System-X Matrixes

The System-X matrixes provide the video switching in small, medium and large CCTV installations. The matrixes are ideal for installations covering around 10 cameras all the way up to 1024 cameras. Similarly, the matrixes can accommodate from just a few monitors all the way up to 512 monitors. The system can be expanded whenever needed.

The matrixes provide text insertion including camera texts as well as alarm and status information.

All communication between the matrix and peripheral equipment such as keyboards, telemetry receivers and alarm I/O devices is done over a LON network. The use of the LON network offers a number of advantages such as configuration of all equipment from one point, using a laptop PC, free routing of the control cabling as well as the availability of standard network components such as repeaters, routers and converters.

The System-X matrixes can be programmed for automatic operation by using macros and sequences.

The daily operation of the system is done via the ergonomically designed keyboard or via activated alarms. System-X features an advanced handling of alarms which can be generated from simple door contacts, access card readers, intruder detectors, fire detectors, light control or more advanced alarm detectors, such as video movement detectors. Up to a total of 1024 alarms can be handled by the matrix. Furthermore, it has the ability to activate up to 1024 auxiliary outputs, such as lights, gates and other devices.

The System-X matrixes are available in four different versions:

Designation	Description
M1608AX	Video matrix, 16 camera inputs, 8 monitor outputs
M3208AX	Video matrix, 32 camera inputs, 8 monitor outputs
M3216AX	Video matrix, 32 camera inputs, 16 monitor outputs
M3216XX	Video matrix for expansion only, 32 camera inputs, 16 monitor outputs, no BNC connectors
M6432AX	Video matrix, 64 camera inputs with sync loss detection, 32 monitor outputs
M6432BX	Video matrix, 64 camera inputs with sync loss detection, 32 monitor outputs, for expansion beyond 64 cameras
M6432XX	Video matrix, 64 camera inputs, 32 monitors outputs, for expansion beyond 64 cameras and 32 monitors, no BNC connectors
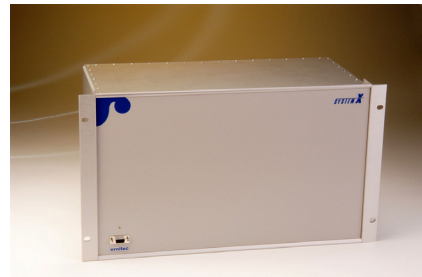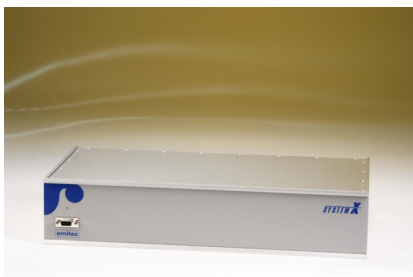
Front view of M1608AX, M3208AX/M3216AX/M3216XX, M6432AX/M6432BX/M6432XX

Features

- Expandable up to 1024 cameras
- Expandable up to 512 monitors
- Alarm handling for 1024 alarm inputs
- Advanced alarm handling
- 20 alarm zones
- Possibility of connecting 300 keyboards
- 1024 programmable macros
- 64 programmable sequences
- Video sync loss detection (optional on M1608AX, M3208AX, M3216AX, M3216XX)
- Remote control of PTZ cameras

Features (con't)

- Text insertion providing camera identification, time/date, status text with alarm messages
- LON Interface for PC control, alarm equipment, keyboards, telemetry receivers, I/O boxes
- PC-based set-up program for system configuration
- Extremely easy matrix expansion by looping camera inputs and monitor outputs by simple ribbon loop cables
- Advanced alarm handling with many automated functions, such as selection of cameras, monitors, pre-positions and macro call

In addition, the installation can easily be altered or expanded at all times, since the communication network is already installed. By using the LON-network, expansion of a system becomes a simple task. Once the cable is in place, any System-X product can easily be connected at any point.

Alarm Handling
The matrix is capable of handling up to 1024 alarms received from the alarm devices over the LON network. The alarm handling is divided into a primary alarm handling and a secondary alarm handling. In the primary alarm handling, the installer defines one camera that will be displayed on a monitor. Up to four monitors can be assigned to each alarm so that if one monitor is busy with an alarm, the alarm camera will be diverted to another monitor.

The primary alarm handling also defines how the alarm is cleared, either automatically when the alarm goes off, manually by the operator or automatically after a time-out period.

The secondary alarm handling activates a macro thereby providing a degree of flexibility in the alarm handling. For example it is possible to select any number of cameras, pre-positions, relay outputs etc.

Alarm Zones
The matrix features 20 alarm zones which can be enabled or disabled automatically depending on the time and weekday in intervals of 30 min. Each alarm can be assigned to any of the 20 alarm zones. Typically, all alarms on one floor are grouped in one alarm zone. The alarm zone is then enabled automatically at the end of a working day.

System Expansion
The matrixes can be combined to build a system with up to 1024 cameras and up to 96 or 512 monitors. The maximum number of monitors is dependent on which matrix is used as building block. If the M3208/M3216 are used the maximum number is 96 whereas if the M6432 is used the maximum number is 512. The expansion is done simply by looping the camera inputs and the monitor outputs to achieve the required system configuration. On all matrixes except the M1608AX, there are 16-way loop connectors which provide an easy way of expanding the system. Three types of loop cables with different lengths are available as accessories.

Programmable Macros
The matrixes feature 1024 programmable macros, which provide an easy way of automating the control of the system. The functions that can be programmed with the macros include monitor selection, camera selection, delays, call presets on a PTZ camera and activation of AUX outputs. The macros can either be started manually by an operator or automatically from an alarm. The macros can also be activated when a user logs in on a keyboard. Please note that the number of macros does not increase when expanding a system.

Programmable Camera Sequences
The matrixes feature 64 programmable camera sequences. The sequences allow the programming of a series of camera selections with individual dwell times. The sequences can be executed on any monitor selected by the operator.

Installation Software
The matrix and all other components in a System-X installation are configured from the PC-based software, NodeManager. The PC is connected to any point on the LON network through one of the two available interface adapters (see accessories under specifications). From this point, all connected equipment can be configured easily.
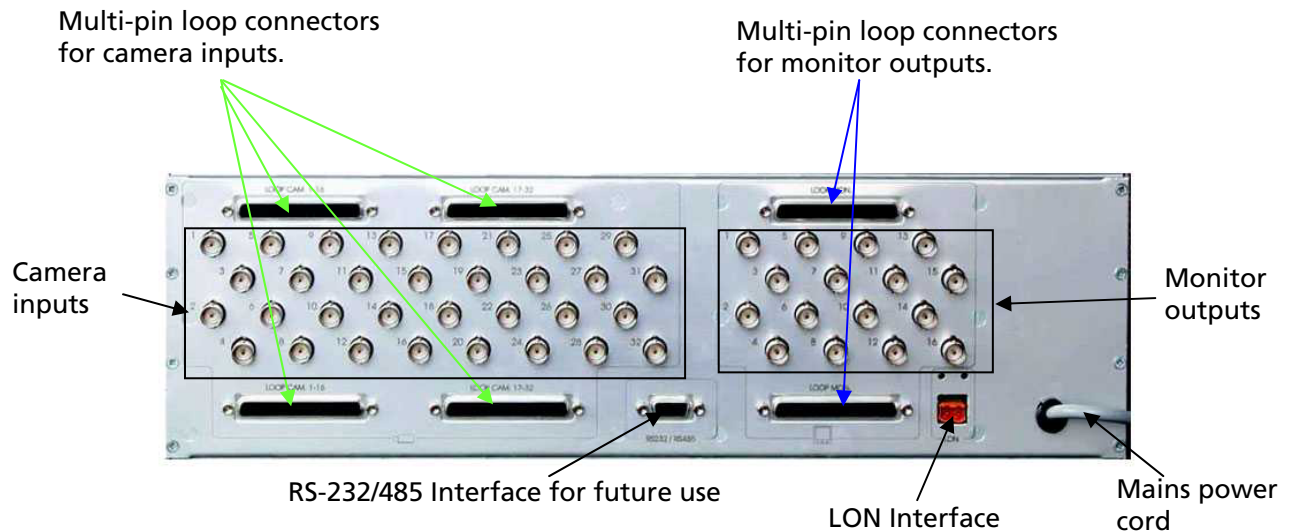
Text Insertion
The matrix provides text insertion at the top and bottom of the video image. The information at the top of the image includes alarm and status messages. The information at the bottom of the image includes camera text and time and date. The matrix has a built-in sync generator, which ensures that text can be inserted even when there is no video signal available.
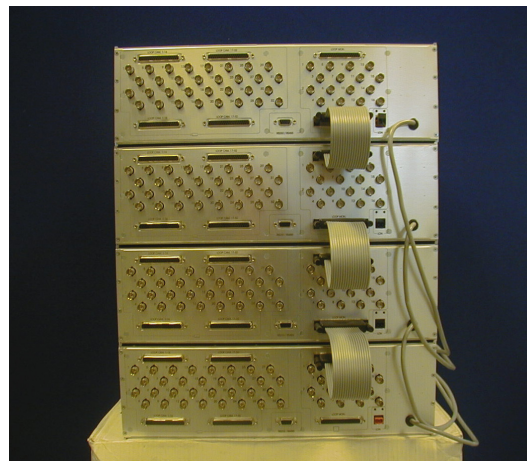
Video sync loss detection
The matrixes with 16 and 32 camera inputs can be fitted with an optional video sync loss module, M32SYNX, which will provide an alarm in case any of the video inputs are lost, e.g. if the cable from the camera is cut. This function is built-in as standard on the matrixes with 64 camera inputs.

Specifications

Functions	M1608AX	M3208AX	M3216AX	M3216XX	M6432AX	M6432BX	M6432XX
Max. camera expansion	1024						
Max. monitor expansion	96				512		
Programmable macros	1024						
Camera sequences	64						
Handling of alarms	1024						
Alarm zones	20						
Alarm text	20 characters						
Camera text	20 characters						
Sync loss detection	Option (M32SYNX)				Standard		N/A
Video specifications							
BNC connectors	Yes			No	Yes		No
Loop connectors	No	Yes					
Video standard	PAL / NTSC						
Video input signal	1 Vpp						
Input termination	75 ohm or Hi-Z, selectable						
Bandwidth	10 Hz to 12 MHz						
Crosstalk, input-to-input	< -60 dB				< -55 dB		
Noise, weighted	< -75 dB						
Chrominance delay	< 6 nsec.						
K-rating (2T pulse/bar)	< 0.4%						
Differential phase	< 0.8°						
Differential gain	< 1.0%						
Luminance non-linearity	< 1.5%						
Interfaces							
Control interface	LONWORKS 78 kbit/s, FTT-10A						
Environmental specifications							
Power supply	230/115 VAC, Auto-Sensing						
Current consumption (230/115 VAC)	75 / 150 mA		105 / 210 mA		325 / 650 mA		150 / 300 mA
Operating temperature	0 – 40 ˚C						
Humidity	< 85 %						
EMC	EN 50081-1, EN 50130-4						
Safety	EN 60950						
Dimensions (H x W x D) excl. connectors	88.5 x 426 x 214 (19", 2 HU)	132.5 x 426 x 214 (19", 3 HU)			266 x 433 x 208 (19", 6 HU)		
Accessories							
M32SYNX	32-way sync loss detection module for installation in matrix				N/A		
XLOOP350	N/A	16-way loop cable for looping cameras and/or monitors when expanding a system. Length = 350 mm					
XLOOP675	N/A	16-way loop cable for looping cameras and/or monitors when expanding a system. Length = 675 mm					
XLOOP1100	N/A	16-way loop cable for looping cameras and/or monitors when expanding a system. Length = 1100 mm					
NM-PCMCIA	NodeManager installation software with LONWORKS PCMCIA card for a laptop PC						
USB-LON	LONWORKS adapter with USB connector						
Minimum requirements for installation PC							
Operating system	Windows 2000/XP						
Processor	Pentium III						
RAM memory	128 Mb						
Free HD capacity	200 Mb						
Video resolution	800 x 600, 1024 x 768 recommended						
Other requirements	CD-ROM drive, Internet Explorer ver. 5.5 or higher (included with installation software)						

Multi-pin loop connectors for camera inputs.

Multi-pin loop connectors for monitor outputs.

Camera inputs

Monitor outputs

RS-232/485 Interface for future use

LON Interface

Mains power cord

Rear view of M3216AX, 32 x 16 Video Matrix

Example of how to build a 128x16 matrix by using the loop cables

LONWORKS, also known as LON, is a communication network. As opposed to TCP/IP (Ethernet), LONWORKS is designed for control applications such as building automation, transportation, home automation, security and other systems. For more information about LONWORKS, please refer to www.echelon.com.

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