

security

# installer

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**What IP  
did next**  
on test:

**The M22M IP camera from Mobotix**

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## The bench test [1]

# What IP did next

## What our experts say...

FOLLOWING THE BRIEF FLURRY OF excitement about five years ago, when the first wave of network IP cameras appeared, things have settled down quite quickly as the technology has slipped comfortably into a small but steadily growing market niche.

Nevertheless IP cameras have been in a continual state of development, and although there haven't been any dramatic advances, we are now seeing what amounts to a second generation of products that go well beyond the original concept, of using a computer network, instead of dedicated cables, to convey video images from a camera to a monitor screen.

The Mobotix M22M colour IP camera clearly illustrates the way the technology is moving, from largely passive network cameras, to semi-autonomous monitoring systems – in the case of the M22M, one that is bursting at the seams with sophisticated features and delivering images that rival those from conventional high-end cabled CCTV cameras.

This particular model, one of a large family of IP products from Mobotix, has many interesting and unusual features, but the ones that will get it noticed are high resolution video images and fast frame rates, the former up to a maximum of 1280 x 960 pixels, the latter up to 30 frames per second (at VGA standard resolution of 640 x 480). The megapixel image sensor operates down to 1 lux (0.05 lux in low light mode) and the camera is supplied as standard with a 22mm 90-degree fisheye lens, though other types are available.

Smooth real-time video is a difficult feat to achieve over a network but a combination of Mobotix's proprietary MxPEG video streaming codec and an Active X browser plug-in means that not only can it be done, but the network load is surprisingly modest, between 1 and 2Mbs. The camera also supports JPEG compression, used principally for recording single images and for use with browsers that do not support Active X plug-ins. Camera configuration and live and recorded image viewing are carried out from a standard web browser, and in addition to video the network connection carries two-way audio with support for SIP (Session Initiation Protocol) for remote audio monitoring and control of various functions using a touch tone telephone.

Up to 40,000 images or 6 minutes worth of video and audio can be recorded on the M22M's internal 64Mb memory; for long-term storage it uses a 'ring-buffer' system for recording audio and video on network servers and workstations. Display features include a 2x and 4x digital zoom and the built-in motion detector has an object-tracing mode for analysing movement. Scheduled

recordings and alarm administration is controlled from a set of 'time-table' menus.

As well as on-screen alarm indicators event notifications can also be sent by SMS, email and voice (using phone call-out). A logo generator displays ready made or custom semi-transparent on-screen logos, and image editing software is included on the camera's support and management CD. Where a web connection is available the internal clock can be synchronised with an Internet Time Server.

The camera is encased in a distinctively shaped weatherproof housing. Its integral sun/rain shield is made from a high-grade ABS plastic and measures 135 x 130 x 200mm. It is supplied with its own 'SecureFlex' mounting hardware with provision for concealed cabling. A plug-in mains supply module is supplied; alternatively it can be line-powered as it supports the Power-over-Ethernet standard. On the front of the unit a detachable cover (a spare is supplied) allows easy access to the lens, for cleaning and adjustment, below that is a small speaker for the intercom and audio announcement functions. To the left of the lens is a microphone and on the right a pair of LEDs indicating power on and network connection.

Around the back there is a covered USB port for optional peripheral components. The Ethernet cable emerges from a rubber gland and there's an odd looking moulding that in future will be used to house optional CF Cards for additional memory storage and wireless connections.

There is very little to see inside the robust and well-protected two-part case, just a single PCB with a few microchips on one side, and the image sensor and lens assembly on the other. All of the hard work, and the key to the camera's extensive range of features, is an embedded version of the Linux operating system, which is noted for its stability and reliability in this kind of application.

### Setup and operation

Installation shouldn't pose any problems, thanks to the well-designed mounting hardware and unusually comprehensive instructions. Once the camera is in place and connected to its Ethernet cable and (where necessary) the power supply module, all that remains is to open a browser window on a network PC and enter the camera's IP address.

By default it set to Class A addresses (10. x. x. x), which can be a nuisance on systems and networks configured for the more common Class C addresses (192 to 223. x. x. x) but it's a simple enough matter to set up a temporary connection in Windows 2000, XP, Mac OS or Linux and change the IP from the camera's setup menu.

After entering the required password and PIN a setup wizard is launched. Once that has been completed the viewing window opens displaying a live image from the camera plus a set of menu 'softbuttons' down the left side of the screen and a row of mode buttons and drop-down menus along the top.

Menus are essentially hyperlinked web pages, which means the way they are structured and work are a little unusual, compared with conventional OSDs and networked devices that use their own dedicated software.

Menu buttons are colour coded. This is clearly intended to assist the installer and end user but it is not very well explained in the many and various instruction manuals that accompany the camera and they can appear quite confusing to begin with.

### Multitude of functions

Although most options are reasonably intuitive we do not have the room to provide more than a snapshot of what it can do and some time should be taken to read through the larger of the operations manuals, which provides a more in depth explanation of the camera's multitude of functions. At the top of the stack of menu buttons there are two grey-coloured buttons for 'Admin' and 'Setup'. These delve deep into the camera's configuration settings and at first it can be quite difficult to find your way around the options.

The Admin Menu, for example, is split into no less than 14 sections, each with several sub menus, covering such diverse topics as on-line News (via web link) from the manufacturer to more routine tasks concerned with camera operation. The Setup menu is slightly easier to get to grips with and there are just two sections, labelled Image Control and Event Control, which lead to a further dozen or more sub menus dealing with camera control and scheduling.

Button functions can be changed by holding down the shift key and clicking the mouse. This opens a set of drop-down menus with lists of options. On our review sample a set of six red coloured buttons have been set to deal with a specific configuration issues, such as arming and recording, enabling audio, frame-rates and quality mode. A set of three yellow buttons, labelled UC (User Click), LED's Blink and Play Sound, store an image or video, change the blink rate of the LEDs mounted on the front of the camera and replay a pre-recorded audio clip through the camera's built-in speaker.

Three Green buttons are used for Playing Last Event, displaying the Event List and Event Watcher, which displays the last recorded event in an inset window. The last group of blue coloured buttons



PHOTOGRAPHY: TOM DOBBIE

## Factspanel

<b>Equipment:</b>	Mobotix M22M-Sec-D22
<b>Manufacturer:</b>	Mobotix AG
<b>Address:</b>	H.O. Luxemburger Strasse 6 67657 Kaiserslautern Germany
<b>Telephone:</b>	UK: 0870 850 3343
<b>Fax:</b>	+49 (631) 3033 190
<b>Email:</b>	sales@mobotix.com
<b>Available from:</b>	Mayflex, Norbain, VIS, Gardiner Security
<b>Trade price:</b>	£550.00
<b>CE Mark awarded:</b>	Yes
<b>Mono or colour:</b>	Colour (mono available)
<b>Lens:</b>	22mm (other available)
<b>F no:</b>	F=2.0
<b>Vertical angle:</b>	67 deg
<b>Horizontal angle:</b>	90 deg
<b>Min distance:</b>	30cm
<b>Interchangeable lenses:</b>	Yes
<b>Pick-up device:</b>	CMOS
<b>Resolution:</b>	1.3 mega pixels (1280x960)
<b>Sensitivity:</b>	1lux t=1/60 sec, 0.05lux t=1/1sec
<b>Weather resistance:</b>	IP65
<b>Size in mm:</b>	135 x 130 x 200
<b>Temp Range:</b>	-30 – +60 deg C
<b>Power supply voltage:</b>	PoE IEEE 802.3AF compliant
<b>Memory:</b>	64MB
<b>Audio:</b>	Bi-directional
<b>Storage:</b>	Standard Windows share, NAS or Linux NFS
<b>Max current consumption:</b>	150mA
<b>Warranty:</b>	1 year

control the digital zoom, setting the Default View and loading the Default View. Finally at the bottom a Help button opens a web page that briefly describes the main functions and operation of the display window. At the top of the screen, from left to right, are buttons for switching between live and playback view, single or multi-screen display, showing a still from the four most recent alarm events and a pair of drop-down menus for setting frame rate (10 mins to 30fps), display mode, image size, brightness, contrast, backlight, colour, sharpness etc. Switching to playback mode changes the top buttons to a set of VCR like playback controls.

### Performance

At the highest quality/size setting (Mega 1280 x 960) the picture reveals an impressive amount of fine detail, equal to and in most cases better than most top-end analogue cameras. Even at the lower settings (VGA 640 x 480) it still out-performs most mid-range cameras with crisp, bright and

accurately rendered colours and a highly responsive exposure system.

Low light performance is also surprisingly good and at very low levels it switches automatically to a 'night' mode, though there is a marked increase in noise and a significantly reduced frame rate; nevertheless the image remains useable down to near dark conditions. The only visible sign that it is not a conventional camera is the slightly narrow contrast range, which occasionally shows up as very slight pixellation in highly coloured and poorly lit areas of the image. There is almost no loss of quality on archived recordings, which retain all of the detail and characteristics of a live image. Image stability is excellent and the M22M resisted all attempts to upset it with the *Security Installer* rubber mallet.

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

## What the manufacturer says ...



The Mobotix M22M cameras generate and store up to 30 high-resolution live images per second, including sound, and include a wall mount with a concealed cable duct.

These new models include all the functions of the preceding Mobotix cameras as standard.

Image improvement and true-colour functions have been integrated into the M22M camera series to enable the devices to generate high-contrast, true-colour images even when the lighting conditions are less than perfect.

The night version cameras are equipped with a black-and-white sensor and an infrared lens to achieve optimum light sensitivity.

The camera is IP65 and weatherproof from -30 °C to +60 deg C and accommodates a microphone and a speaker, supports bi-directional audio and records lip-synchronous sound. The cameras also support SIP, Voice over IP for Bi-directional conversations, useful in applications like door access. Power is supplied via the network line

using standard Power over Ethernet or the Mobotix network power adaptor. No additional heating is required, even during the cold months of a European winter.

Digital zoom, pan and the freely definable exposure windows, combined with other functions, reduce storage requirements to a minimum.

Mobotix technology also takes advantage of motion recognition and event-controlled frame rates to reduce the load on the network, which means that image data is not transmitted unless something actually changes in the picture.

The camera software also offers the option of using the FTP process or an external ring buffer to record the images. Customers can use any standard Internet browser for playback and simultaneous viewing of up to 30 cameras.

The series also includes an advanced alarm management system for pre- and post-alarms.

Image formats range from CIF (320x240 pixels), VGA (640x480 pixels) to a megapixel resolution (1280x960 pixels).

### Productassessment

Design and design features	*****
Circuitry and components	*****
Ease of installation and wiring	*****
Range and variety of functions	*****
Technical advice and backup	*****
Value for money	*****

Grading Key: Outstanding \*\*\*\*\* Very good  
 \*\*\*\*\* Above average \*\*\*\* Average \*\*  
 Below average \*

### Overallassessment

It's difficult to know where to begin with this remarkable camera, suffice it to say the M22M capably illustrates the direction that IP camera technology is heading. What began as a novel solution for a fairly narrow range of surveillance applications is now looking increasingly likely as the eventual replacement for cabled camera systems, and on the evidence of the M22M that now includes difficult and demanding situations where image quality, low-light performance and reliability are critical factors.

Picture performance is simply excellent but it is the range and variety of functions that make it so difficult to pigeonhole.

It goes far beyond anything that is currently available in the hard-wired camera market and sets a new benchmark for IP products; however, that is arguably its only Achilles' heel. Of necessity the setup menus are complex and unusually extensive and although the camera works admirably well straight out of the box on the default settings, fully customising it to a specific application is likely to be a lengthy and demanding job.

It is the range and variety of functions that makes the M22M so difficult to pigeonhole

The M22M Sec D22 IP camera from Mobotix sets a new benchmark for IP products...

