DVMS

LINEARIS™

The hybrid solution ideal for multi-site installations

MARCH networks

LINEARIS™

LINEARIS is a hybrid solution capable to offer the same quality and reliability of the most performing SPECTIVA, with a simple and intuitive interface.

LINEARIS replaces multiplexer technology with a new hardware architecture: 4 DSP (Digital Signal Processor) in parallel ensure deterministic performances for each video input.

LINEARIS is available in the 6 or 16 analog, or 16 universal inputs configurations.

Flexible multi-stream recording

The LINEARIS DVMS can adapt the type of recording to the different situations it detects, by automatically modifying each camera's recording speed and quality. Each single camera can be programmed for different combinations of speed, sensitivity, and motion detection with or without external alarms. The use of separate sectors allows for reduced disk space for digital archiving, improving recording flexibility and enabling faster image handling efficiency.

Pentaplex functionality

LINEARIS offers recording, live view, playback, archiving and transmission of audio and video functions simultaneously. The hardware platform, thanks to the new generation hardware, ensures safe and stable operation on all functions regardless of system activity, current user or content.

Embedded technology

The choice of an embedded operating system ensures maximum efficiency, stability and reliability. LINEARIS is unrivalled in terms of networking and archiving recordings and is compatible with a wide range of hardware peripherals.

Integrated Audio and Video Web server

Every LINEARIS has an integrated web server, VisionWeb. This enables both live view and playback of audio and images, and PTZ function control through any TCP/IP connection via Internet Explorer, without the need for additional software. The video quality is dynamically corrected via MPEG4 Adaptive technology; this provides excellent results even when there is limited or inconsistent bandwidth.

On more stable connections the MPEG4 Main Profile compression algorithm, managed at hardware level by the latest generation DSP, demonstrates the power and quality of LINEARIS DVMS.

High-end controls

Network camera control
With yet another level of power and flexibility, the latest versions of LINEARIS enable control over all cameras on the network. It is now possible to control movement, view and record video entirely from the LINEARIS unit.

Pan, Tilt & Zoom - PTZ
All the PTZ controls, which are an integral function of LINEARIS, are exceptionally responsive with hardly any delay. Cameras with PTZ functionality can be controlled by the server or by any workstation on the network. All movements can be easily controlled by dragging the mouse across the video, by using the graphic PTZ panel interface or with the joystick. PTZ, Focus and Iris controls are supported. Both tour and presetting of PTZ cameras are available and can be re-applied or configured either remotely or on specified events.
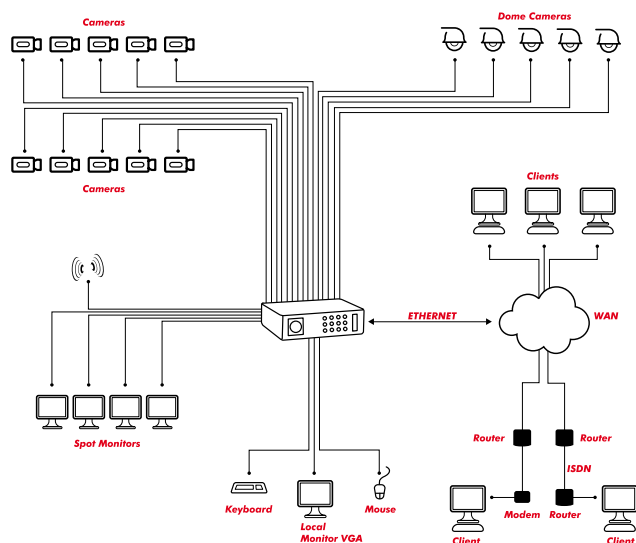
Dynamic DNS MyDVMS
MyDVMS is the new dynamic DNS system fitted in all March Networks' DVMS: making possible direct DVMS connection to the Internet, without requiring a static IP address.

Full-screen mode
No more small windows! With LINEARIS it is possible to view and control the cameras in a single view or in 4, 9 or 16 frames (structured to suit the user). The system can be switched from the normal window to full screen mode with a single click. Easy to use, PTZ control via mouse or joystick is available in both modes.

Virtual Zoom
LINEARIS offers an integral digital virtual zoom, for the views of fixed cameras. Virtual zoom is available for live pictures as well as during playback. This function provides an excellent enlargement of the real-time image across all cameras.

Image printing
LINEARIS can retrieve and print any image saved on a local or network peripheral. It is also possible to choose the resolution of the image to be printed.

Loopthrough
LINEARIS has video loopthrough outputs in the RM and MINI (6).

Image Retouching
Each recorded image can be digitally enhanced. There are tools to modify gamma, saturation, sharpness, blur, contrast, brightness as well as equalize, invert, flip, reverse and mosaic effects. There is also a digital zoom function.

Multiple format image export
Each image or sequence of live or recorded images can be exported at any point without compromising the recording. The images can be exported as single JPEG or BMP files. The single frames can be further modified (brightness, contrast, saturation, sharpness, digital zoom etc.) using a retouching program prior to exporting. Files will be exported at the recording resolution. Video sequences can be exported (with authentication) in AVI and MP4 format. The material can be exported by any workstation loaded with March Networks' client to an archiving peripheral connected to the network. A comprehensive export tool is also available on the local LINEARIS interface. AVI video clips can be reproduced on Windows Media Player.

Password control
Complete password control enables the administrator to manage operator permissions for each function, camera and time slot, ensuring powerful and flexible access management. The system is now even safer thanks to the introduction of a right of access check with certificates encrypted on a Smart Card.

Multiple analogue screens.
LINEARIS can be connected to a VGA spot monitor and up to 16 CCTV standard analogue spot monitors via the BNC loopthrough outputs.

Flexibility – Multi-Encoder technology
LINEARIS supports multi-encoder technology capable of activating - in real time and on each channel - multiple stream compressions for each camera, thus ensuring extremely flexible and optimized management of the video flow to the clients connected. Each encoder can be configured in terms of frame rate, quality and resolution and then addressed to different platforms for different functions (e.g. 2 Mbit in D1 for real-time recording, 256 Kbit CIF for ADSL connection, 10 Kbit QCIF for transmission towards GPRS networks).

Hardware compression

MPEG4 Main Profile

MPEG4 is the most widespread compression technology on the market today. The MPEG4 Main Profile algorithm provides the best compromise between quality and bandwidth. MPEG4 Main Profile reduces the bandwidth used by 50-90% over the traditional compression algorithms like Wavelet and MPEG2, delivering equal or better quality. The advantage of MPEG4 Main Profile consists in its capacity to codify the video using multiple profiles rather than a single standard profile. Each profile, made up of numerous software elements that improve the potential of the algorithm, is used to mark out different objects thus applying them a dynamic, selective and more specific compression, so as to deliver an exceptional visual quality and a significant reduction in space. MPEG4 Main Profile, applied to March Networks' DVMSs, represents the apex of of current MPEG4 technology.

MPEG4 Adaptive

MPEG4 Adaptive is a revolutionary discovery by March Networks for dynamic manipulation of video compression and transmission. In terms of variable conditions such as available bandwidth, subject content and movement, it ensures the maximum possible quality. MPEG4 Adaptive is a proprietary algorithm for assessing available bandwidth, capable of dynamically adjusting the MPEG4 compression profile. Based on continuous feedback from the network and a heuristic analysis in real time, the new MPEG4 Adaptive algorithm improves video quality and optimises the frame rate, adapting it to the amount of available bandwidth and image content. MPEG4 Adaptive technology makes manual compression adjustment a thing of the past, by selecting the optimum configuration in real-time.

Compression hardware
The exclusive implementation of compression hardware allows LINEARIS to process a higher number of images at a higher resolution from sixteen unsynchronised cameras in real-time and to transmit them live or play them back with surprising video quality.

The Main profile of the MPEG4 algorithm contains a greater number of software elements. This delivers exceptional quality and unrivalled compression.

Simple   **Core**   **Main**
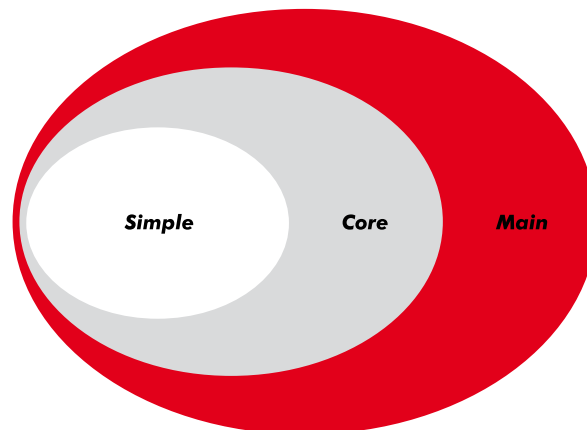
Real-time Motion detection

Real-time Motion detection

Motion Detection is integral and it can be configured for each camera individually by setting precision levels and sensitive areas with just a few clicks.

Camera activity display

LINEARIS DVMS "active" view automatically displays only those cameras currently recording. A view of 4, 9 or 16 panels is automatically selected to show all the active cameras. This function is also available in full screen mode.

Pre-Motion and Pre-Alarm

LINEARIS can automatically record 4 seconds of video and audio pre-events (movement or alarms). No specific setting is required and pre-event recording neither affects the performance or any other system function.

A complete software suite

Networking

LINEARIS' networking is exceptionally versatile and can be interfaced via any TCP/IP network infrastructure (LAN, WAN, PTSN, ISDN, xDSL, Microwave Link, etc.). An unlimited number of LINEARIS servers can be placed on the network and be accessed by one or more PC clients. All LINEARIS DVMSs can operate both standalone and as network servers, while system performance levels are maintained, supporting as many as ten users connected to the network simultaneously.

A unique client platform

The March Networks' software suite is compatible with all March Networks' DVM Systems. The software's versatility allows each individual workstation to control the different models and versions of DVMSs.

Open systems provided by RTP/RTSP protocols.

Standard real time transport and streaming protocols RTP/RTSP have been implemented on the latest versions of March Networks' products to answer to a well known demand of integration (RTP/RTSP protocols provide "open" systems and perfect compatibility). Data transport is also enhanced by a controlprotocol (RTCP) to allow monitoring of data delivery to large multicast networks in a scalable way, and to provide minimal control and identification functionalities. March Networks streaming technology has been tested with many different clients and proved to be perfectly compatible with the most known video players capable of displaying streamed medias, such as VideoLan, Mplayer or Apple QuickTime.

ActiveX Developer's Kit

The ActiveX kit for LINEARIS DVMS developers is an open platform for a third party peripheral interface or for the development of proprietary client applications. All March Networks' DVMS features are available across highlevel APIs.
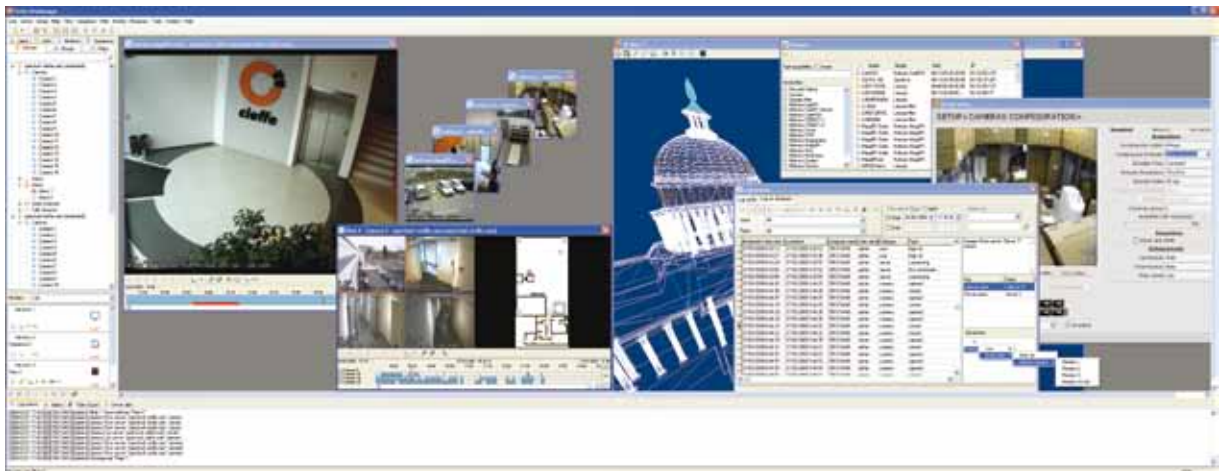
Direct visualisation of alarms via the network

Each LINEARIS can immediately send alarms to the connected clients through SiteManager. Video and audio can be sent accordingly to different criteria (ie: alarm type or kind of connected client).

Remote control and Audio/Video transmission

LINEARIS client-server architecture supports remote reproduction of live or recorded audio and video, server control and configuration as well as upgrading, over a TCP/IP network. There is no difference in functionality either remotely or by local interface.

Support for Multi-brand Multi Megapixel Network Cameras

The latest LINEARIS versions are even more powerful and flexible, and ready for multi brand network camera management. With LINEARIS it is possible to supervise motion, visualise and record any native IP camera, or any camera encoded by supported encoders, with different algorithms: H.264, MPEG4 Main Profile, MPEG4 and JPEG.

VIRTUAL PTZ FEATURES

LINEARIS supports cameras with Fisheye and Panomorphic lenses

Fisheye lenses have a very wide-angle, and are designed to capture a large hemispheric view, while panomorphic lenses, recently introduced onto the market, deliver similar results to fisheye lenses. However they use very different image management principles: still with the aim of capturing a scene with an angular resolution of 180°, panomorphic lenses apply a selective compression to the image in order to increase its resolution in peripheral areas. The aim of this functionality is to gain a higher quality image than the typical panoramic view, which will inevitably suffer from the usual distortions.

Recorded video

LINEARIS can record scenes with an angular resolution of 180° and a circular one of 360°. The DVMS applies a perspective correction to the recorded material, in real-time or afterwards. The operator is able to define specific zones within the Megapixel image captured by the lens, and acquire them in real-time while applying the perspective correction directly. The operator could also choose to record the entire view and analyse and correct the distorted areas during playback, with a facility to zoom in to the video.

Live view

LINEARIS also provides the same benefits during the live view, applying the perspective correction to the areas that the operator wishes to frame thereby allowing to move within the video using PTZ commands and zooming in on the important detail. The risk of detail loss is reduced by the ability to record continually over the entire monitored area, independently from the selected live view.

Easy to use

Easy to use

The LINEARIS Graphical User Interface (GUI) has been designed with simplicity and efficiency in mind: it supports operation by mouse or joystick.

Rapid start-up

A simple auto-configuration procedure enables almost immediate use of the LINEARIS units on installation. LINEARIS automatically recognises the number of cameras connected, disks and PTZ protocols, etc. The speed of recording and the disk space are equally divided among the various cameras during the quick start-up. Alternatively, the simple set-up wizard can be used to balance the different configurations of time, frame rate, quality and disk space, thereby rapidly obtaining the most suitable profile for the required use.

VCR Controls

The LINEARIS video playback is highly functional. Forward and reverse Playback frame by frame, at normal speed, 2x, 4x, up to 512x, from any point in the recording. Recordings or the live view can be played in full screen.

Video Text Insertion

Text input from peripherals like POS terminals, ATMs, petrol station fuel pumps, etc., may be captured together with the video recording for more comprehensive archiving. This data is linked to the recorded frames in order to enable searching within the film segments for specific text.

Quick and easy scene search

LINEARIS has a simple point-and-click interface to view the images recorded chronologically, subdivided by camera and organised along a dynamic timeline. Images can be retrieved in a few seconds: a click on the desired camera opens a window showing the relative view at high resolution, without interrupting the recording. The user can modify the scale of the timeline from weeks into seconds. By doing this it is possible to locate an exact instant from months of recording. It is also possible to specify a sensitive area, identified in previous recordings, on which to train any of the cameras. The results can be viewed in graphics with different colours to highlight different levels of movement.

Unlimited storage

Multi-stream storage

All the video recorded by LINEARIS is archived online. All video material, regardless of duration, is instantly retrievable thanks to the efficiency of the archiving system. The search function's graphics make searching through months of recordings easy. Search queries can be in terms of time and/or Prime and Alarm sector reference.

Asymmetric Encryption

All March Networks' DVMSs use an asymmetric encryption system (public and private key) with keys from 128 to 4096 bit. The archived video signal is encrypted and linked to certificates stored on smart cards. Only the combination of an enabled user and a physical external certificate allows the recorded data to be viewed.

Optional RAID 5 data protection

LINEARIS can be configured with external RAID 5 fault-tolerant storage system. This solution eliminates the need for continually backing-up data and prevents loss of material and slower function due to hard disk errors.

Optional, external mass memory

The latest generation of LINEARIS has integral support for archiving on external peripherals.

This approach opens new possibilities for independent, expandable and transportable storage, which may be connected to LINEARIS at any moment, at a reasonable cost. Good examples of this new function are the ability to change archiving requirements, examining content by third-party investigative activity and making rapid copies.

Alarms

Alarm inputs/Relay outputs
LINEARIS includes as many as 16 totally programmable and remote controllable alarm inputs/outputs.

I/O expansion
For more demanding requirements March Networks has developed I/O USB expansion cards allowing for the connection of up to 32 opto-isolated inputs and 32 relay outputs for each LINEARIS. The USB interface supplies the required connection and power, with no need for any other equipment.

Alarm transmission via software
Each LINEARIS unit can be equipped with alarm interface software run by the ActiveX Developer's Kit. This interface enables communication with third-party systems such as access control, video matrix commuters etc.

Technical data

LINEARIS™

	LINEARIS RM	LINEARIS LE	LINEARIS MINI
Video inputs	16 (analog or IP)	16	6
Loop through	Yes	No	Sì
Audio channels	8 mono	1	1
Spot monitors	Opzional	Sì	Optional (via network)
Audio channels (bi-directional)	1	1	1
Alarm inputs (optoisolated)	16	16	8
Auxiliary outputs (relay)	16	16	8
Operator interface	VGA	VGA	IP
Internal storage archive	Up to 1TB	500 GB	Up to 160 GB
Raid5 archive with hot swap disks	Yes - external	No	No
Recording speed (ips)	100/120 IPS* @ D1	100/120 IPS* @ CIF (16)	100/120 IPS* @ CIF
Resolution	Megapixel, D1, 2CIF, CIF, QCIF	D1, 2CIF, CIF, QCIF	D1, 2CIF, CIF, QCIF
IPS per camera	From 1 IPS to 25/30 IPS*	From 1 IPS a 25/30 IPS*	From 1 IPS a 25/30 IPS*
Recording compression algorithms	MPEG4 Main Profile	MPEG4 Main Profile	MPEG4 Main Profile
Recording compression algorithms	MPEG4 Main Profile MPEG4 Adaptive	MPEG4 Main Profile MPEG4 Adaptive	MPEG4 Main Profile MPEG4 Adaptive
Multiencoding system	Yes	Yes	Yes
Ethernet ports	Gigabit	10 / 100 Mbit	10 / 100 Mbit
USB port	Yes (v2.0)	Yes (v2.0)	Yes
Serial interface	Via USB	RS.232	RS.232 / RS.485
Keyboard / Mouse port	PS/2	PS/2	No
Operating system	XP Embedded	XP Embedded	Linux Embed. on flash memory
Power supply	110 / 220 VCA ± 10%	12 VDC ± 5%	12 VDC ± 5%
Power consumption	Up to 160 W	60 W	30 W
Operating temperature	5 - 50 °C	5 - 50 °C	5 – 55 °C
Relative humidity	8 – 90% non condensing	8 – 90% non condensing	8 – 90% non condensing
Weight	20Kg	7,4 Kg	2,3Kg
Dimensions	435w x 550d x 177h mm	430w x 410d x 65h mm	230w x 190d x 64h mm

* PAL/NTSC

2 year warranty

PTZ protocols supported (via RS232/422/485)

Vicon, Sensormatic SpeedDome/DeltaDome, Philips Autodome, Panasonic Standard & Extended, Star Micronics, Pelco (D-Protocol), Pelco (P Protocol), Kalatel Cyberdome, JVC TK-C67x Series, Alec Dragon, Samsung, VCL (VCLTP Protocol), Ernitec (ERNA Protocol), Vision (360 Protocol), Ultrak Maxpro, Hitachi, Sanyo and others on request.

The latest technical information about March Networks' products is available for download from March Networks' website: www.marchnetworks.com

March Networks is continuously in research and development and therefore reserves the right to alter specifications and prices without notice.
For precise information, please contact your March Networks' representative. Subject to change in design and specifications. Subject to error.

North America ———— 1 800 563 5564
Latin America ———— +1 613 591 8181
Europe, Middle East and Africa ———— +39 0362 17935
Asia Pacific ———— +61 1300 089 419

www.marchnetworks.com

March Networks EMEA
Via Lavoratori Autobianchi, 1
Edificio 23
20033 Desio - Milano - ITALY
Phone: +39 0362 17935
Fax: +39 0362 1793590

March Networks
Corporate Headquarters
303 Terry Fox Drive
Ottawa, Ontario - CANADA K2K 3J1
Phone: +1 613 591 8181
Fax: +1 613 591 7337

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