

## The bench test [1]

# Network upgrade

## The 213 PTZ Network Camera from Axis has matured nicely

### What our experts say ...

A LITTLE OVER A YEAR AGO IN OUR BENCH TEST of the Axis 2130 network camera, we concluded that the technology was still a work in progress. Whilst that model had a few rough edges, it was sufficiently well developed for it to be considered an alternative to cabled CCTV and a valuable new resource in its own right. How time flies...

Outwardly, its successor, the Axis 213 – which we are looking at here – appears to be almost identical, but like the network camera and remote surveillance market as a whole, there has been a lot of activity behind the scenes.

The 213 is an altogether more refined product, and we're gratified to see that some of our suggestions from the previous review have been incorporated into the new design – but more about those later.

The general specification, however, remains largely unchanged, based around a stylish looking camera module with autofocus lens and built-in zoom, mounted on a compact pan/tilt mechanism.

The camera has its own IP (Internet Protocol) address so it can connect directly to a computer network, effectively acting as a self-contained 'website', enabling any PC connected to a local area network (LAN) or the internet – with appropriate authorisation – to remotely view images and control the camera via standard web browser software.

In addition to camera operations and housekeeping, the camera's setup menu also controls alarm functions and scheduling, plus alarm notification and image uploading via email, TCP or HTTP.

Key differences between the old and new models include a change from a 16x optical zoom to a combination zoom with 26x optical and 12x electronic magnification.

Low light performance has been improved, from 6 lux down to 1 lux in normal operation, with manual or scheduled day/night switching, from colour to black and white, with a sliding IR cut filter. The camera module now has 0 lux functionality via an on-board IR illuminator, or it

can control an external IR lamp for wider area coverage.

Image resolutions and refresh rates have been rationalised and brought into line with industry standards. In PAL mode there are five choices based on the Common Interface Format (CIF) of 4CIF, 2CIF, CIF and QCIF, which translates to between 768 x 576 and 176 x 144 pixels at 25 frames per second.

The compression ratio, which determines image quality and file size, has five preset levels,

access. Exposure, white balance and backlight compensation can be left in the hands of automatic systems or configured manually from the camera's setup menus.

PTZ functions have been slightly simplified, and the 213 has 20 preset positions (as opposed to 40 on the 2130) and one programmable sequence, but the range of movement remains the same, with a maximum pan angle range of 340 degrees and tilt angle of 100 degrees.

Up to 20 remote 'viewers' can connect to the camera simultaneously; access is password protected and IP filtered. An unlimited number of connections can be made when using MPEG4 or an optional relay server.

The image buffer memory, which stores pre and post-event images, has been increased from 4 to 6Mb. The 213, like its predecessor, uses a stripped down version of the Linux operating system, which continues to enjoy an excellent reputation for reliability and stability.

We are very pleased to see that Axis has responded to our request to include a facility to invert the image from the setup menu, so it can be used in both ceiling mount and 'table top' configurations; the 2130 was available in two separate versions.

Installation is now simpler and quicker – another gripe we had with the 2130 – and the assignment of IP address and network settings is carried out from a simple Windows based utility included on the CD-ROM that accompanies the camera. This also means the manuals (printed and on disc) are shorter and a lot easier to get to grips with.

Whilst the external appearance remains pretty much the same, there have been some important changes under the bonnet. The most significant one is the switch to direct worm gear drive for both pan and tilt mechanisms. Previously the panning action was belt-driven, which we surmise has enhanced positional accuracy, and speed, and



and Axis continues to use well established MJPEG compression – but by the time you read this a software upgrade should be available to allow it to use the more efficient MPEG4 system.

This should result in better image quality at higher compression levels and improved network



**Installation of the 213 is simpler and quicker than its predecessor**

it should improve reliability as well.

Otherwise the internal layout is unchanged, with the tilt motor and gearbox housed in one of the camera's support pillars.

There are two PCBs in the base, handling all of the network electronics, video processing, power supply and motor control, whilst the camera's electronic, lens, focus, zoom and exposure actuators are contained within a separate sub-assembly in the camera module. The only obvious new addition is a bank of four infrared LEDs to the left of the lens.

As before, weatherproofing is minimal, so it would need to be housed inside a suitable enclosure (one is available from Axis) if it is to be used in a hostile environment or outdoors, and the plastic casing is not especially robust so it needs to be located well out of harm's way.

The DC power socket and RJ45 LAN socket are carried over from the 2130's back panel, but instead of the 4-pin socket for external alarm connections there is a 26-way multi-pin socket which is used to link it to the optional Connection Module, which handles the alarm wiring, and a BNC socket for composite analogue video output.

The module also supports two-way (duplex) audio between the camera and a workstation, and a pair of 3.5mm minijack sockets are provided for the microphone input and line audio output.

### Setup and Operation

Connections to the outside world in a basic system are very straightforward, with just DC power, from an external mains adaptor, and the RJ45 Ethernet cable to plug in.

The first job is to interrogate the camera from a network workstation and instruct it to acquire an unused IP address. In most cases the quickest way

to do this is to use the Axis IP utility (Windows only) included on the CD-ROM.

The camera's serial number is entered into a box, and the new IP address assigned. Once that is done, the camera's 'home page' can be accessed from a browser window (Internet Explorer, Netscape, and Mozilla are supported under Windows, Linux and Mac operating systems).

The page opens with a request for a username and password, and after they have been typed in, the live camera image, control panel and menu shortcuts are displayed. Alternative manual access and configuration methods are outlined for Mac and Linux platforms.

In contrast to our experiences with the 2130, we were able to get the 213 up and running without a hitch, and although the manuals still lack detailed troubleshooting advice they contain sufficient information for network savvy installers to diagnose and solve most problems.

The 'Live View' page can be configured to show the camera image in four preset sizes (x1/2, x1, x2 and x4). On the right side of the display there is a single 'slider' to control tilt angle, and beneath that are four sliders for Pan, Manual Iris and Focus and Zoom, with their respective Auto/Manual override buttons.

Buttons may also be displayed for day/night operation (switching the IR illuminators and cut filter) and enabling backlight compensation. Above the display there's a drop-down menu for selecting the camera Home and preset positions.

At first glance PTZ operation is not as intuitive as the display suggests, or compared with a traditional 'joystick' type control. The camera and zoom can be moved incrementally by clicking on arrow buttons at the ends of each slider, or → P.12

## Factspanel

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|------------------------------------|---|
| <b>Equipment</b>                   | Axis 213 PTZ Network Camera   |
| <b>Product group</b>               | High-end PTZ Camera   |
| <b>Application</b>                 | Small businesses, property monitoring, etc                                  |
| <b>Manufacturer</b>                | Axis Communications   |
| <b>Address</b>                     | Suite 2, Ladygrove Court<br>Preston, Nr Hitchin<br>Herts SG4 7SA            |
| <b>Telephone:</b>                  | 0870 162 0047   |
| <b>Fax:</b>                        | 0870 777 8620   |
| <b>Email</b>                       | info-uk@axis.com  |
| <b>Available from</b>              | Details at:<br><a href="http://www.axis.com/sales/">www.axis.com/sales/</a> |
| <b>Trade price</b>                 | £1,222 (ex VAT)   |
| <b>CE Mark awarded</b>             | Yes   |
| <b>Mono or colour</b>              | Dual  |
| <b>Lens</b>                        | Motorized zoom lens<br>3.5-91mm   |
| <b>F no</b>                        | F1.6 - F4.0   |
| <b>Vertical angle of view</b>      | 54-2.3 degrees  |
| <b>Horizontal angle of view</b>    | 42-1.7 degrees  |
| <b>Minimum distance</b>            | 0.01m (wide angle),<br>1.6m (telephoto)                                     |
| <b>Interchangeable lenses</b>      | No  |
| <b>Pick-up device</b>              | 1/4" Interlaced CCD   |
| <b>Pixel array</b>                 | PAL: 702H x 575V  |
| <b>Resolution</b>                  | Max of 768 x 576 (PAL)<br>or 704 x 480 (NTSC)                               |
| <b>Sensitivity</b>                 | Daylight down to 1 lux  |
| <b>Preset view positions</b>       | 20  |
| <b>Weather resistance</b>          | Operates at 5-40 deg C  |
| <b>Size in mm</b>                  | 130mm (h), 104mm (w),<br>130mm (d)  |
| <b>Housing material</b>            | Plastic/Metal   |
| <b>Power supply</b>                | 13v DC  |
| <b>Maximum current consumption</b> | 1.8W  |
| <b>Audio</b>                       | Audio functionality through Axis 213CM accessory                            |
| <b>Warranty</b>                    | 1 year  |

← it will move quickly to a position by clicking inside the graduated slider.

There's a slight delay, even on a direct local network installation, and it can take a little getting used to, but the technique is quickly mastered. However, the 213 overcomes another of our quibbles concerning the 2130, with a facility for quickly moving the camera to a specified position or following movement. By clicking on the subject or object with the mouse pointer, the camera quickly centres the display on that location.

Clicking 'Setup' on the Live View page displays the menu options, which are grouped under seven main headings: Basic Configuration, Video & Image, Audio, Live View Config, PTZ Configuration, Event Configuration and Systems Options.

They are reasonably self-explanatory, but for the record Menu 1, Basic Configuration, covers users and passwords, network settings, date and time, browser video quality, page appearance (camera title, overlays and on-screen displays) and audio settings.

For some inexplicable reason the Video & Image and Audio menus appear to duplicate the video and audio settings in Menu 1, so they would seem to be superfluous.

Menu 4, Live View Config, is used to show or hide various function buttons and to place links to websites on the Live View page. PTZ configuration superimposes a live display with the pan, tilt and zoom sliders, to set up preset positions, set positional limits, program a sequence of movements and set parameters for a PTZ 'queue' for when the camera is accessed by multiple viewers.

The Event Configuration menu deals with alarm notification and uploading video and still images to specified destinations, such as web sites and email addresses. System Options also repeats a lot of the content of Menu 1, with repeat showings for Security (users and passwords), time and date setting, and network configuration, though to be fair, there are some extra network settings, a 'maintenance' sub-menu for restoring factory and default settings, plus a section devoted to logs and system parameters, and for advanced users, a Script Editor for delving into the 213's inner workings.

## Performance

The advantages of network IP video operation are clear to see, with consistent image quality whether the monitoring station is in the same building as the camera, or half a world away.

Actual picture performance is excellent, and at the highest resolution settings the camera produces a crisp, well-defined image under a very wide range of lighting conditions. Low light operation is markedly better than the 2130, though don't expect too much from the on-board IR illuminators, which are really only useful when the subject is within a metre or so of the lens.

Colour fidelity and white balance are good (for a network camera), picture noise levels in normal light are very low, and the exposure systems react quickly to lighting changes. Autofocus works well and only comes unstuck in very low light, when manual intervention may be necessary.

Although the PTZ mechanics have been upgraded, we didn't notice any significant

## Product assessment

|                                 |       |
|---------------------------------|-------|
| Design and design features      | ★★★★★ |
| Circuitry and components        | ★★★★  |
| Ease of installation and wiring | ★★★★★ |
| Range and variety of functions  | ★★★★★ |
| Technical advice and backup     | ★★★★★ |
| Accompanying instructions       | ★★★★★ |
| Value for money                 | ★★★★★ |

Grading Key: Outstanding ★★★★★ Very good ★★★★★ Above average ★★★ Average ★★ Below average ★

differences, and it still lacks a couple of features that we would like to see.

The 'blind spot' brought about by the camera's 340 degree pan limit remains, the zoom and pan/tilt mechanism are not linked, which makes it extremely difficult to control camera position at higher magnifications, and an auto 'Flip' facility wouldn't go amiss either, to make it easier to track a moving subject passing under the camera when it is ceiling mounted.

## What the manufacturer says ...

**THE AXIS 213 PTZ NETWORK CAMERA IS a professional-level pan/tilt/zoom network camera. Its powerful 26x optical zoom, remote PTZ control and day/night in-built infrared capability makes it suitable for a wide range of applications.**

**It is also suitable for smaller businesses that want a dual functioning camera offering the ability to scan an entire shop and zoom in on cash registers for more precise surveillance regardless of the time of day or night.**

**The Axis 213 PTZ Network Camera enables advanced remote monitoring with pan, tilt and zoom control over IP networks. It features an auto focus lens and an IR mode for night time conditions.**

**The Axis 213 PTZ delivers superior quality Motion JPEG and MPEG-4 video streams simultaneously. The camera provides 20 preset positions and one preset sequence (auto patrol) to monitor specific areas. It also offers pre and post-alarm image buffering and advanced event management features.**

**The optional Axis 213CM Connection Module provides functionalities such as two-way audio, in addition to two alarm inputs and three relay outputs.**

**The Axis 213 PTZ connects directly to an IP network, and with a built-in Web server, enables remote monitoring and control from any PC connected to the local area network or the Internet.**

**The camera provides wide coverage with its ability to pan 340 degrees, tilt 100 degrees and zoom in on specific details. The Axis 213 PTZ is ideal for monitoring people and property, and for remote learning and troubleshooting. A protective dome housing is available for indoor and outdoor applications.**

\* Reader Service No 100 (or go to [www.security-installer.co.uk/enquiries](http://www.security-installer.co.uk/enquiries) and key in 100)

## Overall assessment

**All of the changes we have noted have been for the better, and the 213 now feels like a fully matured, mainstream video surveillance product.**

**The setup menus are a tad untidy, and there are still a couple of items remaining on our wish list, but they are relatively minor in nature and we're hopeful they'll be addressed on an Mk III version.**

**In the meantime, the 213 fulfils most, if not all, of the primary functions of a conventional PTZ camera, with the added advantage of network operation and all that entails in respect of remote surveillance.**