

Gyyr Products Application Guide

GYRTM

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electronic
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beyond
the **BOX**

CONTENTS

FORWARD	vii
INTRODUCTION TO ODETICS AND GYJR	viii
HOW GYJR SUPPORTS SALES	x
Product Pricing Procedure	x
Product Warranties	x
WHY BUY GYJR?	xi
TIME-LAPSE RECORDING	1
VIDEO RECORDING PROCESS	1
TIME-LAPSE RECORDING	1
FRAME RECORDING VERSUS FIELD RECORDING	2
Playback	3
COMPATIBILITY WITH CONSUMER RECORDERS	4
TIME-LAPSE RECORDER VERSUS CONSUMER VCR	4
Better Resolution	4
Built for Tougher Service	4
CHOOSING VHS TAPE CASSETTES	5
Low-Oxide Shedding	5
Lubricating Quality	6
Low Elasticity	6
TAPE USAGE	6
VIDEO RECORDING FORMATS	7
EVENT RECORDING	7
DIFFERENCES BETWEEN VHS AND S-VHS TIME-LAPSE RECORDING	7
PSEUDO REAL-TIME RECORDING	9
MULTI-CAMERA RECORDING	9
ANALOG SWITCHERS	9
QUAD MULTIPLEXERS	9
FRAME MULTIPLEXERS	9
WHICH SYSTEM TO CHOOSE?	10
VIDEO TRANSMISSION	11
THEORY OF OPERATION	11
Digital, Conditional Refresh	11
Digital, Full-Frame Video Compression	11
TIME-LAPSE VIDEO RECORDERS	12

TLC2100	12
Product Features	12
Options	14
User Benefits	14
When to Recommend the TLC2100	14
TLC2100-SHD	15
Product Features	15
Options	16
User Benefits	16
When to Recommend the TLC2100-SHD	16
 HIGH-DENSITY TIME-LAPSE VIDEO RECORDERS	17
Product Features	17
User Benefits	19
When to Recommend the HD Series	19
TLC2130HD	19
TLC2196HD	19
TLC3168HD	19
 VALUE ADDED VCRS	20
TLC2100-DC	20
Product Features	20
User Benefits	20
When to Recommend the TLC2100-DC	20
DC Variations	20
TLC2100-232	21
Product Features	21
User Benefits	21
When to Recommend the TLC2100-232	21
TLC2100-S16	22
Description	22
Product Features	23
User Benefits	25
When to Recommend the TLC2100-S16	25
System Design Suggestions	25
 MULTI-CAMERA DIGITAL PROCESSORS	26
DQ44/44C	26
Description	26
Product Features	26
User Benefits	27
When to Recommend the DQ44/44C	27

DQ88/88C	28
Description	28
Product Features	28
User Benefits	30
When to Recommend the DQ88/88C	30
DVMD32/32C	31
Description	31
Theory of Operation	31
Product Features	32
User Benefits	34
When to Recommend the DVMD32/32C	34
DIGISCAN PRO SERIES DIGITAL SWITCHERS	35
Description	35
Product Features for Color DSP Models	35
Product Features for All DSP Models	35
User Benefits	37
When to Recommend the Digiscan Pro	37
DIGISCAN DS9	38
Product Features	38
User Benefits	39
Update Rate	40
When to Recommend the Digiscan DS9	40
DIGISCAN DS16C	41
Product Features	41
User Benefits	41
Update Rate	41
When to Recommend the Digiscan DS16C	41
OTHER DEVICES	42
FASTRANS 2004	42
Description	42
FasTrans Format	42
Product Features	42
User Benefits	45
When to Recommend FasTrans 2004	45
5232 ATM TEXT INSERTER	46
Product Features	46
Cables	47
ATM Requirements	47
User Benefits	47
When to Recommend the Text Inserter	47
MP SUPPORTED DEVICES	48
Electronic Cash Registers	48
Automated Teller Machines	48
Computer Assisted Devices	48

MULTILINK	49
Theory of Operation	49
System Requirements	49
Product Features	49
User Benefits	52
When to Recommend MultiLink	52
CONTROLINK	53
Overview	53
Product Features	53
User Benefits	56
When to Recommend ControlLink	56
GYJR VIDEOTAPE	57
Product Features	57
MAINTENANCE REQUIREMENTS	58
REQUIRED MAINTENANCE	58
WHY IS MAINTENANCE IMPORTANT?	58
HOW DO I SELL IT TO THE CUSTOMER?	58
SELLING TIME-LAPSE VIDEO RECORDING	59
WHO SHOULD USE TIME-LAPSE RECORDING?	59
QUESTIONS TO ASK THE PROSPECT	59
TECHNICAL APPENDIX	60
DIGISCAN ALARM RESPONSE	60
DS16D	60
DS9, DS16C	60
REMOTE CONTROL OPTIONS FOR MULTIPLE KEYBOARDS/MULTIPLEXERS	
USING DIGISCAN	61
CONTROL OF A SINGLE DIGISCAN FROM MULTIPLE KEYBOARDS	61
CONTROL OF MULTIPLE DIGISCANS FROM A SINGLE KEYBOARD	62
CONTROL OF A SINGLE DIGISCAN FROM A SINGLE KEYBOARD	62
ADVANCED DVMD32 SETUP NOTES	63
OUTDOOR USE RECOMMENDATIONS	64
FASTRANS TRANSMISSION OPTIONS	65
General Modem Information	65
Compatible Modems	65
Dedicated (Leased) Line Transmission	66
Direct Connect Transmission	67
Basic Overview of ISDN	68
How to Design a FasTrans System Using ISDN	69
Recommended ISDN Terminal Adapters	69
High-Speed Digital Transmission	69
Inter-Model Compatibility	70
Cellular Transmission	70

FASTRANS PTZ NOTES	71
FasTrans Control Data Format	71
Why Use RS-232 Signaling?	71
RS-232 PTZ Systems	72
ControlLink System Compatibility	72
Pelco System Compatibility	72
FASTRANS 2004 DIGITAL STORAGE/ALARM OPTIONS	73
Post-Alarm Picture Storage	74
Pre-Alarm Picture Storage	74
PCMCIA Removable Storage	75
RECORD/PLAY CHARTS FOR 2100/2100-SHD	76
DIGISCAN/2100-SHDUPDATE RATE CHART	77
 APPLICATION NOTES	 78
SINGLE ECR TRANSACTION VERIFICATION SYSTEM	78
MULTIPLE ECR TRANSACTION VERIFICATION SYSTEM	80
BANK SYSTEM	84
SMALL RETAIL SYSTEM	88
MANUFACTURING MONITORING SYSTEM	90
AUTO SPEED SWITCHING USING DIGISCAN AND TLC2100	92
MOBILE RECORDING SYSTEM	94
MULTI-SITE RECORDING USING THE TLC2100-S16	96
MULTI-CAMERA TRANSMISSION USING DIGISCAN AND WIRELESS SYSTEM	98
CENTRAL MONITORING AND RECORDING FROM MULTIPLE SITES USING MICROWAVE/DIGISCAN	100
COMMERCIAL APPLICATION USING DVMD32	105
MUSEUM APPLICATION USING DVMD32	108
MULTIPLE BANK CONTROL SYSTEM	110
CONTROLINK SYSTEM OPERATING A REMOTE SITE WITH FASTRANS	111
CONTROLINK RC KEYBOARD CONTROLLING CAMERAS AND MULTIPLEXER VIEWS	113
 SALES MANUAL UPDATES	 115

FORWARD

The purpose of this manual is to provide a source of detailed information describing Gyyr products and applications that are not found in specification sheets or operator manuals. This manual discusses each product category in detail, including theory of operation, answers to common questions, features/benefits and sales advice. Also included are application notes of common installations with detailed diagrams.

This manual is updated periodically. You may wish to inquire about later versions if the print date is more than a few months old.

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INTRODUCTION TO ODETICS AND GYJR

ODETICS PROFILE

Odetics was established in 1969 as a government supplier of data control and storage products. The company has since successfully migrated 90 percent of its government technology into products that now lead many commercial markets worldwide. This publicly held company (NASDAQ; ODETA, ODETB) reported 1996 annual sales of \$104 million from its two wholly owned subsidiaries and two major operating divisions devoted to digital data management products for the security, broadcast, computer storage and data communications markets. The corporate product line includes digital image processing products, broadcast libraries and communications products.

GYJR, AN ODETICS COMPANY

Gyjr, Inc., a wholly owned subsidiary of Odetics was established in 1971. A leading supplier of time-lapse video recorders and digital image-processing equipment, Gyjr is one of the most recognized names in the closed-circuit television (CCTV) industry. Gyjr is credited with developing the first time-lapse video cassette recorder and continues to be an innovator in the CCTV marketplace. The company has been on the cutting-edge of remote-site management for more than a decade and is now positioning itself as systems integrators. Gyjr's products include time-lapse video recorders, video transmission systems, digital video motion detectors and remote-site management systems.

Since its inception, Gyjr has generated a number of industry technological firsts including the time-lapse recorder with the following features:

- Records more than 24 continuous hours
- Offers multiple recording speeds
- Uses standard VHS cassettes
- Includes a time/date generator
- Records in color
- Works with an internal microprocessor
- Provides an RS-232 port
- Incorporates a built-in 10/12-position camera switcher
- Operates with a 12-Vdc battery
- Incorporates a built-in quad multiplexer
- Incorporates a built-in time/date search option for a time-lapse VHS VCR
- Incorporates a built-in frame multiplexer
- Offers high-density and S-VHS recording together

Additionally:

- Integrates a quad multiplexer with digital video motion detector
- Offers PCMCIA support for a phoneline video transmission system

ODETICS BROADCAST

Nearly a decade ago, Odetics Broadcast delivered the first large automated video library. Two years ago, the company introduced the concept of hierarchical video management (HVM). HVM is a system architecture that combines the archival advantages of tape libraries with the speed and immediacy of video servers. With the entertainment industry generally embracing the HVM concept, Odetics became the leading supplier of these new HVM systems. The video libraries combine automation expertise with innovative software to automate the recording, retrieval, and playing of programming and commercials for broadcast stations, broadcast networks, cable networks and direct broadcast satellite facilities.

ODETICS COMMUNICATION DIVISION

The Communication division is comprised of three main product areas: cellular telephone synchronization, broadband interface and solid-state recorders. Since the company's inception, Odetics has been producing high-reliability tape recorders for use in space vehicle applications. This product line has aggressively moved from tape recorders to solid-state recorders and from the government market to the commercial market. Our recorders fly on virtually every major space mission in the free world and are a significant part of operational, experimental and commercial space exploration programs. In the late 1980s, the Odetics Communications division began designing and manufacturing telecommunications products to meet the industry's requirements for timing and synchronization. In the early 1990s, Odetics Communications invested in faster, larger bandwidth technology by creating line rate conversion products to meet the growing requirement for access. By 1996 a worldwide demand had been created for Odetics' wireless and wireline products, resulting in the establishment of the Odetics Telecom division.

ODETICS INTELLIGENT TRANSPORTATION SYSTEMS

Odetics ITS has assembled some of the brightest, most innovative ITS specialists within the industry. By combining the diverse talents of experienced traffic management professionals from the public sector with some of the best minds from systems, software, hardware, electrical, and civil engineering, we have created a "dream team" with all of the core competencies necessary to help local, state, and national agencies to design and implement the right ITS solutions for their needs.

HOW GYJR SUPPORTS SALES

Gyjr is accessible through sales and marketing-support activities throughout the United States. Gyjr supports demo and sales calls, help with system layout, supplies literature, technical and application notes and sales training.

PRODUCT PRICING PROCEDURE

Gyjr is authorized to give pricing information on Gyjr CCVE products only to authorized Gyjr dealers. Others must refer questions on pricing to the manufacturer representative servicing their area.

PRODUCT WARRANTIES

Time-Lapse Recorders

During the period of twelve (12) months from the date of sale to the original end-user, Gyjr repairs or replaces (at Gyjr's option) all necessary parts, except exterior cabinet, without charge for parts or labor required to make the repair or replacement. Gyjr is the only time-lapse VCR manufacturer that warrants their VCRs for a full year on parts and labor.

Digiquad/Sequencer Products

During the period of twelve (12) months from the date of sale to the original end-user, Gyjr repairs or replaces (at Gyjr's option) all necessary parts, except exterior cabinet trim, without charge for parts or labor required to make the repair or replacement.

Gyjr warranty policies do not cover damage caused by vandalism or natural disasters.

WHY BUY GYJR?

In today's competitive market, it takes something special to be the best. Gyyr always strives to provide competitively priced products with a high degree of customer support. Many of the products offered by Gyyr are truly unique and provide a cost-effective solution to most security needs.

- **Established leader in CCVE and time-lapse video recording**

Gyyr was one of the first volume manufacturers of time-lapse recorders, originating the concept over twenty years ago. Gyyr specializes in video recording and processing, and is focused on providing the most advanced systems available.

- **Unique solutions to security needs**

Gyyr offers the widest variety of time-lapse video recorders. Gyyr has many integrated VCRs with built-in quad processors, highly programmable switchers, time/date search capability, text inserters and more. A true integrated system takes advantage of the functions available and provides greater automation or utility. Many Gyyr products are unique and not available elsewhere.

- **Knowledgeable, courteous sales personnel**

All Gyyr sales managers have extensive technical backgrounds, with installation and applications engineering experience. Sales associates can assist with non-technical sales inquiries.

- **Multi-level customer support**

Gyyr's fully-staffed service center provides repairs, updates, parts sales and technical support. There are many authorized factory dealers and independent service centers worldwide available to repair product. Convenient toll-free support lines provide quick answers to installation or service-related questions.

- **Best warranty on time-lapse recorders**

One year parts and labor on all VCRs, including tape heads. Most TL manufacturers offer 90 days labor and frequently exempt the video heads.

TIME-LAPSE RECORDING

VIDEO RECORDING PROCESS

To understand video recording, compare it to the audio process. Conventional audio cassette recorders use oxide particle tape that is slowly pulled across a stationary tape head. The normal recording speed is 1 7/8 inches per second (ips).

The composite video signal contains much more information than an audio signal. To record the higher frequencies, the tape speed must be faster. It must have a head-to-tape speed that is 100 times faster or around 225 ips. Recording video using the same format as conventional audio recording is impractical due to the amount of tape required. To solve this problem, video recording uses a rotating drum containing video heads, which spin at 1800 revolutions per minute (rpm). The tape is then partially wrapped around the spinning head drum to achieve the high head-to-tape speeds required. This allows the linear tape speed to be set at around 1.3 ips. The format used in consumer and time-lapse recording is known as helical scan recording.

A conventional consumer VHS VCR runs at two or three speeds, running from the start of the tape to its end in two, four or six hours. In video surveillance systems which may run continuously, month after month, it is not feasible to remove and insert a new cassette every two hours. More important, viewing (playing back) the tape to observe monitored activities takes an unreasonable amount of time, even if tapes are played back at high speeds.

TIME-LAPSE RECORDING

Time-lapse recording is a means of recording video information over long periods of time on a relatively small amount of video cassette tape.

In time-lapse recording, the video heads rotate at the same 1800 rpm rate as real-time recording, but the tape moves at much slower speeds. In fact, 960 hours of surveillance video can be recorded on a single T-120 cassette.

In normal real-time video recording, all video head scans (60 per second) are recorded. In time-lapse recording, only periodic head scans are actually written onto the tape.

The Gyyr 2100 series recorders offer many different speeds, up to 960 hours. Faster speeds (12 or 24 hours) are used for more detailed recording of activity, slower speeds (240 or 360 hours) for tape economy and less activity detail.

An alarm condition or another programmed event automatically shifts the recorder from a slow to a fast speed in order to capture the event in greater time detail.

NOTE

Picture detail or quality is **not** a function of tape speed, thus it is maintained throughout the entire speed range.

FRAME RECORDING VERSUS FIELD RECORDING

A frame creates one complete image on the monitor every $1/30$ second at real-time recording speed. Each frame is composed of two fields, each field occurring at a rate of $1/60$ second. An analogy for describing TV frames and fields is a page in a book. The even numbered lines on the page are one field and the odd numbered lines make the other field of the video. When combined or interlaced together, a complete frame or page is created. All consumer VCRs use a frame-recording system.

Since each frame is composed of two fields stored $1/60$ second apart, any subject in motion jitters or blurs on still-frame playback. For this reason, virtually all time-lapse VCR manufacturers use a singular field interval recording method. At any given time-lapse speed, a single field is recorded. A delay occurs before the next field is recorded. The delay or interval is determined by the time-lapse speed. Another benefit of field-interval recording is that it allows a tape to last twice as long as an equivalent frame-interval method.

The following table gives time/field relationships at different tape speeds for the TLC2100.

Table 1. TIME/FIELD RELATIONSHIPS

Tape Hours	Fields Per Second	Time Between Pictures in Seconds
002	60.0	0.0167
012	10.0	0.1000
018	06.66	0.1500
024	05.0	0.2000
048	02.5	0.4000
072	01.7	0.5800
120	01.0	01.0000
168	00.7	01.0420
240	00.5	02.0000
360	00.33	03.0000
480	00.25	04.0000
600	00.20	05.0000
720	00.16	06.2500
960	00.12	08.0000

Playback

When a time-lapse recording plays back at normal or real-time VCR tape speed (2 hours), the playback presents events at a speed faster than real time. For example, when a 72-hour recording plays at the 2-hour speed, events appear on the monitor 36 times faster than real time. The amount of time being compressed is calculated by the time-lapse ratio (TLR). The TLR is calculated by dividing the time-lapse speed by 2. The TLR for the preceding example is 72 divided by 2, thus the TLR equals 36. It is common to play back a time-lapse recording at a faster speed. If any event on the screen calls for greater attention, that event may be reviewed at a slower playback speed.

COMPATIBILITY WITH CONSUMER RECORDERS

In a consumer-type VCR, video heads are positioned so that video tracks on the tape are adjacent, with no space between them. To avoid interference between tracks, the heads are held at different angles so that neither head can record over or read the track of the other. This arrangement is referred to as the unlike-azimuth system. At time-lapse speeds, a standard two-head, time-lapse recorder displays either a noisy or flickering picture.

Gyjr solves the compatibility problem by utilizing multiple tape heads. The two unlike-azimuth heads are used to record at any tape speed, making the tape playable in any consumer-type VHS VCR. When the Gyjr recorder plays back tapes at time-lapse speeds, one of the heads teams with a like-azimuth head to allow noise-free playback.

TIME-LAPSE RECORDER VERSUS CONSUMER VCR

While some of the electronics and hardware of the Gyjr time-lapse recorder are like a consumer VCR, the most critical elements are different. All Gyjr time-lapse VCRs use a heavy-duty, industrial-based chassis and tape drive. The tape heads and motors are designed for performance and long life. These features allow maximum performance over a long period of time. A consumer machine does not last as long under the same operating conditions. Most competitors manufacture time-lapse machines based on a more fragile consumer chassis. Many of the inexpensive time-lapse video-camera recorders (TLVCR) on the market are consumer-based machines that may not last long under the rigorous task of time-lapse recording. Even though there are many differences, a time-lapse tape recorded on a Gyjr 2100 may be played back on any standard VHS-type VCR.

Better Resolution

One difference between a consumer VCR and the Gyjr time-lapse recorder is the high resolution, which shows an impressively better picture. The Gyjr recorder creates a 400-line monochrome picture, compared with a consumer VCR picture of only 240 lines.

Built for Tougher Service

Because the Gyjr time-lapse recorder may operate 24 hours per day, everyday, it is built to be tougher, with more rigid tolerances, for a long, relatively trouble-free life.

While a typical consumer VCR is designed to run approximately 1100 hours before requiring a major overhaul, the Gyjr time-lapse recorders are designed to run at least 8,760 hours before major work is necessary. This performance is achieved if the unit receives the prescribed service quarterly or after 2,190 hours of use, and if the customer uses only Gyjr-approved tape cassettes.

CHOOSING VHS TAPE CASSETTES

The trouble-free performance of a time-lapse recorder depends on the quality and characteristics of the cassette tape used in it.

The Gyyr recorder uses standard VHS tape cassettes, but all tape brands are not the same. Tape cassettes from the following manufacturers are recommended:

- GYYR
- BASF
- MAXELL
- TDK

Although there may be other name brands preferred, years of service experience show these tapes to be reliable and trouble-free. All tape formulations from the approved tape manufacturers are recommended. There is no evidence to support that high-grade tapes wear out the video heads faster.

It is very important to avoid inexpensive tapes. Inexpensive tapes do not have a brand name and are of dubious quality. All VHS tapes must be made by manufacturers who are licensed to do so and must adhere to strict specifications. These tapes are characterized by poor cassette shell tolerances, which are likely to misload and have poor oxide binders that allow excessive shedding. In some cases the shedding is so bad that a tape head can become permanently clogged requiring replacement.

There are three essential characteristics of tape used in time-lapse recorders. They are as follows:

Low-Oxide Shedding

The video recording is stored on a coat of oxides on the tape surface. If oxides are easily stripped by head friction, not only is the tape degraded but the stripped oxides clog the video heads and create harmful dust within the recorder. Oxide shedding is a particular problem in a time-lapse recorder because the video heads continue to spin on the tape surface while the tape is stopped for several seconds.

Lubricating Quality

Compared to the movement in a consumer VCR, the tape is pulled very slowly across the heads of a time-lapse recorder. To avoid degrading both tape and heads, the tape must have low-friction characteristics. Better tapes have lubricating additives that are imbedded with the oxide layer and have a highly polished surface.

Low Elasticity

The tape is heated by friction as it presses against the spinning head. As the leading forks maintain a constant pressure against the spinning head, the tape may be stretched. Tape that is excessively stretched cannot be played on a VCR. Thus, resistance to stretching is an important consideration.

TAPE USAGE

Tapes have a limited life, especially in time-lapse applications. Time-lapse machines apply stress to the tape. The recommendations are not intended to be absolute, but serve as a guideline that can have an important bearing on maximizing the useful life of the video heads.

Table 2. TAPE USAGE

Recording Speed (Hours)	Recommended Passes
02	50
12 to 72	20
120	15
168 to 240	10
360 to 960	05
Pause/One Shot	02

VIDEO RECORDING FORMATS

EVENT RECORDING

Event video tape recorders do not normally incorporate any time-lapse recording circuits. This type of machine records real-time video only under alarm conditions. Most event recorders are constantly in the Record/Pause mode, which reduces the record start delay. Unless the event machine is in a constant pause state, it takes several seconds after an alarm to record usable video. These machines are useful whenever desired events can be identified by alarm sensors.

DIFFERENCES BETWEEN VHS AND S-VHS TIME-LAPSE RECORDING

To understand and appreciate the capabilities of modern time-lapse recording methods, it is necessary to examine the basic concepts behind video signals and how regular VHS recording works.

The color composite video signal has the monochrome (black and white) and color portions of the signal mixed together. On VHS machines, the video signal is separated into the monochrome and color signals for more efficient recording. This is a form of component signaling. (The separated monochrome and color signals are referred to as component signals throughout the remainder of this manual.) During playback, these signals are mixed together to form the composite video signal. Consumer VCRs, as well as all VHS time-lapse machines are limited to 240 lines of resolution for color recording and playback.

The super VHS (S-VHS) format provides higher resolution capabilities and still retains backward compatibility with VHS tapes. An S-VHS VCR produces high-resolution color pictures since the format allows for increased bandwidth (or space) for the monochrome portion of the signal, as well as a higher frequency band. The bandwidth of the color signal remains essentially unchanged. When these two signals are combined, there are approximately 400 lines of horizontal resolution when recording monochrome or color images. Special S-VHS tape must be used to record these higher frequencies.

Although S-VHS machines record and play back regular VHS tapes, it is necessary to use the special S-VHS tape to gain the increased resolution. The S-VHS recorded tapes do not play back in a standard VHS VCR. Prices for S-VHS VCRs are 25 to 35 percent higher than a comparable featured VHS VCR. The S-VHS tape is 2 to 3 times higher priced than the regular VHS tape.

One of the common misconceptions about S-VHS is the use of the Y/C connectors. The S-VHS format incorporates additional Y/C video connectors, allowing access to the component video signal. The Y indicates the Luminance (monochrome) signal, while the C indicates Chroma (color). Handling the signal in the component format minimizes the picture degradation that results from separating and mixing the color and monochrome signals within a video system. For example, a color camera creates a component signal that is mixed back to composite. It then goes to a VCR which converts the signal back to component for recording. On playback, this signal is again converted back to composite to output to a monitor.

Once the signal is converted to composite, the signal cannot be separated without some contamination between the monochrome and color portions of the signal. Poorly processed pictures result in noticeable “Chroma crawl” or “Dot crawl”. In a color picture, fuzzy, moving edges may appear between objects on the screen.

If all devices within the video system utilize Y/C connectors only, then edges are sharper and better defined. A computer VGA monitor produces good color pictures because the signals are in a component-type format.

In a typical color security system, it is impractical to keep all the signals in a component format. If the component signals are combined to composite, it does little good to try to separate them again since there is some contamination. Although some color security cameras have Y/C jacks, it is difficult to find suitable bulk cable. There may be distance limitations when compared to regular coax cable carrying composite signals.

Modern VHS time-lapse recorders have circuits to detect if the incoming video signal is color or black and white. If the video signal is color, then filters are engaged to prevent interference between the monochrome and color component signals during recording. This filter limits the bandwidth of the monochrome signal and the picture is restricted to approximately 240 lines of resolution. If there is no color present, then the VCR allows unrestricted recording of the monochrome signal. This is why most time-lapse recorders produce better horizontal resolution in monochrome than in color. The monochrome resolution is 300 to 400 lines.

Although the S-VHS specification calls for “greater than 400 lines, black and white or color”, monochrome video resolution is better. The TLC2100-SHD exceeds 440 horizontal lines in monochrome. Since the typical VHS time-lapse VCR provides 300 to 350 lines monochrome, the TLC2100-SHD has as much as 33 percent more monochrome resolution.

If picture quality is of utmost importance and losing playback compatibility with VHS machines is not a problem, then S-VHS is a better choice. If compatibility and cost are more important, then choose the conventional VHS.

PSEUDO REAL-TIME (HIGH-DENSITY) RECORDING

This format uses EP reduced track-width tape heads. These heads allow three times as many fields to be recorded per inch when compared to standard track-width heads (SP style). The concept is similar to the consumer VCR (two- and six-hour speed). High-density (HD) time-lapse VCRs have the same EP track-width heads that a consumer machine uses in the six-hour speed.

Like the consumer EP speed, HD recordings have slightly reduced resolution and greater video noise when compared to conventional (regular density) time-lapse recordings. The fastest replay speed takes six hours to review a T-120 tape (eight hours for T-160) whereas regular density allows playback in two hours.

There are however, many advantages to this format. Multi-camera switching applications benefit greatly since a sequence of cameras record three times faster. Most manufacturers offer a real-time 24-hour recording mode (18-hour speed coupled with T-160 tape). This allows recording of ~20 fields per second for up to 24 hours. True real-time recording is 60 fields per second. This speed per mode offers fast enough refresh to catch most activity with a single camera.

MULTI-CAMERA RECORDING

ANALOG SWITCHERS

Analog switchers are the least expensive solution to multi-camera recording. Almost any number of cameras can be recorded, depending on the configuration. Using this type of switcher with a VCR requires special consideration. Without exception, all cameras within a system must be synchronized together. This is commonly done by adjusting a vertical phase (V-phase) control on each camera or by running external sync cables. This is an absolute requirement for the VCR because without it, pictures tear or roll when switching to a new camera. Playback of time-lapse recorded images normally are viewed at slow speeds. Otherwise, the full-screen images flash by too fast to interpret.

QUAD MULTIPLEXERS

The quad offers multi-camera users the most convenient way of simultaneously viewing and recording multiple locations. Digital-video processing eliminates any sync cables or adjustments normally required of analog-based systems. Reviewing tapes are simplified since tapes can easily be played at a faster speed without different views flashing on a screen.

Full-screen playback is possible with some quad processors, but the recovered image reduces clarity. Since the quad processor displays four images simultaneously, the space allotted for each camera then has one half as much vertical and horizontal detail to define the image.

FRAME MULTIPLEXERS

Frame multiplexers (FMs) are a device that combine high-speed, full-screen switching with digital processing. Each camera view is digitized full screen with an ID code imbedded. Any view or sometimes multi-screen views are available on playback. Frame multiplexers overcome most of the shortcomings of analog switcher and quad devices. Since the images are digitally processed, cameras do not need to be synced. High-picture resolution is retained since each camera view is recorded full screen with minimal losses. High-end frame multiplexers include multi-screen reviews in playback as well as live.

The frame multiplexer is the most efficient way to record and review multiple cameras with a single VCR and retain maximum clarity and resolution.

WHICH SYSTEM TO CHOOSE?

Answer the following questions to make this decisionmaking process easier.

1. Is the system primarily used for live viewing with recording a secondary issue?
2. Do strangers need to be identified on tape playback?
3. Is the system intended for verification of activity?
4. Is the system primarily recording unattended for later review?
5. Is live, multi-screen viewing required?
6. Are there situations where the entire tape must be reviewed to get the desired scene?

Use a conventional switcher when:

- Recording is unattended
- Need to identify strangers on tape playback
- Desired time of scene is known and tape does not need to be reviewed in its entirety
- Cameras must be synced

Use a quad (and VCR if applicable) when:

- Live multi-screen viewing is required
- Need to verify activity (live or playback)
- Need multiple cameras recorded with the least loss in time update
- Need to fast scan during tape playback (4 cameras only)
- No need to worry about camera sync

Use a simplex frame multiplexer when:

- Need to identify strangers on tape playback
- Live full-screen view is sufficient or recording is unattended
- No need to worry about camera sync
- Need to review the tape faster than the original time-lapse recording speed

Use a duplex frame multiplexer when:

- Need live, multi-screen display and maximum resolution playback
- Need to review the tape faster than the original time-lapse recording speed

VIDEO TRANSMISSION

THEORY OF OPERATION

To fully appreciate the capabilities of Phoneline Video (PLV) systems, one needs to understand the limitations of the phoneline itself. A pure baseband video signal requires up to 5 MHz (5,000,000 cycles) bandwidth while a normal phoneline passes only 3 KHz (3,000 cycles). The analog phoneline has less than one-thousandth of the capacity to send an unprocessed video signal. Different techniques are used to make the transmission more efficient. All modern PLV systems digitize a video image and then digitally compress it. Compression reduces the quantity of data needed to define the image, thereby reducing the time it takes to transmit. Listed below are the two common methods of transmission. For more related information about compression, see Video Recording Formats and Compression Techniques for Digital Recorders.

Digital, Conditional Refresh

This format digitizes the first key or reference image into a file that contains all elements of the picture. Sometimes compressed, it takes longer than ten seconds to send this initial reference image. After that, only the portions of the image that change are sent. This reduces the quantity of data required, so the frame update rate increases to as little as one second.

Although this is an efficient method of transmission, the refresh time increases if large portions of the image move or change. This makes conditional refresh systems less desirable for use with pan/tilt/zoom cameras.

Digital, Full-Frame Video Compression

This format takes each digitized image and compresses it into a smaller package. The amount of compression used is dependent on the quality of the desired image as well as the size. The transmission time is relatively unaffected by major changes in the view, making the full-frame compression format the most efficient way to transmit images that have many changes. Motion JPEG is a good example.

TIME-LAPSE VIDEO RECORDERS

TLC2100

The TLC2100 is the latest generation time-lapse VCR from Gyyr. This VCR replaces the TLC1800 as the basic, full-featured VCR in the lineup. The TLC2100 meets or exceeds all specifications of the TLC1800, with improved transport speed, reliability and additional features. Thirteen record speeds, enhanced 24-hour audio recording and the highest resolution of any VHS VCR are only a few of the features.

PRODUCT FEATURES

High Resolution	Over 400 lines of horizontal resolution (monochrome).
Record/Playback Speeds (13)	2, 18, 24, 48, 72, 120, 180, 240, 360, 480, 600, 720 and 960.
Direct Drive Chassis	Half-load mechanism combined with direct drive allows fast tape loading, response and lower maintenance. Fifty percent fast rewind/fast forward time compared to the TLC1800. Numerous enhancements to improve transport reliability.
Multiple Play Modes	Reverse play, still field, single-field advance in forward and reverse allows easy, precise review of any event.
High-Speed Video Scan	Scan speeds programmable from 3X, 5X, 7X and 9X.
Selectable Azimuth	Allows review of all VHS tape recording formats. Plays tapes made from like-azimuth VCRs.
Improved Audio Response	New 18-hour speed allows 24 hours of recording using T-160 tape. With re-engineered audio circuits, this faster tape speed allows improved audio performance.
Alarm Memory	Stores time/date of first and last eight alarms.
One-Shot Recording Mode	Allows recording of 2, 4, 6, 8 fields on demand; repeats up to 128X.
Bordered T/D Display	Back-shadowed characters allow maximum visibility of Time/Date display against any background.
Security Lockout	Prevents unauthorized access to recorder.

Auto Maintenance	Self-diagnostic and self-cleaning heads.
Remote Control Input	Allows remote control of transport and speed functions. The RC1800 optional wired remote control operates the 2100.
Expanded Timer Control	Allows six different start/stop times, each with speed change and timer output (TO) control. The TO turns security lights on or off.
Enhanced Display Options	The 12/24-hour clock display and date format is selectable in eight different international formats.
Split Time/Date	The time and date lines can be independently displayed vertically on the screen. The time can be placed at the top of the display with the date on the bottom. This leaves the center or “sweet” spot of the image free of text clutter for easy identification.
Expanded Alarm Recording Speeds	Allows selection of any recording speed, up to 960 hours, during alarm.
Programmable Camera Switcher Pulse	Allows selection of 1 to 99 fields during non-alarm recording and separate selection of 1 to 99 fields for alarm recording. Selectable active edge as positive or negative for maximum compatibility with any external switcher.
Programming Made Easier	An opaque background is displayed for all menu screens to improve legibility. A program shortcut for daylight savings time adjustment is added. A two-button keypress allows the hour display to jump forward or reverse one hour.
24-Character System Code	Programmable title line enables the user to identify the recording location. This can also be displayed on any line not occupied by the time/date.
Alarm Search/Index	Allows the operator to search to the next alarm from the current position.
Additional Convenience Features	The V-Lock adjustment is now located on the front panel. The battery backup time has now increased from 168 to 720 hours. An added System Reset button allows the microprocessor to be reset without erasing program information.

OPTIONS

Time/date search, integrated switcher, integrated text inserter and dc operation are available as options. These versions replace the 1800 value-added series.

RM21	Recorder rack-mounting kit allows the VCR to be installed into a standard 19-inch equipment rack. 4IU high (7 inches)
RC1800	Desktop wired remote allows control of all 2100 transport functions as well as speed adjust.

USER BENEFITS

The TLC2100 offers a high-resolution, latest generation machine at a reduced price.

WHEN TO RECOMMEND THE TLC2100

The TLC2100 is a highly reliable, full-featured time-lapse recorder designed for a wide variety of demanding applications. This machine is well-suited to record for extended periods of time.

TLC2100-SHD

The TLC2100-SHD is the top of the line time-lapse VCR from Gyyr. This VCR is the same as the basic TLC2100 with additional features. The TLC2100-SHD has triple density (HD) recording combined with S-VHS compatibility for unsurpassed picture resolution.

PRODUCT FEATURES

2100 Chassis	Based on the latest generation, highly reliable 2100 chassis, the TLC2100-SHD has all of the features mentioned in the TLC2100 description.
High-Resolution Color Recording	The S-VHS technology allows improved detail and resolution for color recording. Over 400 lines of horizontal resolution are possible when using S-VHS tape. Even black and white pictures benefit by the extended recorded video bandwidth.
High-Density Recording	The EP track-width recording allows three times more pictures recorded at any given speed when compared to regular time-lapse recorders. Using a T-160 tape at the 18-hour speed, the 2100-SHD records 20 fields per second, for near real-time recording. This is the same format used by other manufacturers claiming real-time recording. High-density recording is selectable for all speeds, up to 960 hours.
Selectable Modes	Operator selected normal or HD recording. S-VHS tape is auto-detected during recording and playback.
Auto Mode Playback	On tape playback, unit automatically identifies recorded format and plays back in appropriate mode. Identifies VHS/S-VHS and normal/high-density modes automatically.
All Formats Supported	The 2100-SHD records and plays VHS, S-VHS, normal-density and high-density formats. The unit also supports like-azimuth (old red, brown head tapes) tape playback. The 2100-SHD is compatible with more formats than any other VCR.

OPTIONS

Value-added options are now available in the 2100-SHD series.

USER BENEFITS

The HD format normally records a slightly noisier picture. The user can select the format most suitable for their application. If more recorded pictures per second are of primary importance, choose the HD mode. If a clearer, less noisy picture is more important, then select the regular, S-VHS compatible mode. Other time-lapse VCRs give either triple density recording or S-VHS. The 2100-SHD offers both triple density recording and high resolution S-VHS recording quality.

WHEN TO RECOMMEND THE TLC2100-SHD

- Any application when picture quality is of the utmost importance.
- Multi-camera installation that require switchers or frame multiplexers benefit from the faster recording.
- Any application previously served by true real-time recorders can be replaced with the TLC2100-SHD operating in the Real-Time mode.

HIGH-DENSITY TIME-LAPSE RECORDERS

Gyyr has a complete line of economical time-lapse recorders to suit most needs. All include 24-hour near real-time recording on a single VHS tape; 400+ lines of resolution; an ultra-reliable direct drive chassis and triple-density format.

PRODUCT FEATURES

High-Density Recording	EP track-width recording allows three times more pictures recorded at any given speed when compared to regular time-lapse recorders. Using a T-160 tape at 18-hour speed, the VCR records 20 fields per second, for near real-time recording. This is the same format used by other manufacturers claiming real-time recording. High density recording is selectable for all speeds.
High Resolution	Over 400 lines of horizontal resolution (monochrome).
Direct-Drive Chassis	Half-load mechanism combined with direct drive allows fast tape loading, response and lower maintenance.
Multiple Play Modes	Reverse play, still field, single-field advance in forward and reverse allows easy, precise review of any event.
High-Speed Video Scan	Scan speeds programmable from 3X, 5X, 7X and 9X.
Audio Recording	Records video and audio at 6-, 18- and 30-hour speeds.
Alarm Search/Index	Allows the operator to search to the next alarm from the current position.
Alarm Memory	Stores time/date of first and last eight alarms.
Bordered Time/Date Display	Back-shadowed characters allow maximum visibility of Time/Date display against any background.
Security Lockout	Prevents unauthorized access to recorder.
Auto Maintenance	Self-diagnostic and self-cleaning heads.

Programmable Camera
Switcher Pulse

Allows selection of 1 to 99 fields during non-alarm recording and separate selection of 1 to 99 fields for alarm recording. Selectable active edge as positive or negative for maximum compatibility with any external switcher. Maximizes performance when used with the Gyyr DS Pro Digital Switcher.

Programming Made
Easier

An opaque background displays for all menu screens to improve legibility. A program shortcut for daylight savings time adjustment is added. A two-button keypress allows the hour display to jump forward or reverse one hour.

24-Character System Code

Programmable title line enables the user to identify the recording location. This can also be displayed on any line not occupied by the time/date.

Additional Convenience
Features

The V-Lock adjustment is located on the front panel. The battery back-up time is increased from 168 to 720 hours. An added System Reset button allows the microprocessor to be reset without erasing program information.

USER BENEFITS

The HD series offers the user a high-resolution, latest generation time-lapse VCR at an economical price. The high-density format allows three times the number of pictures recorded at any given speed when compared to a conventional machine. The HD series records the same amount of images as other manufacturer's 24-hour real-time VCRs, but with better resolution.

TLC2130HD

Record/Playback Speeds (3) 6, 18, 30 hours.

TLC2196HD

Record/Playback Speeds (6) 6, 18, 30, 48, 72 and 96 hours.

TLC3268HD

Record/Playback Speeds (7) 6, 18, 30, 48, 72, 120, 168 hours.

WHEN TO RECOMMEND THE HD SERIES

The HD series is designed for simple applications or those with budgetary constraints. The HD series is used for applications not requiring the full range of features of the TLC2100-SHD. Applications requiring full-screen, multi-camera recording (conventional switchers and frame multiplexers) also benefit by the faster field recording rate used by the triple-density format. All cameras record 300 percent faster when compared to using a conventional TLVCR. The HD format normally records a slightly noisier picture. Recommend the HD series if time detail is more important than picture quality. Any application previously served by true real-time recorders can be replaced with the Gyrr HD operating in the Real-Time mode.

For recordings that require a daily tape change, use the TLC2130HD. Select the TLC2196HD for unattended weekend recording. For weekly requirements, select the TLC3168HD.

NOTE

The HD VCRs record and play tapes using EP track-width heads. These tapes are compatible with other manufacturer's 24-hour real-time VCRs, as well as consumer VCRs. Tapes recorded on this VCR do not play back on most conventional SP track TLVCRs, such as the TLC2100. Tapes made on SP TLVCRs (2100) play back on the 2130/2196/3168HD, but only at the two-hour speed. The HD tapes play back on the TLC2100-SHD, since that machine supports both EP and SP heads.

VALUE ADDED VCRS

TLC2100-DC

The TLC2100-DC is a time-lapse VCR with direct current (dc) power capability. This full- featured machine is perfect for applications without available alternate current (ac).

PRODUCT FEATURES

The TLC2100-DC incorporates the same features of the standard TLC2100 plus those listed below.

Dual-Power Operation	Operates from 120-Vac or 12-Vdc source. Standard ac line cord and screw type terminal strip for dc power included.
Auto Switch to DC Power	If ac power source fails, the unit operates uninterrupted by switching from ac to dc power automatically.
Power Consumption	Two amps normal operation, three amps on thread up.

USER BENEFITS

The TLC2100-DC can be installed in many different locations due to its dual-power capability.

WHEN TO RECOMMEND THE TLC2100-DC

Mobile applications work best when all equipment is dc powered. The ac power invertors can be used but are not desirable, due to their poor power regulation and noise that can be induced into the system or interfere with basic operation. The TLC2100-DC works on any 12-Vdc source, eliminating the need for unreliable power converters. High-security applications require constant security and the auto switch from ac to dc feature permits fail-safe operation even if ac power fails. Covert applications benefit from the 2100-DC because it may be moved on short notice to locations where the power source is unknown.

DC VARIATIONS

The dc option is available on some versions of the TLC2100 series VCRs. Inquire at the factory for availability and combinations.

TLC2100-232

The TLC2100-232 incorporates all the standard features of the TLC2100 plus an RS-232 input.

PRODUCT FEATURES

The TLC2100-232 incorporates the same features of the standard TLC2100 plus those listed below.

RS-232 Remote Control	Allows control of all functions of the VCR through the RS-232 port.
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USER BENEFITS

The TLC2100-232 allows remote installation and operation. All VCR functions including programming can be controlled from a host device. The host can be a computer or terminal, outputting simple ASCII commands to control various VCR functions. The TLC2100-232 is a low-cost solution for large installations controlling multiple VCRs, such as the ControLink. Combined with the Gyrr MultiLink, the VCR operates from anywhere in the world.

WHEN TO RECOMMEND THE TLC2100-232

The TLC2100-232 is beneficial to those who require precise control of the VCR from a remote location. Complex security systems under control from a PC, MultiLink or ControLink are complete with the addition of this VCR.

TLC2100-S16

The TLC2100-S16 was designed to meet the needs of financial and retail applications. Tightly integrated features allow this unit to be a complete video recording system.

DESCRIPTION

The S16 is a time-lapse VCR with a built-in, full-featured video switcher with the ability to receive RS-232 commands or text. The S16 is the natural successor to the TLC1800-S12MP. The S16 is used for most bank monitoring and multi-camera applications. The integration of several key devices allows much greater flexibility than separate components, allowing cleaner installation and improved reliability.

Advanced features include tape management, time/date search and integrated text inserter. All of the features work together to simplify the process for transaction verification.

Time/Date/Transaction Search Theory of Operation

During the recording process, the TLC2100-S16 inserts coded data onto the unseen vertical interval portion of the video signal. This coded data represents the time and date, as well as other information.

Tape Management Theory of Operation

Tape management is common in many applications when tapes need to be archived for long periods of time. Since tapes have a limited number of recorded passes, it is helpful to keep track of usage. If several VCRs are used in the same room, a large number of tapes may be needed. It is desirable to keep tapes in groups.

Gyyr's tape management automates the maintenance of recordings. The operator can specify a **PROTECT PERIOD**, which sets the number of days that must pass before the tape can be erased. **PASSES** dictate how many times the tape can be reused. **GROUP NUMBER** allows tapes to be recorded only if the number matches the VCR. This information is stored on the beginning of the tape.

When a tape is inserted into the VCR for recording, a validation process is started. If the tape is not validated based on the recorded criteria, the tape is ejected, preventing erasure. All of these elements maximize the useful life of the tape, minimize operator error and automate the maintenance of the system.

PRODUCT FEATURES

The TLC2100-S16 incorporates all the features and performance of the TLC2100 as well as the following.

Up to 16 Video Cameras	Camera inputs are switched in accordance with the sequence and dwell-time program. Any camera may be selected more than once during a switching sequence. The camera switcher may be programmed through either front panel controls or remote keyboard. The dwell time for each camera may be programmed from 1 to 99 seconds or fields.
7-Day Programmable Timer with Separate Day/ Night Sequencing	The user may program two time periods for each day of the week, during which the switcher sequence is automatically modified. This permits greater attention to certain areas during busier or more critical periods. Also, six start/stop times per day are allowed.
Tape Management	Automated system that allows management of multiple tapes in multiple VCRs. Controls usage, keeps track of tape groups, and prevents premature erasure.
Built-in MP Text Inserter	Superimposes text information over a video signal. The text information is provided by any RS-232 generating source such as a cash register, ATM or access control system. The text inserter receives information from the video camera and from the electronic cash register or ATM and superimposes the transaction text over the video image. On receipt of transaction information, the VCR automatically records the combined information for a preset amount of time.
Auto Time/Date Synchronization to ATM	The time/date generator is automatically resynchronized to the ATM network on receipt of data. This eliminates the need to periodically reset the time display.
Text Inserter Auto-Configuration	Designed to simplify the installation process. After connection to the network, the unit determines the device type, protocol, bit rate, parity used, character code, mode of operation (for example, start/stop, sync, NRZI, etc.) and the ATM address.

Programmable ATM Text Format	Like the standalone 5232MP, the installer selects which text strings are desired for display. Normally, only the time/date, transaction number and amount are selected. On selection, the on-screen display can be customized to show the selected text strings in any order, on any specific line on-screen.
Time/Date/Transaction Search	Allows user specified time/date/transaction search to the nearest second.
Multiplexer Encoding	Tapes can be reviewed through any Digiscan unit to allow selected full- or multi-screen playback. Eliminates the cost of a recording multiplexer when centralized tape playback is desired
Camera Titles	The user may input 24 characters of alphanumeric information for each camera via the front panel. This information is displayed on the monitor.
RS-232 Remote Input	This permits the user to program the camera switcher and enter camera titles from a personal computer with remote control of the VCR functions.
Alarm Inputs	There are 12 alarm contact inputs (open or closed) plus one RS-232 input. Alarm periods may be independently programmed and prioritized from 1 through 13. An active alarm input calls up a programmable "guard tour" that locks the system on the camera(s) associated with the alarm. Any alarm can call up any sequence for display. All alarms can call up one of two sequences depending on the time of day. There is a day and night alarm sequence. Each alarm input can be programmed to command the suspicion or normal alarm outputs. Any time-lapse speed can be selected for alarm recording.
Alarm Outputs	The suspicion output may be used to alert facility management. A normal output may signal remote functions: for example, call the local police. The third output (VCR alarm) activates under any alarm condition. A low-tape output asserts when there is less than 10 percent of tape left.
Alarm Search	Allows the operator to search to the next alarm from the current position.

Dual-Monitor Outputs w/ Switcher Using two monitors, the user can view live and pre-recorded events simultaneously. Also, a user-defined sequence for the live display different from the recorded sequence is possible since the S16 has two integrated switchers. A slow sequence of cameras can be viewed live while a faster sequence can be recorded.

USER BENEFITS

The TLC2100-S16 offers a complete recording solution for bank applications. The integrated camera switcher allows precise control of duration and camera sequence during recording. The day/night sequence minimizes tape usage and improves update performance on desired cameras. The text inserter provides verification of every ATM transaction. Tightly integrating these features with tape management, multiplex encoding, time/date/transaction search, allows for flexibility not available from separate components. More features are available for less than the cost of separate components. The result is a system that is more reliable, easier to install with lower operational costs.

WHEN TO RECOMMEND THE TLC2100-S16

The TLC2100-S16 is designed primarily for banking and retail applications. With the integrated camera switcher and ATM text inserter, the S16 provides a complete recording system for any bank. It is the easiest way to automate and simplify transaction verification.

It is recommended wherever a multiple camera recording system is required, since it is well-suited for a variety of industrial and commercial applications.

SYSTEM DESIGN SUGGESTIONS

When mixing color and black and white cameras on the S16, the color detection circuits need a small amount of time to recognize a color signal. Typically, it takes at least 6 fields or 100 milliseconds to detect and process a color signal. To optimize the recording of multiple cameras on the S16, the internal switcher is designed to switch immediately after a field is recorded. This is done to allow maximum time for the input circuits to stabilize on the new, incoming camera signal. Some external switchers are not designed to optimally switch the same way.

At all time-lapse speeds, there is an interval of at least 100 milliseconds when the S16 switches and the field is recorded. Therefore, there is ample time for the input circuits to properly resync and allow proper color recording when switching from a black and white camera. However, at the two-hour speed, switching may occur too fast. Therefore, a minimum of six fields per camera are programmed into the sequence whenever cameras are recorded at the two-hour speed.

When using the SHD version of the S16 and recording in the HD mode, do not mix cameras while recording at the 6-30 hour speeds. Since the HD mode records three times more often, it places more demand on the color detector.

MULTI-CAMERA DIGITAL PROCESSORS

DQ44/44C

DESCRIPTION

The Digiquad DQ44 and DQ44C quad multiplexers allow the user to display activity from four locations simultaneously, in a four-quadrant display. A high-resolution, real-time display assures a clear, detailed picture without appearing digital or artificial. There is no reduction of the surveillance area since each location is digitally compressed so that 100 percent of the original viewing area is retained. The DQ44 is monochrome only and the DQ44C displays monochrome and color views.

PRODUCT FEATURES

High-Resolution Display	768 x 480 pixels produce 50 percent more resolution than standard quad processors.
Real-Time Display	Sixty field-per-second update assures lifelike movement.
256 Grey Levels	Eight-bit processing with anti-aliasing filters for the most accurate picture possible. Quadruple the grey levels compared to the average quad.
True Color Display (DQ44C only)	A palette of over 16 million colors assures vibrant, accurate color rendition.
Enlarge During Recording or Playback	Electronic digital enlarge allows 2:1 zoom on recording or full screen playback.
Movable Enlargement Window	Using the arrow keys on the remote panel, move the 2X enlargement window vertically and horizontally. This allows the user to easily select the important part of the original image for enlargement.
Full-Screen Switcher	The monitor/VCR output can be selected to receive full-screen switching or quad display. Dwell time is adjustable from 1 to 15 fields or seconds per camera.
Fixed Camera ID	CAM1 to 4 are superimposed on each quadrant. This display can be defeated.

Alarm Inputs and Outputs	Individual alarm inputs for each camera. Activation of a single alarm forces recording and display of the corresponding camera. Alarm response is selectable.
Special Cameras Not Required	Digital time base correction eliminates the need to synchronize the cameras. 2:1 interlace is recommended.
VCR Output	Permits recording of full-screen or quad display as selected by internal switcher.
VCR Input	Permits viewing either quad or full screen from a VCR.
Selectable Termination	Allows all or individual cameras to be looped to another device and provide proper termination. Use BNC T adapters to physically loop.
Easy System Integration	The DQ44 may be teamed with any Gyr time-lapse recorder and most other brands. If four cameras are used. No equipment modifications are required and no additional cables need to be run from cameras.

USER BENEFITS

The DQ44/DQ44C are the most economical quads, with popular features and exceptional performance not normally included in this price range. The Digiquad DQ44 offers multi-camera users the most cost-effective way of simultaneously viewing and recording up to four locations. Alarm circuits allow the quad video system to automatically call an alarm event to full screen for greater detail during recording and subsequent review on playback. Time-base correction eliminates any sync cables or adjustments normally required for a sequential switcher based system.

The DQ44 series combines low cost with high performance. Simple operation and many features are now present in the DQ44 that were previously unavailable from any other manufacturer. Additional benefits include greater reliability, simplified installation and maximum compatibility. Alarm circuits allow the quad video system to automatically call an alarm event to full screen for greater detail during recording and subsequent review on playback. Enhanced enlargement circuits allow closer review of a selectable portion of the image.

WHEN TO RECOMMEND THE DQ44/44C

A Digiquad DQ44 is recommended whenever multiple cameras (up to four) are needed for simultaneous viewing and/or recording. A continuous quad display is much easier to view on a daily basis than sequential full-screen images because a constant switching view is more disorienting. An unused quadrant of the screen appears in black. Use of the Digiquad eliminates the need for multiple monitors if several locations are monitored simultaneously.

DQ88/88C

DESCRIPTION

The Digiquad DQ88 and DQ88C digital multiplexers permit the user to display activity from up to eight locations, in a four-quadrant display. The quad display selections are highly flexible, allowing a multitude of display options. Cameras are grouped in two quads of four, with any camera appearing in any quadrant. Either quad may be displayed singularly. Three quadrants can be fixed, with the fourth sequencing the remaining cameras. A high-resolution, real-time display assures a clear, detailed picture without appearing digital or artificial. There is no reduction of the surveillance area since each location is digitally compressed so that 100 percent of the original viewing area is retained. The DQ88 is monochrome only and the DQ88C displays monochrome and color views.

PRODUCT FEATURES

High-Resolution Display	768 x 480 pixels produce 50 percent more resolution than standard quad processors.
Real-Time Display	Sixty field-per-second update assures lifelike movement.
256 Grey Levels	Eight-bit processing with anti-aliasing filters for the most accurate picture possible. Quadruple the grey levels compared to the average quad.
True Color Display (DQ88C only)	A palette of over 16 million colors assures vibrant, accurate color rendition.
Flexible Display Options	Manually or automatically select Quad A, Quad B or full-screen display. Automatically displays all locations in full-screen sequence. Displays any camera in any quadrant. Displays three stationary views while last quadrant sequences remain in cameras. Adjustable dwell time in any switching mode.
User Friendly Programming Via Front Panel	Menu driven programming provides simple, quick setup.
Enlarge During Recording or Playback	Using the remote panel, electronic digital playback/enlarge allows full-screen review on recording or playback.

Movable Enlargement Window	Use the arrow keys on the remote panel to move the 2X enlargement window vertically and horizontally. This allows the user to easily select the important part of the original image for enlargement.
Alarm Inputs and Outputs	Individual alarm inputs for each camera. Activation of a single alarm forces recording and display of the corresponding camera.
Programmable Alarm Response	Selectable auto switch to full screen on alarm. Multiple alarms switch to full-screen sequence or remain in quad mode. On-screen alarm indication in all modes.
Selectable Freeze Frame on Alarm	When switching to full screen on alarm, the image is frozen up to 30 seconds allowing the operator to quickly assess a situation.
Programmable Camera Titles	Nine alphanumeric characters per camera. Title position adjustable in Full-Screen mode.
VCR In/Out	Optimized operation with optional time-lapse video recorder. Full compatibility with VCR dedicated video input and output. Alarm output to automatically force VCR to alarm recording. 2X enlargement on playback for closer inspection.
Dual Programmable Monitor Outputs	Each monitor output can be programmed to display the digital processor or the analog switcher.
Security Lockout	Access code prevents unauthorized operation.
12-Vdc Power Operation	Operates from a 12-Vdc source, with a transformer included.
RS-232 Remote Input	This permits the user to change program presets or modes from a personal computer.
Special Cameras Not Required	Digital time-base correction eliminates the need to synchronize the cameras. 2:1 interlace is recommended.
VCR Loop-Through	Time/date information from the VCR or inserted text displays on the monitor during the record process.

USER BENEFITS

The Digiquad DQ88 offers multi-camera users the most cost-effective way of simultaneously viewing and recording multiple locations. Flexible display options allow viewing of the most important scenes. Many features are now present in the DQ88 that were previously unavailable from any manufacturer.

Alarm circuits allow the quad video system to automatically call an alarm event to full screen for greater detail during recording and subsequent review on playback. Enhanced enlargement circuits allow closer review of a selectable portion of the image. The auto-freeze feature prevents the operator from missing an alarm event. Time-base correction eliminates any sync cables or adjustments normally required for a sequential switcher based system. For unattended operation, the DQ88 takes full advantage of a time-lapse VCR.

WHEN TO RECOMMEND THE DQ88/88C

Gyyr recommends a Digiquad DQ88 whenever multiple cameras (up to eight) are needed for simultaneous viewing and/or recording. A continuous quad display is much easier to view on a daily basis than sequential full-screen images. A constantly switching view is more disorienting. An unused quadrant of the screen appears in black. Use of the Digiquad eliminates the need for multiple monitors if several locations are to be monitored simultaneously.

DVMD32/32C

The DVMD32 combines advanced digital video motion detection technology with integrated multi-screen display.

DESCRIPTION

The DVMD32 is the first video motion detector with an integral quad multiplexer. The DVMD32 permits the detection of motion in up to eight cameras while simultaneously displaying activity from up to four locations in a quad format. It includes the same features and functions of the DQ88 quad. Advanced artificial intelligence software algorithms minimize false alarms in difficult outdoor applications and allow unique detection modes. The Museum mode watches a stationary object, ignoring movement around it and alarms only when the item is removed. Programmable display options allow custom views during alarm or normal operation. These functions combine to create a system that allows faster, easier assessment of events as they occur.

The DVMD32C has the same features, functions and specifications as the existing monochrome DVMD32, except it displays full color as well.

THEORY OF OPERATION

The DVMD32 digitizes each camera view in sequence and looks for motion in each programmable detection window. In outdoor applications, random activity causes false alarms in conventional motion detection systems. Gyr uses several techniques to reduce false alarms in the following ways:

- Multi-Cell Window Analysis

Each detection zone is analyzed as a four-cell window. In order for motion to be detected, an object must breach two of the four cells as well as exceed the programmable threshold of sensitivity.

- Adjustable Window Size

Each detection zone can be sized as any rectangular shape. To minimize falsing, the detection window can be sized similar or smaller to the desired object and away from shifting backgrounds. The reason is that the sensitivity control works in conjunction with window **size**. The sensitivity adjustment defines how much of the cell must be occupied by a moving object before detection occurs. A high number (more sensitive) setting requires less area to be disturbed for motion to be detected. The lower the sensitivity number, the less sensitive the window is. By carefully juggling these selections, the system can reliably detect movement of a person yet ignore small animals.

- Ambient Light Compensation

By constantly evaluating overall light levels in a camera view, falsing due to ambient light changes can be greatly minimized. An average light value for each complete camera view is created and used for a reference. Each detection window contains a reference value as well. If a sudden change occurs, all references reset preventing a false alarm. Gradual changes update the window references individually.

The Museum mode is a unique way of detecting motion. When properly defined, the DVMD32 reliably detects when a static object is completely removed from the window, yet ignore moving objects temporarily obscuring it from view. This mode is best described when a painting is on display in a museum. If a person's head gets in the way of the camera, detection does not occur. Only when the painting is completely removed does the DVMD32 alarm. This function works best when the object is against a flat monochromatic background.

PRODUCT FEATURES

Fully Integrated 8-Position
Quad Display

Allows live quad display of four cameras simultaneously.

Digital-Video Motion Analysis

All camera views are digitally analyzed to provide accurate detection of motion. Advanced artificial intelligence software developed by Odetics for the aerospace industry minimizes false alarms.

Suitable for Indoor or
Outdoor Detection

Specifically designed to analyze outdoor views where detection is difficult. Several specific features minimizing falsing are described in Theory of Operation.

Flexible Display Options

Manually or automatically select Quad A, Quad B or full-screen display. Automatically displays all locations in sequence on full screen. Displays any camera in any quadrant. Displays three stationary views while last quadrant sequences remaining cameras. Adjustable dwell time in any switching mode.

Programming Via
Front Panel or Mouse

Menu driven programming simplified by supplied mouse.

32 User-Defined Detection
Windows

Defined by size, position, sensitivity and type. Mix and match up to 32 windows on the system.

Selectable Museum/Motion
Detection Modes

Motion mode detects moving objects entering a window. Museum mode detects an object exiting a window. All windows can be specified as either.

Programmable Automated Alarm Response	Selectable auto switch to full screen on alarm with breached windows displayed. Multiple alarms switch to full-screen sequence or remain in quad mode. On-screen alarm indication in all modes. Selectable auto time-out allows alarm to reset whenever an object enters and stays within a detection window for extended periods.
Selectable Freeze Frame on Alarm	When switching to full screen on alarm, the image is frozen for a programmable length of time. This allows the operator to quickly assess a situation even when not watching the monitor as the event occurs.
Selectable Alarm Program Presets	Five separate configurations can be programmed for easy selection. Each preset can have all parameters set a different way.
10 Alarm Outputs	Individual alarm outputs correspond to motion detected in each camera. Allows the DVMD32 to report to an external device (Alarm Panel etc.) on which camera the motion was detected. Master alarm output is suitable for hookup to VCR or audio annunciator. Separate alarm output for video loss.
Programmable Camera Titles	Nine alphanumeric characters per camera. Title position adjustable in Full-Screen mode.
Automatically Adjusts for Ambient Light Changes	Ambient light changes are compensated for, reducing false alarms.
Optimized Operation with Optional Time-Lapse Video Recorder	Full compatibility with VCR dedicated video input and output. Alarm output automatically forces VCR to alarm recording. 2X enlargement on playback for closer inspection.
Programmable Monitor Outputs	Each monitor output can be programmed to display the digital processor or the analog switcher.
High-Resolution Display	The 768 x 480 pixels produce 50 percent more resolution than standard quad processors.
Real-Time Display	Sixty field-per-second update assures lifelike movement.
256 Grey Levels	Eight-bit processing with anti-aliasing filters for the most accurate picture possible. Quadruple the grey levels compared to the average quad display.

True Color Display (DVMD32C only)	A palette of over 16 million colors assure vibrant, accurate color rendition.
Enlarge During Recording or Playback	Using the front panel cursor keys, electronic digital enlargement allows full-screen review of a quad recorded picture. The 2X digital enlargement of live image is possible as well.
Movable Enlargement Window	Use the arrow keys on the front panel to move the 2X enlargement window vertically and horizontally. This allows the user to easily select the important part of the original image for enlargement.
Special Cameras Not Required	Digital time base correction eliminates the need to synchronize the cameras. 2:1 interlace is recommended.
Security Lockout	Access code prevents unauthorized operation.
Dual-Power Operation	Operates from 120-Vac or 12-Vdc source. Comes with standard ac line cord and screw type terminal strip for dc power.
Auto Switch to DC Power	If ac power source fails, the unit operates uninterrupted by switching from ac to dc power automatically.
RS-232 Remote Input	This permits the user to change program presets or modes from a personal computer.

USER BENEFITS

By combining quad and motion detection technology, event monitoring is simplified. Flexible display options allow viewing of the most important scenes. The auto freeze feature prevents the operator from missing an alarm event. For unattended operation, the DVMD32 takes full advantage of a time-lapse VCR.

WHEN TO RECOMMEND THE DVMD32/32C

Any application suitable for video motion detection benefits from the many features of the DVMD32. It is priced the same or less than most eight-channel VMDs, yet offers more features, performance and flexibility.

DIGISCAN PRO SERIES DIGITAL SWITCHERS

The DSP series represents a new group of full-featured frame multiplexers, offered at a price lower than most. All units allow high resolution, full-screen recording of multiple cameras. Full-duplex operation and activity detection are only a few of the many features

Available products are:

DSP16	Monochrome 16 channel Duplex
DSP16C	Color 16 channel Duplex
DSP9	Monochrome 9 channel Duplex
DSP9C	Color 9 channel Duplex

PRODUCT FEATURES FOR COLOR DSP MODELS

Enhanced Resolution for Live Display

Advanced DSP Digital Filtering For any Multi-screen mode, video images are digitally filtered using true horizontal and vertical decimation filtering. This results in a more accurate display in all segments. Diagonal lines appear smoother, without “stairstepping” artifacts common in other designs.

True Interlaced Display

By displaying a true 2:1 interlace of unique fields, twice the vertical resolution during live display is achieved. This provides significantly more measurable and apparent detail. It is now possible to identify people in the 16-screen mode. Competitive units commonly replicate a single field for live display, resulting in far less detail.

Enhanced Decoding

By using a more accurate phase locked loop decoder, images are more stable, with less jitter and cleaner vertical edges on all pictures.

PRODUCT FEATURES FOR ALL DSP MODELS

Multiple Video Inputs

The programming of the multiplex switcher is consistent with the look and feel of the TLC2100-S16. Camera inputs are switched in accordance with the user’s sequence and dwell-time program. Thus, the camera switcher may be programmed to record certain cameras during the day, and different cameras at night. The dwell time for each camera may be programmed from 1 to 99 seconds, or 1 to 99 fields.

Full-Duplex Operation	Live multi-screen or zoom while still high-speed multiplexing to the VCR. Using dual VCRs, simultaneous record and playback can be accomplished.
Activity Detection	The recorded sequence is dynamically altered to capture more images from cameras with movement than static scenes. This selectable feature can be user programmed to easily define the areas requiring detection.
Flexible Display Modes	Selectable full-, zoom-, quad-, 9- and 16-screen (on DSP16/16c only) display live or on playback. Sequential multi-screen mode shows four-page quad (4+4+4+4) or dual - page nine (9+9) display.
High-Resolution Display	The 768 x 480 (720 x 480 for color) pixels allow reproduction of sharp images, well exceeding the capabilities of current and future VCRs. Live multi-screen pictures have more detail in each quadrant. There are 256 levels of grey scale, 16 million colors for the "C" models.
7-Day Programmable Timer with Separate Day/Night Sequencing	For each day of the week, the user may program two time periods during which the switcher sequence is automatically modified. Each sequence has 16 different program steps to define which camera is to be recorded, and in what order. This permits focusing greater attention to certain areas during busier or more critical periods.
Alarm Inputs with User Sequence	There are 16 alarm contact inputs (normally open or closed). Alarm periods may be independently programmed and prioritized from 1 through 16. An active alarm input calls up a programmable guard tour that locks the system on the camera(s) associated with the alarm. Each alarm has a unique sequence for recording. All alarms can call up one of two sequences depending on time of day. These are defined as day and night alarm sequence. Each alarm input can be programmed to command the first and/or second alarm outputs. There is a 255-alarm memory. Any sequence speed can be selected for alarm recording.
Dual-Alarm Outputs	The first alarm output is normally used to force the VCR to record at a faster rate. The second output can be used to identify whenever there is a video loss, or linked to a specific alarm input.

Dual-Monitor Outputs	The main monitor output shows the digital display, as well as menus during programming. This allows live multi-screen, zoom, and selected playback. The second output displays the analog switcher. This is useful as a spot monitor to provide a more detailed look at an individual camera without changing the live multi-screen.
Camera Titles	The user may input 24 characters of alphanumeric information for each camera. This information is recorded onto tape for display during playback.
Camera Switcher Input	Allows the sequence speed to be synchronized with the recording speed of the host VCR. This allows automated speed changes without having to reprogram the multiplexer.
Serial Remote Input	The RS-232 input permits the user to completely program the unit or remote control any function from a personal computer or via the ControLink system. The RS-485 connection allows multiple DSP Pro units to be daisy chained together for remote operation.
16-Loop-Through Outputs	With individual, selectable termination.

USER BENEFITS

The same user benefits from the DS9 apply for the Digiscan Pro, in regards to the performance advantages over quads. This digital switcher is state-of-the-art, and can be programmed for fully automated, efficient recordings. The combination of activity detection and custom programming allows only the cameras important to the customer to be recorded. This means less tape used, and faster review. No other multiplex system allows this kind of recording flexibility. The camera switcher input allows the DSP series to be synced to the host VCR to automate tape speed changes easily. No more programming the MUX when the weekend rolls around.

Activity detection and programmable sequencing allows for more efficient recording than most multiplexers. Several enhancements for the color multiplexers provide a cleaner, higher resolution display than previously available .

WHEN TO RECOMMEND THE DIGISCAN PRO

Any application requiring recording of multiple cameras, with critical full-screen review. Operators present during recordings benefit from the independent digital display. The 2:1 enlargement, single or multi-screen can be viewed live without interfering with what is recording. The DSP Pro is fully compatible with all 24-hour real-time recorders, and makes an especially good match with any GYR VCR.

DIGISCAN DS9

The DS9 is an intelligent digital switcher/frame synchronizer. This system allows recording up to nine cameras onto a single, time-lapse or standard VCR. The Digiscan synchronizes all video sources and sequentially switches full-screen images as fast as the VCR records them. Each image is superimposed with time/date, camera titles and channel identifiers. On playback users may select a single- or multi-channel display.

PRODUCT FEATURES

9 Video Inputs	Loop-through outputs.
High-Quality Display	There are 256 grey levels in monochrome and over 16 million colors available. High pixel density gives a high-resolution display. Provides the sharpest, most lifelike images available.
Color/Black and White Compatible	Color/ black and white cameras are combined within a system. Full-color and monochrome images are displayed.
Flexible Switching Modes	Manually selectable full-screen, quad, or nine camera display on playback. Separate sequential switcher allows programmable real-time display independent of the multiplexed switcher to the VCR. Automatically displays all locations in sequence on full-screen playback. Automatic 4+4 switching quad display on playback. Live multi-screen display if not recording to VCR.
Programmable Video Gain Controls	Camera input gain is individually compensated via the on-screen programming menus. This is especially handy in situations where cameras are connected via different lengths of coaxial cable. Normally, there is a video level difference between these cameras. With the menu driven gain controls the levels equalize to allow optimum picture storage.
Enlarge on Tape Playback	2X electronic digital enlargement allows more detailed review on playback. The enlargement window is movable in both vertical and horizontal directions via the front panel cursor keys.
Alarm Inputs and Outputs	Individual alarm inputs for each camera.

Versatile Alarm Response	Audible beeper on alarm with programmable dwell time. All or alarmed cameras are recorded on alarm. Alarm output duration selectable. Programmable sequence rate on alarm.
Easily Programmed	On-screen menus permit the user to easily program functions including operating modes, alphanumeric camera ID and camera dwell.
Versatile On-Screen Displays	There are 39 alphanumeric characters per camera. One programmable title message appears on all camera displays. RECORD HEADER title identifying pertinent set-up information automatically appears on start of recording and disappears after a programmed time. Time/Date display is selectable on or off. Time/date/text position selectable.
Easy System Integration	The Digiscan may be teamed with any current Gyyr time-lapse recorder and most other brands. Full looping capabilities are available allowing additional equipment to be easily integrated. No equipment modifications are required and no additional cables are needed to run from cameras.
Special Cameras Not Required	Digital time base correction eliminates the need to synchronize the cameras. 2:1 interlace is recommended.
Security Lockout	Key lock allows limited control of functions.
RS-232 Input Standard	Allows remote operation with available optional RS-232 keyboard.
Remote Keyboard Options	Two different remote keyboard options are now available. The hardwired remote allows connection up to 100 feet and includes a 25-foot cable. The RS-232 keypad allows hookup for 50 to 100 feet with conventional cable, longer when used with line extenders.

USER BENEFITS

Recording multiple cameras onto a VCR is easily accomplished using a conventional switcher. However, this method requires the cameras to be synchronized and normally requires the tape to be reviewed at a slow playback speed. A quad processor can be used to solve these problems and generally works best with a maximum of four cameras.

Full-screen playback is possible with some quad processors, such as the Gyyr DQ series, but the recovered image reduces clarity. Since the quad processor simultaneously displays four images where one would normally be, the space allotted for each camera then has one half as much vertical and horizontal detail to define the image. The Digiscan compensates for all of the short-

comings listed. Since each image is electronically marked with a channel ID, a single channel can be played back without having to view the others. The DS9 can display nine channels at once on playback. Full-screen playback is inherently sharper than with a quad processor since all images are recorded in a full-frame format.

The Digiscan allows the most efficient way to record and review multiple cameras with a single VCR and retain maximum clarity and resolution.

UPDATE RATE

The update rate is how often the system samples each camera input. This rate is dependant on how many cameras are connected to the Digiscan and how fast the VCR records pictures. For example, a regular density VCR set for the 24-hour speed, with 16 cameras on the Digiscan updates every camera approximately once every 3.2 seconds. Table 3 lists common settings, when using normal density Gyyr recorders such as the TLC1800 and 2100. For update rates using the triple density VCRs, refer to the Technical Appendix.

Table 3. COMMON SETTINGS

NUMBER OF CAMERAS				
	4	8	12	16
2 hours	7.50 pps	03.75 pps	2.5 pps	1.90 pps
12 hours	2.50 pps	01.25 pps	1.0 pps	1.60 sbp
18 hours	1.60 pps	01.07 sbp	1.6 sbp	2.13 sbp
24 hours	1.25 pps	01.60 sbp	2.4 sbp	3.20 sbp
48 hours	1.60 sbp	03.20 sbp	4.8 sbp	6.40 sbp
72 hours	2.40 sbp	04.80 sbp	7.2 sbp	9.60 sbp
168 hours	5.60 sbp	11.20 sbp	16.8 sbp	22.4 sbp
240 hours	8.00 sbp	16.00 sbp	24.0 sbp	32.0 sbp

pps = pictures per second; refers to how many samples per second for each camera input

sbp = seconds between pictures; refers to how long it takes for all cameras to be sampled

WHEN TO RECOMMEND THE DIGISCAN DS9

- Applications requiring multiple camera recording, with critical full-screen review.
- Low-end monochrome applications are effectively served using the quad processor.
- If the customer requires color compatibility, up to nine video inputs or maximum clarity on single-channel playback.

DIGISCAN DS16C

The Digiscan DS16C is a simplex digital switcher/frame synchronizer. These systems allow recording up to sixteen cameras onto a single-time lapse or standard VCR. The Digiscan synchronizes all video sources and sequentially switches full-screen images as fast as the VCR records them. Each image is superimposed with time/date, camera titles and channel identifiers. On playback, the user may select any single- or multi-channel display for review.

PRODUCT FEATURES

All features of the DS9, plus the following additions:

Sixteen Video Inputs	Loop-through outputs.
Flexible Switching Modes	Manually selectable full-, quad-, 9- and 16-screen display on playback. Separate sequential switcher allows programmable real-time display independent of the multiplexed switcher to the VCR. Automatically displays all locations in sequence on full-screen playback. Automatic 4+4 switching quad display on playback.

USER BENEFIT

The same user benefits from the DS9 apply to the DS16C. Any application requiring recording of up to 16 cameras, with the ability for critical full-screen review benefits.

WHEN TO RECOMMEND THE DIGISCAN DS16C SERIES

Applications requiring recording up to 16 cameras with critical full-screen review. Applications with unattended recording benefit by not requiring a more expensive duplex multiplexer. If requirements are more than nine video inputs and maximum clarity on single-channel playback, then the Digiscan 16 series is the best choice.

OTHER DEVICES

FASTRANS 2004

DESCRIPTION

FasTrans is a video system that transmits color or black and white images over a wide range of communication links. Support for basic voice grade telephone lines to high-speed digital links up to 2.0 Mbps. The enhanced serial port allows hookup to a wide range of RS-232 controlled switchers, pan/tilt/zoom cameras for easy remote control. Full-alarming and auto- dialing capability is conveniently programmed remotely using simple, on-screen menus. Cellular modems are also supported for wireless portable applications.

FASTRANS FORMAT

The FasTrans system uses a hybrid form of full-frame video compression. It sends mostly complete images, but does utilize redundant data provided by previous frames. This helps to speed refresh rate without slowing down as drastically as Conditional Refresh under high change scenes.

FasTrans incorporates an advanced, high-speed custom IC that makes intelligent decisions. This IC varies the level of compression based on image content. The user controls the relative amount of compression by the quality-level selection. This allows for extremely high compression ratios while minimizing detail loss. On standard phone lines at the low resolution, cropped view the images can be updated as fast as 10 frames per second. Full-frame, medium resolution images take 1-to 3 seconds and full-frame, full resolution takes 4 to10 seconds. The FasTrans is optimized for color images, but accommodates monochrome video at a 1/3 faster rate.

PRODUCT FEATURES

Full Color or Black and White	Accurate, full color transmission. Up to 30 percent faster transmission time when using monochrome cameras.
Four Input Switcher with Quad Receiver	Four video inputs that can be displayed in auto full- screen sequence or quad mode. Individual titles for each camera can be programmed.
Multiple Communication Links Supported	Transmission via ISDN, T1, E1, LAN, cellular as well as normal dial telephone lines. The faster digital lines allow significantly faster update rates, approaching real-time transmission. ISDN is supported in both sync and async modes.

Simple Operation	Intuitive pop-up menu system allows easy operator control. Logical front panel buttons allow control of frequently used features. No personal computer required.
Four Programmable Alarm Inputs	Programmable alarm response, such as storing frames, auto dialing to receive station, camera input. User specified reaction to alarm condition.
Full-Frame Compression	Transmits a new image each time the monitor updates. Superior update rate especially under high activity conditions or when PTZ cameras are used.
RS-232 Remote Pass-Through	Data back channel allows RS-232 remote control of external devices used in the system such as VCRs, pan/tilt/zoom, switchers, etc. Able to be used with third-party equipment for better system integration. Supports transmission of continuous data through a bidirectional RS-232 port.
Multiple Receiver Control	FT2004 receivers can be configured in a master/slave format, which allows one designated receiver to control several others. This reduces clutter at a central station where one receiver can control up to 15 other units.
MultiLink, ControLink Compatible	When used with MultiLink, the received images are displayed on the PC monitor, along with a virtual remote control for other Gyr devices. All commonly used functions are controlled by MultiLink, directly from the PC mouse and keyboard. The system can easily be remote controlled by the ControLink system.
Digital Image Storage	The Transmitter has a fixed amount of digital picture memory. This allows numerous pictures to be stored not only subsequent to alarm activation, but also prior to the event. Post alarm image capacity can be increased by using PC memory cards. Computer industry standard PCMCIA type 3 slots are on both the transmitter and the receiver. Image storage is limited only by the capacity of the memory card used. For example, up to 50 compressed images (pre or post alarm) can be stored on a 2-MB flash card, at the transmitter site. These images can be transferred to the receiver by plugging the memory card directly into the receiver. If a memory card is installed in the receiver, the operator can manually force continuous image storage using a single keypress. See Technical Appendix for more detailed information.

Full-Frame Compression	Transmits a new image each time the monitor updates. Superior update rate especially under high-activity conditions or when PTZ cameras are used.
Detail-oriented Compression Algorithm	Retains user selected resolution regardless of level of motion/activity.
Fast Frame Rate Using Standard Analog Lines	Works with virtually any telephone system in the world. Improves picture quality and speed. Up to 10 frames per second at low quality, small picture mode. Up to 10 seconds per frame at full screen, high resolution.
Expanded Modem Capability	The FT2004 supports most modern modems. The more common ones are auto detected; others are manually programmed. (See attached appendix for full list of modems.)
Integral Time/Date Generator	The transmitter has an integrated time/date generator that is user selectable for display. Time/date is automatically stamped on all alarm video frames for optimum verification.
Multiple Transmitter List	Up to 500 transmitter phone numbers are pre-programmed into the receiver for easy dial up.
Remote Controlled Transmitter	No user action required at transmitting site. All control retained from receiver location.
Remote Picture Adjustment	Camera brightness/contrast controls allow the user to optimize transmitted images.
Remote ID	Remote transmission is identified by on-screen alphanumeric characters.
PAL or NTSC Versions	European and domestic versions available. PAL/NTSC versions communicate with each other for global system flexibility.
Size Selection	Allows transmission of a partial view (transmission window) resulting in faster transmission.
Position Selection	Allows different positions of the transmit window.
Enlarge Function	Allows a portion of the image window to be enlarged. Enlarge by 2:1 or 4:1.

Security Code	Limits access to program function.
Easy Access Pan/Tilt/Zoom Mode	A simple two-button keypress changes the picture size/resolution to small/low resolution, which allows optimal control of pan/tilt/zoom. The same key sequence returns transmission to prior settings.
Expanded Program Options	The transmitter has several program buttons that allow control of an on-screen menu display. The local video output displays program menus only. This increased flexibility allows programming of the transmitter locally or from the receiver site.
Hold Image on Hangup	For demo purposes, the last received image remains on-screen on the receiver monitor. For normal installations, a blank screen on hangup may be preferable; FT2004 can be programmed either way.
Alarm Output on Receiver	On reception of incoming alarm images, the FT2004 receiver can automatically activate an external VCR to record the event.

USER BENEFITS

FasTrans 2004 can take full advantage of emerging high-speed communication links such as Switched 56, ISDN and T1. It is important to remember that FasTrans is not easily obsolesced as it is designed to optimally adapt to new transmission line technologies. FastTrans is designed with modularity in mind. As a standalone system, it provides a capable single or multi-site transmission system that is easy to use. Combined with MultiLink, a powerful integrated remote management system can be created.

WHEN TO RECOMMEND FASTRANS 2004

Applications where remote video monitoring and control of camera movement is desired. The FT2004 excels in providing many options for pre- and post-alarm applications by virtue of its expandable digital image storage.

5232MP ATM TEXT INSERTER

This product superimposes transaction information over a video signal. The text inserter receives information from the video camera and the ATM and sends the combined video image to the time-lapse recorder. The 5232MP is designed primarily for ATM applications. A limited number of Cash registers are supported for retail applications.

PRODUCT FEATURES

Auto-Configuration

The 5232MP is designed to simplify the installation process. On connection to the network, the 5232MP determines the Device Type, Protocol, Bit Rate, Parity Used, Character Code, Mode of Operation (for example, start/stop, sync, NRZI, etc.) and the ATM address.

Programmable ATM Text Format

Like the TLC2100-S16, the installer selects exactly which text strings are desired for display. Normally, only the time/date, transaction number and amount are selected. On selection, the on-screen display can be customized to show the selected text strings in any order, on any specific line on-screen.

TDS Encoding

Time, date and transaction number information can be encoded into the vertical interval of the output video signal. This allows any Gyyr TDS VCR to perform subsequent time/date search on the tape. The TDS encoding position is adjustable, allowing compatibility with Gyyr Digiscans and possibly other frame multiplexers.

Time/Date Generator with Lock to ATM

An internal time/date generator continuously displays over the video picture. The display is configured in a variety of ways; large/small size, black/white characters, 12/24-hour and position. The T/D generator can be selected to LOCK TO ATM (just like the S16). This allows the T/D generator to synchronize to the network time during each transaction. The time/date never needs resetting.

ATM Demo Mode

A free-running simulation of typical ATM transactions continuously scroll on-screen without physical hookup to the ATM network. This feature is for demonstrating the product using only a camera and monitor. The installation is simplified by allowing verification of text format and proper hookup of camera and monitor.

Easier Programming	Although the auto-configuration takes care of most of the setup, some manual programming may be necessary. Five push buttons make on-screen menu programming easy.
Single Text Alarm	Single, 24-character text string programmable for alarm. This is normally used for alarm activation based on card number or transaction type. There are two programmable alarm outputs with selectable duration. Allows system to automatically tag a specific transaction for later review.

CABLES

The 5232MP comes equipped with a 6-foot, DB25 cable. This cable has dual 25-pin DB connectors on both ends, with straight pin-to-pin connections. This cable allows the 5232 to search all pins during the auto-config mode for proper setup. Since this cable uses standard point-to-point wiring, off-the-shelf cables/adapters can be used to extend the connection.

ATM REQUIREMENTS

Virtually all ATMs can be connected to the 5232.

USER BENEFITS

- There is a permanent video record of every transaction with pertinent text integral with a picture of the ATM customer or the check-out counter.
- Disputes arising from an ATM transaction can easily be settled and the retailer can be assured that the viewed action is supported by the cash register text.
- Low cost and easy installation. Auto-configuration means less time installing the system.

WHEN TO RECOMMEND THE TEXT INSERTER

Recommend the Text Inserter for any ATM application where there is a video recording. This device can be retrofitted to an existing recording system.

MP SUPPORTED DEVICES

Official List of devices currently supported for MPs (as of August 1992)

ELECTRONIC CASH REGISTERS

- * Chevron EPOS (NCR 2157)
Dresser/Wayne PLUS (PLUS 3)
- * Gilbarco-RTI (Replacement for TCR-G2 & T-12G Console)
Gilbarco TCR-G
MICROMAX 3000
MSD Systems PS-2
NORAND A LINE
- * SHARP ER 20RS
- * SHARP ER 25RS
- * SHARP ER 30RS
- * SHARP ER 31RS
- * SHARP ER 32RS
- * SHARP ER 33RS
- * SHARP ER 42RS
- * TEC 1190
Suntronic 890/960
Sweda 5400 Series
Uniwel System-3

AUTOMATED TELLER MACHINES

ASYNCR Poll Select
BISYNCR Poll Select
Fujitsu ACT ATM
NCR ATM w/ Intelligent Camera Interface
NCR Native Poll Select
SDLC IBM 3624
IBM w/ Intelligent Camera Interface

COMPUTER ASSISTED DEVICES

Federal APD Auditor 2
IBM Personal Computers
Toledo Scales 8530 Gross

*Additional Equipment Required

MULTILINK

MultiLink is a PC-based modem communications system for remote monitoring and control of Gyr VCRs with RS-232 ports. It is well-suited for command operations at a central station managing multi-site recording locations.

THEORY OF OPERATION

A MultiLink control center consists of an IBM compatible PC, MultiLink Software running under Windows 95, two internal modems, mouse, monitor and keyboard. This is a complete turn-key system, with all components and software installed and integrated. MultiLink is not available as a software package only.

SYSTEM REQUIREMENTS

At the central command center, a MultiLink PC system must be set up. Two separate dial phone lines must be available. At each remote site, at least one Gyr VCR with RS-232 must be connected to a MultiLink input/output (I/O) box, and connected to a separate phoneline. The I/O box is available in a 4- or 8-channel configuration.

PRODUCT FEATURES

Complete Turnkey System	MultiLink Software, Microsoft Windows 95™, modems and other hardware is factory installed and configured. Conflicts are avoided by having a stable, uniform platform for the software to run. A national volume PC manufacturer is used so servicing is not a problem.
Monitors VCR Status at Remote or Local Sites	Operator can observe and verify VCR status at any time. Maintain a Status and Event log for future reference.
Up to 8 Devices per Site	The MultiLink I/O box is available in 4- or 8-channel versions meaning that up to 8 VCRs or Digiscans can be controlled at that site. Future versions of ML software allows control of Gyr Quads, motion detectors and more.

Operate Devices Remotely	On connection to the remote site, VCR remote control can be requested. A replica of the particular VCRs front panel controls appear on-screen. The time/date, tape counter displays. Using the mouse, select PLAY, RECORD or any other transport controls. Search operations are available if the VCR has that option. Remote operation of any Gyyr DS series color Digiscan is also supported. A replica of the Digiscan front panel appears on-screen to allow control of common functions.
Program VCR Remotely	All timer-based functions of any Gyyr RS-232 VCR can be remotely programmed. User friendly templates can be created to simplify programming of other VCRs, with easy pull-down menus.
Compatible with Color Digiscan	Any color DS series Digiscan can be controlled by MultiLink. Full remote control, T/D synchronization and remote programming are allowed. Interrogation is not supported.
Remote Video Monitoring	Live video from the remote site is supported optionally by adding FasTrans to MultiLink. The monitor display shows a live video window of the remote site, with control of the local FasTrans receiver. Camera selection and adjustment is conveniently available by the PC mouse.
Auto Configuration for Easy Maintenance	The operator can elect to poll the I/O box and identify the VCRs connected when a service call requires the VCR to be replaced or removed. The installer does not need to worry about the precise VCR installed, nor the original programming. The operator can remotely identify any newly installed compatible VCR and download the original programming.
Alerts Operator to Abnormal Conditions	The MultiLink I/O box autodials the ML PC whenever an abnormal condition occurs. Power loss, VCR not recording, no tape etc., is reported to the ML PC and logged. For example, if a VCR runs out of tape, the ML operator is notified and can take appropriate action.
Search for Logged Events	The operator can specify which events are important enough to be logged in the LOG SETUP screen. A text file which contains all specified events is created for each day. On entering the log, the operator may specify a keyword search. The program searches for any occurrence. Items can be searched based on time, event type, etc.

Comprehensive Time/Date Management

MultiLink provides complete, automated time/date synchronization. The ML PC dials to a site operated by the National Institute of Standards & Technology (NIST). The NIST provides accurate timing signals via modem, allowing the MP PC to sync to a nationally recognized source. Then, ML automatically resets the time/date generator of the remote VCR to the system clock for synchronized operation. The time/date synchronization can be requested automatically whenever a site is called, either manually or by scheduled interrogation. Each site can be programmed with the appropriate offset for a different time zone. This eliminates the need for a local manager to periodically reset the time on the VCR. The time/date is also updated for any Color Digiscan connected, automatically compensating for daylight savings time.

Verifies Programming and Operation of VCR

All VCR program information is stored on the PC hard drive. On connection to a remote site, the operator has the option to verify programming. MultiLink then compares the current program with that stored in the central database. If differences are detected, the computer logs the discrepancies, alerts the operator and automatically downloads the correct program automatically.

Interrogation Scheduler

The user can schedule periodic interrogations of any or all sites. The system can be set up to call specific sites one or more times per week. The system can then verify operation, log discrepancies and download programming. Typically, interrogations are scheduled during off peak hours.

Uses Standard Phone Lines

MultiLink communicates through internal modems operating on standard phonelines.

Multi-level Password Security

Three levels of users are supported, each with individual passwords. Administrators, managers and users have different levels of control of MultiLink. Administrators can add other administrators, managers and users can program any function. Managers can add other managers and users, and program any function. Users cannot add other operators of any type, nor change any program function locally or remotely.

USER BENEFITS

Any customer with multiple recording sites can benefit greatly by using MultiLink. MultiLink allows a company or corporation to consolidate the management and operation of unlimited recording sites from a single location, with one operator. When combined with FasTrans, the system allows a live video display and tape playback of the remote site. MultiLink provides convenient viewing of live video and remote control of the VCR and Digiscan. This allows more consistent and uniform operation of the remote site, freeing local management to attend to day-to-day operations. The burden of caring for the recording system is greatly minimized. With the increased capability of the security system and the attendant complexity, centralized management reduces costs, increases effectiveness and simplifies operation.

WHEN TO RECOMMEND MULTILINK

Customers of financial institution and bank s are the primary customers for MultiLink. Since the TLC2100-S16 is the VCR of choice for those applications, it only made sense to allow control of those sites. Other applications can effectively utilize MultiLink as well. Large retail chains, convenience stores and fast food restaurants tend to use standardized equipment. These applications allow corporations to control the bottom line with more precision. Therefore, any security customer with multiple recording sites benefits.

CONTROLINK

ContoLink offers the first comprehensive remote control system with integrated mini matrix switching. This expandable system can locally or remotely control any type of RS-232 device, regardless of origin. Most Gyr products such as video transmission, multiplexers, VCRs and motion detectors are compatible. Add to this a powerful, sequence driven matrix switcher, ContoLink allows an unparalleled level of integrated control from a single keyboard.

OVERVIEW

The ContoLink switcher unit is a self-contained device that houses the switching/control hardware. It is available in an eight-camera input/two-monitor output configuration or 16/4. This unit has a hinged flip down control panel that allows complete control of all devices. It can be mounted in a standard 19-inch rack.

An ergonomically designed desktop control panel can remotely control the CL switcher. The responsive touchpad controls optional pan/tilt/zoom cameras, as well as speeding through menu programming. The RS-232/RS-422 connections allow versatile placement options and provide control capability to compatible Gyr products. Extensive programming options allow high-end matrix switching control at a fraction of the price.

PRODUCT FEATURES

Integrated local or Remote Control	Video transmission: FasTrans 2004 VCRs: 2100-232, 2100-SHD-232, 2100-S16,1800-RS, 1800-TDS, 1800-S12MP, 1800MX16MP and other Gyr RS-232 VCRs Quads: DQ88, DQ88C Digiscans: DS9, DS16C, DS16D, VMX16D Video Motion Detectors: DVMD32, DVMD32C
Open Architecture	Allows control of any manufacturer's RS-232 device. Easily creates a control menu to operate other manufacturer's VCR, switcher, multiplexer, etc.
Up to 16 Video Inputs	The 8/2 version has 8 video inputs and 2 monitor outputs. This can be field upgraded to 16 inputs and 4 outputs. ContoLink can be ordered from Gyr as a 16/4 configuration as well.
Compact Desktop RC Panel	The optional remote control panel communicates to the CL switcher via serial connection. This compact device has a gentle sloped panel, providing quick access to all functions.

Ergonomic Touch Pad	The raised, rubberized touchpad allows precise control of camera position, as well as aiding menu selection and programming. Individual rubber buttons circle the main touchpad to control camera focus, zoom and iris. This control provides excellent tactile feedback, making it easier to use than a conventional joystick. The touchpad is present on the CL switcher as well as the RC panel.
Integrated Wrist Rest on RC	Reduces wrist strain, allowing the operator's hand to rest naturally within easy reach of controls. Made of compressible material that provides comfort and is easy to clean.
RS-232/422 Serial Ports	Four serial outputs designed to control separate RS-232 devices such as VCRs, quads, etc. Another RS-232 port has input/output capability to allow connections to the RC panel or a fifth device for remote control. The RS-422 port is also input/output, and allows connection to multiple ControLink switchers, keyboards and camera receiver/driver units.
Multi-Unit Control	Up to 16 ControLink switchers can be connected in a master/slave configuration. This port is ID addressable, so each slave unit can have a unique ID.
PTZ Control	ControLink receiver/drivers (CL R/D) are available to allow pan/tilt/zoom of system cameras. Currently, there is no support for existing receivers/drivers from other manufacturers. The receivers/drivers work with virtually any manufacturer's pan/tilt unit.
64 PTZ Presets	The function keys can be used to recall and store PTZ presets. Up to 64 unique camera positions defined by pan, tilt, zoom, focus, iris, can be programmed for each camera, up to 16 cameras per CL switcher. The pan/tilt head and motorized zoom lens must have preset pots in order for this feature to work.
Matrix Switching	Full matrix control allows switching any camera to any monitor. A programmed sequence can be manually or automatically initiated by alarm contact or event schedule.
256 Switch Sequences	A sequence is a series of commands that are created by the user and given a unique name and number for future recall. Each sequence has 28 steps which command a multitude of actions. Besides programming specific cameras to monitors, you can induce timed delays, display text messages, position cameras and transmit remote control commands. A series of sequences can be linked to create a sophisticated script, enabling hundreds of actions to occur automatically.

Camera Titles	There are 24 alphanumeric characters per camera. The default is Camera X. Each title can be placed in a desired position. Selectable black border for legibility.
64 Text Messages	There are 24 programmable alpha characters per message, independent of camera titles. They are normally used to alert the user of alarm contact, video loss or operator response. Messages are called to specific monitors as a result of a programmed sequence.
64 Events	Similar to VCR timer programming. Each event is initiated as a result of the weekly timer. An event normally initiates a sequence.
Time/Date Generator	The time/date can be placed in any desired position, and enabled for any or all camera displays. Selectable black border for legibility. Multiple time formats.
Integrated Buzzer	The buzzer can be programmed into any sequence, with any duration. Also verifies keypress during programming or normal operation. Advanced control during setup.
Camera Switcher Input	Allows the switcher dwell time to be controlled by external source. Commonly connected to a VCR C/S output, to synchronize recording and switching. Minimum two fields per camera.
Video Loss Detection	Detects loss of video detected on all inputs, and initiates a sequence. Able to auto call a custom message to any monitor, sound buzzer and activate an alarm output.
Multiple Alarm Inputs	There are 8/16 inputs. Each can call a unique sequence. Dual sequence supported, one for contact open and closed. Selectable priority. Individual and master enable/disable.
Alarm Printing	Any of the RS-232 outputs can be programmed to drive a serial printer.
Multiple Relay Outputs	Four relay outputs used for alarm reporting and sequencing. When utilized through the event scheduler, lights or other devices based on the internal timer can be controlled.
Multi-level Password	Supervisor and operator level passwords are supported. Supervisor has access to menus and all functions. Operator level is prohibited from accessing menus. Log-in is required on power-up or after log-off.

Extensive System Tests	Convenient troubleshooting tool to test various parts of the system. Alarm inputs, relay outputs, video detection, receivers/drivers and remote keyboards can be easily checked for status or operation. ControLink system hardware can also be tested. Front panel keys, LEDs, on-screen display, internal RAM and EPROM checksum all can be exercised, verifying proper operation.
Standard Multilingual Support	Selectable English, German, French, Italian, Spanish and Portuguese languages for on-screen text. This is implemented in a future release of ControLink. The RC overlay is made of a removable, magnetic material to easily change to a supported language.
Joystick Port	For those who prefer an external PC compatible joystick, a standard 15-pin port is provided.
Expansion Options	The 12C port is present to allow future expansion.

USER BENEFITS

ControLink provides comprehensive remote control of any RS-232 device with matrix switching features. This can be expanded to suit user needs as they occur. The 256 program sequences allow numerous and complex reactions to occur automatically, invisible to the user. ControLink provides a major step in simplifying the control of a myriad of components from a single keyboard. The stylish, ergonomic design of the RC panel provides a comfortable interface for any user.

WHEN TO RECOMMEND CONTROLINK

Any application where a user must have control of a variety of CCTV equipment. The single keyboard solution allows other components to be rack mounted. All the user needs is the ControLink RC panel to control camera position, VCRs, multi-camera displays and many other devices.

For FasTrans applications, the ControLink switcher can be connected to the FT2004 transmitter for expansion to 16 cameras. The ControLink RC is then connected to the FasTrans receiver, to allow selection and positioning of transmitted cameras.

GYJR VIDEOTAPE

Gyjr Videotape has been specially developed for long life and high performance for all time-lapse applications. Each cassette is loaded with 10 percent more tape than ordinary cassettes for an extra safety precaution. Gyjr tape has all of the characteristics required for reliable time-lapse recording. It resists oxide shedding which can clog video heads and degrade picture quality. It also has a low friction coefficient which minimizes wear on the video heads. Gyjr tape is available in T-130 VHS and SVHS formulations.

PRODUCT FEATURES

10 Percent More Capacity than Standard Tape	Provides for an extra margin of safety, especially if recording at faster speeds.
High-Quality, Professional Grade Tape	Grade A industrial recording video tape retains its integrity through time-lapse usage.
Precision Cassette Shell	Allows smooth loading and prevents jamming.
Stainless Steel Rollers and Teflon Wheels	Allows tape to move freely without binding or damaging the tape.
High-Grade Oxide Binders	Resistant to heat buildup caused by the rigors of time-lapse recording; minimizes oxide shedding.
Low-Friction Tape Surface	Polished tape with imbedded lubricants provide a low friction surface which minimizes video head wear.
Low Elasticity	Minimizes tape stretching which can cause picture distortion or render the tape unplayable.
Excellent Frequency Response	Allows reproduction of fine detail in the picture.

MAINTENANCE REQUIREMENTS

REQUIRED MAINTENANCE

A service contract should be sold with every Gyyr time-lapse recorder. In many applications the recorder operates continually, 24 hours a day, week after week.

The 2100 series recorders require preventive maintenance less often than previous generation machines. Every six months the unit should be inspected, the tape path cleaned and operationally checked. It is recommended that a comprehensive maintenance procedure be performed every 8000 hours or 12 months. This procedure consists of:

- Installation of Preventative Maintenance (PM) kit

- Full cleaning, inspection and alignment of tape transport

- Verify all latest Technical Service Bulletins have been installed

WHY IS MAINTENANCE IMPORTANT? HOW DO I SELL IT TO THE CUSTOMER?

A time-lapse recorder is a mechanical device working through motors, wheels and belts. Information is recorded and played back by dragging an oxide-coated tape over a head drum rotating at around 1800 rpm.

If a typical consumer VCR is used only to play back a rental tape once every other day, then a typical time-lapse recorder can endure as much as 24 times as much wear and tear over the same time period.

Recorder performance depends on proper mechanical operation and a clean, smooth tape-to-head interface. Frequently customers do not find out that there is a problem with their video system until they need to review an important incident. By then it may be too late. It should not be difficult to show that periodic preventive maintenance is the best insurance against product failure.

Be sure to explain the importance of using only the recommended brands of tape cassettes (GYJR, BASF, MAXELL, or TDK).

SELLING TIME-LAPSE VIDEO RECORDING

WHO SHOULD USE TIME-LAPSE RECORDING?

Any business that needs to see what employees or the public are doing in its facilities.
Any business that needs deterrent protection from holdups, theft or employee pilferage.
Any person or business that requires proof of events or activities at a later time.
Any business able to obtain lower insurance rates if video recording is used on its premises.

Typical businesses include:

- Convenience stores
- Banks and other financial institutions
- Liquor stores
- Rental yards
- Retail stores
- Industrial plants
- Warehouses

Time-lapse recording can provide improved safety to both employees and customers.

QUESTIONS TO ASK THE PROSPECT

To help your prospect select the right Gyr products for his needs, you must know something about those needs. You can offer useful guidance only if you know the Gyr product line and understand your prospect's problem.

Here are a few typical questions you may ask. You may add more from your own experience, using questions especially pertinent to your prospect's business.

- Are you concerned about holdups?
- Are you often away from your store or shop?
- Would you like to know what happened over the weekend?
- Is shoplifting a problem?
- Do you wish to control shrinkage in your store?
- Have you had counterfeit money passed in your store?
- Will you need to document incidents for possible future reference?

TECHNICAL APPENDIX

DIGISCAN ALARM RESPONSE

When the DS series is programmed to RECORD ALARM CAMERAS ONLY-ON (or programmed for seconds), the following is true. All Digiscans multiplex only those cameras that have been alarmed. These selected cameras multiplex at the programmed alarm speed for the duration specified by the RECORD ALARM CAMERAS menu selection. If the ALARM OUTPUT DURATION is programmed longer than the RECORD ALARM CAMERAS selection, then ALL cameras (including non-alarmed ones) multiplex for the difference in program time.

For example, you have a DS16C with 16 cameras attached. RECORD ALARM CAMERAS is programmed for 10 seconds and ALARM OUTPUT DURATION is programmed for 25 seconds. If cameras 1,2 and 3 momentarily alarm, then only those cameras are multiplexed at the alarm speed for 10 seconds. After that, **ALL 16** cameras multiplex (at the alarm speed) for an additional 15 seconds.

If the RECORD ALARM CAMERAS ONLY menu is selected ON, then alarmed cameras record (at the alarm speed) for the duration of the contact closure of the last alarm. If the ALARM OUTPUT DURATION is programmed longer than the duration of the incoming alarm, then all 16 cameras record (at the alarm rate) for the remainder of the duration.

Note that if multiple cameras are alarmed, the DS does not drop any from the sequence. All asserted cameras remain in alarm sequence until the last alarm clears.

DS16D

If the ALARM DISPLAY is programmed OFF, then the Monitor 1 (Digital) output is not affected by any alarms. If ALARM DISPLAY is programmed ON, any live multi-screen display homes to the full-screen view of the alarmed camera. If multiple alarms occur, the last alarmed camera appears full screen. The full-screen display remains until manually changed via the DISPLAY SELECT key.

In both cases the analog display homes to the alarmed camera, for the duration specified by the DWELL HOLD TIME menu. If the alarm input is asserted for a duration longer than the DWELL HOLD TIME, the analog monitor output (Mon 2) resumes its programmed sequence.

DS9, DS16C

Both of these units are simplex devices, which mean that during RECORD, full-screen pictures from the analog switcher are provided. Live multi-screen images are not available in this mode. However, a special demo mode can be initiated, which forces the unit to display live multi-screen images. If this mode is selected, the following is true: cameras are no longer multiplexed to the VCR; and the ALARM DISPLAY menu allows the units to respond in a similar fashion as the DS16D. During normal record operation, the ALARM DISPLAY menu does not affect anything.

REMOTE CONTROL FOR MULTIPLE KEYBOARDS/MULTIPLEXERS USING DIGISCAN

Using the proper equipment, multiple keyboards can be used to control a single Digiscan. Also, a single keyboard can control multiple Digiscans.

CONTROL OF A SINGLE DIGISCAN FROM MULTIPLE KEYBOARDS

To control a Digiscan from multiple RS-232 keyboards is possible with third-party equipment. Black Box Corporation has a micro switch device that facilitates this. The device is an electronic switch that accepts data from two terminals (keyboards) and routes it to a single destination. It automatically senses which terminal is active and routes it to the destination. While one keyboard is active, the micro switch buffers commands input by the secondary keyboard until the initial one finishes. The data from the second keyboard is then sent. The only time the operation is erratic is when two users attempt simultaneous control. There are other micro switches that accommodate more than two keyboards.

Direct RS-232 connections normally have a maximum distance of 50 to 100 feet. However, there are special devices (other than conventional modems) that convert the signal to formats suitable for long distance transmission. It is assumed the micro switch is located within 50 feet of the Digiscan; otherwise, an additional line drivers/adapters is needed. A suitable line driver is available from:

BLACK BOX CORPORATION, Pittsburgh PA (412-746-5500). These line drivers are capable of 38.4Kbps transmission up to 2.5 miles using (2) 24 gauge twisted pair cables. Listed are the devices that are needed:

Item	Qty	Description	Part #	Approx. Price
1	1	Micro switch	HM-SL001A	\$425
2	4	RS-232 Line Driver	ME-745A-M	\$118
3	2	Digiscan RS-232 Remote	DSRC-232	\$640 List
4	2	DB9M-DB25F Adapter	Custom	
5	2	DB25F-RJ45 Adapter	Custom	
6	1	DB9M-RJ45 Adapter	Custom	

CONTROL OF MULTIPLE DIGISCANS FROM A SINGLE KEYBOARD

All Digiscans have an addressable RS-232 input that accepts data from the RS-232 keyboard. The output of the keyboard connects to an RS-232 broadcast router, which duplicates all commands to all Digiscans. As long as each Digiscan has a unique ID number, then only the specified Digiscan responds to the commands. All Digiscans can be programmed up to 16 different ID numbers.

An 8-channel RS-232 broadcast router is available from Black Box Corporation. Additional line drivers and adapters may be required, depending on distance and configuration.

Data Broadcast (DB25 version)	HL-TL158A-R2	~\$400
Data Broadcast (RJ-11 version)	HL-TL159A	~\$275

CONTROL OF A SINGLE DIGISCAN FROM A SINGLE KEYBOARD

No special wires or adapters are required if the connection is within 25 feet. Use an extension cable to extend up to 50 feet. In some cases, connections up to 100 feet can be made without special extenders. In excess of 100 feet, use a pair of RS-232 line drivers as described above.

ADVANCED DVMD32 SETUP NOTES

Reference-update is to set a time interval at which the reference stored in memory is updated. The reference is compared to the current actual picture in order to judge if an alarm condition exists. A setting of 1 is recommended for outdoor use where there may be fast moving cloud shadows.

Light-window is a threshold that is set to update the reference when the light level in the entire scene changes significantly. If it updates too often it may accept an alarm condition as normal. The operation manual advises to adjust it so that it does not trigger too frequently.

Sensitivity - The higher the sensitivity number, the more sensitive the window. A sensitivity setting of 90 percent or more is likely to false alarm.

Smaller windows are more sensitive than larger ones because an object passing through a small window causes a greater percentage change in the pixels of the window.

A larger window needs to have a higher sensitivity setting if it to detect smaller objects. If an area needs to be covered that is much larger than the object to be detected, it may be better to cover the area with several smaller adjacent windows than with one large one.

Light window sets the light level update for the entire scene, not just the area inside the detection window. It should be set to around 80 percent for it to work properly.

A window containing blank space (homogeneous area) is more sensitive to detecting cluttered objects (for example, objects with various contrast levels) and a window containing clutter is especially sensitive to homogeneous objects. Therefore in a situation with two detection windows, one covering a blank wall, the other on a high contrasting scene and both set to the same low sensitivity setting; the window covering the blank wall triggers more easily.

Raise the sensitivity on the contrasting window to make it react similar, depending on the contents of the scene.

The sensitivity setting on the DVMD32 is nonlinear. Adjusting sensitivity from 10 to 20 percent is a very small change, however, a change from 80 to 90 percent is a relatively large change in sensitivity.

OUTDOOR USE RECOMMENDATIONS

Set REF UPDATE to “1” second for outdoor use. This allows the reference to be updated more often for slow moving shadows cast by structures or clouds and the slow change in light level from day to night. If the Reference in the DVMD32 is not updated often enough it may detect the slow movement of a shadow as an alarm.

Set LIGHT WINDOW to “0” for outdoor use. Setting LIGHT WINDOW to “0” is effectively turning it off.

The light window was designed more for indoor use, to help distinguish between lights turning on or off and actual motion. Turning light window off is only a recommendation.

The light window may be useful in outdoor use if there are automatic street lights near the camera that turn on at twilight or night. The DVMD32 would simply update its reference rather than trigger an alarm.

The light window is designed to accommodate fast changes in the entire light level of the picture. Light levels do not usually change fast outdoors. Setting it to off forces the DVMD32 to update its reference according to the REFERENCE UPDATE setting only, which handles slow changes such as day to night or slow moving clouds.

FASTRANS TRANSMISSION OPTIONS

GENERAL MODEM INFORMATION

FT2004 works with any modern modem. The FasTrans system auto-detects compatible modems on connection, eliminating additional user setup. Picture transmission speed is directly related to modem speed; The higher speed modems allow faster transmission. A 33.6K modem transmits pictures approximately twice as fast as a 14.4K modem. Most modems are designed to connect at the fastest rate possible for the duration of the call. If the current connection is noisy or of poor quality, the modem normally auto-ranges to the next lower speed.

Modem speeds in excess of 21.6Kbps are sometimes not possible, particularly if the call is over very long distances. If the call cannot connect at the maximum speed of the modem, try re-dialing. Try a different long distance carrier. Local calls generally allow maximum modem speeds with fewer problems.

Currently, Gyjr recommends the Motorola Codex, Motorola Power Series and Microcom modems for land line applications. These modems seem to tolerate line noise the best. Most modern modems work with the FT2004 system. Listed below are the recommended modems. Always use a modem rated for 24Kbps or faster. Since modem speed directly affects refresh performance, it makes little sense to save a few dollars purchasing a 14.4K modem. The modem cost is normally a small percentage of the total package, so spending a little more substantially improves performance.

The 56K modems (now available) do not provide any faster data transmission than the 33.6K modems. The 56K devices are designed for faster data transfer during reception of data, not transmission. It is only beneficial when downloading files from the internet, when the Internet Service Provider (ISP) provides compatible service. If two devices are connected using 56K modems (such as 2 PCs or 2 FasTrans), the maximum data transfer is 33.6K. It is not beneficial to spend more money on a 56K modem over a 33.6K modem.

COMPATIBLE MODEMS

Most of the modems listed below are available from local computer outlets at a good discount. ISDN modems and other communication adapters have been included.

33.6Kbps Modems

Select Motorola manually from MENU
U.S. Robotics Sportster 33.6

28.8Kbps Modems

- * **Motorola 32X Series (3260 Faste)
 - *Motorola Power Series (V.34)
- * **Microcom Deskporte Faste
 - Microcom ES Model
 - *SUPRA Modem
 - *U.S. Robotics Sportster

ISDN Modems/TAs (64Kbps)

MOTOROLA BITSURFR

**ADTRAN DSU IIIAR

ISDN Modems/TAs (128Kbps)

MOTOROLA BITSURFR PRO

**ADTRAN ISU 128

Analog Lease Line Modems

MOTOROLA 3261

**MOTOROLA V.3400

LAN Adapters

* **LANTRONIX LRS2

T1 CSU/DSU

*ADTRAN TSU-100

MOTOROLA FT100S

LARSCOM ACCESS T CHANNEL BANK

The FasTrans 2004 is also capable of custom settings which enables it to connect to any modem if the correct initialization strings are entered.

* FasTrans autoconfigures to equipment

** Suggested equipment for installation; In some cases these modems are more expensive, they are easier to setup/install than the others listed.

DEDICATED (LEASED) LINE TRANSMISSION

For continuous transmission requirements, a Dedicated or Leased phoneline can be ordered from the phone company. A dedicated line is defined as a direct, point-to-point line that can neither be dialed into nor dialed out. The lines can be either Digital or Analog type. Regardless, leased line usage normally requires a pair of special, compatible modems. There are normally no distance limitations.

Analog Leased Lines

Analog leased lines are usually voice grade, and may or may not have dial tone voltage. Currently, the only modems that are plug and play compatible are the Motorola Codex 3261 FAST 24K and 3260 FAST. The 3261 is primarily a leased line modem whereas the 3260 can be configured for dial up or leased line. The FT2004 works with any AT configurable leased line modem.

Digital Leased Lines

A DDS digital leased line can be supplied by your local phone company that supports 56Kbps. To transmit over this line use the ADTRANS Model DSU-IIIAR; This device can function as a digital DSU as well as a line driver.

DIRECT CONNECT TRANSMISSION

The data ports on FasTrans transmit/receive in a RS-232 format, normally connecting into a modem or terminal adapter. However, there is a provision to allow direct connection of the transmitter to receiver without modems. This is particularly handy if you have to do a demo and do not have easy access to phone lines.

Using a standard modem cable and null modem adapter, the FT2004 can transmit up to 115.2Kbps asynchronously. This is 2 to 4 times the transmission speed when compared to the Motorola Codex. A modem cable is included with FasTrans and the null modem adapter can be obtained at most computer stores.

Back-to-back speeds up to 2.0Mbps are possible. At this rate, nearly real-time images are possible. To achieve speeds between 128Kbps to 2.0Mbps, the FT2004 ports must be programmed to the EIA-530 synchronous mode. This is a standard protocol that is used for To connections, between DSU and a host device such as FasTrans. In this mode, a special high-speed cable must be used, which is different from the standard modem cable/null modem adapter mentioned above. Contact Gyr for pinouts for the high-speed cable.

Direct RS-232 connections normally have a maximum distance of 50 to 100 feet. However, there are special devices (other than conventional modems) that convert the signal to formats suitable for long distance transmission. One FasTrans customer has successfully used a pair of RS-232 line drivers allowing a 38.4Kbps transmission for a distance exceeding 1 mile. The requirements are 1 to 2 twisted pair cable that are not routed through the switched telephone network. Maximum distance varies from 2.5 to 3.4 miles. Any line drivers used must allow at least 38.4Kbps speed. Suitable line drivers are available from:

Black Box Corporation, Pittsburgh PA (412-746-5500). These line drivers are capable of 38.4Kbps transmission up to 2.5 miles using (2) 24 gauge twisted pair cables.

Line Driver	#ME-745A-M
Null Modem	#HL-ME202

Rad Data Communications, NJ (201-529-1100). These line drivers are claimed to transmit 38.4K up to 3.4 miles over 26 gauge, single twisted pair wires.

Line Driver	ASM-31/115/V24
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ADTRANS Model DSU-IIIAR; This product has been tested by Gyr. This device can function as a line driver as well as a digital DSU. Using dual twisted pair wires, transmission is up to 2 miles. By connecting to a special 56Kbps DDS digital leased line from the local phone company, you can transmit as far as you want.

BASIC OVERVIEW OF ISDN

ISDN is an acronym for Integrated Services Digital Network. This is a new generation of phoneline available as an alternative to regular voice grade analog (POTS) lines. Most phone companies across the country are offering this service. ISDN is a true digital link with speeds between 56Kbps to 128Kbps. There is anywhere between 2 to 5 times more capacity than the most advanced analog modems available. ISDN is a switched service, so you can use the same line to call any other ISDN line in the world and communicate at a rate at least 112Kbps.

FORMS OF ISDN

ISDN comes in two basic forms. BRI ISDN stands for Basic Rate Interface, which provides two 64Kbps channels, which can be used for voice, data or video. One copper twisted pair delivers two bearer channels (B-channels) plus one 16Kbps signaling channel (D-channel). This is also called 2B+D.

Primary Rate ISDN (PRI) consists of 23 B-channels, sharing a single D-channel for signaling (23B+D). This is normally delivered over a T-1 circuit.

USES

This bandwidth can be used in a variety of ways, depending on the interface devices. For example, you can:

- Have simultaneous voice and data, by using one B-channel for each.
- Aggregate B-channels for more bandwidth; a single ISDN line can provide up to 128 kbps bandwidth, to be used for circuit switched data/video, and the B-channels of multiple ISDN lines can be combined (inverse multiplexing or bonding).
- Use up to 9.6Kbps bandwidth of the D-channel for packet-switched data, since signaling does not use it all.
- BRI-ISDN can support up to eight separate devices (telephones, computers, fax machines, etc.) on the same line-and each given as many separate telephone numbers as needed.
- Receive/send three calls simultaneously; for example, two phone and one fax connection.
- ISDN telephones can call and receive from ordinary telephones everywhere, since the digital and analog systems are interconnected.

HOW TO DESIGN A FASTRANS SYSTEM USING ISDN

1. Make sure ISDN service is available at both transmitter and receiver sites.
2. Identify and estimate monthly line charges and installations costs.
3. Select ISDN Terminal Adapter (TA). One each is needed for transmitter and receiver. Make sure the ISDN TA has an integrated Network Terminating Device (NT1) or specify an external one. It is recommended that you select a TA that can aggregate the B-channels to get full 112-128Kbps transmission rates.
4. Specify FasTrans 2004.

RECOMMENDED ISDN TERMINAL ADAPTERS

ADTRANS Model ISU 128; Standalone TA that connect FT2004 directly to the ISDN network. Includes NT1. Speeds from 300-128Kbps.

ADTRANS Model 2 x 64; Dual ISDN TA; Has two separate 64Kbps ports allowing two applications simultaneously and independently. Allows 64Kbps video transmission on one channel, and simultaneous audio on the other. Requires ISDN compatible telephone or audio code on each end. May require optional NT1. Call 800-827-0807

For more general ISDN information:

Pacific Bell Faxback Service	800-995-0346
AT&T	800-432-6600
North American ISDN Users Forum	301-975-2937
Internet Usenet News group	comp.dcom.isdn

HIGH-SPEED DIGITAL TRANSMISSION

FT2004 is compatible with digital links up to 2.0Mbps. BRI ISDN (64-128Kbps), 384K, PRI ISDN (1.5Mbps, otherwise known as Fractional T-1) and T0 are supported. The Modem port is selectable RS-232 or EIA-530 (for high speed links). The EIA-530 mode is V.35 compliant.

INTER-MODEL COMPATIBILITY

FT2004 receiver can communicate with a FT2000 transmitter, with most features available. FT2000 receiver can communicate basic commands with a FT2004 transmitter, limited to receiving images from Cams 1 and 2. FT2004 receiver can communicate with FT2000 cellular.

CELLULAR TRANSMISSION

FT2004 is cellular compatible and the modem listed below is recommended.

For proper reception of pictures originated from FasTrans Cellular, the FasTrans Receiver should use the AT&T Comsphere modem; Model # 3710-A2-201. This allows a maximum speed of 14.4K, the limit of current cellular technology.

FASTRANS 2000/2004 PTZ NOTES

FASTRANS CONTROL DATA FORMAT

The FasTrans system allows RS-232 control signal information to be sent from receiver to transmitter during picture transmission. This signal path is typically used to send pan/tilt/zoom or camera switch commands from an RS-232/serial keyboard to remote device.

FT2004

Control data signals can be sent during picture transmission. Control signals take priority over picture transmission. As long as the Control information is not continuous and at a low baud rate, picture transmission is minimally affected. The total data throughput improves when using over a faster transmission medium, such as ISDN.

There are RTS and CTS handshake signals available through FasTrans to indicate that the buffer is full. These signals tell the host device to cease sending control data until the buffer empties. If these signals are properly utilized, FasTrans prevents the loss of control data sent by the PTZ controller.

The FT2004 system can be successfully used for PTZ control. FT2004 picture transmission suspends for the duration of control signals sent. After succession of data, picture transmission resumes.

WHY USE RS-232 SIGNALING?

The RS-232 protocol is an industry standard for transmission of computer data or control signals. The technical specifications allow the cable to be up to 50 feet in length, although in most cases it goes to 100 feet using properly shielded cable. For long distance transmission, there are several types of devices that extend the useful distance of the RS-232 signal.

One type is a Line Driver, which converts the RS-232 signal into a waveform which allows use of twisted pair(s) of wires. These devices can go to several miles. Another type is the Interface Converter, which changes RS-232 to the more robust RS-422 or RS-485 format. RS-422/485 signals are designed for long distances, around 4,000 feet.

RS-232 PTZ SYSTEMS

Several other manufacturers have RS-232 controlled PTZ systems, most of which have some sort of integrated camera switcher. A separate keyboard that outputs RS-232 signals is normally available allowing remote operation of the receiver/driver box and/or the camera switcher.

The transmission format of these systems loosely falls into two types. For example, if the operator moves the joystick left for 5 seconds, then the P/T unit will pan left for 5 seconds. One system outputs a string of continuous commands that say “panleftpanleftpanleft” for a total of 5 seconds, and then cease this data string (type A system). Type A puts a burden on the transmission system if limited bandwidth is available.

Performing the same command with the type B system outputs a “pan left start” command and then 5 seconds later a “pan left stop” command. This format is much more efficient, putting a minimum burden on the RS-232 transmission system. Both systems may be used with FT2004.

CONTROLINK SYSTEM COMPATIBILITY

Gyyr’s ControLink system is compatible with the FasTrans 2004 system. ControLink uses the type “B” form of signaling. The ControLink RC (CLRC) is connected to a remote ControLink switcher (CLSW) via the RS-232 port on the FasTrans 2004 system. Pan, tilt and zoom cameras are connected to the CLSW with any other peripheral devices. A Gyyr receiver/driver is needed for each PTZ camera. If the application does not require a CLSW, the CLRC talks to remote Gyyr receivers/drivers via RS-422 command protocol. However, since the FasTrans 2004 system inputs and outputs RS-232 data only, interface converters are needed.

PELCO SYSTEM COMPATIBILITY

Compatibility between the Pelco Coaxitron and Gyyr FasTrans systems have been analyzed by both Pelco and Gyyr engineers. Pelco uses the Type “B” system of RS-232 signaling.

The CM8500 system (software version) V1.3 optionally has the capability to allow serial data control of PTZ cameras. This is done by an optional communications board (CM8507) allowing RS-422 operation.

FT2000

Pelco has tested their MPT9500 series controller with FasTrans 2000, and the following observations were made. Although the 9500 series allows control of up to 32 receiver/drivers, it has no capability to control a video switcher to select cameras.

The FasTrans 2000 system allows limited RS-232 data to be transmitted from receiver to transmitter. Although the Pelco system is Type “B”, it can be operated in such a manner as to overburden the data transfer capacity of FasTrans. For example, if pan/tilt is operated simultaneously, and the variable speed commands are used, the system may pan/tilt, but not stop when desired.

Under worst case conditions (for example, Large, high-resolution pictures transmitted and continuous commands generated by the Pelco system), few commands are transmitted. It appears that the Pelco system is not compatible with the handshake protocol of FasTrans therefore control signals may be lost.

FT2004

FT2004 has been tested with the Pelco 9750 system and works fine. Interface converters may be needed, depending on configuration. FT2004 inputs and outputs RS-232 data only. Pelco makes a receiver/driver that accepts direct RS-232 commands; it is recommended to use this version since it eliminates an interface converter for this end. The 9750 keyboard only communicates with RS-422/485 so an interface converter is needed there.

The Pelco 9500 and 8500 series have also been tested. Interface converters need to be used. The MPT9500 uses RS-485 and the CM9505D, CM8505D use balanced RS-422. (Contact the factory for detailed system drawings.)

FASTRANS 2004 DIGITAL STORAGE/ALARM OPTIONS

FT2004 has the ability to digitally store multiple images for later review. These can be stored as a form of pre-alarm sequencing or post-alarm. The transmitter has a 128KB of built-in picture memory, allowing storage of around 20 to 30 medium resolution or four high-resolution images. Images from each camera can be stored using pre-defined parameters such as size, position, and resolution. A capture interval must be specified. The quantity of total stored images depends on these factors.

Each image can be stored in normal or high resolution. Each resolution mode has 10 steps. The maximum file size for a full screen, normal resolution, level 10 image is 16KB. That means you can store at least 12 images. Actual pictures stored is normally higher, due to efficiencies of compression with images from the same camera view. Likewise, the max file size for a full-screen, high resolution, level 10 image is 64KB. This means two images can be stored. Typically, you might get five images; even more if you choose a lower level. It is recommended to store alarm images at full-screen, high resolution, level 3. This is the best compromise between resolution/file size.

POST-ALARM PICTURE STORAGE

Each alarm input has a four-step programmable sequence of cameras. Each sequence position can have multiple images stored. The record interval time is programmable. After reception of an alarm, the FT2004 TX begins to store images specified by the programmed sequence and capture interval. This continues until the buffer is full or the sequence ends, whichever comes first.

For example, Alarm input 2 is programmed for a sequence of cameras 1,2,1,2. Sequence positions 1 and 2 are set for 3-second dwell times. Sequence positions 3 and 4 are set for 2-second dwell. The capture interval is set for 1 second.

When the alarm is triggered, the TX proceeds to store images. It begins to store three images from Cam 1, then three images from Cam 2, then two images from Cam 1, and last, two images from Cam 2. This process takes 10 seconds and then storage stops. After storage ceases, the TX starts dialing the RX site. As soon as the receiver connects, current (not alarm) pictures are automatically received. The alarm images only appear on operator request. These alarm images do not erase unless manually cleared by the operator. It is important for the operator to review alarm pictures during the connection in order to then clear them. This empties the transmitter picture buffer, allowing new images to be accepted.

PRE-ALARM PICTURE STORAGE

FT2004 TX has the ability to store pre-alarm images. While the TX is powered up, the unit automatically and continuously stores images into the integrated memory. These are stored based on a user-programmed sequence similar to the alarm sequence. It is recommended that an amount of pre-alarm images not to exceed 2/3 of the total picture memory is stored. If the pre-alarm storage fills the entire memory space, none will be left over to store post-alarm images. That means there is not a picture of what initiated the alarm. Remember that pre-alarmed images have priority over post-alarm as far as picture memory goes.

When the storage of pre-alarm camera sequence is complete, the TX erases over the first images stored and continues this process. At any given time, the picture buffer contains images of past events, up to several seconds, perhaps minutes.

PCMCIA REMOVABLE STORAGE

A PC standard PCMCIA type 3 card slot is installed in the FT2004 TX. This PC card slot is the same type as used on modern laptop computers. This card slot accepts FLASH type memory cards to increase the picture storage capacity. Compatible FLASH memory cards come in 1- and 2-MB sizes. FLASH memory is a non-volatile memory that requires no power or batteries. However, it does not have unlimited write cycles like conventional RAM in a computer. Generally, they last about 100,000 write cycles before memory cells start to fail.

Use of this card greatly increases the number of post-alarm pictures. Likewise, the pre-alarm sequence can be programmed to fill to capacity the internal 128KB memory.

A 2-MB FLASH card costs about \$120 and holds a minimum of 31, full-screen, high resolution, level 10 images. Typically, 60 to 90 of the same images are at level 3.

For example, the pre-alarm sequence can be programmed to fill the internal memory. The post-alarm sequence can be set for 30 pictures stored on alarm. When an alarm occurs, several things happen. First, all the pre-alarm images are transferred to the FLASH card, freeing the internal memory for later pre-alarm storage. This happens within milliseconds. Next, 30 post-alarm images are stored right behind the pre-alarm images to complete a file. Then the TX begins to dial the receiver. On connection, the receiver displays current images. The operator may then request the pre/post alarm image file for replay. The operator may choose not to download the file and hang up. This poses no problem since the pre-alarm buffer has been transferred to the FLASH card, and the card has capacity for more alarms. As long as the FLASH card is not full, the operator need not worry about erasing the memory files.

Another advantage of the FLASH card is that it can be plugged directly into the PC card slot on the receiver for direct playback. Select the VIEW ALARM/STORED FILES menu and the VIEW RCVR sub-menu. A list of files are available, each with a file size and a time/date stamp. Select the file for replay. A FLASH card can also be used in the receiver, and the operator can force image storage onto the card on demand.

Table 4. RECORD/PLAY CHART FOR THE 2100/HD TLVCR

REC Time (Hours)	2100 Norm Mode Fields/Seconds	2100 Norm Mode Seconds/Field	2100-SHD HD Mode Fields/Second	2100-SHD HD Mode Seconds/Field
02	60	.016	N/A	N/A
06	N/A	N/A	60	0.016
18	6.660	0.15	20	0.05
24	5.000	0.2	N/A	N/A
30	N/A	N/A	12	0.083
48	2.500	0.4	7.5	0.13
72	1.700	0.58	5.1	0.20
120	1.000	1.00	3.0	0.33
175	N/A	N/A	2.1	0.49
180	0.666	1.50	N/A	N/A
240	0.500	2.00	1.5	N/A
360	0.300	3.33	0.9	1.11
480	0.250	4.00	0.75	1.33
600	0.200	5.00	0.6	1.67
720	0.160	6.25	0.48	2.08
960	0.120	8.00	0.36	2.78

For a Digiscan/2100 Update Rate Chart, see the Gyyr New Product Comparison document.

**Table 5. DIGISCAN/2100-SHD UPDATE RATE CHART
FOR REGULAR AND HIGH-DENSITY RECORDING**

CAMS/ Record Time	Standard Mode				High Density Mode			
	4	8	12	16	4	8	12	16
2	7.5 pps	3.75 pps	2.5 pps	1.9 pps	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	7.5 pps	3.75 pps	2.5 pps	1.9 pps
18	1.66 pps	1.2 sbp	1.6 sbp	2.13 sbp	4.98 pps	2.5 pps	1.67 pps	1.25 pps
24	1.25 pps	1.6 sbp	2.4 sbp	3.2 sbp	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	3.0 pps	1.5 pps	1.0 pps	1.33 sbp
48	1.6 sbp	3.2 sbp	4.8 sbp	6.4 sbp	1.89 pps	1.07 sbp	1.6 sbp	2.13 sbp
72	2.4 sbp	4.8 sbp	7.2 sbp	9.6 sbp	1.25 sbp	1.6 sbp	2.4 sbp	3.2 sbp
120	4.0 sbp	8.0 sbp	12 sbp	16 sbp	1.33 sbp	2.67 sbp	4.0 sbp	5.33 sbp
175	N/A	N/A	N/A	N/A	1.89 sbp	3.81 sbp	5.71 sbp	7.62 sbp
180	6.0 sbp	12.0 sbp	18 sbp	24 sbp	N/A	N/A	N/A	N/A
240	8.0 sbp	16 sbp	24 sbp	32 sbp	2.67 sbp	5.33 sbp	8 sbp	10.7 sbp

ps = pictures per second; refers to how many samples per second for each camera input.
sbp = seconds between pictures; refers to how long it takes for all cameras to be sampled.

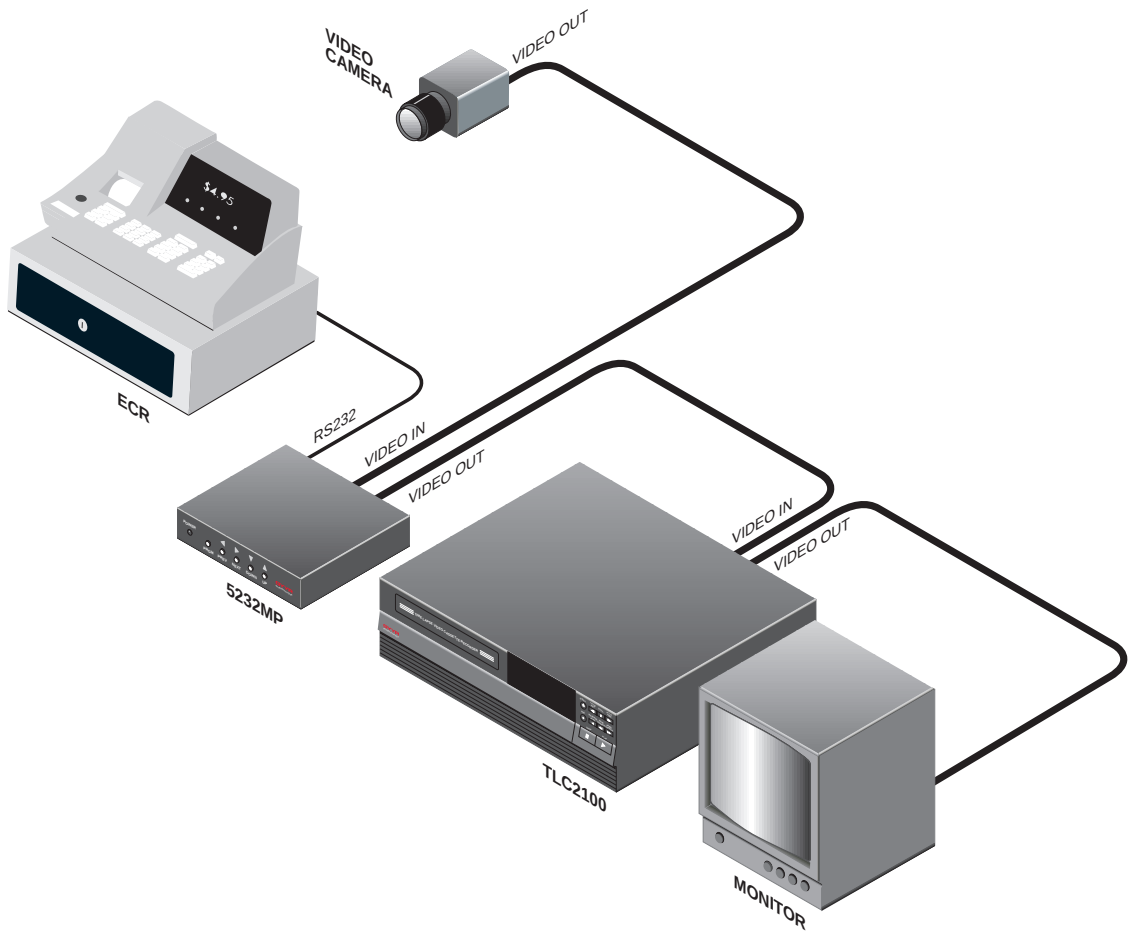
This chart is designed to calculate the switching rates of a Digiscan/VCR combination. How often a frame multiplexer/VCR system records each camera is dependent on three factors; VCR speed, number of cameras and VCR recording format. The high-density recording format records three times as many pictures as a regular TLVCR at comparable speeds. It takes 2.13 seconds to record one picture from all 16 cameras using the standard TLC2100 at the 18-hour speed. The TLC2100-SHD in the high-density mode records 1.25 pictures per second, per camera.

APPLICATION NOTES

APPLICATION NOTE

Single ECR Transaction Verification System

Description	A convenience store owner has higher than normal operating losses, which he suspects is due to shrinkage. In particular, he suspects losses due to beer sales improperly rung up.
System Expectations	The store owner would like a way to track sales using a video recorder combined with cash register transactions. He would also like to flag specific transactions such as, beer sales, for later review.
Solution	The recommended system incorporates a video camera, Gyyr VCR and 5232MP Text Inserter.
Results	The camera is positioned to view items being purchased. This video signal is sent to the 5232MP with the transaction data supplied by the cash register. The 5232MP superimposes the transaction information over the video signal and sends it to the VCR. The 5232MP is user programmed to output an alarm to the VCR when a BEER transaction occurs. When this happens, the VCR switches to real-time recording and electronically indexes the tape. On playback, the VCR can be fast scanned to automatically stop at all index locations, showing all BEER transactions.

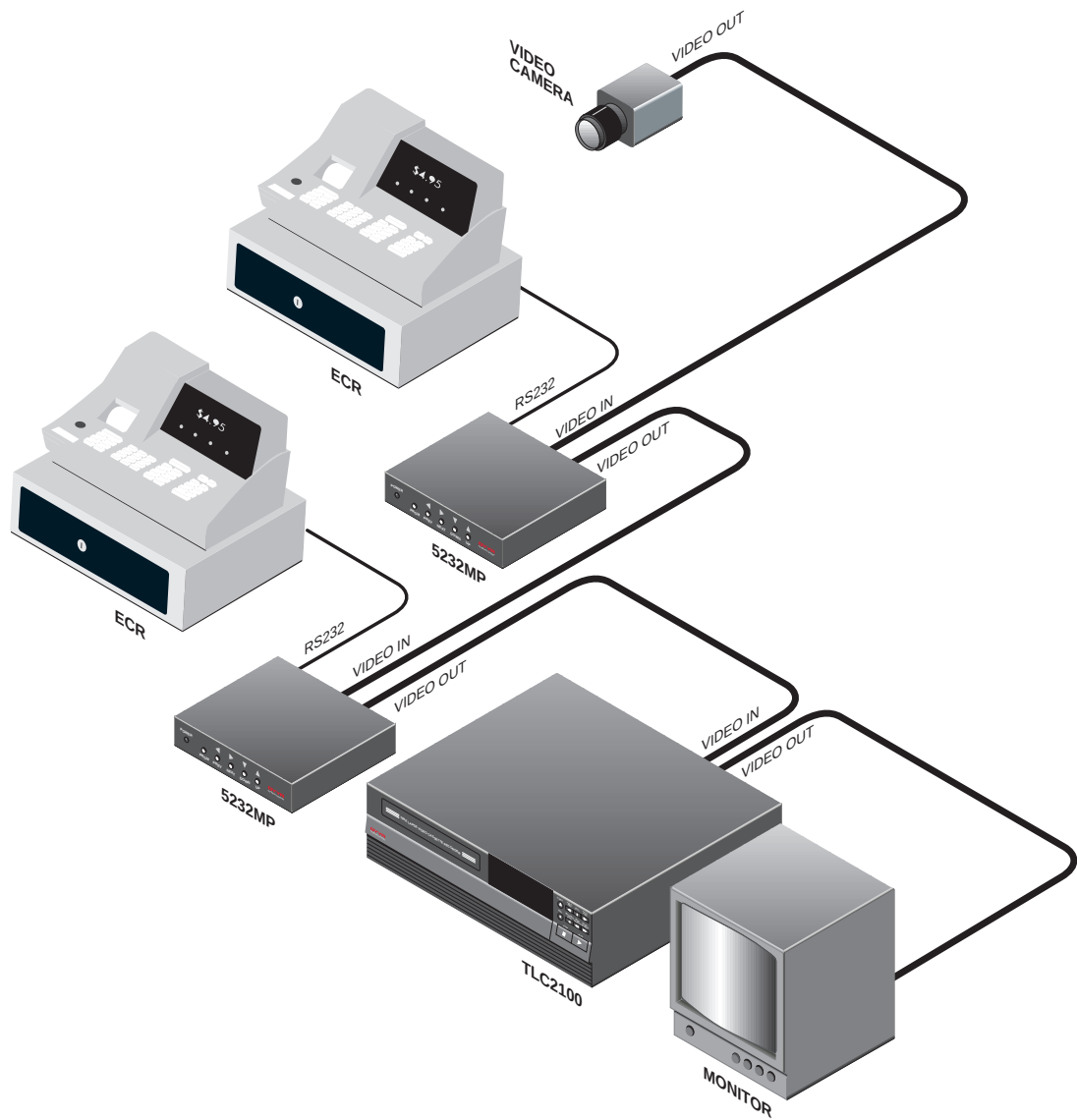


Single ECR Transaction Verification System

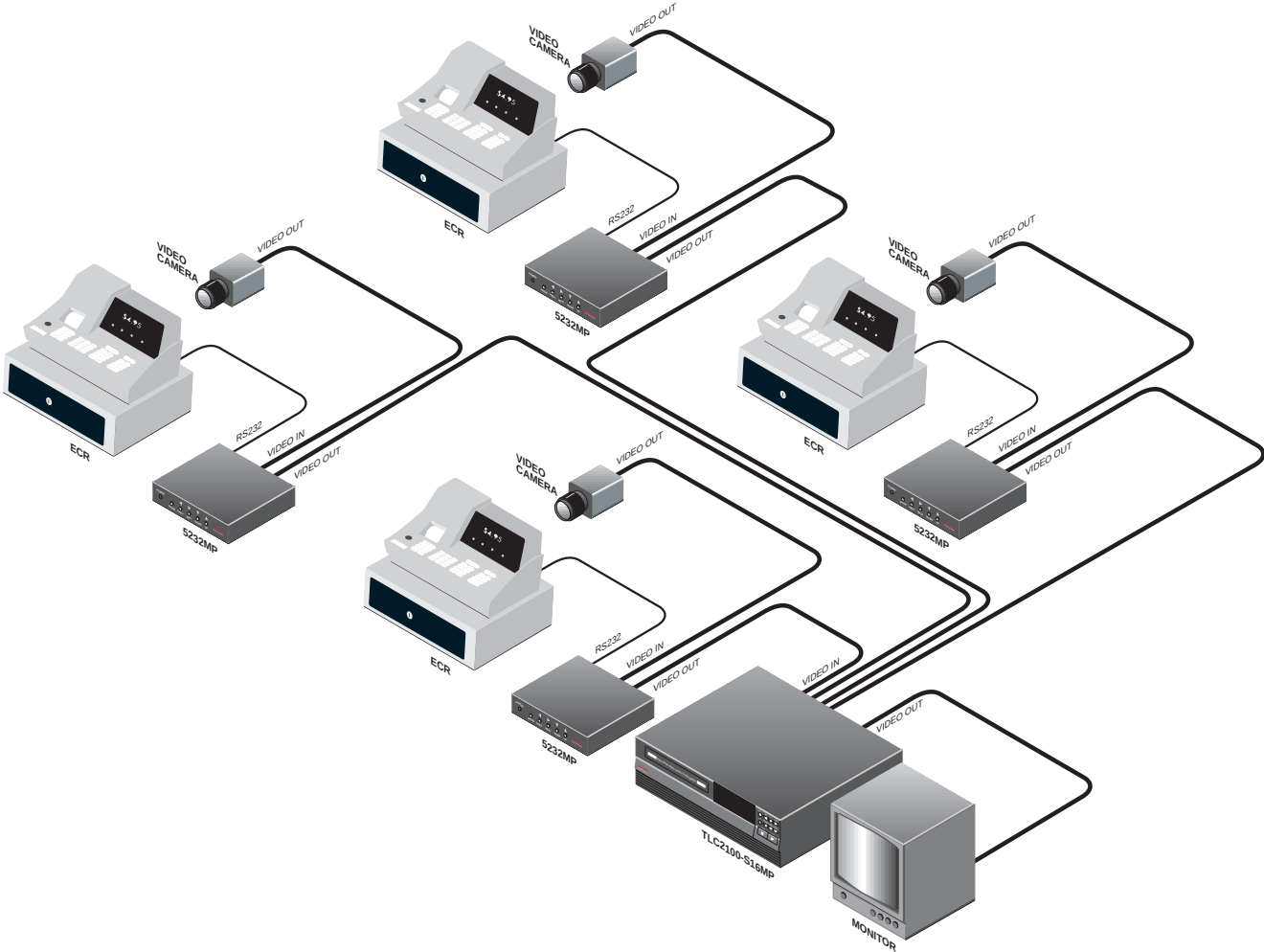
APPLICATION NOTE

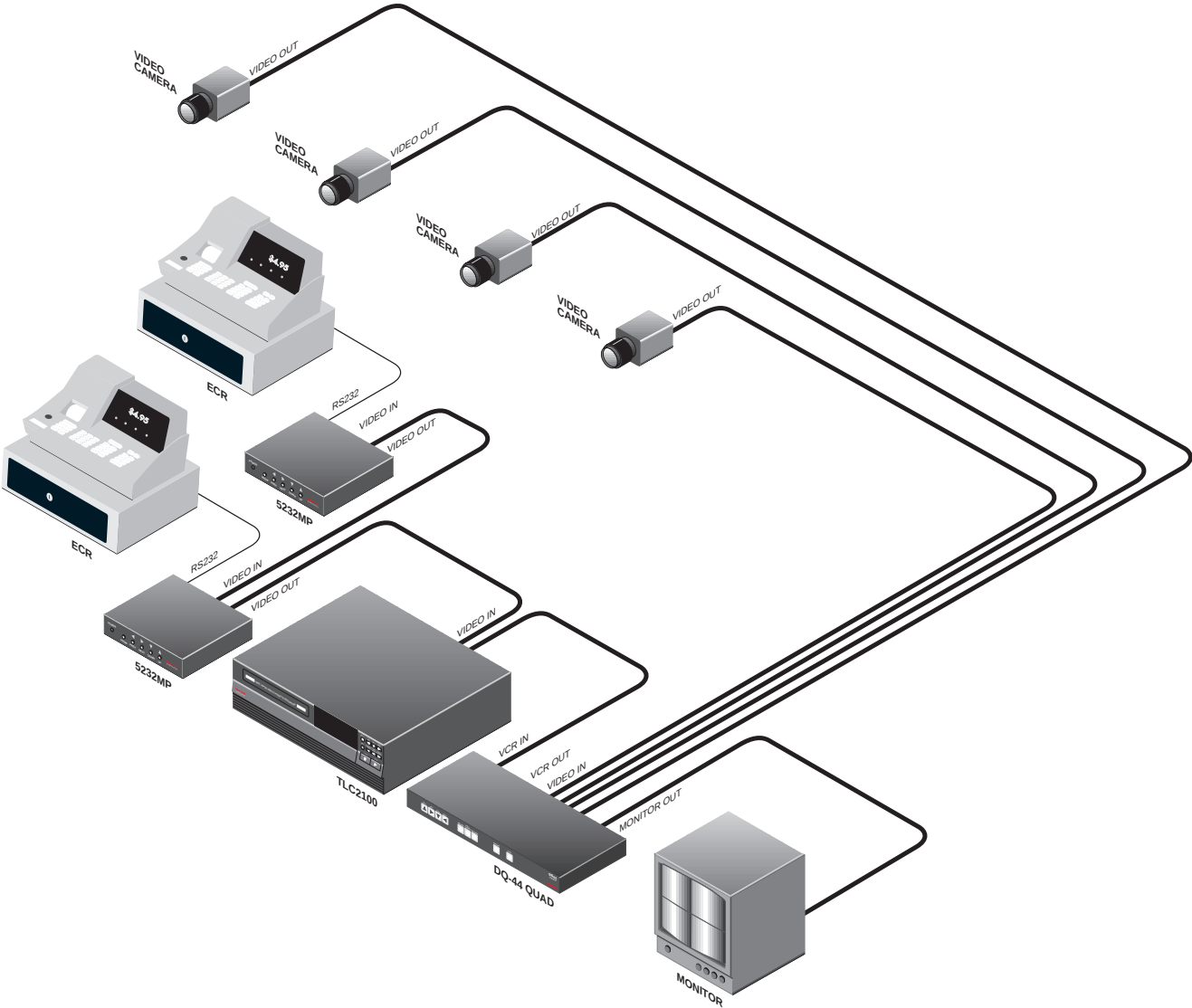
Multiple ECR Transaction Verification System

Description	A store owner wishes to perform an audit trail on several cash registers within his facility.
System Expectations	The store owner wishes to keep track of all transactions from multiple cash registers on a single VCR.
Solution	The recommended system uses four cameras, four 5232MPs and a Gyrr VCR.
Results	a) For multiple ECR hookup, use a 5232MP for every terminal on the system. Up to four 5232MPs can be connected in series to a single video camera source allowing hookup up to a single recorder. For example, four registers may be physically positioned next to each other. A single overhead camera views all of the registers. Each register is wired to a separate 5232MP. The camera video is connected to the video input of text inserter #1 (TI#1). The video output of TI#1 connects to the video-in of TI#2. Video-out from TI#2 connects to TI#3, etc. The text from each inserter can be individually positioned to different portions of the screen, to allow easy comparison of text to individual register. b) If the registers in the store are apart from one another, then individual cameras are necessary. In this case four cameras feed into four 5232MPs. These 5232MPs connect to the TLC2100-S16, which has a built-in camera switcher. This system allows more specific detail since each camera only covers a single register area. Furthermore, each camera view has text only from a single register, without text from other inserters obscuring the view. c) If a Quad processor is to be used, then the text insertion should connect between the Quad device and the recorder. It is not recommended to connect the Text Inserter between the camera and Quad device, because the Quad device compresses the image size and affects legibility.



Multiple ECR Transaction Verification System





Multiple Transaction Verification System

APPLICATION NOTE

Bank System

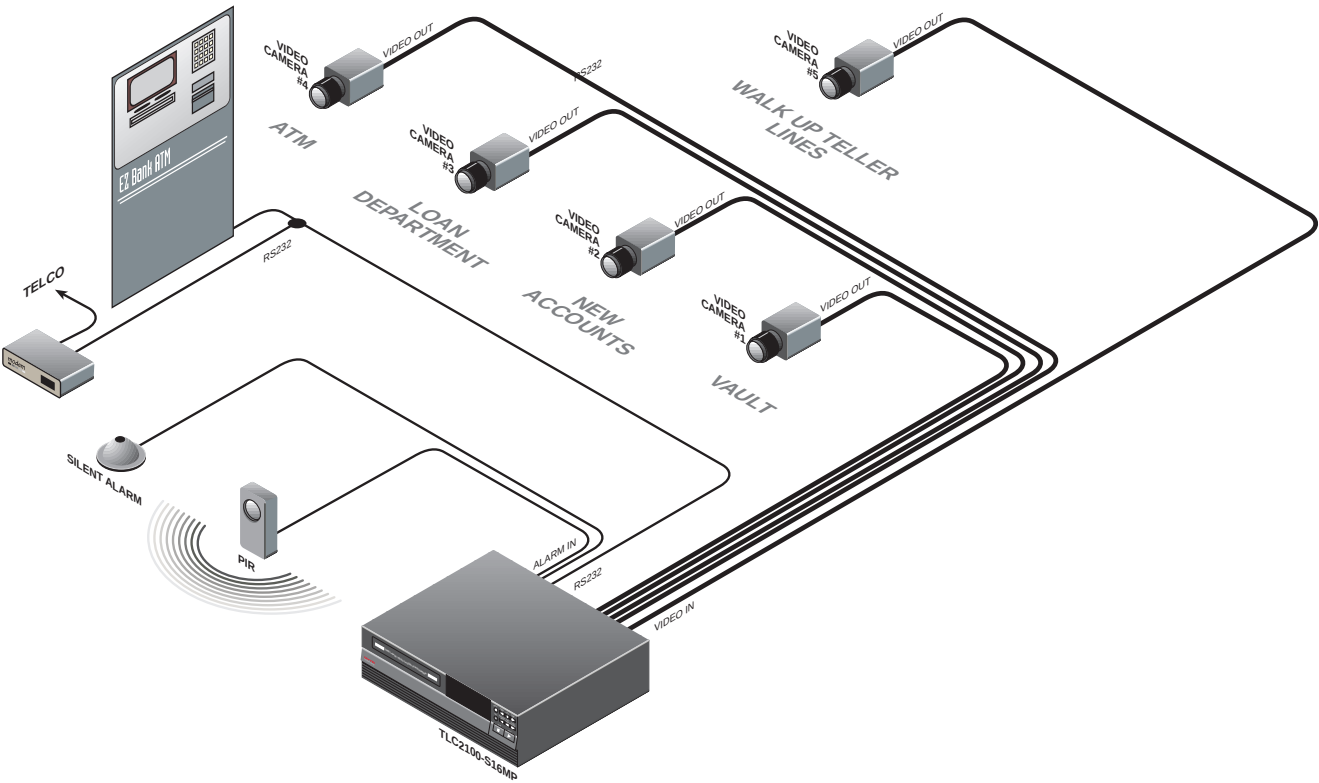
Description	A bank branch office needs complete video coverage and recording for multiple teller lines and outside ATMs.
System Expectations	The bank security management expects the system to record from multiple camera views depending on the time of day. Specifically, all views including the vault, teller and new account lines and ATMs are to be recorded during normal working hours. After hours, only the ATMs need be recorded. Alarm conditions should cause only the teller lines to be recorded at a faster rate.
Solution	For a bank branch with a single ATM, the recommended system uses the TLC2100-S16. The S16 is the only time-lapse recorder with a built-in switcher specifically designed for banking applications. The powerful program flexibility of the S16 allows virtually any combination of cameras to be recorded at any time and create 16 custom sequences on alarm.
Results	Several cameras are positioned inside the branch and within the ATMs. All are connected to the TLC2100-S16, which has a 16-position camera switcher built in. During the hours of 10 am to 5 pm, all cameras are recorded at the 168 hour rate. This requires the tape to be changed only once a week. From 5 pm to 10 am, the switcher sequences only the ATMs. Discrete holdup buttons are available at each teller. Each holdup button can command the S16 to record only the specific areas you desire. Any alarm causes a specific sequence, depending on the time of day and changes the VCR speed to a faster recording rate.

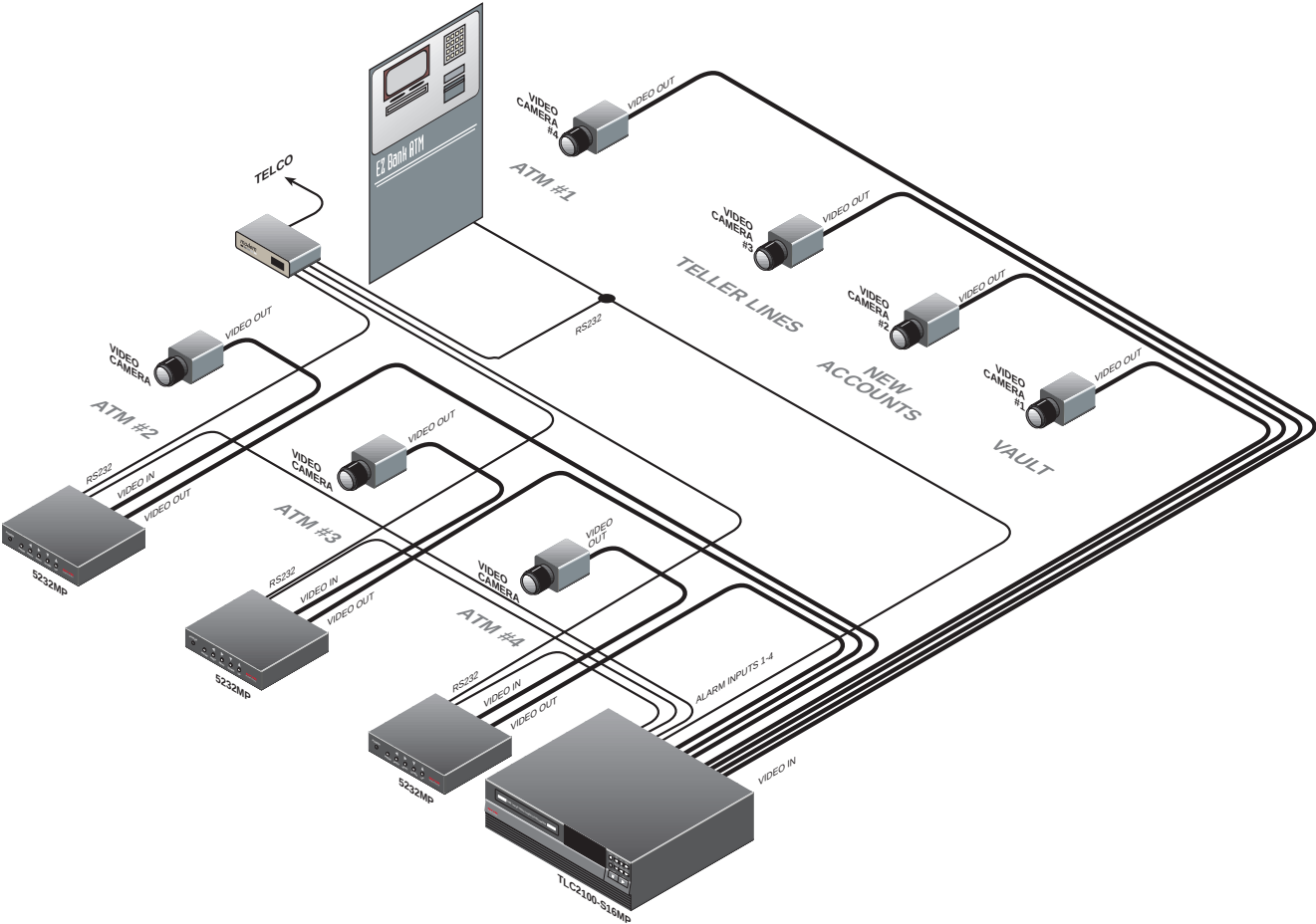
Advanced Systems

a) Larger systems that use multiple TLC2100-S16 may require extensive programming. These systems can benefit by using the Storage Transfer Device or STD. The STD package provides an easy way to archive complicated multi-program sequences used with the S16 or download the same program to multiple S16s. This package consists of memory storage and transfer device, software for an IBM PC or equivalent and interconnects.

b) Integration of ATM transaction text can be easily accomplished with no additional equipment required. All that is needed is a connection between a compatible ATM network node (normally from a modem output). See Figure 1. The S16 has a text inserter built in and can superimpose transactions from a **single** ATM over a specific camera view. Under normal conditions, the S16 switches all interior cameras. When an ATM transaction occurs, the S16 auto-switches to the ATM camera and the transaction information appears over the camera video. After a preset period of time, the transaction display goes away and the S16 resumes normal switching until another transaction or alarm occurs. **Note:** During an ATM transaction, the internal time/date generator is suppressed and the time/date display that appears is sourced from the ATM network. This guarantees that two conflicting time/date displays do not appear on screen at the same time.

c) For a bank application with multiple ATMs, additional 5232MP text inserters can be used. See Figure 2. Each additional ATM requires another 5232MP. Each 5232MP has an alarm output that can be programmed to activate on a transaction. This output would then go to one of the alarm inputs of the S16. The alarm sequence for that input can be programmed to home only to the corresponding ATM camera. This is to insure that the transaction video of an active ATM is not missed. **Note:** Whenever an external 5232MP processes a transaction, two time/dates appear on screen. One is sourced from the ATM network and the other is the S16 internal time/date generator. These two displays are the same since you can synchronize the internal T/D generator to all transactions serviced by the S16s internal text inserter (See SYNC TO ATM feature in S16 description).

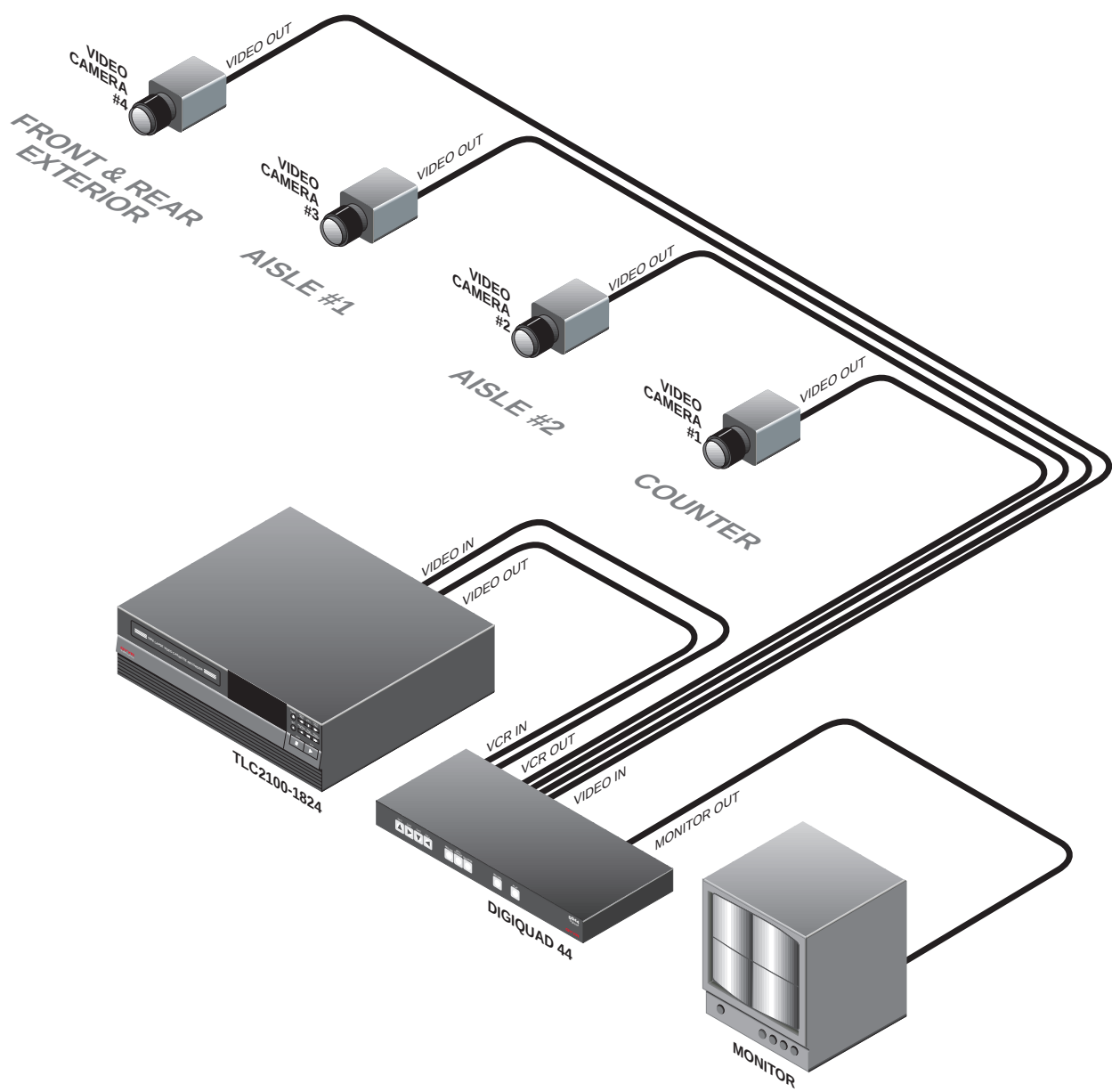




APPLICATION NOTE

Small Retail System

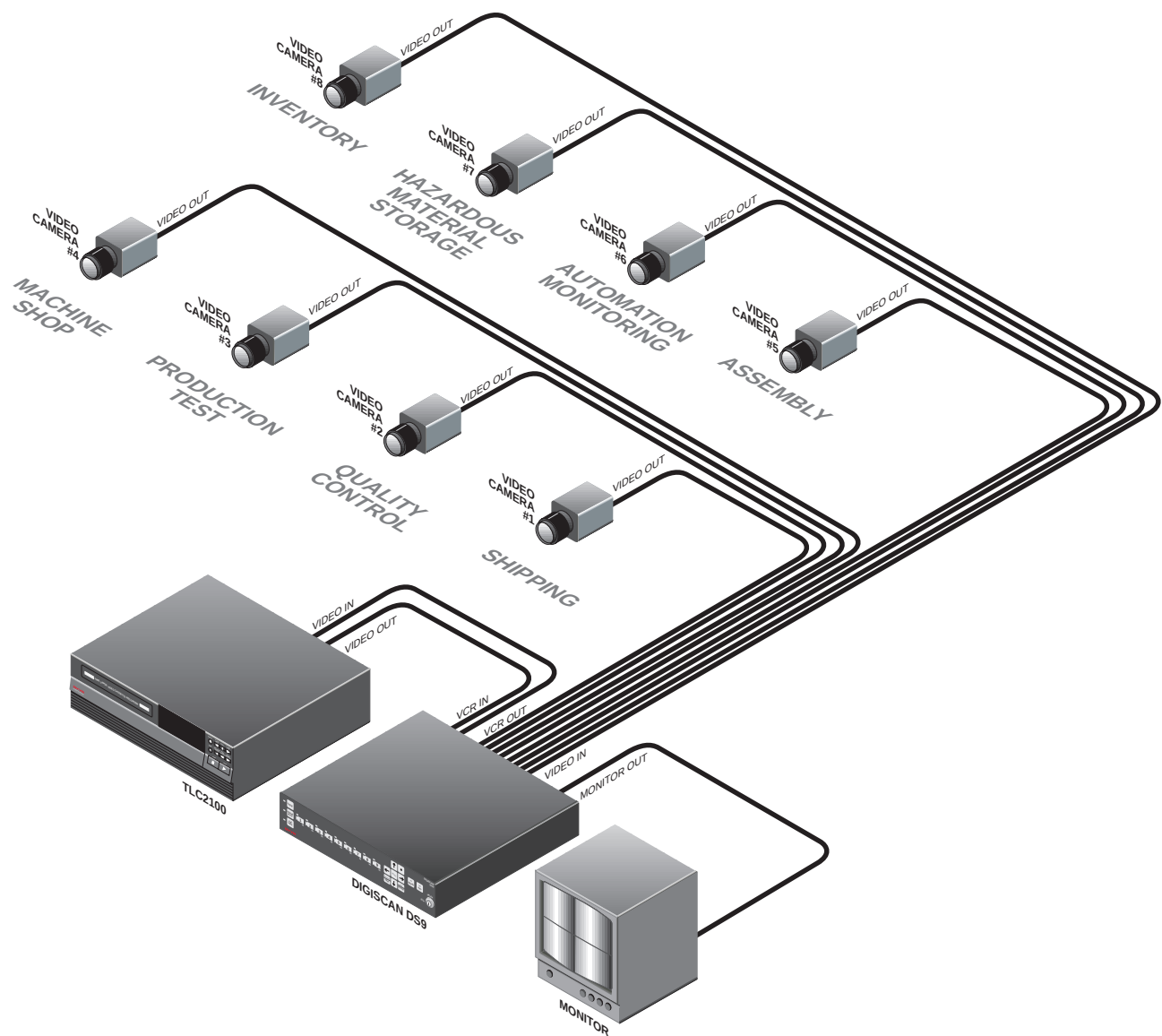
Description	A small market owner would like to have a four camera video system and recording capability. The store is in a bad neighborhood, with problems of juveniles loitering outside, and customers prone to shoplifting.
System Expectations	The system must be capable of simultaneous recording all scenes.
Solution 1	The recommended system uses the Gyjr DQ44/88 Digiquad, four cameras and Gyjr time-lapse VCR.
Results	The Gyjr DQ44 quad processor is a cost-effective way to simultaneously display and record multiple cameras. Only a single monitor is required for the register area which allows viewing of all four cameras. The cameras connect to the quad and then to the VCR for recording. On playback, the operator can zoom a quadrant back to full-screen for closer review.



APPLICATION NOTE

Manufacturing Monitoring System

Description	A clothing manufacturer makes an exclusive line of designer apparel. Many pieces that are used are quite valuable, including gold-plated appliques and semi-precious stones. On occasion, the production manager has had some problems with valuable pieces missing. Some of the processes during manufacture utilize toxic chemicals. The customer would like to safeguard the valuable pieces used and verify proper assembly techniques.
System Expectations	The customer would like to record several assembly stations, particularly the areas where the valuable pieces are used. In addition, he would like to review the assembly process to verify that correct techniques are being used.
Solution	The recommended system uses any of the Gyjr Digiscan series switchers, multiple cameras and the TLC2100.
Results	The cameras are positioned at every station using valuable components. These cameras connect to the Digiscan, which allows sequential recording of full-screen images from multiple cameras. The TLC2100 allows high-resolution recording on standard VHS tapes. On playback, the Digiscan allows multi-channel playback of selected cameras. The Digiscan system has several advantages over a quad or standard sequential switcher systems. The Digiscan imprints each recorded image with a ID code allowing playback of only those channels selected. A standard sequential switcher system cannot selectively play back the desired channels. This eliminates viewing unwanted information and speeds up the review process. Since the Digiscan records full-frame images, the playback has inherently better detail than using a quad with full-screen enlargement capabilities. Another good selling point is the system is also effective for monitoring hazardous areas. Machines or chemicals can be monitored for proper use. In the event of an accident, the system can verify proper use, minimizing liability.



Manufacturing Monitoring System

APPLICATION NOTE

Auto Speed Switching Using Digiscan and TLC2100

Description

A retail store is open to the public 12 hours per day, Monday through Friday. Peak hours are between 9 am and 3 pm daily. The manager is concerned about providing for shrinkage protection as well as overall security for employees and customers. The manager wishes to have a record of activity throughout the day.

System Expectations

The manager wants a system that records up to 16 cameras, 24 hours a day. The system must be able to play back single camera and multi-screen views. However, the manager wants to change the tape as seldom as possible, yet still have adequate coverage. Also, they want coverage on Saturday and Sunday, when the store is closed and unattended.

Solution

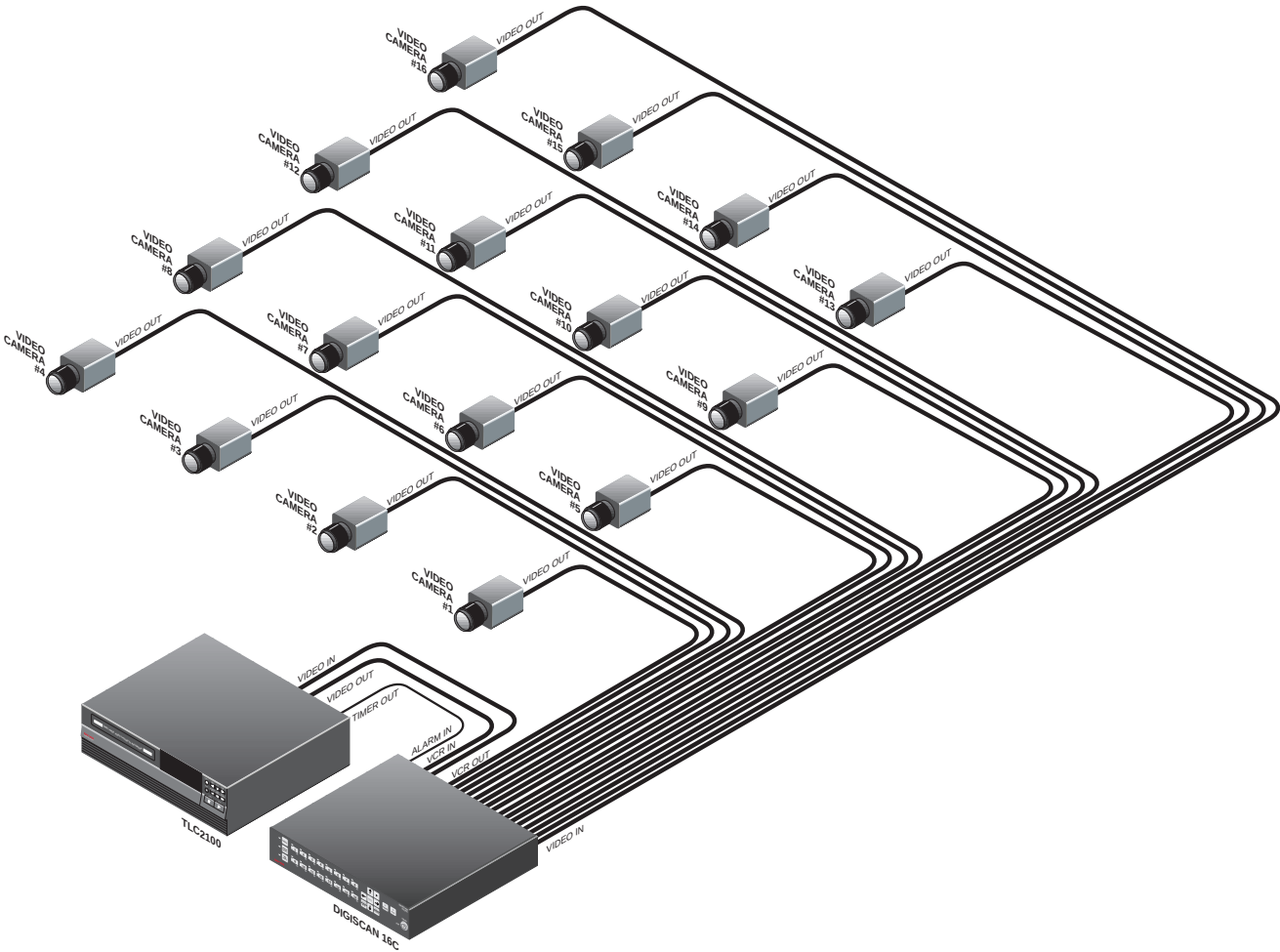
Since the majority of activity occurs 6 hours per day, it is not necessary to record at the same rate during non-peak hours. A switching/recording system that has at least two sequence speeds is necessary to satisfy the customers requirements.

The recommended system uses a Digiscan and the TLC2100. In order to have the systems change sequence speeds in tandem, the timer output pulse from the TLC2100 can be used to toggle the Digiscan between two different sequence speeds. The Digiscan can be forced into another sequence speed by toggling an alarm input.

The TLC2100 timer is set to record at the 12-hour speed between 9 am and 3 pm during the weekdays. At all other times the VCR records at the 48-hour speed. The timer output would be programmed to engage whenever the VCR is in 48-hour recording. This forces the Digiscan into the alternate (alarm) sequence speed, which is set for 48-hour multiplex speed.

Results

This setup allows continuous recording for up to 24 hours during the weekdays and 48 hours on the weekend. The system is optimized to record more pictures during the peak hours, yet still have coverage during non-peak and closed hours. During peak hours, the system records a picture from all 16 cameras every 1.6 seconds. During off-peak hours, a picture from all cameras is recorded every 6.4 seconds. For better performance, use any of the HD VCRs; they will record all cameras three times faster.

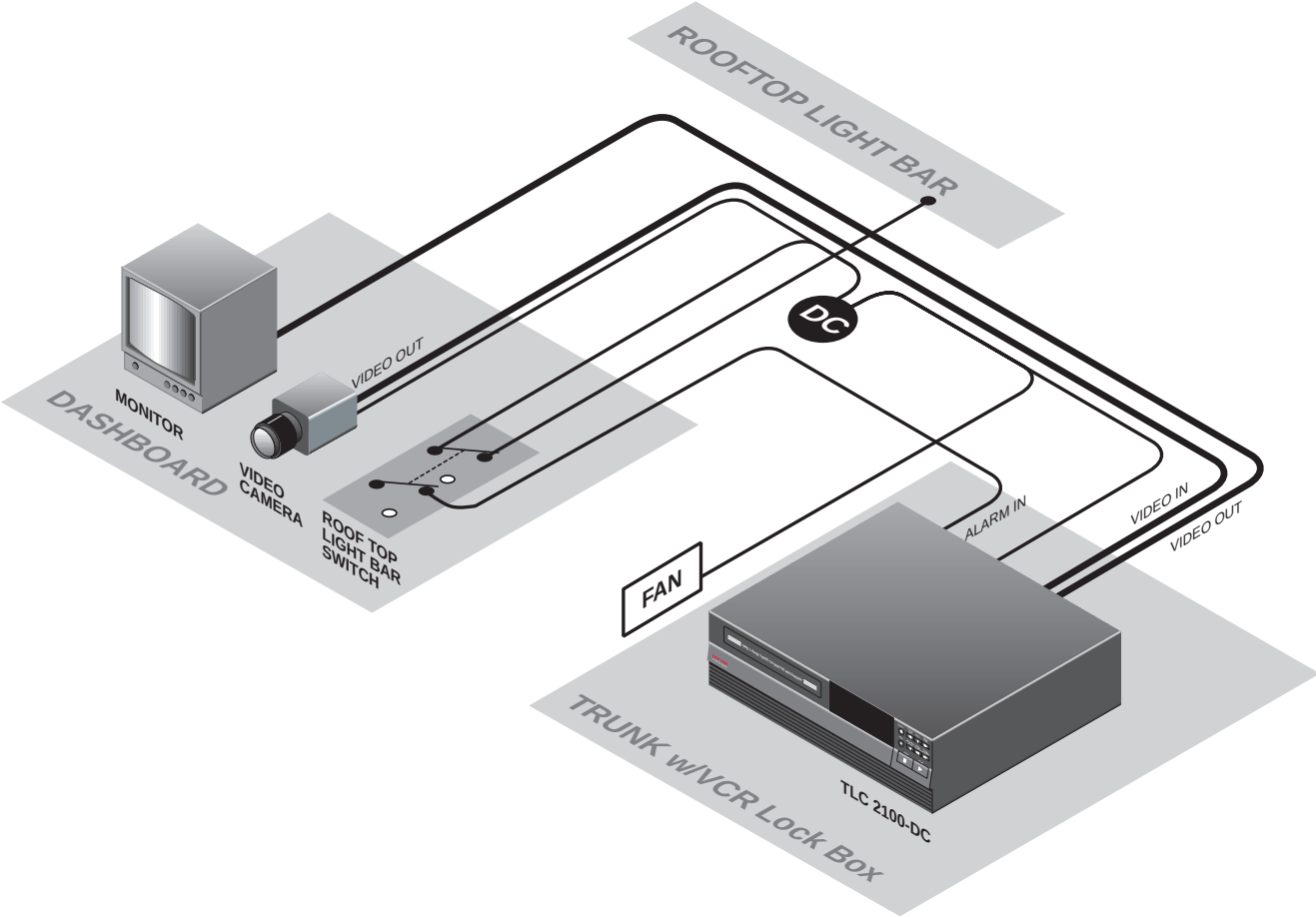


Auto Speed Switching Using Digiscan and TLC2100

APPLICATION NOTE

Mobile Recording System

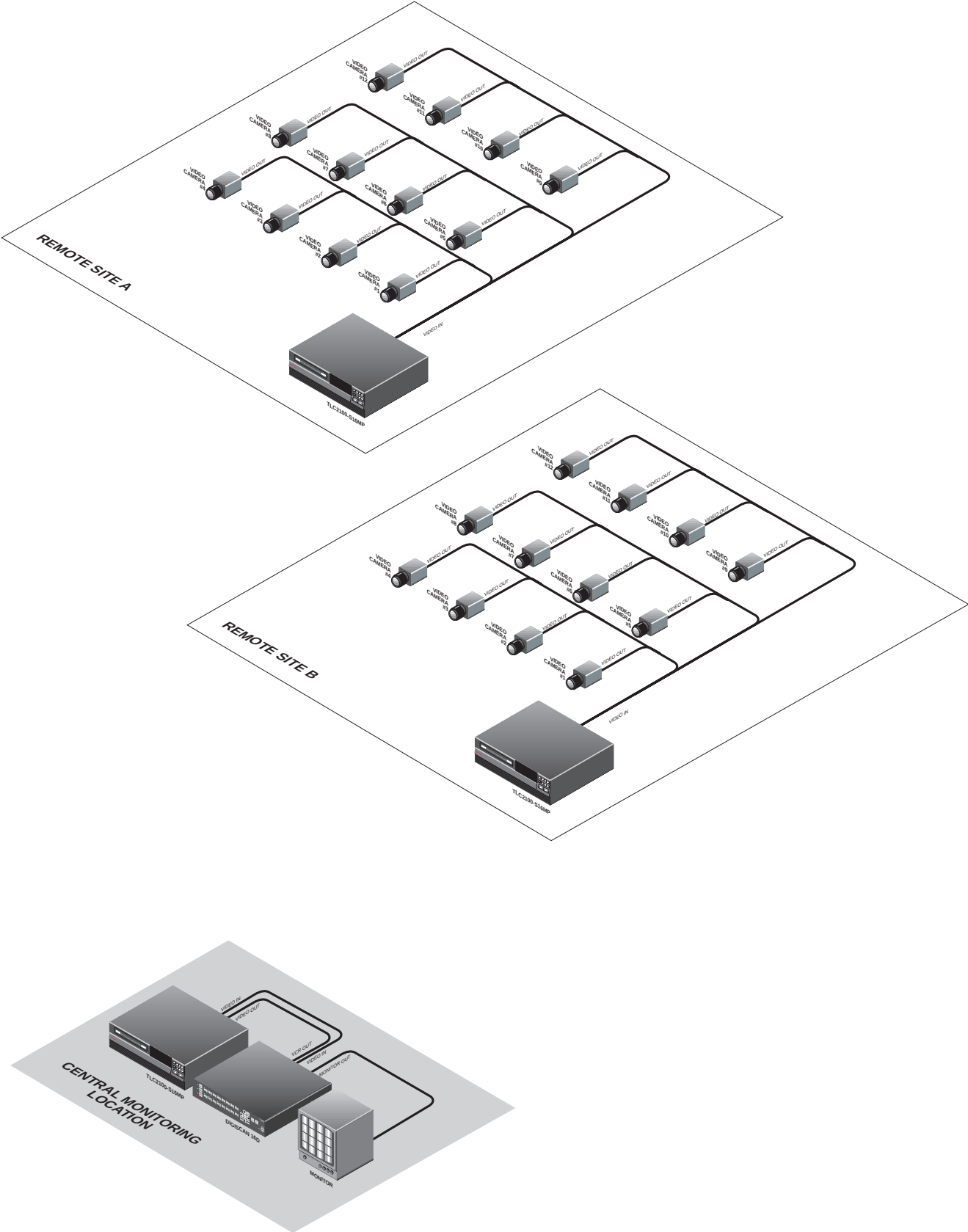
Description	There are an increasing number of lawsuits against police officers who stop passenger vehicles. Most are due to charges of excessive force or illegal search and seizures. Other times, officers are called to prove reasonable justification for stopping individuals.
System Expectations	Police departments would like a way to document all traffic stops that officers perform while on the road. Automated video recording would provide a document of each stop for later reference.
Solution	The recommended system incorporates the Gyrr TLC2100DC (TLVCR with 12-Vdc power option), 12-Vdc video camera and VCRLB lockbox.
Results	The camera is mounted on the dashboard positioned to view directly forward. The VCR is mounted in the trunk, locked away in the lockbox which is not accessible by the police officer. The lockbox also includes an integral filtered fan to keep the VCR cool during high temperatures. Whenever the overhead blue emergency lights are turned on, the VCR is commanded to automatically start recording, with the time/date printed directly on tape. This setup eliminates possible charges of intervention by the officer and can verify the condition or state of the detained suspect. The 12-Vdc option is designed specifically for mobile applications and allows direct hookup to the vehicle electrical system. This system eliminates any bulky power invertors which frequently are electrically “noisy”, thus avoiding potential problems with digital circuits.
Options	Audio can be easily integrated by using a battery powered wireless microphone. The TLC2100DC has the End-of-Tape output which will notify the officer of this event.



APPLICATION NOTE

Multi-site Recording Using the TLC2100-S16

Description	A customer has multiple locations that require video recording. One central location is designated as the review site.
System Expectations	High resolution playback of specific cameras; Playback is necessary only in the central location.
Solution	The best solution IS to use a video recording system utilizing frame multiplexing/encoding. Certainly you could have a Digiscan/VCR combination at every site. Since tape review is only necessary at the central location, there is a way of avoiding the expense of Digiscan at every recording site. The TLC2100-S16 is a time-lapse VCR with an integrated 12-position switcher and time/date search. This unit also records all cameras in a Digiscan compatible format. That means that tapes recorded on the S16 can be decoded by a Digiscan system allowing single-channel or multi-screen playback. Each recording location would have the S16 The playback location would consist of the TLC2100-52 and Digiscan DS16. This setup would allow not only selected playback of specific cameras but also automated time/date search. The S16 does not digitize the video while switching cameras like the Digiscan processors do. Therefore, you must synchronize the cameras as you would any conventional switcher. Playback is still possible using the S16 but you do not have the benefit of selected playback unless it is decoded by a Digiscan.
Results	Each location using the S16 is less expensive than the Digiscan/VCR combination. This substantially reduces the cost of the entire system.
Options	The playback VCR used with the Digiscan need not be a TDS unit. A standard TLC2100 or equivalent works fine. However, since the tapes have time code anyway, specify a TDS unit to take advantage of the time/date search feature. The cost to specify one TDS unit over a single TLC2100 is minimal compared to total system cost.

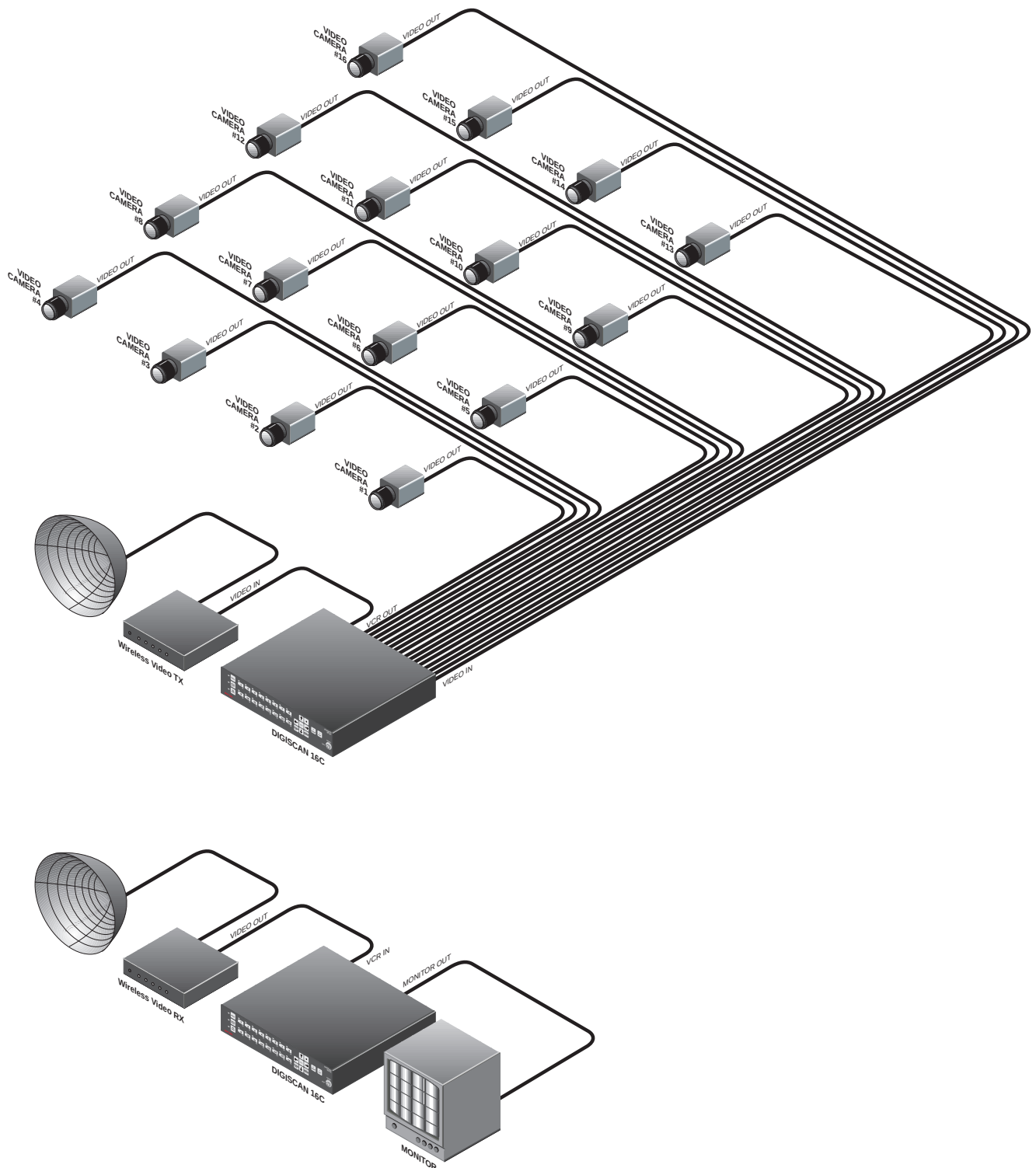


Multi-site Recording Using the TLCTLC2100-S16

APPLICATION NOTE

Multi-Camera Transmission Using Digiscan and Wireless System

Description	A customer wishes to have several cameras in one building monitored from a nearby location.
System Expectations	The buildings are within several blocks of each other, but cost considerations rule out running coaxial cable. The system must have a cost-efficient way of transmitting multiple cameras.
Solution	One way to provide remote monitoring is to use a wireless transmission system. This can be microwave or RF based. Microwave systems normally require on-site certification but can transmit several miles line of site. RF systems do not require certification but usually transmit best when in close proximity to the transmit station. The least expensive systems transmit only one real-time video channel so some form of switching must be used. Once the transmission method has been selected, the Digiscan can be used to multiplex several video channels over a single link. Another Digiscan is required at the receive end to de-multiplex the signals for single- or multi-screen viewing.
Results	The operator at the receive end has complete flexibility of the display. He can choose single-camera, auto-sequence or multi-screen viewing. Local video recording is also available. Since the images are time multiplexed, each channel viewed will not be quite real time. Update rate is determined by the number of cameras on the system. See the UPDATE RATE CHART in the DS9 chapter (2-hour speed). With 16 images transmitted, each camera is updated twice per second.



Multi-Camera Transmission Using Digiscan and Wireless System

APPLICATION NOTE

Central Monitoring/Recording From Many Sites Using Microwave and Digiscan

Description

A company has four buildings which need video surveillance and recording. Buildings 1 and 2, and 3 and 4 are adjacent to each other, close enough to run coaxial video cable between them. Buildings 1 and 2 need 8 cameras each. Building 4 needs 5 cameras. Building 3 is to be the central monitoring location, and needs 16 cameras for internal coverage. Buildings 2 and 3 are _ mile apart.

System Expectations

The security director wants to be able to view and record all cameras at the Building 3 location.

Assessment

Buildings 1 and 2 are close enough to have discrete coax cables going between Buildings 1 to 2. Likewise, it is the same for cameras originating at Building 4, ending up at Building 3 (the monitoring location). Since Buildings 2 and 3 are _ mile apart, it is more cost effective to transmit the 16 cameras from Buildings 1 and 2 via microwave.

Solution 1 (See Diagram 1)

Note

This setup uses a combination of two types of Digiscan products, the DS16 and DS16C-D (Duplex). The standard DS16 can only show a single camera switching display (spot monitor) while recording; the DS16C-D can show a live multi-screen while recording, along with a separate spot monitor display.

DS16 #1 (Building 2) allows a local spot monitor display (optional). This Digiscan is set to multiplex at the speed dictated by TLC2100 #2 (Building 3). DS16 #2 (Building 3) shows a live multi-screen display, at a reduced refresh rate. All pictures update approximately every 3.2 seconds, if at the 24-hour recording speed. The operator can select any of the 16 cameras (originating from Building 1 and 2) full-screen or multi-screen without affecting the recording of the cameras. This would be accessed via DS16 #2.

To replay a tape from TLC2100 #1, you have to interrupt

the live display of Cams 1 to 16 of Buildings 1 and 2. DS16C-D #1 allows simultaneous display and recording of the 16 cameras at Building 3. The operator can change the live multi-screen view without affecting recording. Monitor 4 (optional) shows a live, full-screen sequential switching view. To replay a tape from TLC2100 #2, you have to interrupt the live display and recording of Cams 16 of Building 3. If you added an additional TLC2100 to this part of the system, you could replay a tape and still record the cameras.

DS16C-D #2 allows simultaneous display and recording of the five cameras originating at Building 4. The operator can change the live multi-screen view without affecting recording. Monitor 6 (optional) shows a live, full-screen sequential switching view. To replay a tape from TLC2100 #3, you would have to interrupt the live display and recording of the five Cams originating at Building 4. If you added an additional TLC2100 to this part of the system, you could replay a tape and still record the cameras.

Solution 2 (See Diagram 2)

The transmission, multiplexing and recording of the 8+8 cameras originating at Buildings 1 and 2 remain unchanged from Diagram 1.

The 16 cameras at Building 3 would be broken into an 8+8 arrangement. These 8+8 cameras would loop in and out of DS16 #3 and then into the two Duo-quads (or equivalents) for display onto Monitors 3 and 4. These monitors would **each** show an alternating quad display of four cameras simultaneously. DS16 #3 and TLC2100 #2 would be used for recording or playback. Monitor 5 would allow multi-screen during replay and live, full-screen spot monitoring during the recording process.

The five Cams originating at Building 4 would loop in and out of DS16 #4 and then to DQ48 #3. DQ48 #3 would show an alternating quad display of four cameras simultaneously onto Monitor 7. DS16 #4 and TLC2100 #3 would be used for recording or playback. Monitor 6 would allow multi-screen during replay and live, full-screen spot monitoring during the recording process.

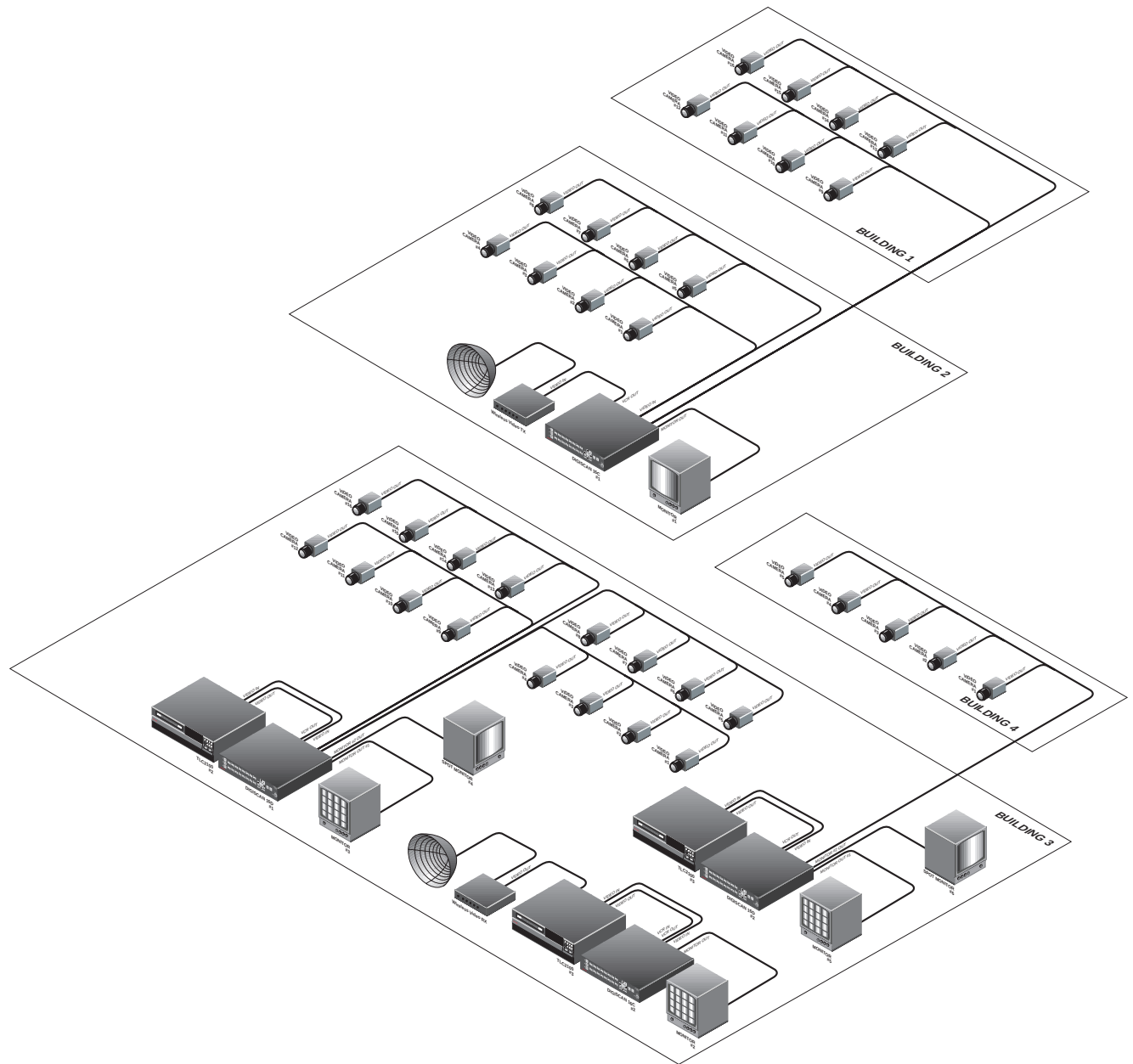
Results

System 1 would allow simultaneous display of **all** live cam-

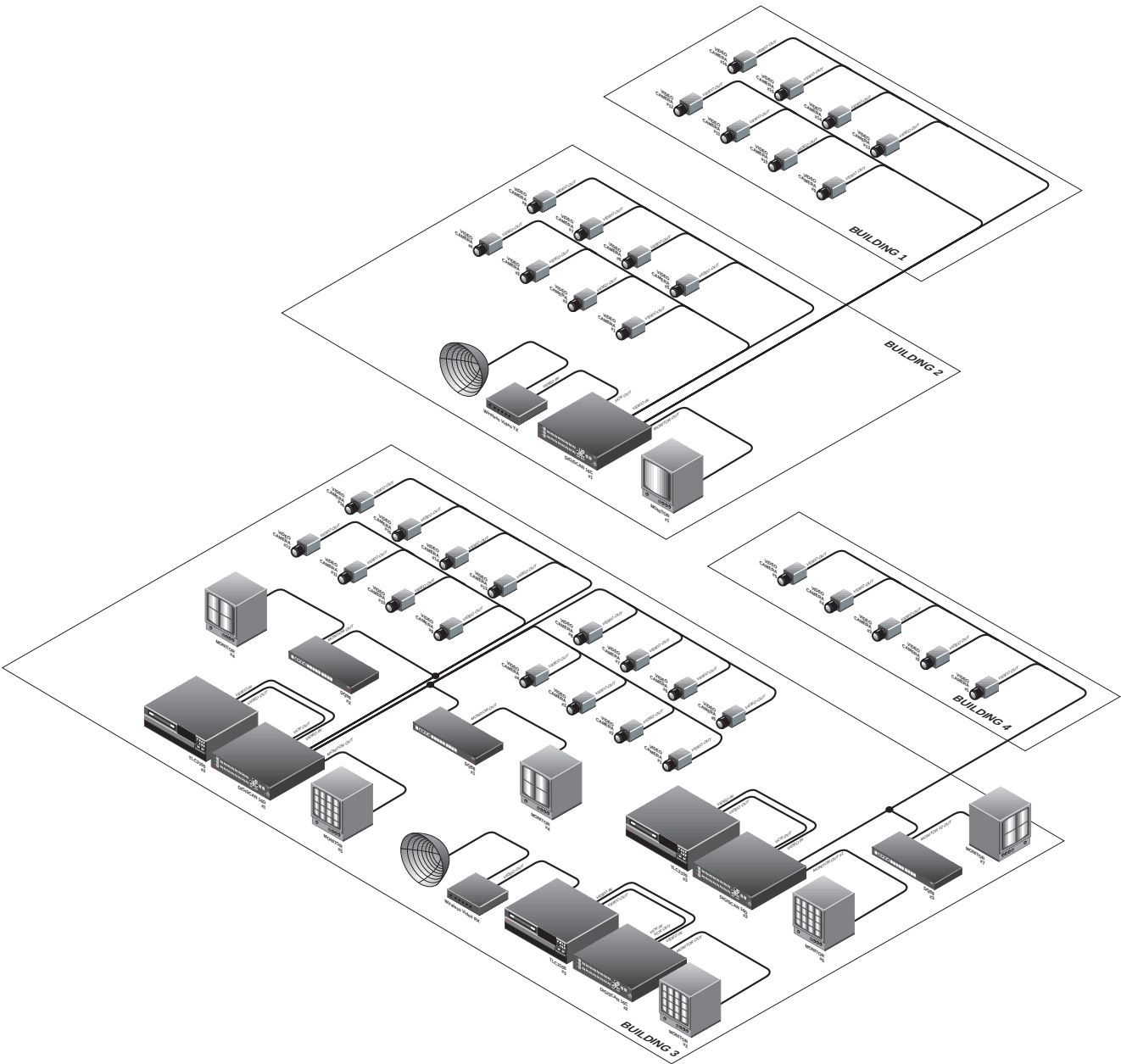
eras, whereas System 2, for the most part, relies on alternating quad views. System 2 has the advantage of not interrupting the **live** multi-screen display of cameras during the replay process. System 1 would not allow live multi-screen display during playback, unless you added an additional DS16 and VCR as a dedicated replay only station.

System 2 would be less expensive by approximately 10 to 15 percent, less labor and markup. This also takes into account the additional monitor needed in Diagram 2.

Also note that in both systems, the live multi-screen from Monitor 2 would update once every 3.2 seconds (assuming 24-hour speed). In System 1, the live multi-screens originated by Digiscan DS16C-Ds would update around twice per second. In System 2 the live quad displays originating from the duo-quads would be displayed at real time update rates.



Central Monitoring/Recording From Many Sites Using Microwave and Digiscan



Central Monitoring/Recording From Many Sites Using Microwave and Digiscan

APPLICATION NOTE

Commercial Application Using DVMD32

Description

A company wants to have an automated video system to provide security and surveillance. Several areas have activity that must be monitored and recorded as they happen. The system may be unattended at any time.

System Expectations

The system must accommodate many cameras and automatically record and/or alert personnel certain views when activity occurs. In particular, the parking lot, cash vault and walk-in entrance must be recorded when active. If there happens to be a security operator present, the system must alert them when those areas have activity. After hours, any activity at the cash vault must be reported to a central monitoring station.

Solution

The DVMD32 Digital Video Motion Detector would be the best choice as the centerpiece of the system. The unit permits the detection of motion in up to eight cameras while simultaneously displaying activity from up to four locations in a quad format. Detection windows can be defined to detect cars entering or leaving the parking lot, activity in the cash vault and the main entrance.

The floor monitor would display sequential switching images to all entrants. The supervisor's monitor would show a quad display, allowing a view of four cameras at any given time.

Whenever activity is detected, several things occur:

1) Supervisor monitor goes full screen, freezing the detected object for viewing and recording. If the operator is there but not watching the DVMD monitor, then the annunciator alerts the operator to view the frozen image.

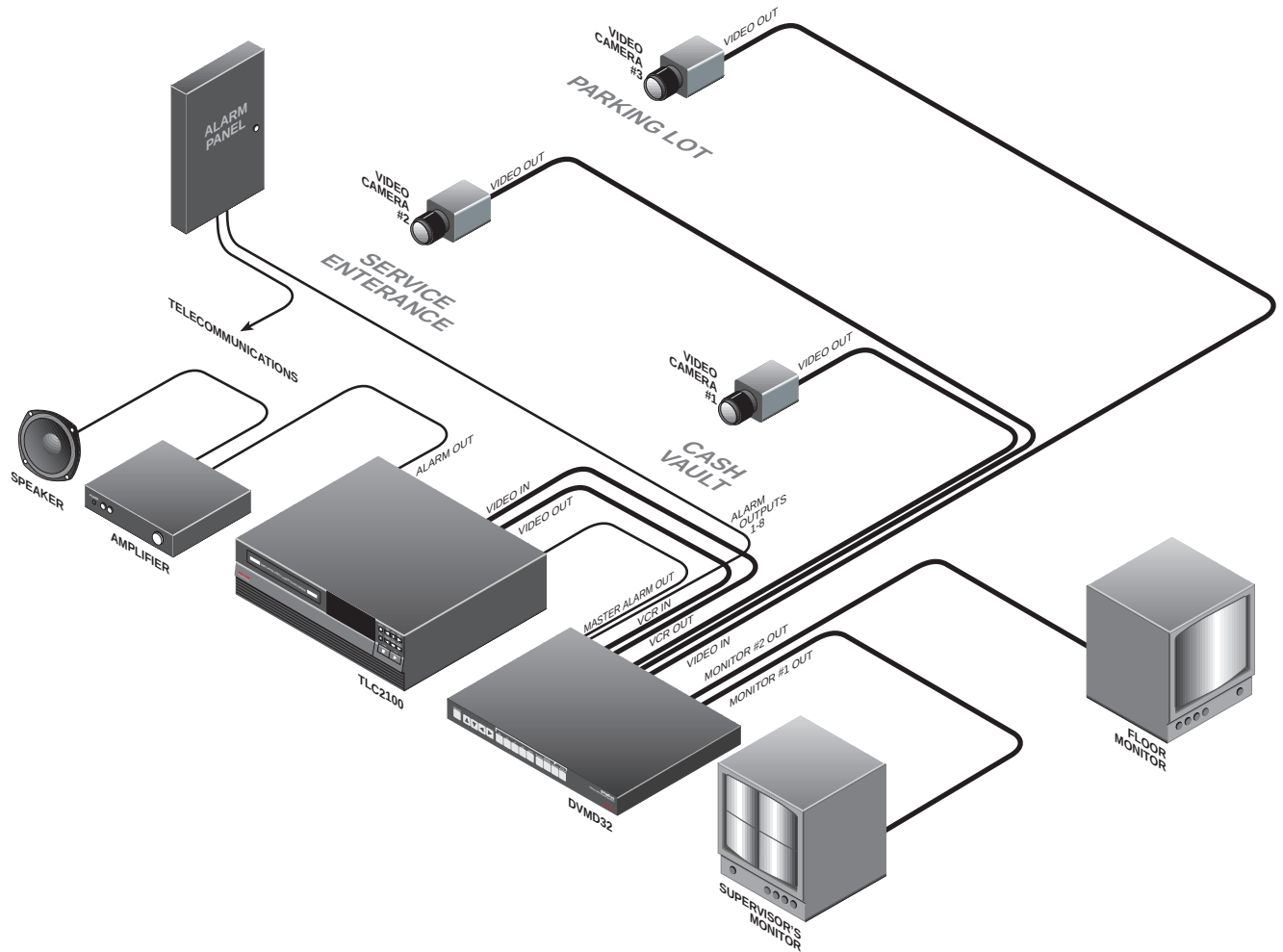
2) The VCR goes into alarm recording, marking the tape for easy index search at a later time.

When the facility is closed, the DVMD can be pre-programmed for both a day- and night-time configuration. At night, the operator selects the NIGHT program and only movement at the cash vault is detected. If that occurs, the DVMD alarm output for that camera reports to the central station via the alarm panel.

Results

By using the DVMD32, event monitoring is greatly simpli-

fied. The DVMD will handle and control alarm reporting, VCR operation and provide quick assessment of exception events. Dependence on operator alertness is reduced; operator intervention is made easier. The quad display allows viewing of the most important scenes. The Auto freeze feature prevents the operator and VCR from missing an alarm event.

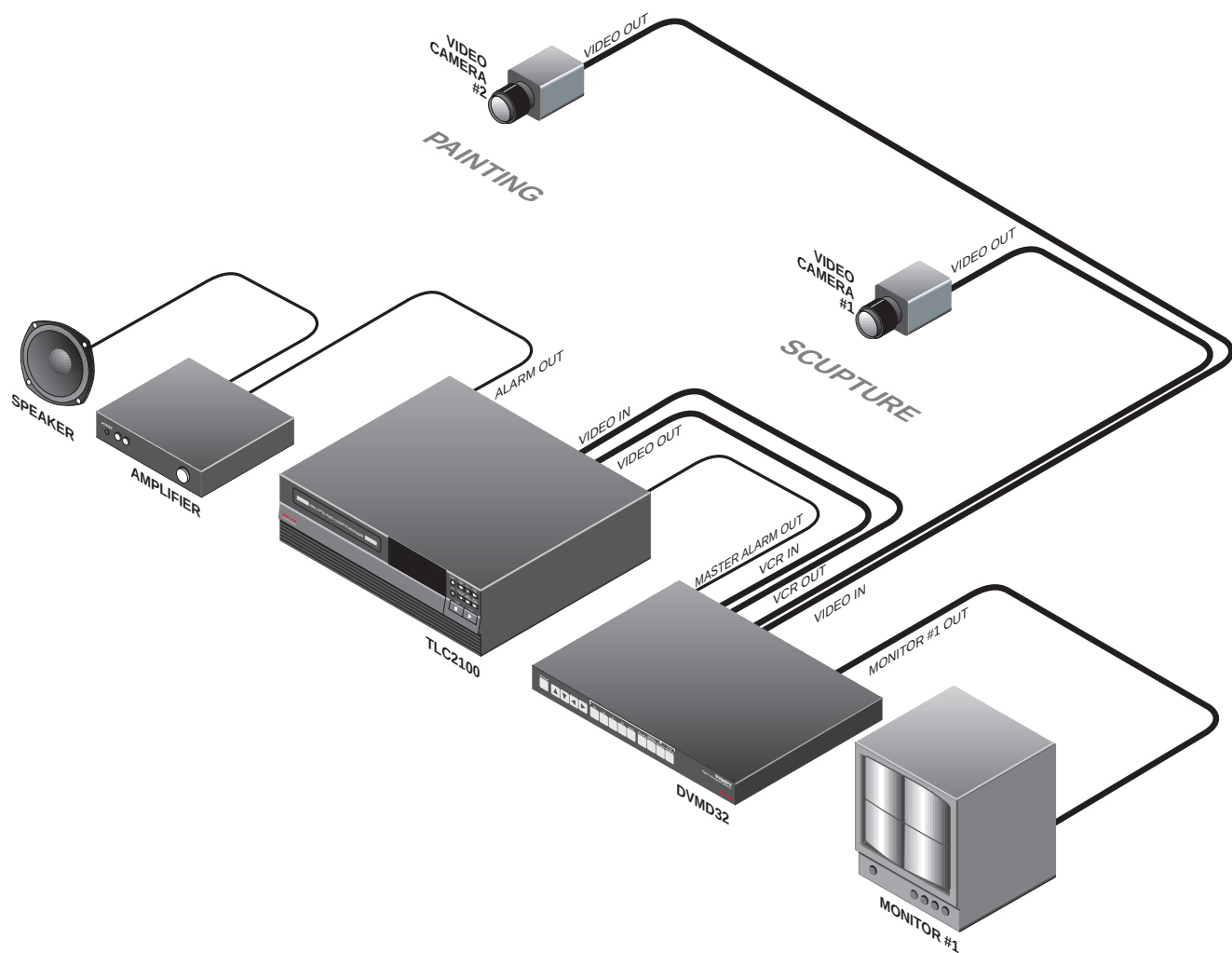


Commercial Application Using DVMD32

APPLICATION NOTE

Museum Application Using DVMD32

Description	A museum has many paintings and artifacts on view. The security director wants to prevent these valuables from getting stolen.
System Expectations	Some form of automated system is required that is simple to operate and does not require extensive retrofitting of alarm sensors. Use of the existing camera system is preferred.
Solution	The DVMD32 Digital Video Motion Detector would be the best choice as a detection system. The DVMD permits the detection of motion in up to eight cameras while simultaneously displaying activity from up to four locations in a quad format. The Museum mode would be the main detection method used. When properly configured, the DVMD can reliably detect when a static object is completely removed from the window, yet ignore moving objects temporarily obscuring it from view. Each painting or sculpture would have it own detection window. If a person's head gets in the way of the camera, detection does not occur. Only when the painting is completely removed does the DVMD alarm. This function works best when the object is against a flat, high contrast monochromatic background.
Results	The DVMD32 provides a convenient, reliable way to detect when an object is removed from a secure area. However, there are some limitations to this system, as it is not designed to detect if an object is replaced by a replica. In this application, the DVMD32 is best used in conjunction with other measures to provide greater security. Many galleries and museums already have existing camera systems which make the addition of the DVMD a simple one.



Museum Application Using DVMD32

APPLICATION NOTE

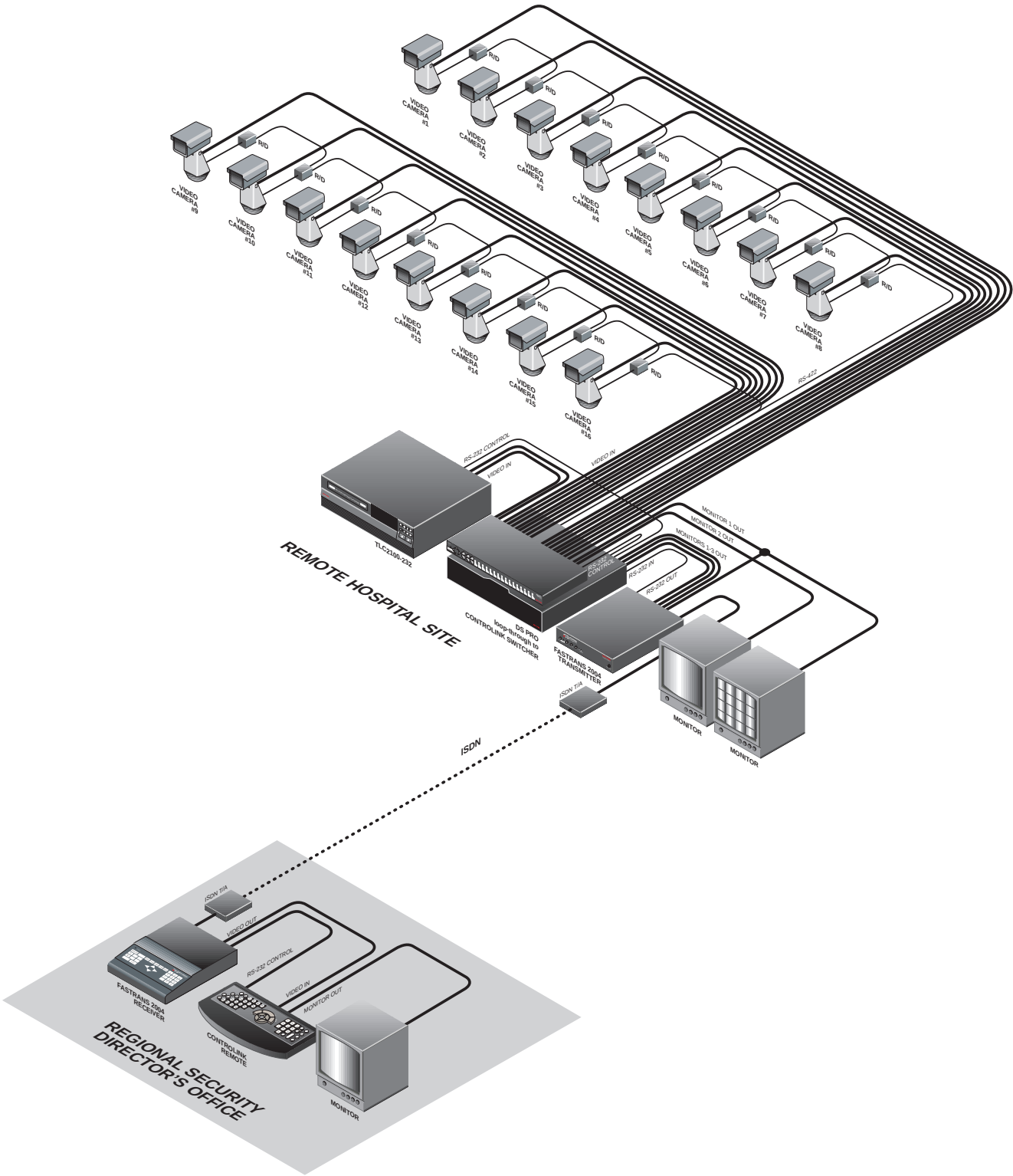
Multiple Bank Control System

Description	A large region bank needs remote access and control of video recorders at 25 of its branch banks with automatic alarm reporting.
System Expectations	The bank security management expects the system to report back to the central monitoring station any alarms, warnings, or malfunctions of the video recorder. Specifically, tape-end or low-tape warnings, program discrepancies, and alarms are of concern. The system operator at the central monitoring location must have the capability of acknowledging each alarm. Also, each alarm must be automatically logged to the computer's hard drive for future reference and evaluation.
Solution	The bank would install the Gyyr MultiLink operating system at its central monitoring location. Each of the 25 branch banks would install a 4- or 8-channel MultiLink I/O box and Gyyr time-lapse video recorder with RS-232 port. The I/O box is the communication link via standard phone lines, between the central monitoring location's host computer and the branch bank. The host computer would then be used to program and interrogate all 25 branch locations. Specific operator intervention and emergency instructions would be programmed into the host computer for each branch location. An interrogation schedule would be defined to remotely poll each branch location for alarms, warnings, or malfunctions. The system would then be password protected to maintain the integrity of the system.
Results	All 25 bank branch recording systems are under control by the central monitoring system's computer. Since all alarms, warnings, and malfunctions are automatically reported and stored at the host computer, a system operator need only be present if immediate alarm acknowledgment is required. The bank corporate security management now has complete control of each of its branch bank locations. Monitoring each system eliminates the loss of critical recordings because of inadequate tape, operator error or machine malfunction.

APPLICATION NOTE

ControLink System Operating a Remote Site With Fastrans

Description	A remote hospital site needs remote monitoring and control from a regional security director's (RSD) office.
System Expectations	The hospital management expects the RSD to monitor their location. Locally, the hospital wants access to control the system, calling up specific cameras to monitors and operating the VCR and multiplexer. Additionally, they have several cameras on pan/tilt housings. All of these devices are available for control locally and remotely.
Solution	The Gyr ControLink switcher (CL-SW), Digiscan Pro 16c multiplexer, TLC2100-232 VCR and FasTrans transmitter at the hospital location. Each camera has a pan/tilt device and zoom lens with preset position capability. Each camera location has a ControLink Receiver/driver attached. Connection from the R/Ds to the CL switcher would be via RS-422. The RS-232 outputs of the CL-SW connect to the serial inputs of the Gyr mux and VCR. The RS-232 output of the FasTrans transmitter feed control signals to the CL-SW. The FT transmitter connects via regular or ISDN modem. At the RSD, a CL RC (remote keyboard) connects to the FasTrans receiver via RS-232.
Results	All functions of the CCTV system are available to the local operator at the hospital. The guard could easily select and position any camera, operate the Mux and VCR from the CL-SW keyboard. If the guard station closes, a system operator located at the RSD can take over. The RSD management now has identical control of the remote hospital location. Since the video signals are compressed and sent over dial lines, the image update is dependant on the transmission medium used. ISDN is preferable, as this allows >4X faster picture updates, and makes camera positioning easier.

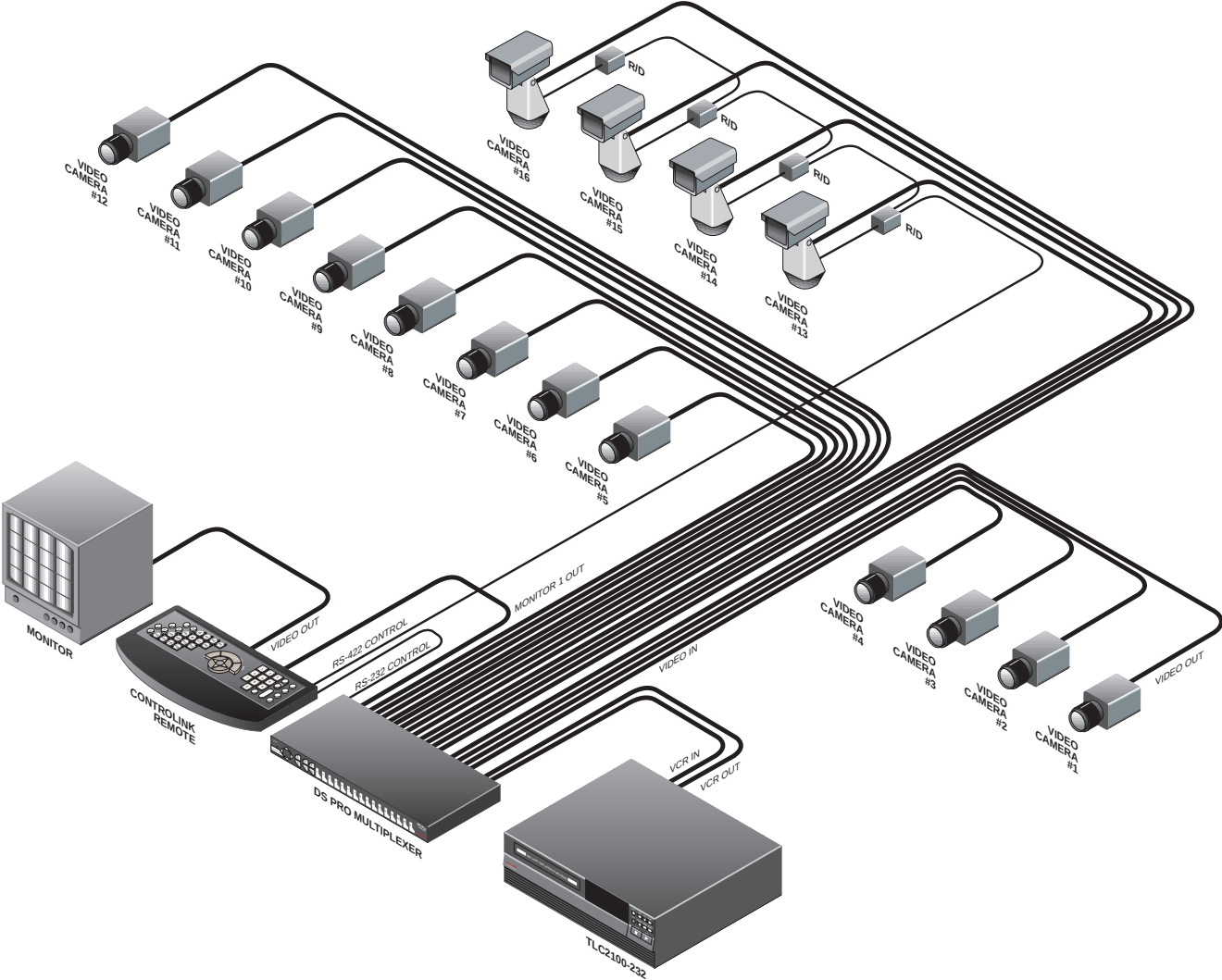


ControLink System Operating a Remote Site With Fastrans

APPLICATION NOTE

ControLink RC Keyboard Controlling Cameras and Multiplexer Views

Description	A multi-camera recording system needs to be integrated with pan/tilt/zoom cameras operated from a single keyboard.
System Expectations	The operator is using a 16-channel duplex multiplexer connected to a VCR. The operator wants to control the position of the cameras without the expense of a full-matrix switching system and multiple keyboards. Since the multiplexer has a duplex function, they can easily see any or all cameras on a single monitor. They expect the system to control the multiplexer views as well.
Solution	The install requires the Gyyr ControLink keyboard (CL-RC), Digiscan Pro 16c multiplexer, TLC2196HD VCR. Each positionable camera requires a ControLink Receiver/Driver (CL-RD) as well. Each camera has a pan/tilt device and zoom lens with preset position capability. Connection from the R/Ds to the CL-RC is via RS-422. The RS-232 output of the CL-RC can connect and control a single device, in this case any of the Gyyr DSP Multiplexers. The CL-RC (remote keyboard) connects in a daisy chain configuration to all CL-RDs via RS-422.
Results	All functions of the multiplexer are available to the local operator. The guard can easily select and position any camera, and store preset views for later recall. Also, any single or multiple screen view is easily accessed because the operator controls the multiplexer from the CL-SW keyboard. Since all cameras are conveniently viewed by the multiplexer, a matrix switching unit is eliminated. This minimizes the cost of this system, yet still provides all the control needed.



SALES MANUAL UPDATES

Enclosed is the latest version of the *Gyyr Product Application Guide*, dated October 1997. The new manual provides the latest updates on existing product, additional application notes as well as the newest products from Gyyr.

Any comments or suggestions can be forwarded to Gyyr Sales or email gyyr-sales@gyyr.com.

Updates compared to last major revision, February 1, 1997:

- * TLC2130HD, TLC3168 added
- * TLC2100-S16 added
- * Digiscan Pro family added
- * DSP 9, 9c, 16, 16c

- * MultiLink updated
- * ControLink updated
- * FasTrans 2004 updated

- * Personnel updated
- * 1800 VCR series deleted

- * Two new ControLink Application Notes
- * Application notes updated to reflect current products



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