

CAM220 & 230

Handbook &
Instructions

High performance CCTV camera with
built in Balun and internal connections
for neat & easy installation



CAM230
Chrome

CAM220
Ivory

MiRs
Maximum IR
Sensitivity ✓

XCAM220 Vol3

Introduction



With a built in Balun the camera can be installed with either CAT5 or Composite co-ax cable allowing flexible installation options. The camera's menu can be controlled by "up the co-ax telemetry" (PELCO-C) or additional 2-wire telemetry (PELCO-D) making it easier to set up on site and remotely.

- Auto Digital Zoom
- Dual Voltage 12V DC, 24V AC
- Built in Balun
- Pelco D - (RS485 2 wire)
- Pelco C - (Up the co-ax)
- 700TVL colour mode - 800TVL B&W mode
- NiteDevil low light - 0.00019Lux
- Internal connections - no flying lead
- Vandal-proof & Weatherproof
- 3 Axis Gimbal for wall or ceiling mounting
- Mega-pixel 2.8 ~ 12 mm Auto Iris Lens
- Metal housing with Polycarbonate dome

Dual power (12V DC and 24V AC), a clever internal connection PCB for neat and fast installation and stunning picture quality make the CAM220 & 230 great first choice CCTV Dome cameras for any installation.

Inside The Camera

1 Zoom Adjustment

Unlocking this screw allows you to adjust the zoom in and out of the camera.

3 Tilt Axis

Unlock this screw and one on the other side to tilt the camera up and down.

2 Focus Adjustment

Unlocking this screw allows you to re-adjust the focus of the camera after adjusting the zoom.

4 Rotational Axis

Turn this to rotate the cameras output image so that it is correct on a monitor.
(Loosen tilt screws first)

7 Video Out - Main

Connect your co-ax to this for the main Video output.

See pages 6, 7

5 Left-Right Axis

Unlock these screws to adjust the left-right orientation of the camera.
(2 Screws, 1 either side)

8 Video Out - Spare

Spare video out for local test using a test monitor.

6 Connection Block

Spring lock connections to wire up the camera.

See pages 6, 7, 8, 9

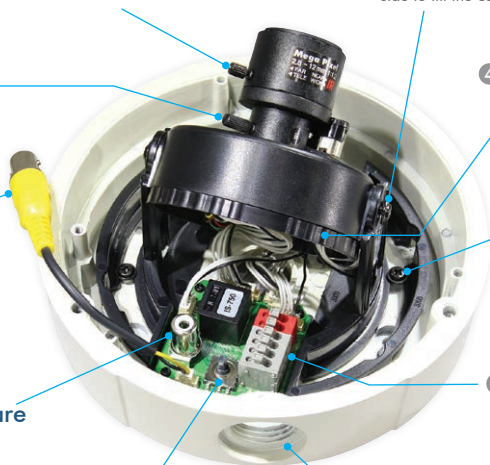
9 Joystick

Press down to bring up the OSD then navigate using the joystick. Down again is select.

10 Conduit Entry

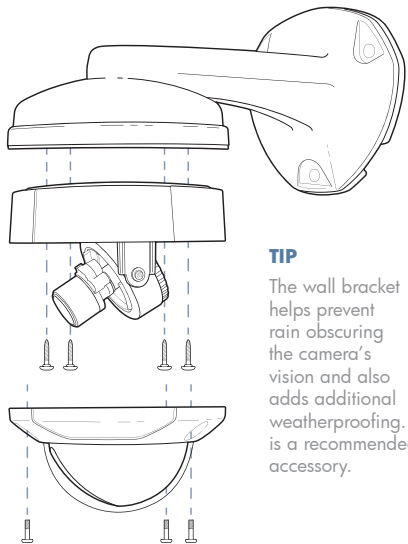
20mm blank supplied.

(Cable entry also at rear through a grommet)



Mounting The Camera

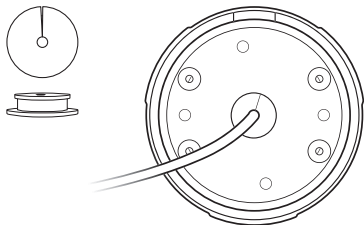
The camera can be mounted on a wall, ceiling or attached to an optional wall bracket.



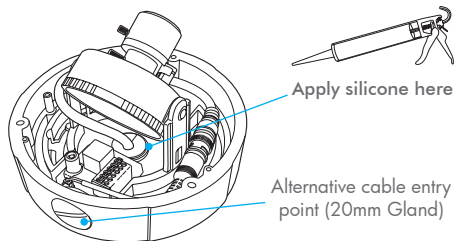
TIP

The wall bracket helps prevent rain obscuring the camera's vision and also adds additional weatherproofing. It is a recommended accessory.

To ensure that the camera is weatherproof, a rubber grommet is provided through which the cable enters the camera.



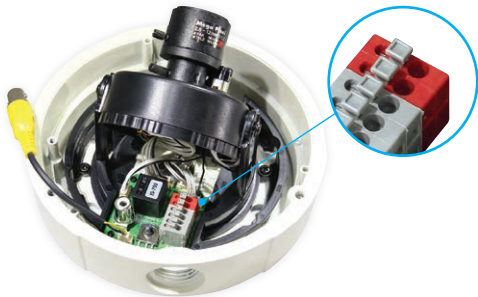
Prior to the end of the installation you need to additionally seal the grommet with a flexible silicone product. This is because the rubber grommet may shrink or get stressed by cable movement over time.



Powering The Camera

The dome requires either a 12V DC regulated power supply or a 24V AC power supply it draws a maximum current of around 150mA @12V DC.

Connections are not polarity sensitive therefore the power can be connected either way round, the power terminals are easy to identify as they are **marked in red**.

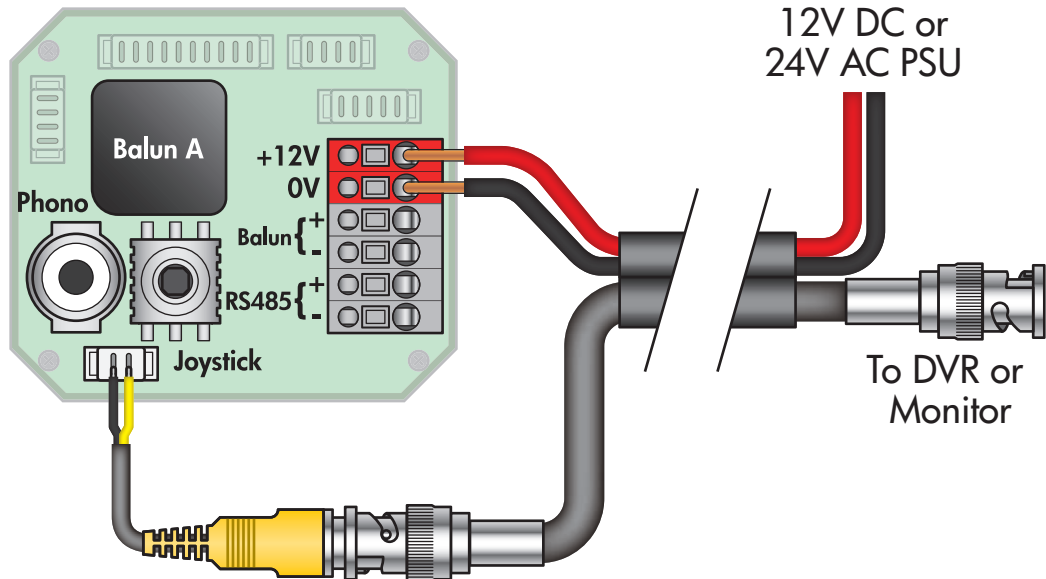


24V AC is a good choice on long cable runs to power the camera as you get less voltage drop in the power cores, however if using 24V AC use only CAT5+2 or RG59+2 to avoid the AC signal interfering with the video signal.

There are four easy ways to cable the camera:

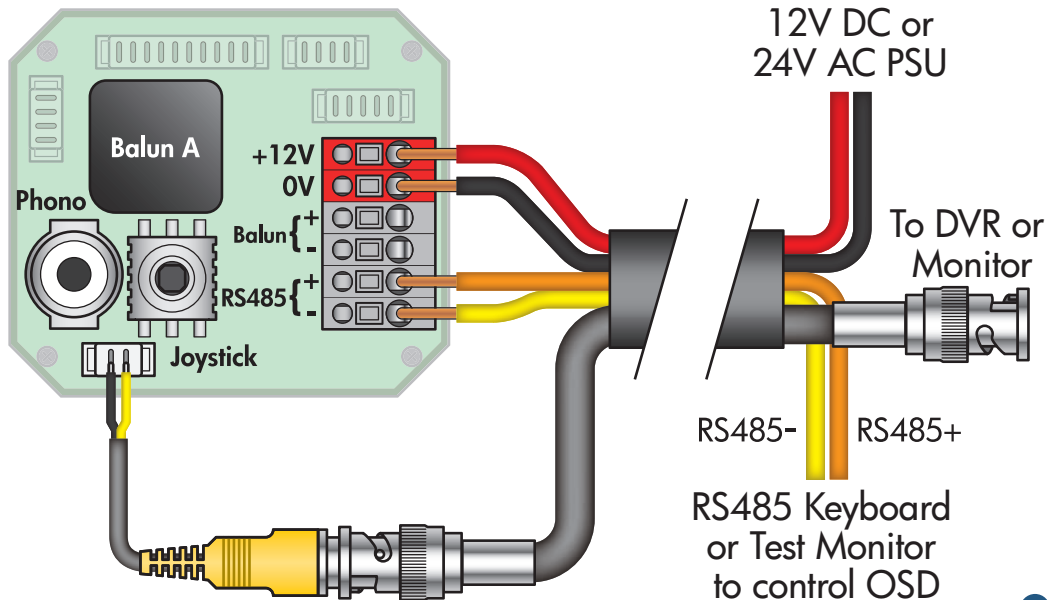
- 1 RG59+2**
No Balun required - easy and simple installation.
- 2 RG59+4**
No Balun required - extra cores allow a DVR with RS485 to control the camera's OSD.
- 3 CAT5+2**
Requires a balun at the remote end - heavy duty power cores can power multiple cameras. OSD control by DVR possible.
- 4 CAT5**
Requires a balun at the remote end - uses the CAT5 cores for power (Powers single cameras only). OSD control by DVR possible.

RG59+2 Cable contains - 1 co-ax core + 2 power cores

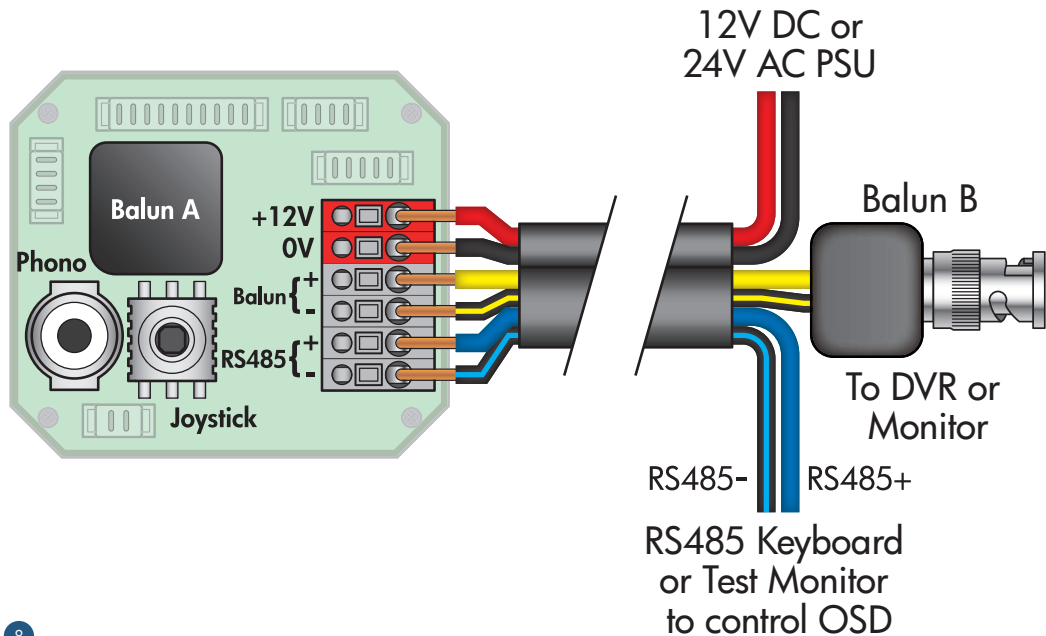


RG59+4 (PTZ Combo Cable)

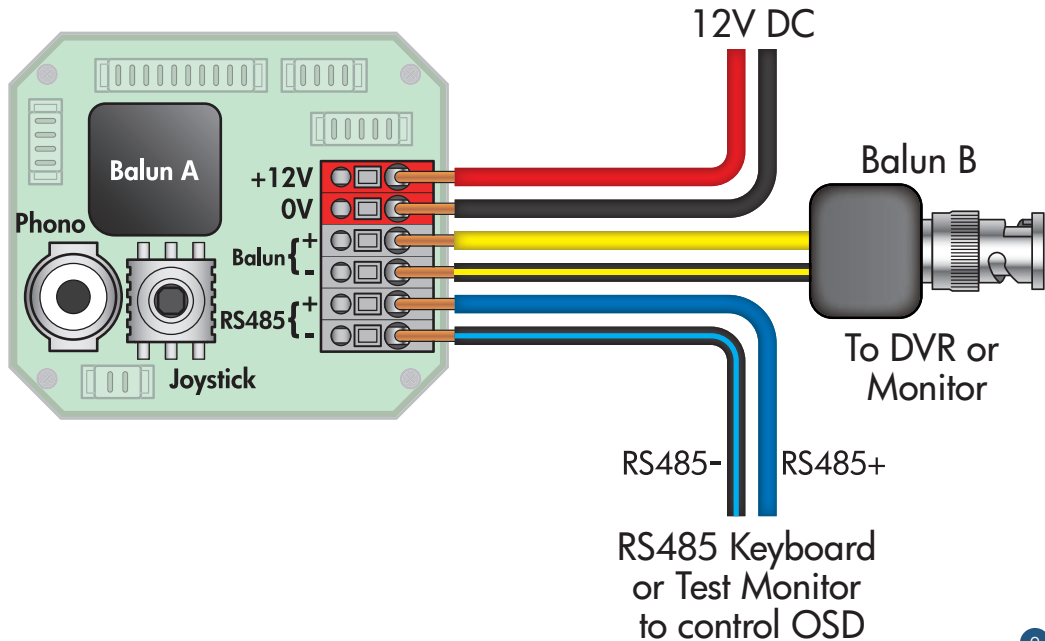
Cable contains - 1 co-ax core + 2 power cores + 2 data cores



CAT5+2 Cable contains - 4 pairs data cores (CAT5E style) + 2 heavy duty power cores



CAT5 Cable contains - 4 pairs data cores (CAT5E style)



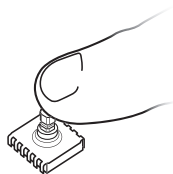
Accessing The Menus

You can access the menus in the camera by three means:

- 1 Micro Joystick on the PCB inside the dome.
- 2 REM088 Up the co-ax telemetry control.
(Optional extra)
- 3 RS485 control using a keyboard, DVR, or CCTVMate test monitor.

Micro Joystick

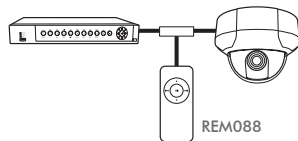
To access the menus using the Micro-Joystick simply press the joystick down and the menu will pop up on the camera's image. Gently moving the joystick up-down-left-right allows you to navigate through the menus. Selection is made by another downward push.



REM088

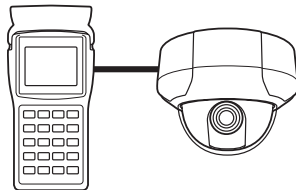
The REM088 simply connects "in-line" with the camera and the DVR or monitor as shown (Top, right). It's a very convenient way to access the camera's menu system as you can do this after the camera is installed and fine tune the camera whilst sitting

comfortably next to the DVR. It sends the control signals through the video co-ax so you don't need any additional cables. REM088 will not work through Baluns or CAT5.



RS485

The camera also has traditional RS485 Pelco-D control and has two terminals to connect the RS485 control device to. PTZ keyboards, some DVRs or the CCTVMate test monitor all have RS485 control outputs that can control the camera. This method can be useful to adjust cameras remotely that are connected to DVRs. The Default setting is BAUDRATE = 9600, PROTOCOL = PELCO-D, ID = 01.



LCD330

Main Menu

MAIN MENU	DEFAULT SETTINGS	SUB MENU	
1. LENS	DC	DC / VIDEO / MANUAL	
		DC: 1. BRIGHTNESS: 1 ~ 100 2. IRIS SPEED: 1 ~ 5	3. RETURN
		MANUAL: 1. BRIGHTNESS: 1 ~ 100	2. RETURN
2. EXPOSURE	1. SHUTTER: NTSC 1/60, PAL 1/50	1/50, 60 / AUTO / FLK / MANUAL	
		AUTO: 1. SHUT. MIN: 1/50, 1/60 2. SHUT. MAX: FLK ~ 100000	3. RETURN
		MANUAL: 1. LEVEL: x2 ~ x256 ~ 1/50, 60 ~ 100000	2. RETURN
	2. AGC: HIGH	OFF (DAY & NIGHT COLOUR) / LOW / MIDDLE / HIGH	
	3. SENSUP: AUTO (x8)	OFF / AUTO	
	AUTO: 1. SENSUP: x2 ~ x256	2. RETURN	
3. BACKLIGHT	OFF	OFF / DWDR / BLC / HSBLC	
		DWDR: 1. LOW LEVEL: 0 ~ 5 2. HIGH LEVEL: 0 ~ 15	3. RETURN
		BLC: 1. VALUE: LOW / MIDDLE / HIGH 2. AREA: SINGLE / DOUBLE (POSITION, SIZE)	3. DEFAULT 4. RETURN
		HSBLC: 1. GAIN: 0 ~ 100 2. MODE: NIGHT ONLY / ALL DAY 3. MASK LEVEL: 0 ~ 100	4. DEFAULT 5. M.SKIP AREA: ON / OFF (ON: POSITION, SIZE) 6. RETURN

Main Menu Continued

MAIN MENU	DEFAULT SETTINGS	SUB MENU
4. WHITE BAL	ATW	ATW / AWB / AWC → SET / MANUAL (BLUE, RED) MANUAL: 1. BLUE: 0 ~ 100 2. RED: 0 ~ 100 3. RETURN
5. DAY & NIGHT	AUTO	AUTO / EXT / B/W / COLOUR AUTO: 1. DELAY: 0 ~ 15 2. D → N (AGC): 16 ~ 255 3. N → D (AGC): 0 ~ 239 4. RETURN EXT: 1. DELAY: 0 ~ 15 2. RETURN B/W: 1. BURST: ON / OFF 2. IR SMART: ON / OFF 3. IR LED: ON 4. RETURN
6. SMART 3D NR	ON	ON / OFF ON: 1. VALUE: 1 ~ 200 2. SMART NR: ON / OFF 3. SMART LEVEL: 1 ~ 200 4. SENSITIVITY: 0 ~ 100 5. RETURN
7. F-DNR	OFF	OFF / MANUAL / AUTO MANUAL: 1. LEVEL: 0 ~ 31 2. COLOUR GAIN: 0 ~ 10 3. EDGE GAIN: 0 ~ 10 4. GAMMA: USER ~ 0.05 ~ 1.00 5. RETURN AUTO: 1. DETECT LEVEL: 0 ~ 5 2. RETURN
8. FUNCTION		For the Function Menu see opposite page
9. EXIT	SAVE	SAVE / RESET / CANCEL

Function Menu

MAIN MENU	DEFAULT SETTINGS	SUB MENU
1. MOTION	OFF	ON / OFF ON: 1. AREA: 1 ~ 4 2. AREA DISPLAY: ON / OFF (ON: POSITION, SIZE) 3. VALUE: 0 ~ 100 4. MOTION VIEW: ON / OFF 5. RETURN
2. PRIVACY	OFF	ON / OFF ON: 1. AREA: 1 ~ 8 2. AREA DISPLAY: ON / OFF (ON: TOP LEFT, TOP RIGHT, BTM LEFT, BTM RIGHT, POSITION) 3. COLOUR: 0 ~ 15 4. TRANSPAR: 0 ~ 3 5. RETURN
3. D-EFFECT	1. D-ZOOM: OFF	ON / OFF ON: 1. RANGE: x1.0 ~ x32.0 2. PAN: -100 ~ 100 3. TILT: -100 ~ 100 4. RETURN
	2. SMART D-ZOOM: OFF	ON / OFF ON: 1. RANGE: x2.0 ~ x5.0 2. POSITION: POSITION 3. SENSITIVITY: 0 ~ 100 4. TIME: 0 ~ 15 5. RETURN
	3. DIS: OFF	ON / OFF
	4. FREEZE: OFF	ON / OFF
	5. MIRROR: OFF	OFF / MIRROR / V-FLIP / ROTATE
	6. NEG. IMAGE: OFF	ON / OFF
	4. IMAGE ADJ	1. SHARPNESS: 20

Function Menu Continued

MAIN MENU	DEFAULT SETTINGS	SUB MENU
4. IMAGE ADJ (cont)	2. MONITOR: CRT	CRT / LCD
		CRT 1. PED LEVEL: 0 ~ 63 3. RETURN 2. COLOUR GAIN: 0 ~ 255
	LCD 1. GAMMA: USER ~ 0.05 ~ 1.00 3. COLOUR GAIN: 0 ~ 255 2. PED LEVEL: 0 ~ 63 4. RETURN	
	3. LENS SHADING: OFF	ON / OFF
4. DEFECT	ON	1. LEVEL: 0 ~ 60 3. V-CENTER: 0 ~ 255 2. H-CENTER: 0 ~ 255 4. RETURN
		1. SENSUP: x4 ~ x128 4. START 2. DIFF: 0 ~ 3 5. RETURN 3. THRESHOLD: 0 ~ 4
5. COMM ADJ	1. CAM TITLE: OFF	ON / OFF
		ON : CAM TITLE
	2. PROTOCOL: PELCO-D	PELCO-D / PELCO-P / SPD-S / DONG YANG / NIC P
3. RS485	1. CAM ID: 1 ~ 255 3. BAUD RATE: 2400 ~ 57600 2. ID DISPLAY: ON / OFF 4. RETURN	
6. SYNC	INT	INT / L/L
		L/L: 0 ~ 360
7. LANGUAGE	ENGLISH	English / Korean / Japanese / Chinese / Russian / French / Spanish / Italian / Portuguese / Dutch / German / Polish / Turkish / Hebrew / Arabic

Getting The Most Out Of The Camera

What the menu options do

The camera has a comprehensive menu system that allows you to set up the camera to get the most out of it in different demanding situations, below is a guide to some of the key functions:

Backlight

This helps make items in front of a bright scene (such as a window on a bright sunny day) clearer to see by increasing their brightness and making the background darker.

Exposure

This alters the speed of the shutter on the camera and adjusts its sensitivity. For maximum sensitivity at night, turn the "SENSUP" to 256, however this will have some "motion trail" on the image in low light due to the long exposure time of the camera. In automatic mode, the Sens Up is set at 8X and suits most applications with good results.

White Balance

This allows the colour adjustment of the camera to be set up so objects appear a natural colour.

Day & Night

This setting allows you to lock the camera in a colour or B&W mode or have it automatically switch. You can also adjust the smart IR function that limits IR glare.

Motion

Allows the camera to display a warning when it detects video motion in the image.

Privacy

Allows the user to "block out" areas in the picture so that the installation complies with the Data Protection Act and avoids infringing other people's privacy rights.

D-Zoom

Allows the camera to be set to digitally zoom in on an area if the optical lens is not quite enough.

Smart D-Zoom

Allows the camera to be set up to "automatically" zoom in when it detects movement. This can be used to get a closer view of faces or number plates.



Movement detected



Automatic Digital Zoom

Mirror

Allows the camera's picture to be flipped along its horizontal or vertical axis. Enabling the correct camera picture to be displayed when used for different applications including as a reversing aid.

Comm ADJ

Allows the camera's communication settings to be changed.

For more details on menu systems and camera adjustments, download TIP 295 at systemq.com

Accessories

Wall Bracket

Mounting the camera onto a wall prevents rain from obscuring the camera's vision.



Order Code:
CAM610

OSD Controller

An easy way to access the camera's menu. Connects "in-line" and sends the control signals through the video co-ax. Comes with a BNC 'T' Piece.



Order Code: **REM088**

1ch Passive Baluns



Mini Passive Balun. Send video 100m down CAT5.

Order Code: **BAL102**
(Sold in pairs)

Unique Snap Together Feature

ZENDit™



1ch In-line Balun. Send video 100m down CAT5.

Order Code: **BAL106**
(Sold in pairs)

4ch Passive Balun

Send & receive 4 video signals 200m down 1 CAT5 cable.

Order Code:
BAL304



Accessories - Cable

Antihum RG59+2

Cable Contains: 1 co-ax core + 2 power cores

Cables can be separated for fast, easy installation

Glued foil sheath provides maximum protection against interference and prevents "loose" foil shorting to the centre pin

0.7mm centre core for maximum performance and long runs.

Black or white PVC

Black 100m Order Code: CAB050

White 100m Order Code: CAB040

0.15mm x 24 Copper power cores for powering the camera

Antihum RG59+4

Cable Contains: 1 co-ax core + 2 power cores + 2 data cores

Glued foil sheath provides maximum protection against interference and prevents "loose" foil shorting to the centre pin

Solid copper centre core for long runs

0.15mm x 30 Copper power cores, extra CSA for powering PTZ cameras

Three cables in one, saves time and money!

Data core with shield for PTZ control

Black 150m Order Code: CAB060

Antihum CAT5+2

Cable Contains: 4 pair data cores (CAT5E style) + 2 heavy duty power cores

Shotgun style - 11mm diameter

4x twisted pairs with easy to ID colours

Black or white PVC

Black 100m Order Code: CAB102

White 100m Order Code: CAB152

2x power cores

Antihum CAT5

Cable Contains: 4 pair data cores (CAT5E style)

Easy to ID colours

4x twisted pairs with easy to ID colours

Black or white PVC

Black 100m Order Code: CAB100

White 100m Order Code: CAB150

Accessories - Power Supplies

5-Amp 12V DC PSU With 9 Outputs



Regulated 12V DC 5 Amp PSU with multiple outputs for use with up to 9 suitable CCTV cameras. Each output produces up to 1 Amp (max 5A overall outputs) to suit most cameras and housings.

Order Code: POW400

6-Amp 24V AC PSU With 6 Outputs



- A 24V AC PSU with a 6 amp output, ideal for
- powering a number of 24V AC cameras such as
- PTZ domes. Housed in a wall-mount metal case,
- this is a toroidal transformer with a low operating
- temperature.

Order Code: POW500

10 Reasons the alien MEGAHero™ DVR is great value for money

alien MegaHero 16ch



1. **Built-in Video Analytics** (*finds evidence instantly!*)
2. **Hybrid Technology for Analogue, TVI & IP** (*futureproof*)
3. **High Definition HDMI Output** (*along with VGA & BNC*)
4. **Easy to Use Interface** (*said to be best in class*)
5. **AutoPort Plug-and-Play** (*for easy internet setup*)
6. **Compact Space Saving Case** (*slim modern design*)
7. **Free Dynamic DNS Setup** (*saves you time*)
8. **Full Alarm Inputs** (*16 on the 16 way*) - (*triggered how you want*)
9. **Bespoke Software Available** (*you want it, we write it*)
10. **Video Tagging** (*tag recording with keywords such as "theft"*)

Order Codes

4ch 1TB: MEGA204K

8ch 1TB: MEGA208K

16ch 2TB: MEGA216N

For more information visit www.aliendvr.com

Accessories - Tools

CCTV Test Monitor



cctvmate.com

- PTZ Control Testing
- DC/AC Voltage Tester
- RS485 Data Test Function
- 29 Protocols Supported
- Check Video Signal Strength
- 12V Camera Power Function
- Up to 10 Hours Battery Life
- Network Cable Testing
- Monitor Output Testing

Includes



Order Code: LCD330

For more information visit
www.cctvmate.com

BNC Ratchet Crimp



Crimps - 2pc✓ 3pc✓ Mini 3pc✓



Order Code: TOO980

Learn how to crimp a BNC!
See online tip 248 at www.systemq.com

Accessories - CCTV Mule

CCTV Mule 4

Sends 4 video signals down 1 co-ax



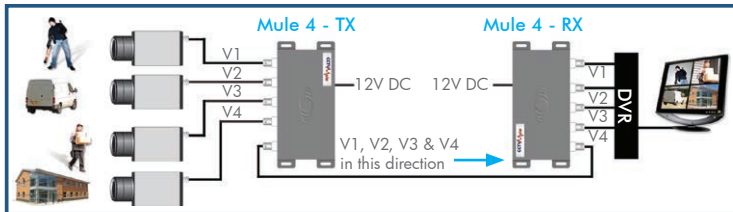
The CCTV Mule makes it easy to add extra cameras to existing installations, you save installation time and reduce the cost of buying and installing more cable.

The Mules work in pairs. One Mule combines the video signals to transmit them down 1 single co-ax, the other Mule then reconstructs the individual video signals at the remote end. A low-cost, easy solution that offers huge installation benefits and opportunities to add extra cameras.

The clever electronics of the CCTV Mule also allow it to carry audio and RS485 data along the same co-ax cable. You can even carry three video signals in one direction and a fourth signal in the other direction!

Order Code: **MULE004** (4-Way)

Order Code: **MULE002** (2-Way)
(Sold in pairs)



Specification

Voltage - 12V DC, Tx 200mA, Rx 350mA
Video inputs - 4, outputs - 1 Tx
Video inputs - 1, outputs - 4 Rx
Video quality - D1 @ 25fps - Every Camera
Gain control for different cable lengths
Operation modes - 5 types
Cable required - RG59 or better
Max Cable length - 200mtrs
Size - 175 x 110 x 30mm

Accessories - Digital Video Transmission



- ✓ Digital Data Transmission
- ✓ Privacy Pairing Function
- ✓ Reverse IR Transmission
- ✓ Handshake Routine
- ✓ Whisper Mode

Includes



Tx and Rx unit with antennas, x2 Phono - BNC Converter
x2 AV cables and x2 IR extension leads

The **VideoMitters** are a breakthrough in the transmission of video signals.

By digitising the video & audio signals, far superior performance can be achieved in transmission distance and received image & audio quality.

The innovative VideoMitters can also transmit IR data in the reverse direction to the transmitted audio and video signals allowing any device that uses a handheld IR remote to be controlled from a different room or location without wires.

Simple, effective and low cost, the VideoMitter is an installer's dream product saving money on cabling and labour with outstanding results.

Order Code: MITKIT

Extend your transmission range*



1.2Km

Order Code: AER540

*As per instructions



400m

Order Code: AER537

Fault Finding

The camera is built to the highest standards and every unit is fully tested prior to packing so if you experience an installation problem you need to investigate your cabling, connections, power supply and monitor. If you do fail to get a picture on a monitor you need to check the following things.

Interference on the camera picture

This is usually caused by poor or inadequate cabling, not observing the correct wiring techniques (CAT5 pairs or cores mixed up) and for 12V DC powered cameras the use of unregulated or poorly regulated power supply.

One camera picture overlaid on another using CAT5

Caused by getting camera cores and pairs mixed up.

Can't control via 2 wire RS485

- A. RS485 wires crossed over, try swapping around.
- B. Wrong protocol and baud rate selected, the default settings are ID -1, BAUD – 9600, PELCO-D.

Can't control via REM088 (Up the co-ax)

Battery flat in REM088 (Check battery voltage with a meter).

No picture

The camera cannot function without the correct working power supply.

- Step 1** Test that the camera has the correct voltage supplying it, you must do this with the camera connected so that there is load on the PSU. The camera should have at least 10.5V DC connected to it.
- Step 2** Check there is a picture coming out of the Phono test point at the camera. If there is a picture here but not at the DVR it could be one of the following:
 - A. Video loss in Composite cable as run too long usually you would get a picture up to around 120mtrs (Remedied by fitting a video amp).
 - B. Ensure that the BNC - BNC lead that you connect between the camera and monitor has no shorts or open circuits. If you are making your own lead, don't forget the lead must have two wires connected to complete the circuit, Video and Ground.
 - C. No Video signal down CAT5 or CAT5+2. The camera has a Balun built in to it so you need a balun fitting at the remote end. Check you have used the correct terminals in the camera for the balun. Check you have used a "pair of cores" not individual cores from different pairs.

Technical Specifications

FUNCTION	SPECIFICATION
Imaging Sensor	1/3" SONY Super HAD 2 (960)
Signal System	PAL 625 lines
Scanning system	2:1 Interface
Scanning Frequency	H:15.625 kHz / V:50 Hz
S/N Ratio	More than 52dB (AGC Off)
Horizontal Resolution	Horizontal: 700 TVL Colour / 800 TVL Black & White
Video Output Level	1.0V p-p (75Ω, Composite)
Lens	Built-in DC Iris Vari-focal Lens (2.8 ~ 12mm, F = 1.4)
Minimum Illumination	Colour: 0.03Lux, 0.00019 (Sens-up 256x)
Sync System	Internal / Line Lock (Dual Option)
OSD	Built-in (Multi-language support)
Electronic Shutter Speed	Auto / FLK PAL: (1/50 sec ~ 1/100,000 sec)
White Balance	AWB / AWC Set / Manual / Indoor / Outdoor / ATW

All specifications are approximate. System Q Ltd reserves the right to change any product specifications or features without notice. Whilst every effort is made to ensure that these instructions are complete and accurate, System Q Ltd cannot be held responsible in any way for any losses, no matter how they arise, from errors or omissions in these instructions, or the performance or non-performance of the equipment that these instructions refer to.

FUNCTION	SPECIFICATION
Backlight Compensation	BLC / HSBC / Off
Gain Control	Low / Middle / High / Off
Adjust	Contrast / Sharpness / CB_Gain / CR_Gain (Level Adjustment)
Language	English - (Multiple)
Camera Title	On / Off (Selectable)
Day & Night	Auto / B&W / Colour / EXT (Selectable)
Privacy Masking	On / Off (8 Zone selectable)
3D NR (digital noise reduction)	On / Off (Selectable)
Sens-up (Frame Integration)	On / Off (Selectable limit ~ 256x)
D-Effect	Freeze / Mirror / Gamma / Neg. Image
Supplied voltage	12V DC & 24V AC ± 10%
Power Consumption	100mA (12V)
Dimensions	Base 140mm, Dome 100mm
Weight	Approximately 250g



WEE/CG07833S

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.