of automatic operations. The camera performs a series of movements and checks the operation of the horizontal movement, the vertical movement and the camera body.

The communication data of the camera are shown in superimposition.

At the end of the automatic test, the camera is ready to receive incoming commands from the console.

Manual Pan Tilt control

The first command to verify the correct communication between the camera and the console is the RIGHT / LEFT (PAN) and HIGH / LOW (TILT) movement by acting on the joystick of the console.

If the camera does not react to console commands, it means that something is wrong with the communication. Check in the order:

- 1 - That the two twisted cables leading the RS485 are connected and not inverted (A with A and B with B).
- 2 - That the console or DVR have been set with PELCO D protocol and that the chosen speed is the same as that set in the camera (2400 factory)
- 3 - That the address of the camera to be controlled (1 factory) has been selected on the console or DVR.

It is possible to check the address and protocol speed directly in superimposition on the camera



Manual ZOOM command

The cameras are equipped with optical zoom. To control the zoom, you can use the buttons of the keyboard ZOOM +/- (or TELE / WIDE depending on the console). If you are using a so-called 3D console, you can also control the zoom by rotating the joystick head. If necessary, you can change the focus by pressing the FOCUS +/- buttons (or NEAR / FAR depending on the console), but in general it is more practical to allow the camera to use the autofocus function. IRIS +/- aperture controls are normally not allowed by the factory settings of the cameras.

PRESET setting

The cameras are able to memorize predefined positions that can be recalled quickly without the need to manually operate the joystick.

Each camera is able to manage 256 PRESETS each distinguished by its own XY, ZOOM and FOCUS coordinate value.

In reality, not all these presets are available to the user to be customized as some have predefined functions that we will see later and which are called SYSTEM PRESETS.

To set a preset act as follows:

- Select the camera to be controlled
- Using the Joystick, position the camera at the preferred point and adjust the zoom
- Dial the number of the preset to be set on the keyboard, for example: 1 and send the SET PRESET command (see the console manual)
- The camera stores the preposition.

Each control unit uses different wordings and sequences. Consult the documentation attached to the control unit for the exact sequence to be composed.

PRESET recall

After storing the presets of interest, you can easily recall them from the keyboard by acting as follows:

- Check that you have selected the camera
- Dial the PRESET number
- Press the PRESET call button, generally CALL or PREVIEW or GO TO depending on the console.

The camera automatically moves to the stored position.

Each control unit uses different wordings and sequences. Consult the documentation attached to the control unit for the exact sequence to be composed.

Automatic movements

The cameras can perform automatic movements such as panoramic scans or preposition sequences. The setting of these movements is carried out in the

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programming menu which is described below. These movements are started with the commands of the control unit or using the system presets.



System PRESET

Not all 255 camera presets are available for user customization; some presets are used by the camera for particular functions and are called SYSTEM PRESETS.

The system presets allow you to access the camera configuration and quickly give the main commands, such as starting SCAN, CRUISE and PATTERN. The control consoles and DVRs also have buttons to start automatic movements, but often, due to the not perfect standardization of the PELCO communication protocol, they may not be effective. The use of system presets, on the other hand, is always functional on each type of control unit.

The cameras in this range allow many operations with system presets, making the use of the OSD menu that we will describe later superfluous.

| PRESET | COMMAND | FUNCTION | DESCRIPTION |
|--------|---------|----------|-------------|
|--------|---------|----------|-------------|

GENERAL COMMANDS

| | | | |
|------------|------|----------------------|---|
| 34 | CALL | Reset | Reboot the camera |
| 81 (41) | CALL | Day / Night by car | Set the day / night switch to automatic |
| 82 (42) | CALL | Day / night on night | Force night mode (B / W) |
| 83 | CALL | Day / night on day | Force day mode (color) |
| 84 | CALL | IR max | Force maximum IR illumination |
| 85 | CALL | IR min | Force minimal IR illumination |
| ninety two | CALL | Start AB scan | Start scanning between two limit switches (AB) AB SCAN defines the horizontal continuous movement between 2 limit switches with the same level of TILT |
| 94 | CALL | Closes OSD menu | Closes the superimposed menu for configuring the camera |
| 95 | CALL | Open OSD menu | Activate the overlay menu for configuring the camera |
| 96 | CALL | Start Tour 3 | Start tour 3 A TOUR is the sequential display of various presets. |
| 97 | CALL | Start Tour 2 | Start tour 2 |
| 98 (38) | CALL | Start Tour 1 | Start tour 1 |
| 99 (39) | CALL | Start 360 ° Scan | Start the 360 ° panoramic scan |

COMMANDS FOR VIDEO SIGNAL SETTING

| | | | |
|-----|-----------------|-----------------------------|--|
| 137 | CALL 2 times | Set up AHD video | Call the preset twice to set the video signal in AHD, used by DSE DVR |
| 138 | CALL 2 times | Set TVI video | Call the preset twice to set the TVI video signal, used by HikVision DVR |
| 139 | CALL 2 times | Set CVI video | Call the preset twice to set the CVI video signal used by the Dahua DVR |
| 140 | CALL 2 times | Set up CVBS video | Call the preset twice to set the CVBS video signal, the standard analog composite video |
| 115 | CALL 2 times | Set up NTSC video | Call the preset twice to set the video signal in NTSC format |
| 116 | CALL 2 times | Set PAL video | Call the preset twice to set the video signal in PAL format |
| 102 | CALL 2 times | Open camera module settings | The camera module contains some settings on the video signal of the camera. In the camera menu, preset 102 is also called as the ENTER key |



SPEED DOME OSD MENU

In the camera configuration menu it is possible to set all the operating parameters of the camera and its movement.

Access to the menu is not necessary for the normal operation of the speed dome as the main control functions can be operated via the system presets as described above. However, there are additional controls in the OSD menu.

Access to the general OSD menu

To access the OSD configuration menu, simply call up the following from the console or DVR:

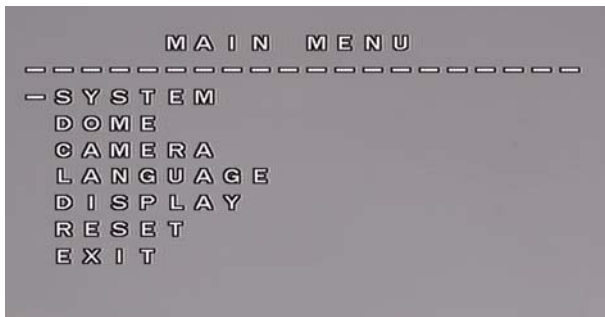
System PRESET 95.

Typically, you must first select the address of the camera you want to program, then type 95 and then press CALL or PREVIEW or GO TO (consult the console manual on how to recall a preset)

HOW TO OPERATE

To move within the general OSD menu use the joystick or the UP DOWN navigation arrows.

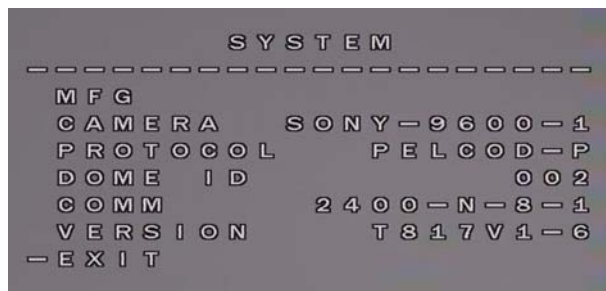
To select a menu item or to exit use the joystick or the right-left navigation arrows





System

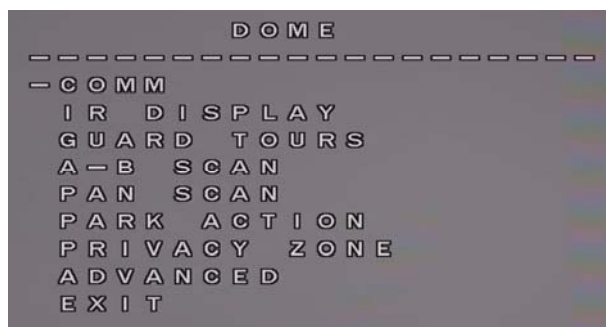
This menu item provides all the information about the camera. It is an information-only panel where nothing can be set.



- CAMERA - Camera module.
- PROTOCOL - RS485 protocol supported
- DOME ID - Address of the camera on the RS485 BUS.
- COMM - Settings of the communication protocol used on the RS-485 bus
- VERSION - Product version

Dome

This section contains all the general settings of the speed dome camera



- COMM - Here you set the data of the communication protocol such as, protocol, bitrate and address. We described this section at the beginning of the manual.
- IR DISPLAY - Here you set some parameters on the illuminator MODE = IR on, off and automatic TESTING TIME = Short time means fast day / night switching, safer long time OUTPUT POWER = It is possible to reduce the IR power if the shots are close together ILLUMINATION ON - It is the activation threshold of the LEDs on a scale from 0 to 15

AMBIENT LIGHT - Measures the ambient light in real time when accessing the OSD menu. It is not a settable parameter.

IR SWITCH ZOOM - It is the zoom level (from 1 to 10) in which the camera switches from near IR to far IR.

- GUARD TOURS - Here you set the tours, that is the automatic movements between different presets. The camera manages 3 tours.
GUARD TOUR - Select tour 1,2 or 3
SETTING - For each position of the tour you can define: Preset, Stay time and speed. Each tour can contain up to 16 locations.
INIT - restore the default tours
CALL - Starts the selected tour
DELETE - Clears all the presets of the selected tour
- AB SCAN - It means the continuous RIGHT-LEFT movement between 2 end positions.
PRESET A - Sets the limit switch A
PRESET B - Sets the limit switch B
SCAN SPEED - Sets the speed of the scan
DWELL TIME - Dwell time on each limit switch (2-60 sec.)
- PAN SCAN - It means the 360 ° panoramic scan
PAN SCAN SPEED - Sets the rotation speed
INIT - restore the default parameters
CALL - Starts the panoramic scan
- PARK ACTION - This section allows you to set the main function that the camera will automatically return to after a certain time of absence of commands from the operator
PARK MODE - A tour, 360 scan or AB scan can be set as the main action. You can also choose ACTION to recall the last automatic movement previously recalled, or HOME to recall a specific position that is set later
PARK TIME - Sets the idle time after which the main action is called.
SETTING - Here you can set the HOME position which is called up if the HOME mode above has been set. Position the shot and recall Preset 1 to save.
CALL - Recalls the main action set DELETE - Reset all the settings in this section
- PRIVACY ZONE - Not available
- ADVANCED - Here are some additional adjustments
PWR ON ACTION - Sets the action that the camera automatically performs at startup. It can be a scan or a tour, or the main action set in the PARK ACTION section, or you can set MEMORY to recall the last action performed before the power failure.
RATIO SPEED - Enables automatic speed reduction with zooming in
AUTOFLIP - It must be enabled if during the vertical movement (TILT) the camera, when it reaches the vertical position, rotates 180 ° and

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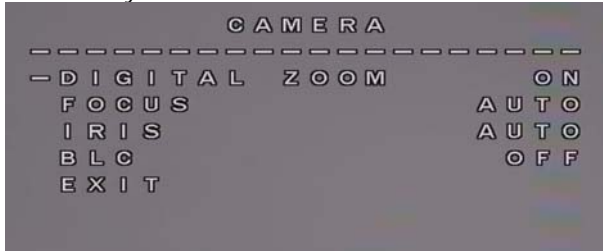


continues the movement in the other direction (AUTOFLIP).

WIPER - Not available

Room

This section contains some settings of the camera module, others are contained in the menu of the camera only which is described below.



- DIGITAL ZOOM - Enable digital zoom, if available
- FOCUS - Sets the focus to automatic or manual.
- IRIS - Sets the aperture of the camera to automatic or manual.
- BLC - Enables backlight compensation for shooting a dark subject against a light background.

Display



- P AND T - Overlays the angle of Pan and Tilt
- ACTION - Shows the automatic action that the camera is performing
- DOME ID - Shows the ID of the camera

Reset

Different types of factory reset are available

- DOME RESTART - Restart the camera
- SYS DATA - Restore factory settings
- CAM DATA - Restore factory settings of the camera module
- PRESET - Delete all presets

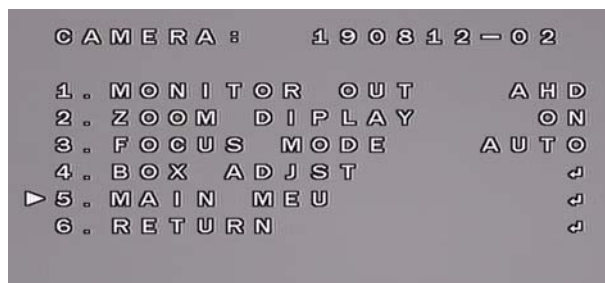
ROOM MODULE OSD MENU

Access to the OSD menu of the camera module only

There is a configuration menu of the camera module that allows you to adjust some advanced video parameters. To access you need:

Call system PRESET 102 twice

CAUTION - It is not necessary to use this menu in most applications.



HOW TO OPERATE

To move within the OSD menu of the camera module only, do not use the joystick between the navigation arrows. Move with ZOOM + / ZOOM - and change the values of the individual items with FOCUS + / FOCUS - The ENTER key is obtained by recalling preset 102 twice. It is necessary to recall preset 102 twice in each item where the ENTER symbol is present.

GENERAL MENU

The initial menu of the room module allows you to set directly

- Video signal AHD CVI TVI CVBS
- Zoom value overlay (ON / OFF)
- Fire (Manual / Automatic)

It is also possible to go to BOX ADJUST and MAIN MENU and access these submenus by calling preset 102 twice

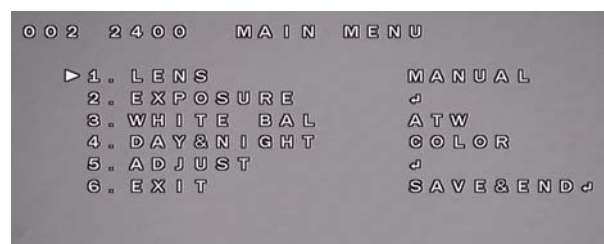
BOX ADJUST

It is possible to go to BOX ADJUST and recall preset 102 twice to access. These are internal camera functions that should not be changed.

MAIN MENU

It is possible to go to MAIN MENU and recall preset 102 twice to access. You can control different camera settings.

To exit the camera menu go to SAVE & END and recall preset 102 twice to exit.



- **LENS** - in this section you must indicate to the camera which type of lens you are using so that it can control it correctly
 - MANUAL: fixed diaphragm lens. The camera will use the electronic diaphragm.
 - DC: autoiris DC drive lens.
- **EXPOSURE** - in this section you set the operation of the electronic diaphragm.
 - SHUTTER: Sets the operation of the electronic diaphragm. It is possible to choose AUTOMATIC (AUTO) and FLK modes the compensation of images that contain small variations invisible to the human eye (neon light, PC screen, TV)
 - BRIGHTNESS: adjusts the brightness of the image.
 - AGC: Adjusts the gain of the image.
 - DWDR: Digital Wide Dynamic Range - used for shooting areas with varying brightness levels. This function allows you to make the dark zone visible and the bright one at the same time.
 - BACKLIGHT: used for shooting backlit subjects against a bright background
- **WHITE BAL**- in this section there are the options for white balance, an important function to make the white color of the image always such in any type of lighting. The following options are available: ATW (Automatic), AWC→SET (manual). As a rule, the ATW setting is always advisable as the white balance is automatically adjusted when the type of lighting changes. The MANUAL option adjusts the shade of white manually for shooting in particular lighting conditions.
- **DAY & NIGHT** - allows you to adjust the way in which the change from color to B / W for night vision takes place. It is possible to set the camera to always provide color images (COLOR), always in B / W (B / W) or to automatically switch from color to B / W based on the light (AUTO).
- **ADJUST** -in this section the following parameters are set:
 - NR: Digital Noise Reduction is a digital video noise reduction function. Thanks to this function,

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especially useful in low light, the video signal is cleaned from noise and a greater uniformity of colors is obtained. 2DNR and 3DNR are available

- SHARPNESS: adjusts the definition of the image
- COLOR GAIN: Adjust the colors
- LSC: Adjust lens shadow effect
- MIRROR: allows the image to be reversed both horizontally and vertically
- DPC: Digital signal control
- LANGUAGE: Change the menu language. It is possible to set Italian, even if in this manual we show the English language.
- FORMAT: It is possible to define the output video format AHD, CVI (CHD), TVI (THD) or CVBS.
- RESOLUTION: It is possible to set the output video resolution of the camera. The maximum value is set at the factory, but you can reduce it according to your DVR
- FRAMERATE: you can choose between RT (Real Time) and NRT (Non Real Time) for maximum resolution
- VIDEO OUT: It is possible to choose between European PAL format and NTSC US format
- APPLY SET: Closes the menu by saving the settings
- RETURN: Return to the main menu