

Broadcast ENGINEERING

THE JOURNAL OF DIGITAL TELEVISION®

Buyers Guide Web Reference

New Special Feature

EXCELLENCE AWARDS

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installation and win!

2002



Wheatstone

DIGITAL AUDIO NETWORK ROUTER

- *BI-DIRECTIONAL FIBEROPTIC OR CAT-5 INTERLOCATION CONNECTIVITY*
- *ALL DIGITAL DOMAIN AES SWITCHING*
- *ANALOG OR DIGITAL (AES SAMPLE RATE) INPUTS*
- *BOTH ANALOG AND AES DIGITAL OUTPUTS*
- *SERIAL CONTROL AND DISPLAY WITH WHEATSTONE CONSOLES*

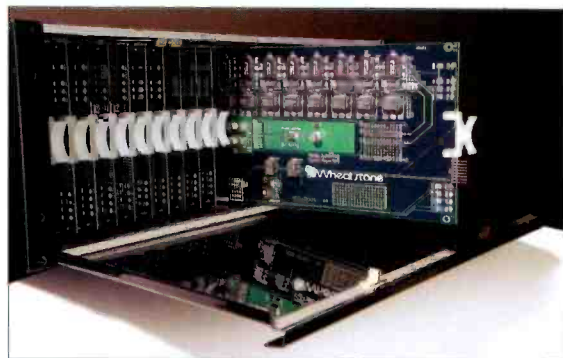
THE 2001 MAKES AUDIO NETWORKING PRACTICAL. It's simple to install, easy to learn, and certain to reduce system costs. Compact enough for small applications, yet stackable for tremendous growth potential, it's design consists of 7" rackmount digital routing cages, each capable of handling 512 simultaneous audio channels on its backplane.

Units can be stacked to suit particular card complements (analog or digital input and output cards or optical network cards) but more significantly cages can be separated by great distances and network their audio through either bidirectional fiberoptic links or a single CAT-5 wire. **ONE INTERCONNECT DOES IT ALL:** 64 channels of simultaneous bidirectional digital audio, interstage communication, X-Y controller commands plus auxiliary RS-232 data streams. This single interconnect between your studio and central rackroom can save you tens if not hundreds of thousands of feet of wire in a typical installation.

The 2001's graphic based setup software is intuitive and easy to use, with all the authorization and security levels you could want. And of course we have a full

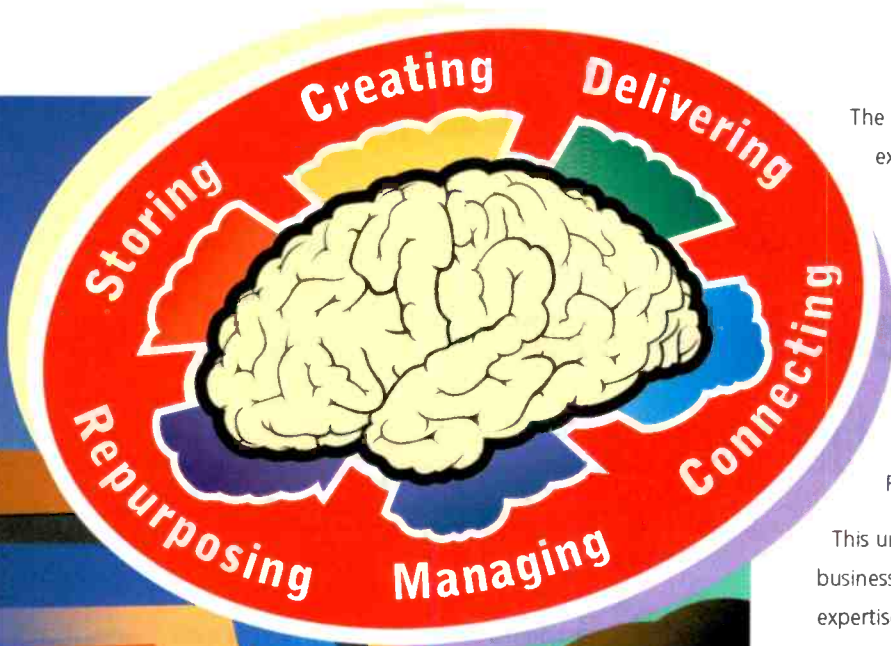
complement of control panels and PC applications to choose from—all designed for straightforward operation and a rapid learning curve.

With 25 years of experience, Wheatstone has the infrastructure in place to help you build your OWN infrastructure. Contact us for answers.



MIXED SIGNAL SWITCHING is easily accomplished with a choice of AES digital or ANALOG 24-bit A>D input cards, and of course 24-bit digital or 24-bit D>A ANALOG output cards, all of which can be serviced from the front of the cage. All signals are routed entirely in the digital domain.

Intelligence • Decisions • Control One B.R.A.I.N. Does It All



The brave, new world of digital broadcasting offers extraordinary opportunities for you to function more efficiently, create new sources of revenue and realize exceptional cost savings. The key to all of this, of course, is centralization - the ability to consolidate, manage and direct all of your resources through a single control system.

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and operational
requirements

Visualize
appropriate
implementation
models

Actualize
the cost-effective
integration of your
separate operations into
a centralized entity

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Circle (104) on Free Info Card

next level solutions

SERVICE

SYSTEMS

AUTOMATION

TRANSMISSION

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This year's *Broadcast Engineering Buyers Guide* contains all the standard useful features you've grown to love. A detailed list of products by product category and the companies that make them is provided. In addition, when you find the product you want, the phone number is right there – no searching around for the contact number. Hundreds of products are listed in 37 categories so it's easy to locate the resource you need.

The manufacturers' directory begins on page 98. Need a phone number, address or Web site? It's there and easy to find.

As a special addition to this year's Buyers Guide, we're presenting the *Broadcast Engineering Engineering Excellence Awards*. Twenty-three installations are highlighted, showing leading technology at work.

These are some of the newest facilities built by top systems integration companies and manufacturers in the business. In these stories, you'll learn interesting design ideas and see how others use technology to solve their problems.

In addition, readers are asked to VOTE for their favorite installation. Go to the *Broadcast Engineering* Web site, www.broadcastengineering.com, and vote for the best RF and best studio installation. The three winners will be announced in the March issue of *Broadcast Engineering* and winners will be presented with an award plaque at the NAB 2002 convention.

Readers win too! Ten readers' names will be drawn from the votes entered in the *Engineering Excellence Awards* and they will win a *Broadcast Engineering* t-shirt. All you have to do is vote for your favorite installation. To vote, go to www.broadcastengineering.com.



Brad Dick
editorial director

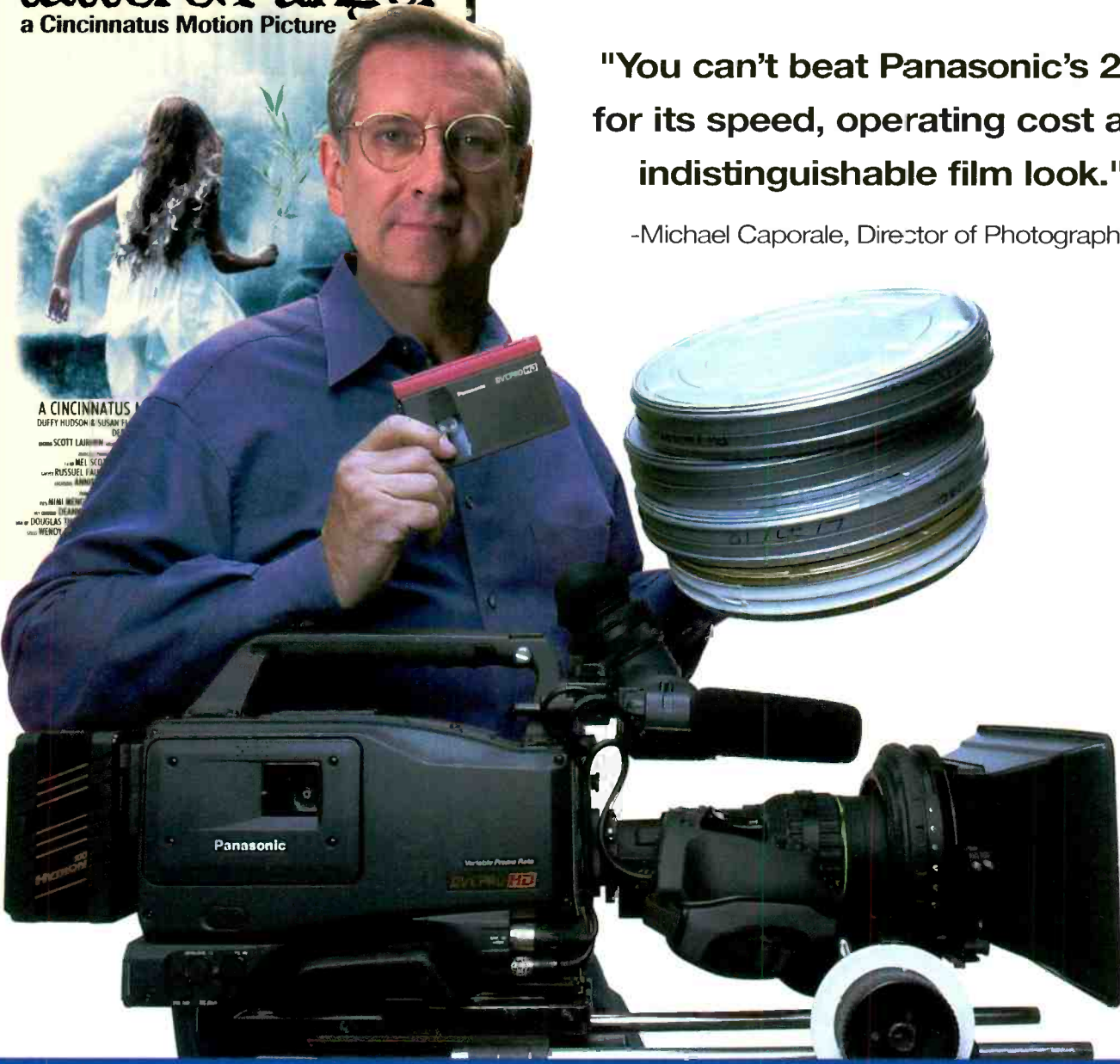
Broadcast
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tattered angel

a Cincinnatus Motion Picture

"You can't beat Panasonic's 27V
for its speed, operating cost and
indistinguishable film look."

-Michael Caporale, Director of Photography



HD Cinema advances the art of storytelling.

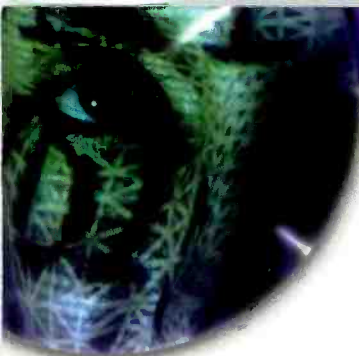
The mobility, versatility and operating cost advantages of Panasonic's AJ-HDC27V variable-frame HD Cinema™ Camera are creating new opportunities for visual artists.

From a music video for the Charlie Daniels Band to a major league baseball documentary, director of photography Michael Caporale has shot demanding projects, including the feature-length movie "Tattered Angel," with the AJ-HDC27V. He praises the lower costs and shortened production time. "We're realizing terrific economies by shooting with the 27V. For 'Tattered Angel,' tape stock was a mere \$1,500 versus \$104,000 for film and processing. Plus, its image quality and dynamic range are truly impressive."

While there will always be a place for film, the AJ-HDC27V's 24-frame- and variable-frame-rate progressive HD capabilities offer storytellers a remarkable new tool to express their vision. To find out more about the AJ-HDC27V and other HD Cinema products, call 1-800-528-8601 or visit www.panasonic.com/hdcinema.

Panasonic

The difference is your image.™



Product Index

Product Index

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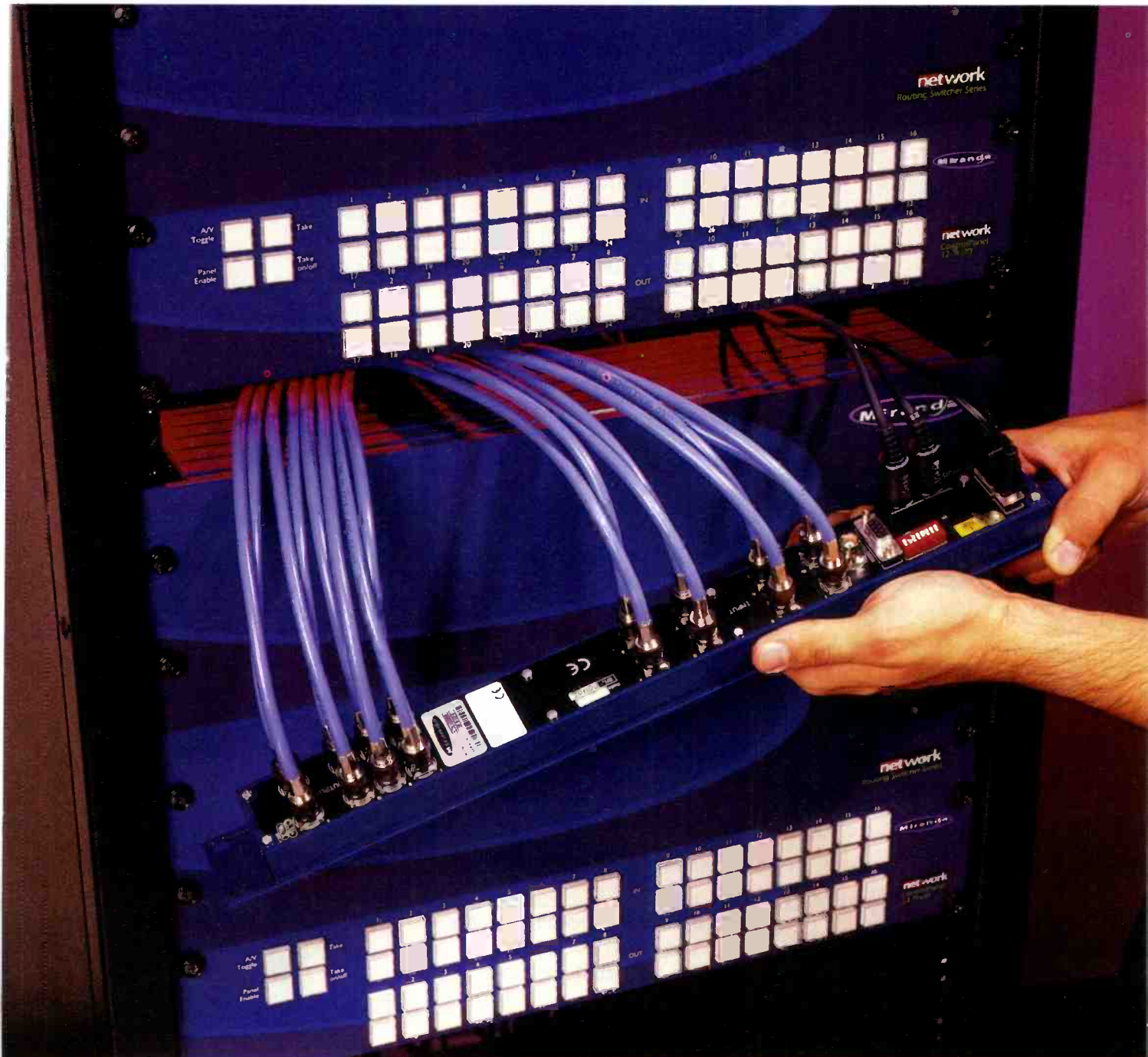
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Powerful, sleek and reliable. Miranda's Network Series Routing Switchers offer cost effective compact packages in a complete range of analog, digital, audio, video, HD and telecom routing switchers. So compact, they can easily be mounted in the rear of a rack, reducing used rack space to zero. Easy installation and maintenance free, Network Series Routing Switchers are available in sizes of 16x2 up to 128x2, 8x8, 16x16, 32x32 and 64x64. Switch today for the flexibility you want in the size you need.



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Product Directory

Product Directory

The Product Directory is the next step in finding the right product for your project.

The listings in this section are divided into general product categories, each containing a listing of manufacturers that provide those products or services.

The category headings are color coded and easily visible to take you quickly to the general section to find manufacturers that make your product.

In each category, there are several product types listed in italics under the category heading, to help you more easily find the specific type of product you are looking for.

Audio Accessories

Includes: Acoustic materials; Audio accessories; Audio codecs; Audio meters; Audio monitor amplifiers; Audio patch panels; Headphones; Speakers; Surround Sound accessories

Aphex Systems
818-767-2929

ATC
609-291-8222
ATC SCM 100-a SL PRO active 3-way monitor

Audio Accessories
603-446-3335
1/4-inch long-frame and mini pre-wired patch bays

Audio-Technica US
330-686-2600
ATH-M40fs
ATH-D40fs

Benchmark Media Systems
315-437-6300; 800-262-4675
SPM 220 and 320 stereo program meters with selectable VU or PPM metering

Garwood
609-291-8222
M-pack-hardwired in-ear monitoring system

Horita Co.
949-489-0240
AM-50 audio meter

Logitek Electronic Systems
713-664-4470; 800-231-5870
Ultra VU high-resolution analog/digital LED meter

Multidyne Video & Fiber Optic Systems
516-671-7278; 800-4TV-TEST
AIA 8x8 XLR breakout panel

Sony Electronics
800-686-SONY
AMS-100

Shure
847-866-2200; 800-25-SHURE
E-5 universal earphone

Ward-Beck Systems Ltd.
416-335-5999; 800-771-2556
MP meter panel series

Wave:Space
949-770-6601
WM15B high-power studio monitor system

Zandar Technologies
321-939-0457

Audio Mixers

Includes: Portable mixers; Studio mixers

AMS Neve
212-965-1400; 888-888-6383
Libra Live Series II
Libra Post digital mixing console
Logic 7 digital console

Audio-Technica US
330-686-2600
SmartMixer

Calrec



Alpha 100 digital console
+44 1422 842 159
Alpha 100 digital console

Product Directory

Euphonix



System 5 digital console

650-855-0400
CS3000 analog console
System 5 digital console

Logitek Electronic Systems

713-664-4470; 800-231-5870
Numix modular digital console

Shure Inc

847-866-2200; 800-25-SHURE
FP-24 portable battery mixer

Solid State Logic

212-315-1111

Wheatstone Corp.



TV-80 audio console

252-638-7000
5P-8 audio console
TV-80 audio console
TV-1000 audio console

Audio Processing

Includes: Audio compressor/expanders; Audio effects systems

Aphex Systems

818-767-2929
Big Bottom Pro plug-in

Dolby Laboratories

415-645-5000; 800-33-DOLBY
DP-569 multichannel encoder
DP-579 Dolby E tri-level interface
DP-570 multichannel audio tool
DP-571 Dolby E encoder

Shure

847-866-2200; 800-25-SHURE
DP11EQ digital dynamics processor

Audio Recording

Includes: Audio playback devices; Audio RAM recorders; Audio recorders/players (ATR, MD, etc); Disk recorders (audio)

360 Systems

818-991-0360
Digicart II Plus
Instant Replay
TCR4
TCR8

Euphonix

650-855-0400
FC726 digital audio format converter
FC727 digital audio format converter w/Pro Tools compatibility

Mackie

800-898-3211
MDR24/96 24-bit/24-track hard disk recorder

RCS

914-428-4600
Sounder TV instant audio for TV

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Contest information on page 64

WBS

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XTM4



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Ward-Beck

Toronto Ontario Canada
800 771 2556
Portland Oregon U.S.A.
866 771 2556

www.ward-beck.com



Product Directory

Audio Routing

Includes: Audio A/D-D/A converters; Audio compression/encoding equipment; Audio DAs; Audio routers; Audio/video mux/embedding equipment; Sample rate converters

Aphex Systems

818-767-2929

Axon Digital Design

+31 13511 6666
AEB-221/ADB-122 embedder/de-embedders

Benchmark Media Systems

315-437-6300; 800-262-4675
AD-104 24-bit A/D converter

Chyron Corp.

516-845-2000
Pro-Bel Eclipse, Freeway, MADI and new Axis routing switchers

Crystal Vision Ltd.

+44 1223 506 515
Aada41GR/M analog audio DA
Dada208 digital audio DA

Datatek Corp.

908-654-8100; 800-882-9100
D-2800 router

Ensemble Designs

530-478-1830
Serial Box digital component video converters

Euphonix

650-855-0400
PMI Model Two HDCD processor

Evertz Microsystems Ltd.

905-335-3700
7720AD-HD HD AES audio de-embedder
7720AD-SDI AES audio de-embedder

Fortel DTV

404-885-9555
DAS-441 audio tracking delay

Image Video

416-750-8872
XAES AES routing switcher

KeyWest Technology

913-492-4666; 800-331-2019
Voo Doo series A/D-D/A converters

Kings Electronics Co.

803-909-5000; 888-909-5551
Micro-mini audio interconnect audio jackfield

Klotz Digital America

678-966-9900
VADIS 880

Leitch

757-548-2300; 800-231-9673
Via 32 analog audio router

Link Electronics

573-334-4433; 800-776-4411
AVS-816 audio/video analog/digital switchers

Logitek Electronic Systems

713-664-4470; 800-231-5870
64x64 digital router
Logitek audio engine

MicroVideo Ltd.

+44 1223 834 119
Series 200 audio converters, mixers and embedder modules

Miranda Technologies

514-333-1772; 800-224-7882
Network series routing switchers

Multidyne Video & Fiber Optic Systems

516-671-7278; 800-4TV-TEST
AAGC-200 audio automatic-gain DA

Network Electronics AS

+47 33 48 99 99; 800-877-8273
AV-MUX audio embedder

PESA Switching Systems

631-845-5020; 800-328-1008
Tiger 144x144 routing switcher

Pixel Instruments Corp.

408-871-1975
AD-3000 audio synchronizer

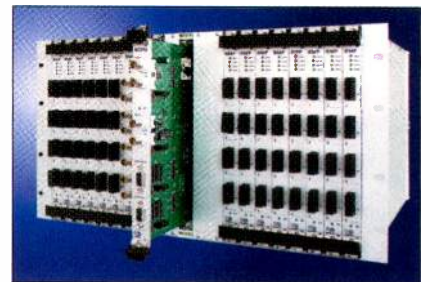
Sierra Video System

530-478-1000
Digilink modular terminal equipment

Sigma Electronics

866-569-2681
DMA-2180 AES/EBU monitoring

Stagetec



Nexus Star digital router

+49 951 972 25 25
Nexus Star digital router

Utah Scientific

801-575-3770
Utah-400, Utah-300, Utah-200 routing switcher

Ward-Beck Systems Ltd.

416-335-5999; 800-771-2556
82 series rackmount frame



Performance & Support

When you really get down to business, it makes sense to talk to Calrec.

Calrec produce **DIGITAL** and **ANALOGUE BROADCAST CONSOLES** for the 21st century. Through Network Operations, Local Stations and Independent Remote production companies, America listens to Calrec every day. In our 35 years of experience in Broadcasting, we have continuously pushed the boundaries. Our craftsmanship and cutting edge technology produce the highest quality products, backed by an unrivalled support team. A growing number of Broadcasters are choosing Calrec based on the performance of our products and our people.

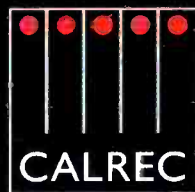
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FOR FURTHER INFORMATION CONTACT

Studio Consultants (New York) Tel : (212) 586 7376 Fax : (212) 582 2169 e-mail : sc@doug@aol.com
Redwood (LA & Nashville) Tel : (615) 871 0094 Fax : (615) 872 7080 e-mail : redwood@isdn.net

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Product Directory

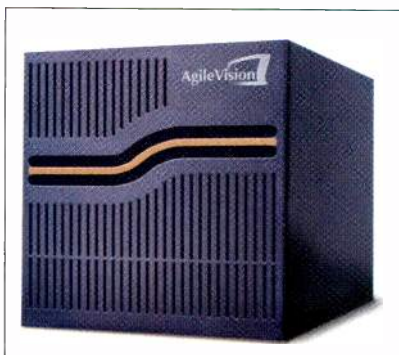
Wheatstone Corp.

252-638-7000
BRIDGE 2001 digital audio router

Automation Systems

Includes: Asset management systems; Master control switchers; PSIP and DTV data encoders; TV business automation (traffic systems); TV facility automation; TV news automation systems

Agilevision



AGV-1000 MPEG master control switcher/server

609-514-4032
AGV-1000 MPEG master control switcher/server

Associated Press

202-736-1100; 800-821-4747
ENPS electronic news production system

BUF Technology

858-451-1350
Spot server management system

Chyron Corp.

516-845-2000
Pro-Bel automation

Comprompter

608-785-7766; 800-785-7765
ENR newsroom automation
NewsKing newsroom automatic

Crispin Corp.

919-845-7744
RapidPlayX news and commercial playback system
AssetBase 2000 database

DNF Controls

818-898-3380
3040 multi-playlist playback

Encoda Systems

303-390-8239
DAL Channel Manager automation
DAL Linkserver automation

FloriCal Systems

352-372-8326
AirBoss NT multichannel automation system
Media Timer program data capture
Show Timer satellite program acquisition

Harris Corp., Broadcast Communications Div.



Broadcast Manager central monitoring

800-622-0022
B.R.A.I.N centralized automation
Broadcast Manager central monitoring
PSIP Plus management system
NDCP network device control

Imagine Products

317-843-0706
Image Mine media asset management

Inscriber Technology

519-570-9111; 800-363-3400
Automation graphics

Leightronix

517-694-8000
TCD/IP video system controller

MassTech

MassStore asset management system
MassControl TV automation system
MassNDCP TV automation system

MATCO

408-353-2670; 800-348-1843
MA-204B playback automation

Norpak Corp.

613-592-4164
Analog, serial digital, HDTV and MPEG-2 encoders

NSI - (N Systems Inc.)

410-964-8400
MC5 PC-based touchscreen remote control system

Odetics Broadcast

714-774-2200; 800-933-0339
AIRO multichannel automation system
Bowser visual asset manager
Roswell content management system

Omneon Video Networks

408-585-5100
Networked Content Server System

Omnibus Systems

530-470-1700
GAMMA asset management system
GIBITARIAN
Workflow Manager

Product Directory

ParkerVision

904-737-1367; 800-532-8034
PVTV Studio News newsroom automation system
PVTV WEBSTATION for News automation system

Pinnacle Systems

650-526-1600
DekoCast CG

SGI (Silicon Graphics Inc.)

650-960-1980
Asset Management

SignaSys

408-998-8053
Centralized Broadcasting Solutions

Sundance Digital

972-444-8442
FastBreak automation
Intellisat broadcast recording manager
SalesView media browser

Telestream

530-470-1300; 877-CLPMAIL
FlipFactory media delivery system

THOMSON Multimedia Broadcast & Network Solutions

800-962-4287
Saturn master control switcher
Jupiter control system

Triveni Digital

609-716-3505
Guidebuilder automated PSIP stream generation
Streambridge ATSC translator for PSIP data

Utah Scientific

801-575-3770
Max master control automation
MC-2020
MC-500

Videoframe

530-477-2000
VTECS control frame/signal monitoring system

Videomedia

208-762-4162
VIP suite of U-LAW applications

vi(z)rt

212-560-0708
Pilot asset management system for graphics control

Cable TV Equipment

Includes: Broadcast cable equipment; CATV system components

Artel Video Systems

508-303-8200; 800-225-0228
Broadcast cable
CATV systems

BarcoNet

770-590-3600; 800-992-5016
Galaxy digital rack system
Triton IRD

Intelvideo

203-348-9229
VP50A noise reducer/ghost canceler

Opticomm Corp.

858-450-0143; 800-8-OPTICOMM
DVX-5000 broadcast SDI/DTV fiber system

Qwest Digital Media

615-650-6000
Uplink and transmitter facility

Sierra Video System

530-478-1000
Tahoe routing switcher
Yosemite routing switcher

Standard Communications Corp.

310-532-5300
SDR422 CI digital receiver
Stratum II modulator

Triveni Digital

609-716-3505
Streambridge ATSC translator for PSIP data

Camera Robotics

Includes: Camera remote controls; Robotic camera controls; Virtual sets

Complex Corp.

316-342-7743
CP-301B
CP-501

NSI - (N Systems Inc.)

410-964-8400
Cam Pac remote camera system

ParkerVision

904-737-1367; 800-532-8034
Analog Cameraman

Radamec

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Camera Robotics touchscreen control system
HD Scenario

Shotoku Camera Support Systems

661-775-7736; 866-746-8658
TE-12HA cam head

Telemetrics

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EP-PT elevating pedestal

Product Directory

Vinten

914-268-0100; 888-2-VINTEN
 IS-9000IT ImageTracker
 SP-2000-X/Y servo pedestal
 Quattro Z servo/manual studio pedestal
 HCP-8000 control system

Camera Support

Includes: Camera support products (tripods); Pan/tilt heads

AVEC

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 Camera Caddy

Bogen Photo Corp.



Manfrotto 503/505

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 Gitzo GB80 CFKIT
 G1338 w/1380
 Manfrotto 500 series pro video heads
 Manfrotto 540 tripod

Cartoni USA

818-760-8240; 800-845-6619
 Alfa series
 Beta
 C40s

Glidecam Industries

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 Glidecam Gold Series vest

Miller Camera Support LLC

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 "Sprinter" series tripods
 Miller fluid heads

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OConnor Professional Camera Support Systems

714-979-3993
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Radamec

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 433 Weather-Cam
 RP2A robotic camera pedestal

RF Technology

203-866-4283; 800-762-4369
 Remote "Beauty" camera systems

Sachtler Corporation of America

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 Tripods
 Pan/tilt heads

Shotoku Camera Support Systems

661-775-7736; 866-746-8658
 TP-66 studio pedestal

Telemetrics

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 D10C SDI to Component Analog Converter, 10-bit * \$ 800
 D10A Component Analog to SDI Converter, 10-bit* \$1,200
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 D5CE Serial Encoder, SDI to NTSC/PAL /w Component* \$ 375
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 DWP Power Supply, 110 Volt (*requires power supply) \$ 40

Rack Mount Products

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 NTSC/PAL or Component to SDI \$1,600
 RD5CE Dual Universal D/A Converter
 SDI to NTSC/PAL or Component \$1,300
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HDL-V90 DVCPRO HD cameras
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9525DSK-LG downstream keyer

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KCT-50 keyboard-controlled titler

Inscriber Technology

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VMP Studio

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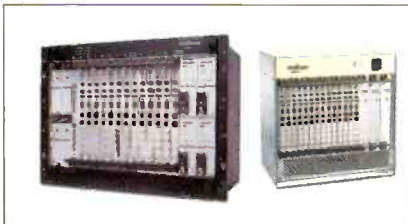
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NSI - (N Systems Inc.)

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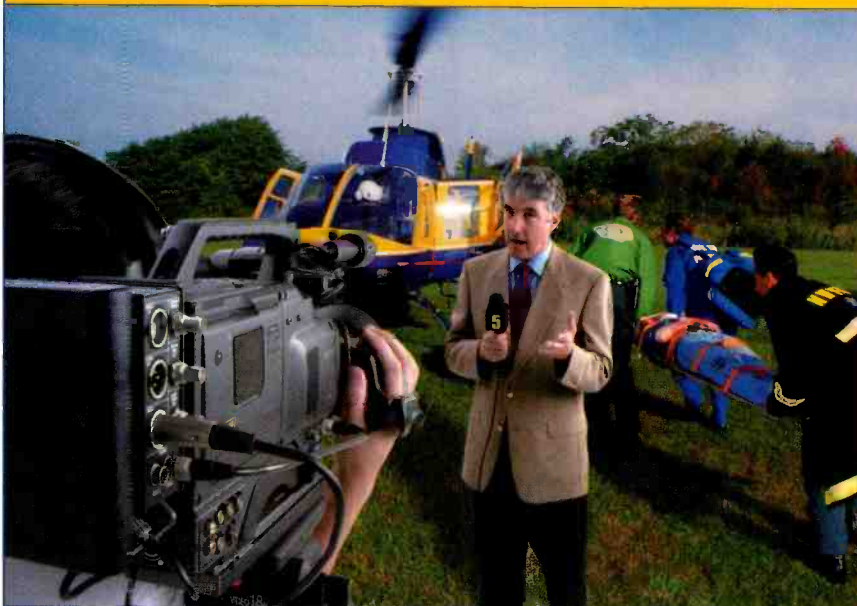
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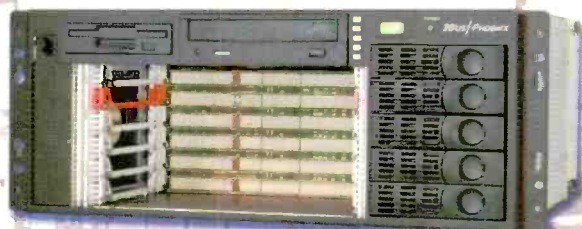
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Internet

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Product Directory

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WebAble tool suite for content repurposing

Laird Telemedia

845-339-9555; 800-898-0759

LTM-RS422 Internet media 4x4 video and audio broadcast router

LTM-RS4AP four-channel Web audio preprocessor

LEL Computer Systems

561-347-2242

Access TV

Medea Corp.

818-597-7645; 888 BY-MEDEA

StreamRaid

Omneon Video Networks

408-585-5100

ParkerVision

904-737-1367; 800-532-8034

PVTV Webstation for News

Pinnacle Systems

650-526-1600

DVD2000

MPEG-2 editing and DVD authoring Impression DVD authoring software

StreamFactory and StreamFactory X2 real-time media encoder

StreamGenie Presenter portable live Webcasting

Scientific-Atlanta

770-236-6190

Scopus Network Technologies

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SGI (Silicon Graphics Inc.)

650-960-1980

SkyStream Networks

408-616-3300; 866-SKY-STRM

Two-band content delivery platform for managing content, bandwidth and network

Telestream

530-470-1300; 877-CLPMAIL

FlipFactory Publish streaming automation software

FlipFactory Pro universal file format translator

Thales Broadcast & Multimedia

413-569-0116

Amythest

Opal IP to MPEG and Gateway

Sapphire

Triveni Digital

609-716-3505

Skyscraper

Skyscraper Interactive

vi(z)rt

212-560-0708

Pilot "I-Tools" for simultaneous broadcast and interactive data transmission

Wegener Communications

770-814-4000; 800-848-9467

iPump media server

Power Products

Includes: Batteries; Battery analyzers; Battery chargers; Lightning protection products; Power (AC) products; Power supplies; UPS systems

Anton/Bauer

203-929-1100; 800-422-3473

Aspen Electronics

714-379-2515

Control Concepts Corp.

607-724-2484; 800-288-6169

Islatran Plus

Cool-Lux

805-482-4820; 800-223-2589

ABNC13, ABNC13-PR

ABNC14, ABNC14-PR

NC3813, NC3814 delta force charger for NiCads

Frezzi Energy Systems

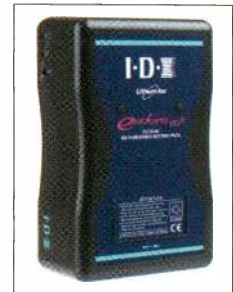
973-427-1160; 800-345-1030

M 2100 battery analyzer management system

I-BUS/Phoenix

858-503-3000; 888-307-7892

IDX System Technology



Endura E-80S Li-Ion battery pack

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VL-2 plus

NP-L50 Li-Ion NP-style battery

Pag USA

818-760-8265; 888-724-8721

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712-258-6690; 800-369-6690

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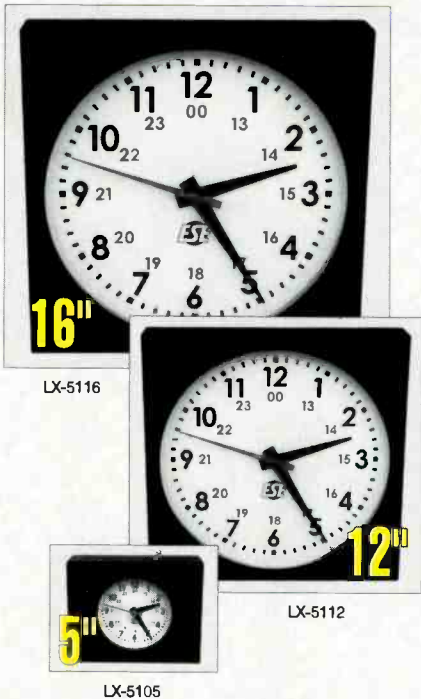
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The LX-"5100" Series can read Time Code (ESE, SMPTE/EBU & ASCII), as well as operate as Stand-Alone or Impulse Clocks. These clocks are loaded with many features, here's just a few...

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- Sweep & Step second hand modes
- Lighted Dial and Rack Mount options
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Product Directory

Production Switchers

Includes: Compositing systems; DVEs; Keyers; Production switchers

Accom

650-328-3818
Abekas 8150
Dveous/HD
Dveous

Broadcast Video Systems

905-764-1584
Masterkey 7 SDI linear DSK

Crystal Vision Ltd.

+44 1223 506 515
Safire digital chroma keyer
LKEY211 digital linear keyer

Extron Electronics



SGS 408 video matrix switcher

714-687-6398
SGS 408 video matrix switcher

For-A

352-371-1505
HVS-3000S M/E switcher
VPS-400D switcher

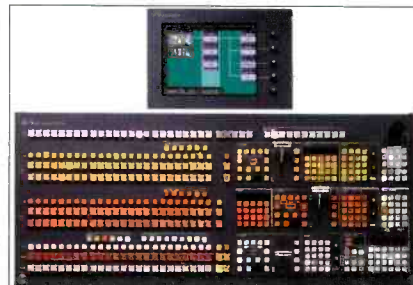
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Grass Valley Group



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800-824-5127
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Ikegami Electronics

201-368-9171
TDP-360 series digital portable switchers
TBCs and frame sync
HVC-555, HVC-680, HVC-65 upconverters and downconverters

KeyWest Technology

913-492-4666; 800-331-2019

MicroVideo Ltd.

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Key200 digital video keyers, mixers and logo inserters

Panasonic Broadcast

800-528-8601
WJ-MX50A production mixer

Pinnacle Systems

650-526-1600
DVEXCEL
DVEXtremePlus
PDS 6000 compact digital production switcher
PDS 9000 2.5M/E, 10-bit component digital live production switcher



- LCD displays
- I/O configurations
- Input carrier detection
- Matrix status

Large tactile illuminated buttons

Data rates up to 360 Mb/s

SMPTE 259M compliant

16 presets



RS-232 or RS-422 control

Ethernet control

DXP 88 SDI

Internal international power supply

Automatic cable equalization

8 inputs with equalized & buffered loop-throughs

8 outputs on dual buffered & re-clocked BNCs

External reference

DIGITAL XPOINT

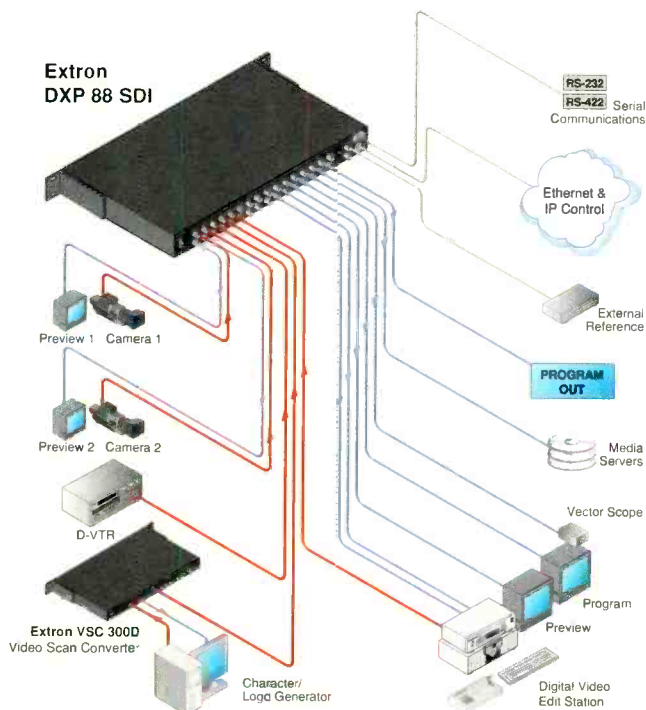
Extron® Matrix Switchers Go Digital

Digital XPoint—the new line of digital matrix switchers from Extron Electronics. The Digital XPoint matrix switcher line is the ideal solution for switching multiple serial digital video devices to multiple digital video devices in production studios, staging applications, non-linear editing suites, and broadcast studios.

Currently, the Digital XPoint line includes two models: the DXP 88 SDI (eight input, eight output) model and the DXP 44 SDI (four input, four output) model. Digital XPoint matrix switchers come standard with front panel control. Remote control is available using Extron's remote keypad (MKP 1000) and/or remote control panel (MCP 1000). Control using a third party control system can be done via RS-232, RS-422, or ethernet.

Features:

- Inputs with equalized and buffered loop-throughs
- Outputs on two buffered and re-clocked BNCs
- Automatic rate selection—the matrix can automatically accept four SMPTE 259M data rates, including: 143, 177, 270, 360 Mb/s. It's capable of switching 4fsc (composite) or 4:2:2 (component) serial digital video transmission standards
- Automatic input cable equalization—typically equalizes greater than 300m at 270 Mb/s of Extron SHR or equivalent high quality cable
- Digital Sync Validation Processing (DSVP™)—when input serial data is locked, the matrix indicates the presence of a carrier source and data rate
- 16 global memory presets
- Ethernet Control—Supports browser-based control of common operations via TCP/IP, the primary communications method on the Internet, by utilizing existing network architecture
- Extron's Simple Instruction Set (SIS™) for easy to use RS-232 control



For complete details, visit Extron's Web site at:
www.extron.com/64/digitalxpoint



Extron® Electronics

800.633.9876
www.extron.com

Product Directory

Ross Video



Synergy

613-652-4886
Synergy I
210A

Snell & Wilcox

408-260-1000; 800-827-4544
HD2524 production switchers

Sony Electronics

800-686-SONY
HDS-7150 1.5M/E production switcher

ULTIMATE Corp.

818-993-8007
Ultimatte-HD
Ultimatte-400
Ultimatte-9

Videotek

610-327-2292; 800-800-5719

Recording Media

Includes: Bulk erasers; Recordable media (tape and disc)

RTI-Research Technology International

847-677-3000; 800-323-7520

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RF Components

Includes: Dummy loads; RF combiners; RF transmitting tubes; Tower accessories/lighting; Tower lighting equipment; Tower site management; Towers; Transmission line accessories; Transmission line

Andrew Corp.

708-349-3300; 800-DIAL-4-RF

Antenna ID Products

610-458-8418
FCC/OSHA antenna site signage

CPI - Eimac Div.

650-592-1221; 800-414-8823

Dialight Corp.

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DTV and NTSC systems
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Doty Moore

972-550-9500

Kline Towers

803-251-8000

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IOT 9707

914-592-6050; 800-342-5338

IOTs

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201-767-5380
Rigid coaxial transmission line systems and components
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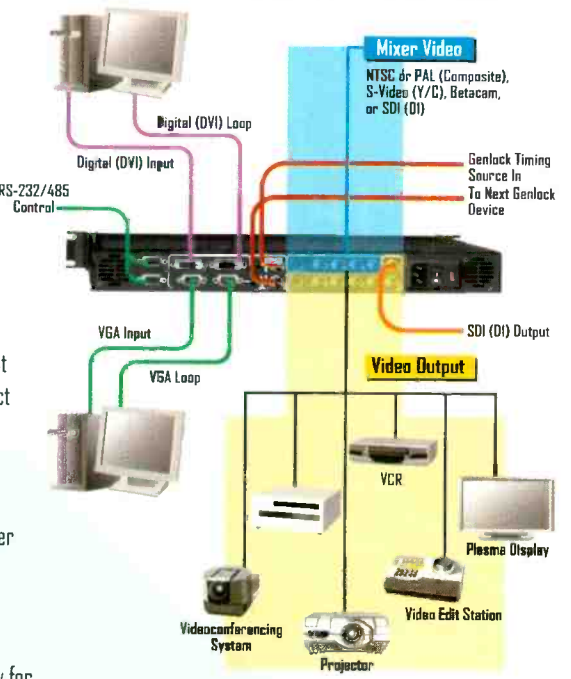
Folsom's ViewMAX down converters convert computer graphics to broadcast quality video in real time. ViewMAX products are packed with advanced features and offered in three models to provide **MAXIMUM FLEXIBILITY**.

ViewMAX automatically locks to the incoming video and processes the image to generate broadcast quality NTSC or PAL outputs including composite, RGB, S-Video (Y/C) as well as serial digital component 4:2:2 (SDI) video. ViewMAX products are designed for professionals who require the highest image quality, high reliability, and control over all aspects of the down-conversion process. The user interface is designed with a large display and interactive menus to provide full control with **MINIMAL FUSS**.

ViewMAX products offer the following features:

- Automatically syncs to interlaced and non-interlaced sources with resolutions up to 1600x1280
- Accepts video in RGB, Y, Pb, Pr (HDTV) or digital (DVI) format
- User selectable output formats including NTSC or PAL, RGB, Betacam, S-Video (Y/C), and digital (SDI) video
- Picture adjustments control input and output brightness, contrast, hue, saturation, and individual RGB control
- Intuitive user interface
- Image scaling features include independent horizontal and vertical scaling to support aspect ratio conversion
- User-selectable under-scan
- Programmable digital filters with adaptive flicker filtering modes
- Dynamic "camera-like" pan and zoom
- View Presets are stored in non-volatile memory for subsequent recall
- Multiple frame buffers eliminate frame conversion rate

ViewMAX Connectivity Diagram



For more information call 1.888.414.7226 or visit www.folsom.com

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1.888.414.7226 916.859.2505 Fax: 916.859.2515

Product Directory

RFS Broadcast
203-239-3311

Richland Towers
813-286-4140; 800-827-4349

Rohn Industries
309-697-4400
Towers and accessories

S2One
509-891-7362; 800-270-7050
The Eye analog and digital IOT replacement

Sabre Communications Corp.
712-258-6690; 800-369-6690

SpectraSite Broadcast Group
972-550-9500

Stainless
972-550-9500

Satellite Equipment

Includes: Satellite receivers and antennas; Satellite uplinks

Advent Communications Ltd.
+44 1494 774 400
Mantis flyaway system
Satellite uplink system

Andrew Corp.
708-349-3300; 800-DIAL-4-RF

BarcoNet
770-590-3600; 800-992-5016
Titan MKII digital satellite receiver

BT Broadcast Services (North America)
201-721-8880

Communications & Power
650-846-2801

GMPCS Personal Comm.
954-973-3100; 888-664-6727
Satellite receivers and antennas

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Product Directory

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Satellite earth-station systems integrators

Fixed and containerized systems
VSAT systems

Newtec America

203-323-0042

Modulators and encoders

Nickless Shirmer & Co.

859-727-6640; 800-543-1584

Scientific-Atlanta

770-236-6190

Wegener Communications

770-814-4000; 800-848-9467

UNITY500/500IP private network receiver with DVB-compliant MPEG-2 digital video

UNITY5000 broadcast receiver with MPEG-2/DVB video and advanced modulation formats

Studio Accessories

Includes: Cable management systems; Cleaning equipment/products; Engineering software; Master clock systems; Outdoor display equipment; Racks/furniture; Studio accessories; Tools; Transport cases; Utility carts; Weather/data systems

AMCO Engineering Co.

847-671-6670; 800-833-3156

Racks and furniture

D.W. Electrochemicals Ltd.

905-508-7500

Stabilant 22 electronic control active resident treatment for connectors

Forecast Consoles

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ImageMaster consoles

Modular consoles

Custom consoles

Horita Co.

949-489-0240

GPS-MTG master time code generator with LTC generator, RS-232 port and GPS antenna/receiver

Hotronic

408-378-3883

Image Video

416-750-8872

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GPS200

TCO100 and TCS100 clock systems

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770-458-3280; 888-786-7335

Tentel Corp.

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Complete general mechanical toolkit for DVCPRO and provider of DVCPRO and Betacam training

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DEC 102S composite-to-SDI decoder

Ensemble Designs

530-478-1830

Evertz Microsystems Ltd.

905-335-3700

7735AVC-LB dual-slot 10-bit video encoder

7735CD composite analog video-to-SDI decoder with frame synchronizer

Extron Electronics

714-491-1500; 800-633-9876

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352-371-1505

FA-350 10-bit processing frame synchronizer

FA-360 10-bit processing frame synchronizer with multiple input and output formats

Fortel DTV

404-885-9555

Intelvideo

203-348-9229

SDI-100 10-bit SDI-to-analog converter

Leitch

757-548-2300; 800-231-9673

VFS-6801 10-bit serial 4:2:2 frame synchronizer

Magni Systems

503-615-1900; 800-237-5964

MagniCoder MC-2410

MagniCoder Pro

MicroVideo Ltd.

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ADC210 and DAC210 converters for digital video

Frame synchronizers for digital video

Miranda Technologies



SDM-871p

514-333-1772; 800-224-7882

ARC-371/372p aspect ratio converters
ASD-231i 12-bit NTSC/PAL-to-4:2:2 decoder/frame synchronizer with TBC
ASD-301NI NTSC-to-4fsc converter
SDM-301NI 4fsc-to-NTSC converter
SDM-871p

Panasonic Broadcast

800-528-8601

AJ-UFC1800 universal format converter

Prime Image

408-867-6519

50-III digital frame synchronizer
PENTA-II all formats to all formats standard converter

Snell & Wilcox

408-260-1000; 800-827-4544

Alchemist motion-compensated frame-rate converter

ARC 20:20 aspect ratio converter

Mach 1 motion-compensated standards converter

Tiernan Radyne Comstream

858-458-1800

Encoders/decoders

Videotek

610-327-2292; 800-800-5719

Visual Matrix

818-843-4831

RTC2 scan converter

Xbox and MiniXBox HD and SD multiformat aspect ratio converters

Wiltronix

301-258-7676; 800-848-7870

Teranex Xantus converter

Teranex Star Up converter

Teranex Starfront converters

Test & Measurement

Includes: Audio test and measurement equipment; Compression/MPEG test equipment; RF test equipment; Spectrum analyzers; Synctest generators; Test equipment-general; TV aural modulation monitors; TV RF monitoring equipment; Video analyzers; Video monitors; Waveform monitors/vectorscopes

Acterna

301-353-1550; 800-638-2049

CSC-16 Phasor return-path monitoring system

HE1000 spectrum analyzer

MS1000 micro stealth signal level meter

SDA-5000 stealth digital analyzer

Astro Systems

818-848-7722

SG-7802 HD/SDI signal generator

WM-3001 HD waveform monitor

SL-7036 HD/SD sync generator

Broadcast Video Systems

905-764-1584

VITS-2 remote video/audio analyzer

Burst Electronics

505-898-1455

SG4 black generator

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Holiday Industries

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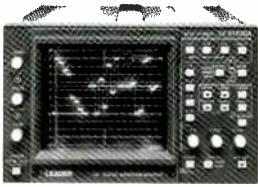
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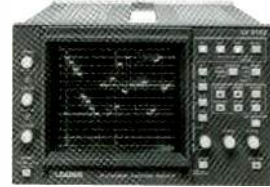
LEADER Test Solutions

LV 5152DA HDTV Digital/Analog Waveform Monitor



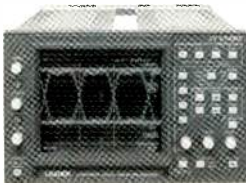
- HDTV Waveform/Vector with 1080/24 Segmented Frame Compatibility in Addition to 720p and 1080i
- 2 HD-SDI Inputs PLUS 3-Wire Analog YPbPr Inputs
- Hex Readout of all Data Points Improves Troubleshooting Capabilities
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LV 5152 HDTV Analog Waveform Monitor



- MultiFormat Analog HD and SD Including 24p and 480p
- Accepts YPbPr and GBR 3-Wire Inputs
- YPbPr or GBR Pix Output
- Component Vectorscope
- Transcodes from YPbPr to GBR
- Picture Display of Y or G Input
- Optional Staircase Input

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- Component Digital and Component/Composite Analog
- Active Serial Output of Selected A or B Serial Input
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- 6-Channel Bargraph Level Display for Dolby Digital
- Accepts 6-CH Digital Audio Inputs from LV 5152DA
- Channel Status Screens for Basic Metadata and Bit Dump
- Precision Sound Image Display Confirms Mixing and Mic Placement

LT 441D Multi-Format HDTV Digital Generator



- Supports 14 Variations of 720p, 1035i, 1080i line systems including 1080/24p + sF
- Digital Genlock to Tri-Level Sync or NTSC/PAL Black Burst
- ± 100 Line Advance/Delay
- Eight Channels of AES/EBU Embedded Audio
- Six Channels of AES/EBU Digital Outputs
- New Monoscope Test Pattern Plus Pathological Check Field Patterns
- Dynamic Patterns for Compression Test
- Optional Bitmap Download Capabilities

LT 425D Digital Component Signal Generator



- 4 Serial (includes digital black) and 1 Parallel Output
- EDH Codes Compliant to RP-165
- 4-Channel AES/EBU Embedded Audio
- Independent AES/EBU Digital Audio Output
- Compression Tests Include Variable Speed, Direction Controlled Marker and Sequentially Switched Patterns
- Digital Genlock with Programmed Advance and Delay

PT 5201 Compact VariTime™ Sync Generator



- VariTime™ Sub-Nanosecond Delay Compensation
- 1U, Half 19" Wide with Rackmount Supplied
- Genlock to NTSC, PAL or 10 MHz Clock, for Slave Applications
- Multistandard: 525/60, 625/50 and Dual Standard Operation
- Outputs: 3 Black Burst, 1 SDI Test Signal Generator (incl. SDI Black), 1 Analog Test signal generator, 1 AES/EBU or Analog Audio, 1 WordClock at 44.1 or 48 KHz
- PC Control Software Supplied

PM 5639 Handheld CRT Color Analyzer

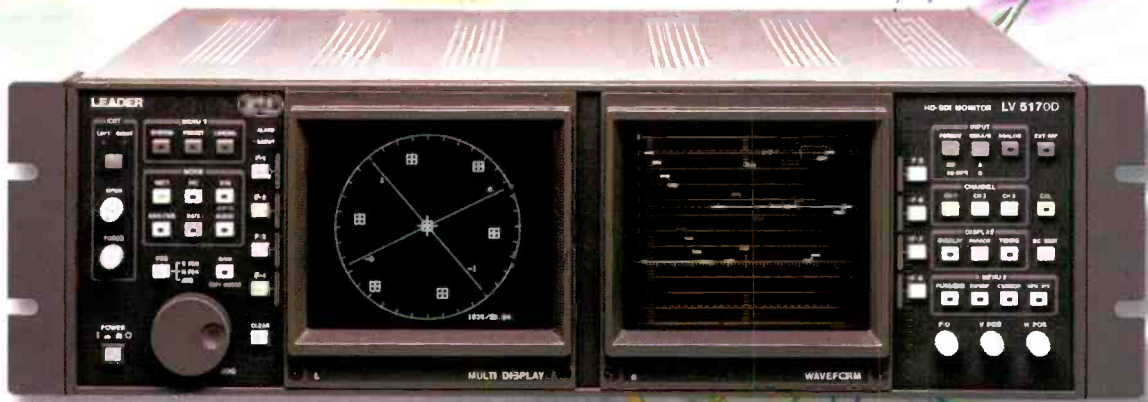


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- Equivalent Cable Length Measurement
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Product Directory

Horita Co.

949-489-0240

PT3 portable tone generator
TSG-50 test signal generator

KTech Telecommunications

818-361-2248

DVM-100 8-VSB professional refer-
ence receiver

Leader Instruments Corp.



LV 5170D HD/SDI waveform/
vectorscope monitor

714-527-9300; 800-645-5104

LV 5170D HD/SDI waveform/vector-
scope monitor

Leitch

757-548-2300; 800-231-9673

SPG-1313N NTSC super master sync
pulse generator

Magni Systems

503-615-1900; 800-237-5964

AVM-510A series automated video and
audio monitor

SDM-560/560M serial digital/compos-
ite video and audio monitor

TSG-700 series test signal generators

Standard genlock test signal genera-
tors, NTSC, PAL or NTSC/PAL

Multidyne Video & Fiber Optic Systems

516-671-7278; 800-4TV-TEST

TS12 NTSC test generator with auto
bypass

Rohde & Schwarz



EFA-T

410-910-7800

ETA-T

Snell & Wilcox

408-260-1000; 800-827-4544

Mosalina MPEG-2 software analysis

SyntheSys Research

650-364-1853

Tektronix

503-627-7771; 800-426-2200

AD920 MPEG transport stream con-
fidence tester

AT970 ATSC MPEG transport stream
generator

AVDC100 audio-to-video delay cor-
rector

RFA300A measurement set for 8-VSB

TG700 multiformat video generator

WFM700 family of multiformat, mod-
ular waveform monitors

Triveni Digital

609-716-3505

Streamscope

Videotek



VTM-400 HD

610-327-2292; 800-800-5719

VTM-400 HD

Wiltronix

301-258-7676; 800-848-7870

SPG/TSGs for analog, SDI/HD, SD/
HD signal monitoring analog, MPEG
VTR+CC/V-chip monitoring

Z Technology

503-614-9800

TV Transmitters, Translators, Exciters & Antennas

*Includes: Frequency conversion equip-
ment; MMDS products; Remote con-
trol systems (transmitter); TV excit-
ers; TV transmitters; TV transmitting
antennas*

Acrodyne Industries



Quantum IOT-based transmitter

410-568-2105; 888-881-4447

Quantum IOT analog or digital UHF
transmitters

Analog Way

212-269-1902

Andrew Corp.

708-349-3300; 800-DIAL-4-RF

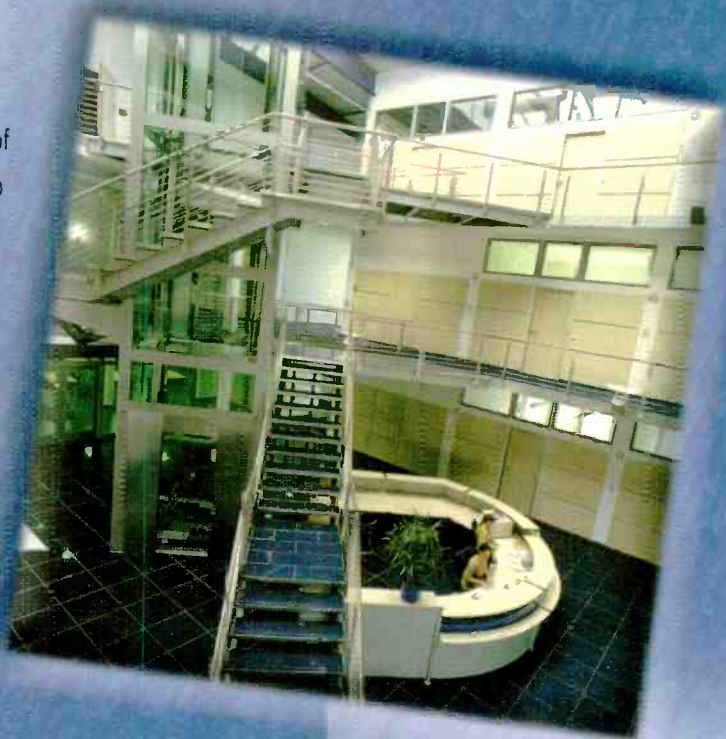
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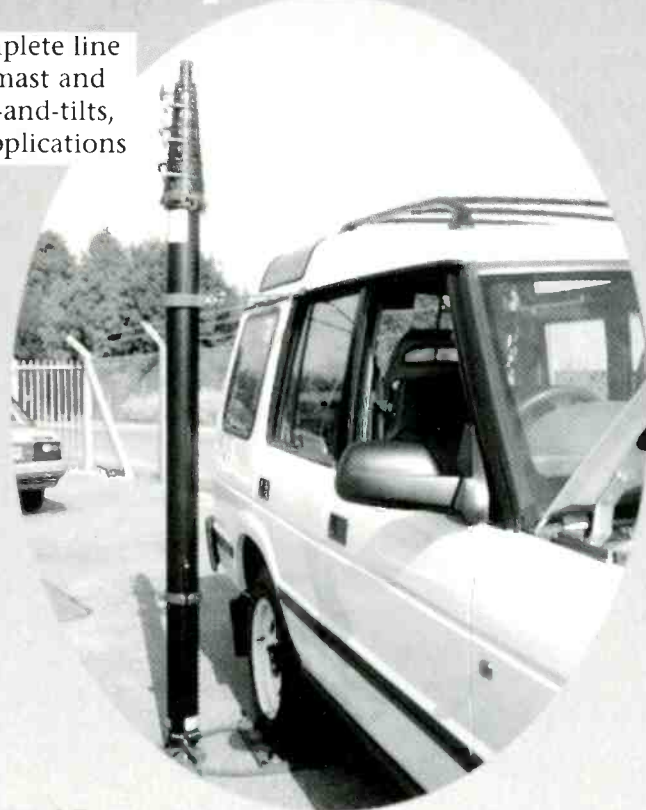


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Visionary series IOT transmitters

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Diversified Marketing International

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Technalogix 10 to 1000W

EMCEE Broadcast Products/ABS

570-443-9575; 800-233-6193

High-power UHF transmitters to 120 kW

Low-power UHF and VHF transmitters and translators

Harris Corp., Broadcast Communications Div.

800-622-0022

Diamond, Sigma, Platinum transmitters

Itelco USA

856-423-0010

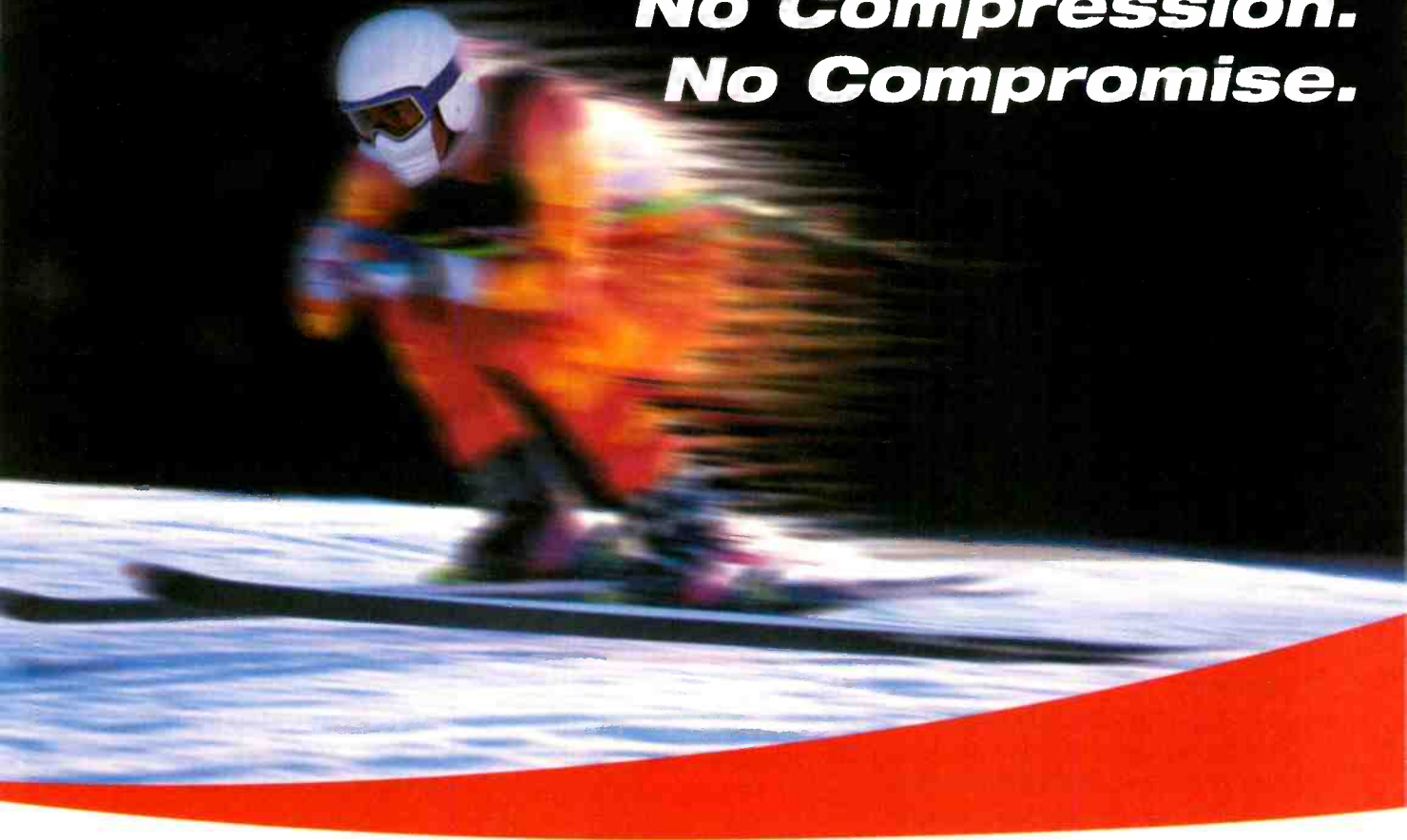
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VSB-FRQ-200 8-VSB-to-ASI and SMPTE-310M converter with PSIP update capabilities
XMT-100 low-power DTV 100W average transmitter

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Stainless

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Lynx satellite uplink trucks

AVEC

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ENG vehicle
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Broadcast Video Systems

905-764-1584
VBI-232 encoder/decoder

Complex Corp.

316-342-7743

D.W. Electrochemicals Ltd.

905-508-7500
Stabilant 22 electronic control enhancer active resident treatment for connectors

Da-Lite Screen Company

219-267-8101; 800-622-3737
Front and rear projection screens

Drastic Technologies Ltd.

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F-30 time code generator/reader

Horita Co.

949-489-0240

VG-50 VITC generator/phase analyzer

Imagine Products

317-843-0706

LTC portable TC reader

Kings Electronics Co.

803-909-5000; 888-909-5551

7750 STD video jacks

7770 Mini video jacks

8600-1 Micro video

Laird Telemedia

845-339-9555; 800-898-0759

LTM-5500 DV media converter

MicroVideo Ltd.

+44 1223 834 119

VBI data encoders for serial digital video

Moviola

323-467-3107; 800-468-3107

Norpak Corp.

613-592-4164

Analog, serial digital, HDTV and MPEG-2 encoders

PatchAmp

201-457-1504

RTI-Research Technology International

847-677-3000; 800-323-7520

Screen Subtitling Systems

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Video Compression Equipment

Includes: Compression encoder/decoders; Compression pre-processors; Statistical multiplexers; Video compression systems; Video noise reduction systems

Aglevision

609-514-4032

AGV-1000

BarcoNet

770-590-3600; 800-992-5016

Polaris MKII multichannel MPEG-2 encoder

Regulus statistical multiplex controller

Digital Vison (US)

818-769-8111

BitLink HDTV/SDTV encoders

BitPack HDTV/SDTV offline encoders

DVNR HDTV/SDTV image processing workstation

Harris Corp., Broadcast Communications Div.

800-622-0022

FlexiCoder

Heartland Video Systems

920-893-4204; 800-332-7088

E5710 MPEG-2 systems encoder

M5620 MPEG video/audio and data multiplexer

Intelvideo

203-348-9229

VP10 noise reducer

VP3000 pre-compression processor

LEL Computer Systems

561-347-2242

MPEG encoding and delivery of video over T1

Opticomm Corp.

858-450-0143; 800-8-OPTICOMM

DVX-2000 and DVX-2200 video compression

Prime Image

408-867-6519

DTM

Scopus Network Technologies

+972 3 557 6200

C-1700 integrated DV encoder/modulator

CID-3100 DVB common interface decryptor

E-1100 advanced 4:2:2 MPEG-2 encoder

TANDBERG Television

407-380-7055

E5821 high-definition encoder

PMRXC800 high-definition receiver

Telestream

530-470-1300; 877-CLPMAIL

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FlipFactory

ClipMail Pro, ClipExpress, Clip-Remote MPEG video delivery systems

Vela

801-464-1600

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Includes: Editing systems and components; Nonlinear editors

Accom

650-328-3818
Affinity
Affinity/SAN
Axial 3000

Applied Digital

352-338-0516
Segmenter MPEG cuts-and-trim editor

Avid Technology

978-640-6789; 800-949-AVID

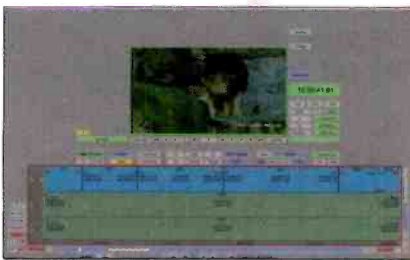
BOXX Technologies

512-835-0400; 877-877-2699
HDBOXX

BUF Technology

858-451-1350
VTC-4000 multiple VTR/DDR controller

Discreet



fire-HD

800-869-3504
Discreet Edit 6 NLE
fire-HD

DNF Controls

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Editware

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DPE-500 series linear hybrid editing controllers
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iFinish
Media 100i

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DNA newsroom production system
newsBYTE50 NLE system

Pinnacle Systems

650-526-1600
blue
CineWave
Commotion Pro
Pinnacle Pro professional video editing/authoring system
purple
silver
TARGA 3000
TitleDeko Pro

Pixel Power

561-395-4801; +44 1223 721000
Collage 2 nonlinear editor

Pixelan Software

360-647-0112
Spice Master Deluxe

Quantel

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iQ HD and 2K production system
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Sony Electronics



DNW-A220

800-686-SONY
XPRI content creation system
DNW-A220

ULTIMATE Corp.

818-993-8007
Ultimate plug-in
Ultimate compositing

Videomedia

208-762-4162
O2-PCE professional online editing

Video Monitors

Includes: DLP projectors; Line doublers/quadruplers; Plasma displays; Projectors; Video monitors; Video presentation equipment; Video walls

Aspen Electronics

714-379-2515

Astro Systems

818-848-7722
DM-3002 15-inch HD LCD monitor
DM-3000 6-inch HD LCD monitor

BarcoNet



ADVM monitors

770-590-3600; 800-992-5016
ADVM series of hybrid analog/digital monitors

CTX International

626-709-1000

Da-Lite Screen Company

219-267-8101; 800-622-3737
Model 500 portable overhead projector
G-200, G-200-VC classroom overhead projectors
Reflex video wall

Extron Electronics



USP 405

714-491-1500; 800-633-9876
714-687-6398
USP 405 line doublers/quadruplers

Folsom Research

916-859-2500; 888-414-SCAN
Audio and video seamless switcher

Ikegami Electronics

201-368-9171
HTM-50 series HDTV monitors
TM-20 and TM-17 series color monitors
PM B&W series monitors

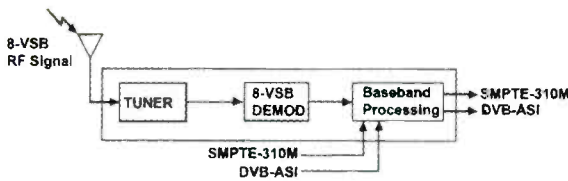
JVC

800-JVC-5825
DT-V1700CG HD broadcast monitor

KTech

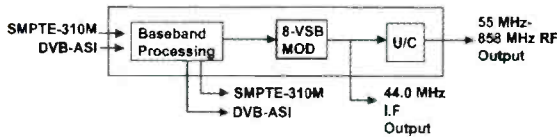
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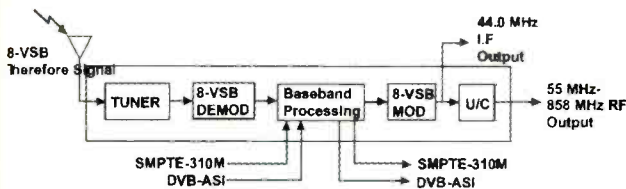
MODEL : VSB-FRQ-200 8-VSB TO ASI/SMPTE-310M CONVERTER

- Inputs : 8-VSB RF, DVB-ASI, SMPTE-310M
- Outputs : SMPTE-310M, DVB-ASI
- PCR Correction
- PSIP Update(VCT, Station ID, Major CH No, Minor CH No)
- Simultaneously Converts
 - 8-VSB RF to DVB-ASI and SMPTE-310M
 - DVB-ASI to SMPTE-310M
 - SMPTE-310M to DVB-ASI
- Alarm & Status
- RS232C Remote Control



MODEL : VSB-ENC-150E LOW COST 8-VSB MODULATOR

- Inputs : DVB-ASI, SMPTE-310M
- Outputs : 44MHz I.F 8-VSB, RF(Tuneable 55MHz-858MHz, Adjustable Power level), DVB-ASI, SMPTE-310M
- PCR Correction
- PSIP Update(VCT, Station ID, Major CH No, Minor CH No)
- Simultaneously Converts
 - DVB-ASI to SMPTE-310M
 - SMPTE-310M to DVB-ASI
- Alarm & Status
- RS232C Remote Control
- Built in 23 stage PN Generator for BER testing
- PLL Lock Detector indicates MPEG2 valid
- SNR : 37dB Typical



MODEL : DCC-150E DTV CHANNEL CONVERTER

On- Air reception of 8-VSB signal and 8-VSB Remodulation to another CATV Channel

- Inputs : 8-VSB RF, DVB-ASI, SMPTE-310M
- Outputs : 44MHz I.F 8-VSB, RF(Tuneable 55MHz-858MHz, Adjustable Power level), DVB-ASI, SMPTE-310M
- PCR Correction
- PSIP Update(VCT, Station ID, Major CH No, Minor CH No)
- Simultaneously Converts
 - 8-VSB RF to DVB-ASI and SMPTE-310M
 - DVB-ASI to SMPTE-310M
 - SMPTE-310M to DVB-ASI
- Alarm & Status
- RS232C Remote Control
- Built in 23 stage PN Generator for BER testing
- PLL Lock Detector that indicates a valid MPEG2 signal

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E-Mail: sales@ktechtelecom.com Web: <http://www.ktechtelecom.com>

Product Directory

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800-528-8601

AT-H317W 1080i/720p/480p/480i HD monitor

Sony Electronics



PFM-42B1 flat-panel plasma monitor

800-686-SONY

BVM-F24U CineAlta monitor

PFM-42B1 flat-panel plasma monitor

Video Routing & Distribution

Includes: Control signal routers/patch panels; Video DAs; Video processing amplifiers; Video routing switchers

AJA Video Systems

530-274-2048; 800-251-4224

Analog Way

212-269-1902

Astro Systems

818-848-7722

SD-1645 HD repeater

AutoPatch

800-622-0246

Modular series of routing switchers

BUF Technology

858-451-1350

BUF ROUTE routing switcher controller

Burst Electronics

505-898-1455

VDA-2EQ

Crystal Vision Ltd.

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DDA108 SDI DA

VDA210R/M analog video DA

DNF Controls

818-898-3380

Ensemble Designs

530-478-1830

ESE

310-322-2136

ES-297A 1x4 video DA

Evertz Microsystems Ltd.

905-335-3700

7700ADA analog equalizing DA for HD

X-1202S 12x12 SDI video router

Extron Electronics

714-491-1500; 800-633-9876

Fortel DTV

404-885-9555

Grass Valley Group

800-824-5127

Kameleon AV modular router

7500 wideband digital router

7500 narrowband digital router

Image Video

416-750-8872

XDS 1601 serial digital router

KeyWest Technology

913-492-4666; 800-331-2019

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LTM-ER4 multiformat router

Leightronix

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AVS-816

Frame synchronizer

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Multidyne Video & Fiber Optic Systems

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VAGC-200 video automatic-gain DA

Netcom

201-837-8424

Patchamp series routing

Network Electronics AS

631-928-4433; 866-928-4433

GYDA advanced control and monitoring card for Flashlink

THOR router management system

Product Directory

PatchAmp
201-457-1504

PESA Switching Systems



Tiger video routing switcher

800-328-1008

Tiger, Cougar, Ocelot video routing switchers

Ross Video

613-652-4886

RossGear

Sierra Video System

530-478-1000

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Shasta HD

Sierra Pro

Tahoe - 16x16 up to 48x48

Yosemite

THOMSON Multimedia Broadcast & Network Solutions

800-962-4287

EPIX line of modular equipment

Trinix, Venus, Triton routing switchers

Trompeter Electronics

818-707-2020; 800-982-2629

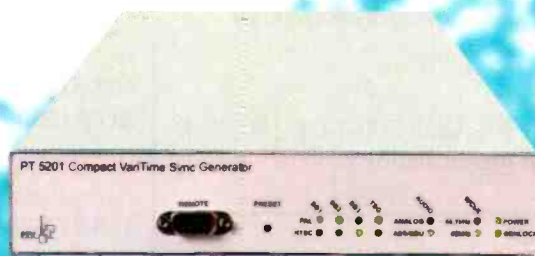
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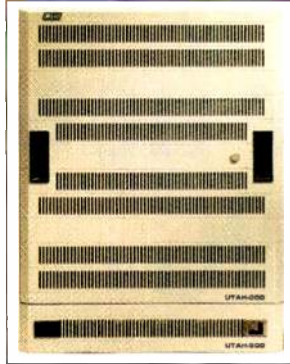


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Product Directory

Utah Scientific



Utah-300 digital/analog router

801-575-3770

DOS-2

Utah-400, Utah-300, Utah-200, Utah-1500 digital/analog routers

Vela

801-464-1600

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Videotek

610-327-2292; 800-800-5719

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Includes: Archive/DVD Storage; Commercial insertion equipment/software; On-air presentation systems; Still/clip stores; Tape library systems; VDRs (video disk recorders); Video servers; VTRs (videotape recorders)

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Abekas 6000

APR-Attache

WSD/HD

WSD-2Xtreme

Adtec Digital

615-256-6619

Agilevision

609-514-4032

AGV-1000

AJA Video Systems

530-274-2048; 800-251-4224

Applied Digital

352-338-0516

ADnet ad insertion system

Avica Technology Corp.

310-450-9090

Avid Technology

978-640-6789; 800-949-AVID

AVS Graphics & Media

801-975-9799

Stillbank

BUF Technology

858-451-1350

Spot server management system

Doremi Labs

818-562-1101

V1bx2 dual-channel disk recorder

V1 MJPEG disk recorder

V1-Server multichannel video server

Fast Forward Video

949-852-8404

Alpha One digital still store

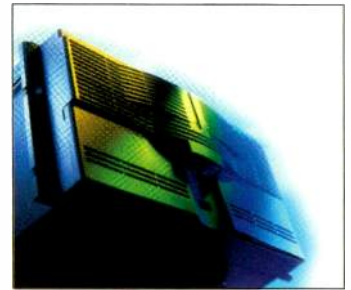
Omega deck digital disk recorder

For-A

352-371-1505

LDR-200 live disk recorder

Grass Valley Group



Vibrint/Profile platform

800-824-5127

Media Area Network real-time shared storage system

Profile XP Media Platform

Vibrint/Profile platform

Imagine Products

317-843-0706

Image Mine

Inscriber Technology

519-570-9111; 800-363-3400

E-Clips server

Leightronix

517-694-8000

MVP-2000

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Product Directory

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VR server system

757-548-2300; 800-231-9673
VR445 broadcast server
VR technology family

MATCO

408-353-2670; 800-348-1843
MA-500M video server

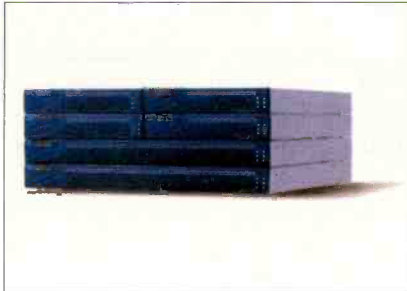
Medea Corp.

818-597-7645; 888-BY-MEDEA
VideoRaid FCR

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714-774-2200; 800-933-0339

Omneon Video Networks



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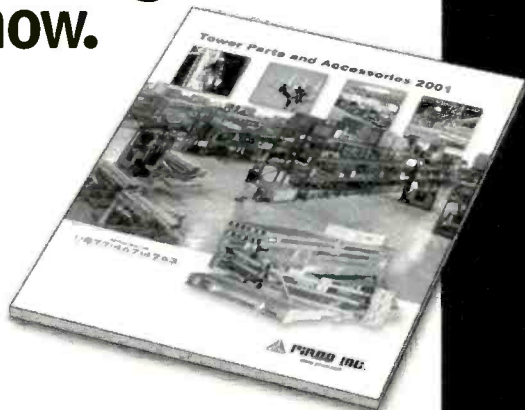
AJ-HD3700HD-5 multiformat, multi-standard mastering VTR
AJ-HD150 DVCPRO HD studio VTR
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Belden Electronics Div.
765-983-5200; 800-BELDEN 1

Clark Wire & Cable
847-949-9944; 800-CABLE-IT

Comprehensive Video Group
800-526-0242

Extron Electronics
714-491-1500; 800-633-9876

Snell & Wilcox
408-260-1000; 800-827-4544
Archangel real-time archive restoration system

Sony Electronics
800-686-SONY
MAV70 on-air playout server
DNW1A100
MAV555 production server

Vela
801-464-1600
Media Machine DVD-RAM archiving

Pixel Power
561-395-4801; +44 1223 721000
Collage 2 still store
Clauter TG-SD and TG-HD text generator and on-air playout system
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SeaChange International
978-897-0100
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SGI (Silicon Graphics Inc.)
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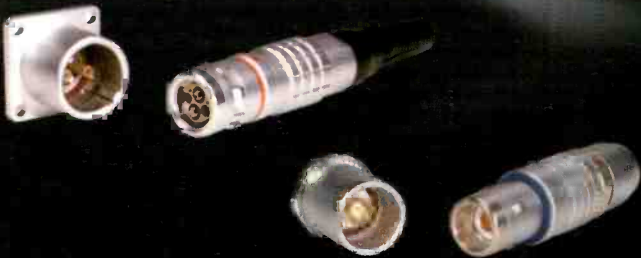
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Gepco

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 HDC 920 composite fiber-copper
 HDTV camera cable
 V37 all-metal DT-12 type connection
 VHD 1100 RG-11 type DTV, HDTV
 coax cable
 VPM2000 RG-59 type DTV, HDTV
 coax cable
 VSD201 RG-6 type DTV, HDTV coax
 cable

Kings Electronics Co.

803-909-5000; 888-909-5551
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Multidyne Video & Fiber Optic Systems

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 TAC-2000 tactical fiber-optic systems

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Broadcast
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EXCELLENCE AWARDS

23 TOP FACILITIES

LEADING EXAMPLES OF TECHNOLOGY

READERS VOTE AND WIN

EXCELLENCE AWARDS

This year, the editors of *Broadcast Engineering* have developed the **Engineering Excellence Award**. The award recognizes innovation and quality design and construction of production and broadcast facilities. A special report containing 23 examples of leading-edge facilities from around the country follows. From RF to DVD production, these transmitter sites, TV stations and production facilities represent some of the best work of today's top systems integrators.

Broadcast Engineering readers will help select the winners of this year's awards. Readers are encouraged to review the facilities highlighted here and then go to the *Broadcast Engineering* Web site and vote for their favorite installations. Go to www.broadcastengineering.com, click on the *Engineering Excellence Awards* icon and vote for your selection.

When voting, consider how well the systems integrator and facility exhibit the following design and application issues:

- Originality/innovation of new or existing techniques
- Complexity of the project
- Presentation, visual attractiveness
- Meeting owner/client goals

Readers win too!

Readers who vote and then enter their e-mail address will be eligible for a *Broadcast Engineering* t-shirt. Only one vote per reader please. To be eligible for the t-shirt you must provide an e-mail address. Winners will be contacted.

Votes will be taken until Jan. 20, 2002. Three winning facilities/systems integrators will be announced in the March 2002 NAB Preview issue of *Broadcast Engineering*. The **Engineering Excellence Awards** will be presented to the winners at the NAB convention.

So read, vote and win!



Brad Dick, Editorial Director

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KCTS	81
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Marshall Space Flight Center

Marshall Television, located at Marshall Space Flight Center in Huntsville, AL, is one of many centers that can originate program content on NASA TV. The facility currently utilizes standard definition system but all acquisition and editing is carried out in the digital domain. The NASA HDTV team is currently evaluating HD equipment and the Marshall TV facility will soon be migrating towards the new standards.

As part of the facility upgrade, the Marshall TV engineering staff was tasked with replacing the existing audio mixing console with a broadcast console that would accommodate current needs as well as address future requirements. The new console needed to be easily integrated into the present facility, be upgradeable to address future standards, provide ease of operation for live broadcast produc-

tions, offer a true electronic signal pathway, and provide a modular design for future upgrades through module replacement.

Marshall chose Wheatstone's SP-8 Series Audio Console to function as the main audio board for center broadcasts on NASA TV, as well as routing



Studio Specs

Design Team

George Baker, facility manager
Curtis W. B shop, lead engineer and project head
Dusty Hood, Bobby Robertson and Gerald Snell; engineering staff

Equipment List

Wheatstone SP-8 broadcast console
ADC patch panels
Mohawk cable

acceptable, but as the entire console was not needed and the switches were not used as much, this became a major problem. Corrosion built up in the unused sealed switches leading to loss of signal and interrupting productions. This interference was especially disruptive during live productions. A decision was made to find a console that had a total electronic path so the signal would not be routed through switches.

The Wheatstone SP-8 audio console fast mix-minus system allows individual foldbacks to keep live programming moving smoothly. The console has ample monitoring capability and can feed a control feed system as well as multiple studio outputs. The entire audio program path is electronically switched to provide reliable operation.

Wheatstone worked with the specifications provided by Marshall TV's engineering staff, and phase one of the project is nearly complete. ■

audio for internal live and taped productions. The Wheatstone SP-8, a 24x8 console, will be located in the audio control room.

The failure of the old console was due to the audio signals going through sealed, self-cleaning switches and faders. In the days when all of the channels of the console were constantly in use, this was





FROM SEA TO SHINING SEA.

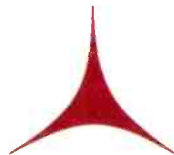
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NY1 News - tapeless and multichannel

NY1, Time Warner Cable's 24-hour New York City news channel, chose A.F. Associates to provide full systems integration and engineering design for its new expanded facility relocating to Chelsea Market on Manhattan's West Side. The new facility is scheduled to launch in February of 2002.

Primary goals for the new facility were to create a tapeless multichannel 24-

The design criteria involved building a state-of-the-art facility utilizing the latest technology. This became a reality when the location at Chelsea Market became available. The space, which had been part of the original Nabisco's Oreo cookie factory, offered 33-foot high ceilings, column-free space for studios, roof space for satellite and microwave dishes, and panoramic views of the city. The space was large enough to support 350 tons of A/C units, one 675 kW generator, six satellite dishes and a production platform.

Working with the Time Warner Cable News Group of Stamford, CT, NY1 News and TWC News' engineering teams, along with A.F. Associates, embarked on a development project to create a 24-hour news wheel automation system utilizing ENPS from the Associated Press, Omnibus Automation, Vertigo Graphics and Pinnacle Servers. The newsroom is based entirely on Media Object Server (MOS) protocol. Pinnacle would also supply its Vertex nonlinear editors, DVEXcels, Deko 2200s and a DekoCast to the project. The new NY1 News facility is also supported by a Thomson/Philips serial digital Venus router, Thomson DD35 switcher and Saturn master control switcher, and Radamec EPO robotics.

The new facility has doubled the station's space, created a better working environment for its personnel, and created a facility that allowed NY1 to offer its services to outside clients. ■



hour news facility and to utilize video server technology that could be accessed at the desktop for viewing and editing by field reporters and production personnel. The new facility would also have to be highly automated to utilize manpower efficiently, have high ceilings for studios, a DVCPRO format, be a serial digital plant, have satellite and microwave transmit and receive capability on site, have access to fiber-optic connectivity, and double the current facility's space in order to allow for future growth.

Studio Specs

Design Team

NY1 News

Steve Paulus, senior vice president and general manager

Jeffrey Polikoff, director of operations and engineering

Joe Truncale, operations manager

Sunn Isarankura, chief engineer

John Tenke, field operations manager

Brad Shapiro, manager of management information systems

Thomas Coviello, facilities manager

A.F. Associates

Paul Berg, project director

Steve Sabin, project manager

Ken Brueck, project leader

Mark Bressack, vice president of sales

Equipment List

Associated Press ENPS newsroom system

Omnibus automation systems

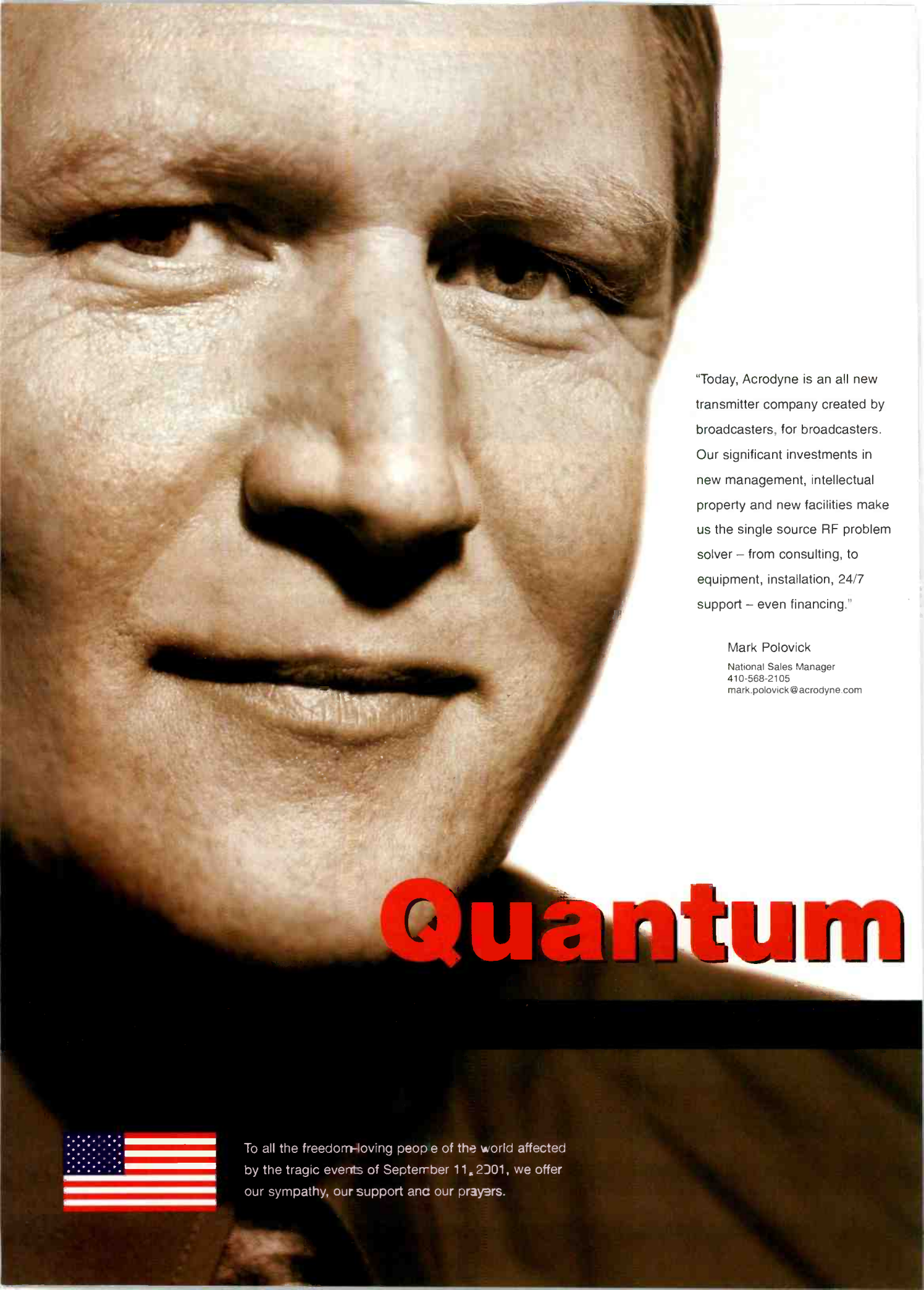
Time Base consoles

Pinnacle Media Core servers, Vertex editors,

Deko 220 character generators, DekoCast,

DVEXcel digital video effects, StreamFactory

Thomson DD35 switchers and Venus router

A close-up, high-resolution portrait of a man's face, likely Mark Polovick, looking slightly to the right. The lighting is dramatic, highlighting the texture of his skin and the intensity of his gaze.

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Ray Kiesel

Vice President, Research & Development
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Andy Whiteside

Vice President, Engineering
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Maine Public Broadcasting's television operations center

Maine Public Broadcasting serves the entire state of Maine with seven FM radio stations, five analog television stations, one digital television station, and four studios, all of which are interconnected via 50 plus microwave systems. The studio facilities are configured with Bangor housing the operational master control centers for television and radio.

The state of Maine has a population of 1.2 million people and covers an area larger than all of the rest of New England combined. MPBC serves 99 percent of the state's population.

The major goal of the project was to

implement DTV in the most cost-efficient and manpower-effective manner possible. The specific goal of the project was to design a master control facility that would handle four standard-definition programs, pass high-definition programming, insert PSIP and opportunistic data, and run under automation. Other goals were to insert Maine PBS into the bit-stream in place of one of the streams in the PBS multicast, switch between HD and SD streams, allow branding of all the services, and work in the compressed domain, all without requiring additional manpower.

MPBC needed a way to integrate their existing analog channel into the ATSC bit-stream for their DTV service. At the same time they wanted to pass three of the four DTV channels provided by PBS because they did not have the capacity in their microwave system to pass both the analog and digital signals. They had to get their existing service multiplexed into the digital stream in order to demux it out at their transmitter sites, feed it into an ATSC decoder, extract the video and encode it as an NTSC signal. They intend to

handle the HD programming by decoding the HD to an SD signal and then encoding it as NTSC.

MPBC selected the AgileVision 1000 as the cornerstone of their master control facilities. The fact that it allows manipulation of the data streams,



forms virtual switchers that can be configured on the fly and can brand the services in the compressed domain made it the ideal solution for Maine Public Broadcasting.

The design and use of AgileVision allows MPBC to pass and manipulate multiple program streams provided by PBS. And, since the AgileVision 1000 also serves as a software solution, MPBC has the upgrade path to provide additional services in the future. ■

Studio Specs

Design Team

Gil Maxwell, senior vice president for operations and technology

Dave Roy, director of telecommunications and projects

Lisa Robertson, director of technology systems

Bob Mullane, director of transmission systems

Dale Hatch, manager of Bangor technology systems

Kate Arno, vice president for television services

Bernie Roscetti, director of television programming



Idaho Public Television's KAID-DT

Idaho Public Television (IDPTV) is a statewide network of five full-power NTSC transmitters and 36 translators. It currently has one DTV transmitter located in Boise, but there are plans to construct three more during 2002 and a fourth in 2003. The Boise market serves approximately 450,000 people.

The goals of IDPTV's KAID-DT facility were to be up and on the air with DTV in a timely fashion and not have to fully rebuild its MC facility at the same time as it built its transmitter plant. Being a PBS affiliate, it knew that it could provide a pass-thru of the satellite-fed "pre-encoded" transport streams, but it wanted its own PSIP, logo and control of those streams.

The AgileVision AGV-1000 was the

core technology used for the project. It is fed an ASI stream by satellite receivers with one tuned to the PBS SD 4-channel multicast and one tuned to the HD feed. They monitor the transport stream output prior to distributing the stream for confidence decoding and to their STL link. The receiver offers both ASI and SMPTE-310 outputs at



Studio Specs

Design Team

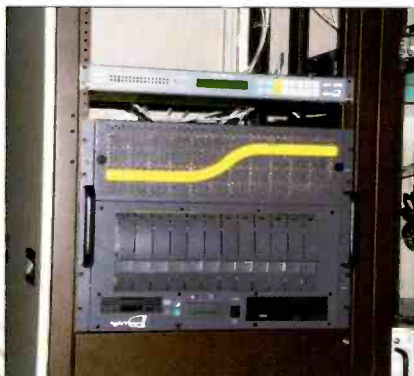
Peter W. Morrill, general manager of IDPTV
 Ron Pisaneschi, director of programming for IDPTV
 Rich Van Genderen, director of technology for IDPTV
 Gens Johnson, DTV planning for IDPTV
 Ted Poe, KAID chief engineer

their transmitter site.

The AgileVision product was a good match for many reasons. First, it gave KAID-DT great performance and flexibility options. Secondly, the advanced feature set allowed the crew to experiment and provide services that normally can't be done in the compressed transport stream arena. Third, the crew foresees options for re-pur-

posing the unit after a full digital rebuild of its MC and distribution facility is complete.

KAID-DT has had positive results. It has been able to brand each multicast channel and its HD channel uniquely and switch between the two streams. It also has been able to insert accurate PSIP data right from the start. The main benefit has been identity. KAID-DT had signed on with two other DT stations at the same time and noticed that its PSIP data enabled the set-top box it was experimenting with to tune to its channels much quicker and with less input from the user. ■



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KHRR

Since 1972, Andrew Corp. has been designing broadcast antennas using computer-modeling techniques referred to as near-field measurements. Andrew engineers pioneered many antenna-testing techniques during a time when the norm was to measure data using a far-field test range to prove the horizontal and vertical plane radiation patterns. These computer-aided techniques



were particularly important when it came to manufacturing a top-mounted NTSC analog antenna for station KHRR Channel 40.

A Telemundo affiliate, KHRR offers one of the foremost broadcasts of Spanish-language programs in Arizona. When the station's 15-year-old Bogner transmitting antenna started to burn up, speed was of the essence to prevent

antenna issues affecting transmission quality. Timing was tight for a standard antenna, and KHRR required a special fully pressurized antenna. An evaluation by an independent consultant of environmental conditions at the transmitter site – 2030 feet above average terrain on Tucson Mountain – had concluded that a pressurized antenna solution was best. The Tucson Mountain area, bordering the west side of Tucson, is prone to dust storms that can sweep through at speeds of up to 90 miles per hour. An unprotected antenna simply could not stand up to the environment as well as a pressurized antenna.

Andrew offered a top-mounted TRASAR antenna with full radome enclosure and 60 kW power rating and a guaranteed delivery of just 16 weeks. The project team – working with KHRR's engineers – made such good time that the antenna was delivered two weeks ahead of schedule.

The TRASAR antenna uses computer-aided techniques to maximize the benefits of custom designs that are inherent in non-uniform arrays. Precise control of the position and electrical characteristics of each slot in the array provides the ability to shape the antenna beam. This type of control allows

for the production of null-free elevation patterns with no real gain penalty. These techniques also improve product delivery by determining the precise dimensions and position of each slot prior to production and eliminating the “black magic” on the factory floor.

When KHRR's new TRASAR antenna was put into operation in late fall 2000, the station received calls from viewers saying how impressed they were with their improved picture. ■

Studio Specs

Design Team

Steve Twiselton, chief engineer
Arturo Rubio, engineer

Equipment List

Andrew TRASAR antenna ATE24H8-ETCXL-40H
ITS-20A exciter modulator
ITS Pulsar
Videotek DM-200 demodulators
Trinity system
Mosley MRC-2 transmitter remote control
Tektronix 492P spectrum analyzer
JVC monitors for master control
Sony DSR-1500 digital tape machine
Sony DSR-1800 DVcam recorder
QSI image insertEr



KERA-DT

KERA chose Andrew Corp. to help make their transition to DTV a success. The transition began with the station being assigned the lowest channel in UHF band, Channel 14. But when local licensees noticed that there was a problem of DTV interference with existing land mobile and other licenses in the spectrum below Channel 14, many petitioned for another channel. Unfortunately, there wasn't another workable channel available in the Dallas, Texas area, so they knew they would have to work with what they had.

The KERA staff realized early on that there would be radiating energy at the lower edge of their DTV signal. The Channel 14 DTV signal has components from 470 to 476 MHz, which is quite different from an NTSC TV station operating at Channel 14. Many mobile operations in the Dallas metro area had valid licenses to operate their low-powered equipment in their businesses, so it was imperative that KERA operate their digital transmitter with the least amount of interference to those land mobile users operating just under 470 MHz. They began by conducting tests with a Dallas-based land mobile consultant to determine what level of attenuation would need to be

achieved by a mask filter. The required attenuation was large. Furthermore, the filter characteristic would have to remain stable with temperature and power level variations. Due to the expansion of the cavities of most filters, the characteristic tends to drift down in frequency with increases in power. This type of drift would be intolerable in this situation. If the passband were to drift down, the attenuation at the critical land mobile frequencies would drop significantly due to the steep band edge. Temperature stability becomes even more important if a station is going to increase

its DTV power in the future, which was the case at KERA.

The KERA team knew that such a filter would be larger and more expensive than a typical mask filter. They also knew, due to the large band edge attenuation required, that the filter would have a large inherent group delay variation which would be challenging for the transmitter manufacturer to correct for. When the filter attenuation near the band edge is increased, the passband group delay variation also increases. Axcera Corp., the transmitter manufacturer, in conjunction with Andrew Corp., performed tests to ensure that they would be able to provide the large amount of correction that would be required.

The temperature compensated, 12-Section Trinity mask filter that was commissioned from Andrew Corp.'s Passive Power Products division provided the desired attenuation and the temperature stability to do the job, and the Axcera transmitter correction scheme was able to deal with the large group delay variation.

KERA Channel 14 has been on the air with their new system since Dec. 14, 2000, at low initial power levels and will be implementing a planned power increase in the near future. ■

Studio Specs

Design Team

KERA-DT

Rick Owen, vice president of engineering and chief technology officer
Andrew Corporation

Spencer Smith, vice president of broadcast
Axcera Corporation

Dan Dickey, coordinating engineer

Equipment List

Trinity mask filter

Axcera Corporation solid state transmitter



Detroit Public Television's WTVS-DT

Detroit Public Television (WTVS) was leasing an analog transmitter facility and antenna space from WKBD (UPN), which is also home to WDWB (WB), when the station was informed that the tower would not support DTV antennas for all three stations. WTVS learned that WWJ-TV, the local CBS affiliate, was planning to build a new 1012-foot guyed tower nearby, so WTVS negotiated a deal to lease a DTV transmitter facility and antenna space from the WWJ-TV location.

The CBS building and tower was designed to accommodate several transmitters, both TV and FM, as well as wireless services. Because of the timeline for WWJ-TV's move of both its analog and digital transmitters to the new facility, WTVS chose to accelerate its DTV plans so it could take advantage of the crews that already were scheduled to build the tower and install WWJ-TV's antennas. In cooperation with CBS and assistance by local broadcast consultant John FX Browne & Associates, Dielectric built a stacked DTV antenna for WTVS (Channel 43) and WWJ-TV (Channel 44). While the tower was being constructed, WTVS applied for an NTIA/PTFP grant to purchase DTV master

control, a DTV transmitter and STL equipment. The grant was awarded in September 1999, and the search for equipment manufacturers and vendors began.

In parallel with the tower and antenna construction were plans to divide the tenant space in CBS' transmitter building. One of the innovations implemented was the sharing of CBS'

UPS/generator electrical system. The use of protected and regulated power from CBS reduced the need for an additional generator and UPS for WTVS' transmitter. Also, the size of the transmitter room and the layout for the transmitter and RF equipment allows the station to add a second IOT for full redundancy.

As soon as the NTIA/PTFP grant was awarded, WTVS put out an RFP for the transmitter and studio equipment. After evaluating proposals from a number of very competitive transmitter and DTV equipment vendors, WTVS chose Axcera (then ADC) to build and install its DTV transmitter.

The project was completed under budget and met the goals and expectations of the WTVS crew. The Axcera transmitter has been extremely reliable and puts out an excellent signal. The WTVS design team believes it chose the best DTV transmitter manufacturer for their project. ■

Studio Specs

Design Team

Axcera

Maxx Thomas, Walt Beaver and
Barry Garratt, field service engineers
Jerry Swain, technical services supervisor
Paul Grzebik, regional sales manager

WTVS

Terry Lee, transmitter engineer
John Mark, studio engineer
Helge Blucher, vice president of
engineering and technology
The Talbot Corp., electrical work
Wiegand Masonry, interior construction

WWJ-TV

Phil Hejtmanek and John Workman;
chief engineers
John Azar, transmitter engineer
John Byrne, director of engineering for
television stations liaison (New York)

Equipment List

Axcera HP25SDW Visionary DT transmitter
Dielectric TFU-18GBH-R04 antenna

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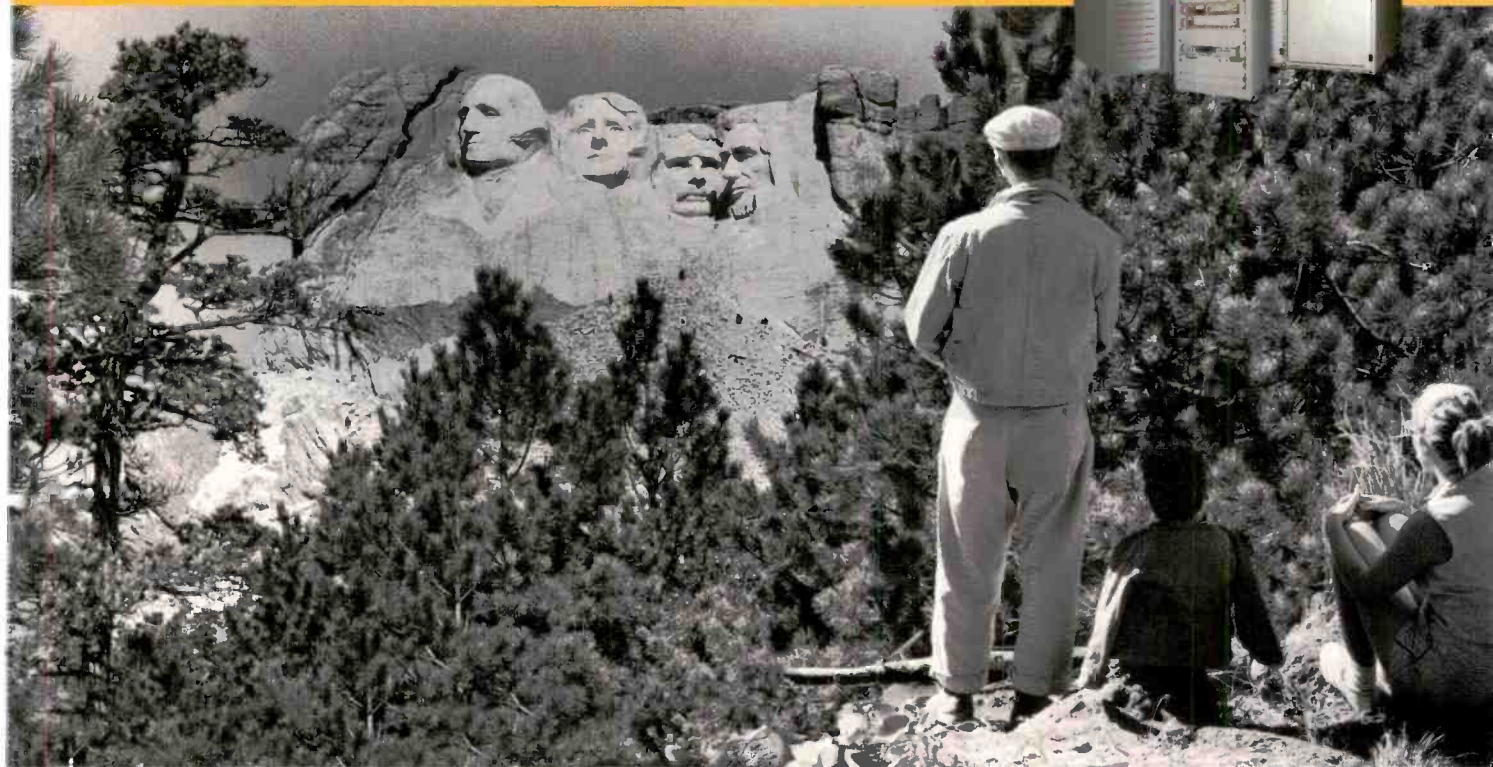
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WABC

Beginning in late 1999, WABC (Channel 7 in New York City) began to prepare for the updating of TV8, the ABC O&O station's on-air master control room. The existing control room had been built in the early 1980s using entirely analog NTSC technology. Surrounding it was similarly dated infrastructure which, while of high quality, was becoming less supportable every year. The first step was to move TV8 to a temporary location, followed by a redesign of the space and re-equipping as needed.

The nation's most important media market, and home to the ABC television network, would also be installing DTV systems at the same time. The decision was made to build one master control room for both the DTV channel and Channel 7 using Philips (now Thomson) Saturn master control switchers for both HDTV and SDTV.

The space plan for the control room, completed by consultants and designers at AZCAR, was intended to provide a comfortable working environment.

The new infrastructure would be the core for the entire station in the future and it was decided that a Grass Valley Group SMS-7500 wideband routing switcher with SMS-7500NB AES routing would be used. In addition, the

GVG control system would have to control an aging GVG 440 routing switcher and interface with the ABC network plant router.

Commercial playback in the system built by AZCAR is a pair of mirrored Pinnacle MediaStream 700s used for both program and commercial playback, and a third MediaStream 1600, which interfaces to a pair of AMPEX DST-712 digital archives under Avalon Archive Manager control. The MediaStreams are automated by Encoda

MCAS automation software, as are the Sony Betacam SX VTRs and the master control switchers.

The system was designed and constructed by AZCAR offsite while the renovated control room designed by Carlton was being finished. After system tests, the racks and equipment were dismantled and shipped to New York where AZCAR completed the installation. The new system lays the groundwork for the complete conversion to digital technology over the next several years. AZCAR is completing TV-13, the news production control room now.

On the weekend of Sept. 8 of this year, the new systems went live for the first time. Two days later, WABC Channel 7 and WABC-DT went dark when the World Trade Center collapsed, killing ABC technician Don DiFranco. ■

Studio Specs

Design Team

Bill Beam, WABC director of engineering
Kurt Hansen, WABC chief engineer
Karl Paulsen, project manager and lead designer
Greg Abel, project engineer
Marty Skoff, installation manager

Equipment List

Thomson Saturn master control switchers
GVG SMS-7500 routing
Nvision 3064 RS-422 machine control port switch
Pinnacle MediaStream 1600/700 video servers
Ampex DST-712 data archive
Avalon Archive Manager
Ikegami video monitors
Encoda MCAS automation

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KALC remote broadcast vehicle

The KALC remote broadcast vehicle is a converted ambulance that, prior to being rebuilt, was unable to perform its tasks as a remote vehicle in the condition it was in. The audio equipment was either unusable or not operator-friendly and the telescoping mast was in need of overhaul and repair as well.

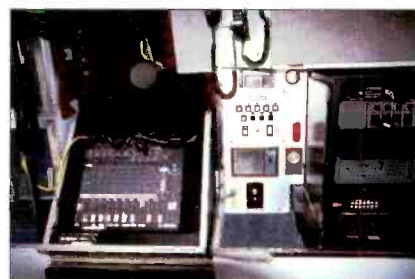
The design team was faced with having

to tear out all the audio equipment and start from scratch, which turned out to be the best route. There were several main design innovations that were implemented in the facility.

The first innovation involved the actual routing of audio throughout the vehicle so that it wouldn't be seen, but was easily obtainable for repair or future upgrades. The advantage of working with an ambulance was that most of the interior carpentry frame was already there, although the design team had to redesign it to handle the needs of remote broadcasting. The process of creating wire channeling through the ambulance furniture solved the problem of hiding the audio routing, and rebuilding the interior with hinged compartments solved the engineering access problem.

The second innovation involved the physical placement of the audio and RF equipment. Keeping the RF and audio equipment in separate racks eliminated any RF leakage into the audio chain.

The third innovation involved "cleaning up" the existing power fluctuations in the power system. To do this, the team integrated two power conditioners into the design. The conditioners were a Furman PLPLUS enhanced power conditioner and an ETA PD11LV



conditioned power distributor.

The fourth innovation involved an inoperable mast. The team sub-contracted a local welding and fabrication company, Fascinating Fusion in Golden, CO, to remove and overhaul the Wi-Burt telescoping mast in order to eliminate the leakage problem it was having. Fascinating Fusion did a complete overhaul, cleaning and seal replacement of the mast.

The fifth innovation involved installing new weatherproof PA monitors on the roof.

The final innovation involved designing an I/O panel on the outside of the vehicle, making it possible to have capabilities outside the vehicle while being able to keep all the doors closed. To do this, they installed balanced audio and speaker cable connectors in a weatherproof box provided by Shook Mobile Electronics. ■

Studio Specs

Design Team

Creative Studio Solutions Inc.
Fascinating Fusion

Equipment List

Mackie VLZ-1402 and 1202 mixers
ETA PD11LV conditioned power distribution
Furman PLPLUS enhanced power distribution
Telex TT-44 16-channel synthesized wireless IFB transmitter
Telex TR-34 16-channel synthesized wireless IFB portable receiver
Sennheiser EW345 wireless, handheld mic system
Yamaha SPX 90 EFX processor
Radio Design Labs RU-SX4A audio switcher
Radio Design Labs ST-MX2 universal audio mixer
JBL Control 29AV speakers
Neutrik connector
Sony 802PAC68 UHF wireless mic system
Mackie M800 monitor amp



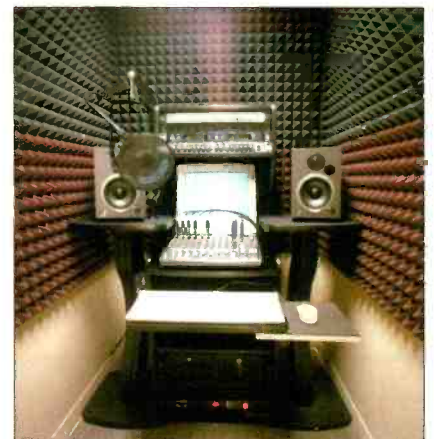
Xact Internet production complex

The Xact Internet facility is a new Internet audio production facility that houses four production studios, one of which is a multi-tracking studio with two adjoining voice booths. Xact Internet offers stations with a custom service offering listeners custom radio through their Web site under their brand and imaging. Stations featuring Xact's music application allows users to create their own stations using the existing station's playlist. Users download the application from the station's Web site and are able to modify the types and frequency of music heard. The application reacts to listeners' preferences, memorizing choices in artists, songs and genres, and anticipates future music that falls in line with those choices.

This is a network affiliate model, offered on a format exclusive to each market. The users delivered by hundreds of affiliates are then aggregated. National sales staff sells the simultaneous audio and banner inventory on the player, accessing Internet and interactive budgets not currently available to radio. Each affiliate receives a share of the revenue generated by their listeners. A few stations using Xact Internet include WBOS in Boston,

WMMW in Philadelphia, WLUM in Milwaukee, WZPL in Indianapolis, and KBEE in Salt Lake City.

The design criteria of the facility involved building in a new location. The goals were to design and install studios in a refurbished warehouse located in the northeast part of Denver that would house four production studios, a server room and offices. There was also a push to design a facility that was very cost-effective, would easily integrate with the company's mass



array of servers, and could handle 24-hour production with virtually little maintenance.

Creative Studio Solutions was chosen to design and install customized studios for Xact.

The production studios had to be totally isolated and floating because the facility is on the second floor of a three-floor renovated factory. The floors of the building are wood with no insulation between floors. The studios were designed to "float" on the original floor and ceiling (floor of the third floor).

The facility is analog and digital, enabling it to handle any type of format that the company might encounter. ■

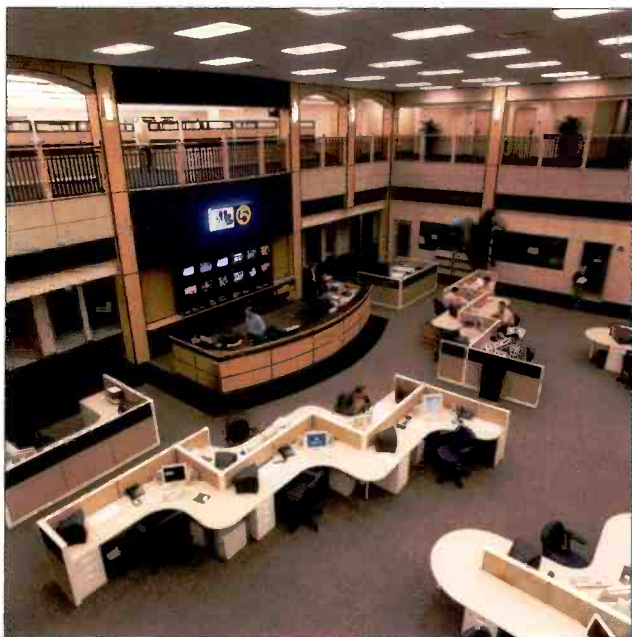
Studio Specs

Design Team

Creative Studio Solutions

Equipment List

Marantz PMD-502 cassette recorder
 Denon DN-680 CD players
 HHB CDR850 CDR recorder
 Mackie analog mixing consoles
 Tascam DA-45HR DAT recorder
 Symetrix 581E distribution amps
 Aphex 109 Tubessence tube equalizer
 Yamaha SPX990 EFX processor
 Tekis Zephyr digital network receiver
 Korg N1 keyboard
 Logitek Ultra VU level meter
 ElectroVoice RE20 microphone
 RDL ST-OSC2A oscillator
 Event P55 active studio monitors
 A/V R TT audio patch cables



WPTV

The new WPTV studio facility was built to replace an outdated, overcrowded facility that was located on the Intercoastal waterway in West Palm Beach. The new facility was to employ new technologies where appropriate, keeping Digital Television in mind. The facility was to have two studios, two studio control rooms, multiple news editing rooms, enhanced

graphics capability, production editing facilities, and was to enhance the station's newsgathering and reporting capabilities.

The new building was designed by Michael Brady Architects of Knoxville, TN. The design included two very ample studios, of which Studio A would be contiguous with the newsroom with the news sets built into the studio. The control rooms for the studios were to be as nearly identical as possible. Master Control would be automated to enable control of multiple outbound programs (both HD and SD). And ENG activities were to be significantly enhanced, with additional recording positions and additional remote management positions.

Project delays were unavoidable due to WPTV building construction, including WPTV having problems acquiring permits and juggling staff work schedules and activities that conflicted with the process of building the systems.

There were many innovations that were implemented in the new design. First, the facility operates with one outbound signal to the WPTV-TV transmitter and is pre-wired for four additional SD signal paths and one HD path. Secondly, the under-monitor display system is very large. Status

changes to sources are tallied by means of GPI emulators from the DD-35 switchers and by means of GPIs from Master Control. Third, the weather radar communicates with the studio by means of a T-1 circuit that piggybacks onto the station's analog STL. Finally, the station has the largest Editstream installation in the United States. The system includes eight news editing rooms, four high-end editing rooms, four ingest stations, three publish gateways, massive on-line storage, and a tape archive for near-line storage.

The facility is readily upgradeable due to future-conscious design decisions and the ample space designed by the architect. The facility's DTV/HD infrastructure is also already in place.

The key vendors included Harris and Philips. Harris provided the systems design and integration, furniture design and manufacture, and served as a source for most of the non-Philips equipment. Philips provided signal routing, master control, production switching, studio cameras, non-linear editing systems and Media Pool servers. ■

Studio Specs

Design Team

Tom Norman, project engineer
 Belinda Binkley, project supervisor
 Craig Tabler, installation manager
 Brooke Baker, David Schreiber, Brad Smith, Don Jewell; integration team
 Joe Flickinger, Perrie Land, Dennis Bukvic; CAD design team
 Byrum Faust, Doug Morford; millwork team

Equipment List

Harris Systems furniture and furniture design
 Harris equipment racks and rack design
 Harris automation
 Philips Venus and Cobra routing systems
 Philips Saturn Master Control
 QTV prompter system
 Euphonix and Mackie audio mixers
 Accom DVEous
 Pinnacle Lightning still stores
 Tally Display Corporation under-monitor displays and software

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Canadian Satellite Communications

Canadian Satellite Communications Inc. (Cancom), a leading provider of satellite-based broadcast and communications services in Canada, is the first to take delivery of Evertz's newly introduced VistaLINK-enabled 7761AVM-DC dual-channel composite analog audio and video monitoring card. The 7761AVM-DC will be used in conjunction with Cancom's Broadcast Solutions and Star Choice monitoring operations.

Canadian Satellite Communications provides broadband cable television, Internet and satellite services to approximately 2.8 million customers. They chose the 7761AVM-DC because they needed a space- and cost-efficient solution. Since they already have an established SNMP Manager implementation, they also needed to have a

solution that could be integrated and interoperable.

The 7761AVM-DC is Evertz's newest addition to the audio and video monitoring (AVM) product line for two independent composite analog video inputs. Similar to the 7760AVM, the 7761AVM-DC card performs a number of quality control and monitoring functions including audio level and phase bar graph creation, closed captioning, VITC, program rating, and SID data extraction and on-screen display. In addition, an extensive list of error conditions can be monitored with fault conditions configured and enabled to automatically alert operators.

VistaLINK is a product feature that enables remote monitoring, control and configuration of products via Simple Network Management Protocol (SNMP). It offers the flexibility to manage operations including signal monitoring and module configuration from SNMP-enabled control systems (Manager or NMS) locally or remotely.

Cancom is one of the largest satellite relay distribution undertakings in North America, delivering television signals to remote and rural markets

via satellite, reaching 4.5 million homes through more than 2000 cable systems. Star Choice Communications, a wholly owned subsidiary of Cancom, is Canada's first direct-to-home (DTH) broadcast service provider and was ranked as the company's fastest growing technology company. Star Choice carries more than 300 audio and video channels nationally and is also the first Canadian broadcaster to distribute high-definition programming to subscribers. Both Cancom and Star Choice are divisions of Shaw Communications.

Shaw Communications has significant interests in telecommunications, Internet infrastructure and interactive television companies. ■

Studio Specs

Equipment List

Evertz 7761AVM-DC Dual Channel Composite Analog Audio and Video Monitoring card with VistaLINK

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KCTS

KCTS is an existing PBS station in Seattle, WA, that used Harris Systems Integration to upgrade their existing single-channel Master Control from a vintage analog audio/video plant to Serial Digital Video, Digital AES Audio, High Definition Video, and four additional output channels. Harris' upgrade provided the facility with a new Master Control room and a new server/archive room, and made additions to the existing



technical core area and videotape area.

The master control room is home for a custom-built 12 bay horse shoe-style Harris console which houses the Philips Saturn master control switcher, Oxtel Presmaster master control switcher, Leitch 12x1 emergency switchers, Philips DVE, Chyron Duet character generator, Leader HD/SD waveform monitors, Tektronix AES/Surround Audio test monitors, Philips routing switcher panels, and Harris Automation Air

Client PCs. Also, HD and 31C switching was accomplished from this position with a Leitch 12x2HDAESC HD switcher and two Harris TRS-12 310m switchers. The Avitech virtual monitor wall system was used in conjunction with the Christie Cube monitors, giving KCTS the ability to size, shape and place up to 16 sources on each 50" screen. The Philips Saturn master control switcher ran the SD program channel along with the HD program channel.

All server-based equipment was set in 10 racks in the server room. The Sea Change Media Cluster five-mode server system is used for satellite network feed records, ingest of existing tape-based material, playback to air, and material prep/editing before air.

The heart of the technical core area, where the majority of equipment resides, is the Philips routing system, which consists of a 2001 Serial digital video frame. Additional routing capabilities include the Venus combined RS-422 and time code router frame. In the initial design and configuration of the routing system it was decided that it would become an all-digital plant so that all existing equipment (sat receivers, production switchers and videotape machines) would be A/D converted using

Leitch/DPS 475 frame syncs selected to the Digiduplex mode. This frame sync would also be used for A/D and D/A conversion between existing analog routers and the new digital routers.

Additions to the videotape area included the addition of two media prep stations for tape ingest and review of recorder material. The equipment used to provide this function included Sony studio editing recorders, Ikegami 14" monitors and Harris Automation Media Client. ■

Studio Specs

Design Team

Darryl Niederbaumer, project engineer
 Craig Tabler, installation manager
 Tim Bieetz, project supervisor
 David Schreiber, Brad Smith, Don Jewell, Paul Araujo; integration team
 Joe Flickinger, Perrie Land, Dennis Bukvic; CAD design team
 Tom Seekamp, Paul Brinager, John Korner; mechanical team

Equipment List

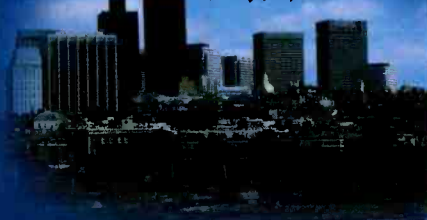
Harris Systems furniture and furniture design
 Harris equipment racks and rack design
 Harris Automation Air Client PCs
 Harris TRS 310m switchers
 Christie Digital Cube monitors
 Philips Saturn master control switcher
 Leader HD/SD waveform monitors
 Tektronix AES surround audio test monitors

The Most Demanding Markets

Chicago



Boston



Los Angeles



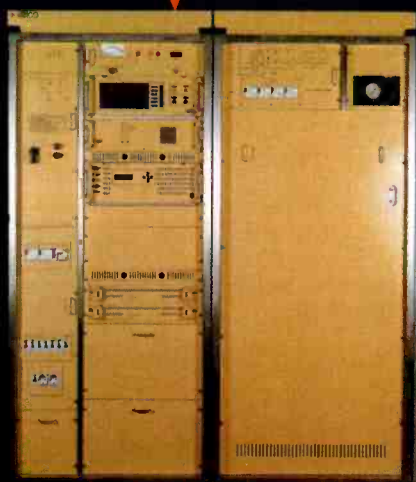
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Dallas



Demand Itelco



Across the country and around the world, the most trusted name in transmitters is Itelco. Whether you're replacing an existing analog plant, fulfilling the requirements of the DTV mandate—or both—you can count on Itelco's complete transmission solutions. Engineered excellence means reliable operation year after year. Stringent design specifications guarantee unrivaled on-air performance. Our unique Itelco Supervisory System provides single-point monitoring and control of multiple transmission sites. No wonder Itelco's been the choice for more than 14,000 installations since 1961.



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WRAL

WRAL, a pioneer in leading broadcast technologies, chose a Wheatstone TV-80 series audio console to produce the audio for its history-making high-definition newscasts. WRAL, the first station in the United States to broadcast an HDTV signal in 1996, is the world's first news operation to

highest quality signal to viewers, which includes CD-quality sound. The TV-80 audio consoles are manufactured specifically to accommodate stations with a strong local news commitment as well as independent, syndicated and network affiliate programming.

TV-80 features include flexible mix-minus, source recall, all-LED illuminated switches, and a sturdy modular design. The TV-80 uses all-electronic switching, insuring the highest reliability and error-proof operation from a streamlined economical and ergonomic package. Other features include computer recall of pre-selected audio sources, alphanumeric source displays, a house router interface, an operator-intuitive eight mix-minus system and a master confidence IFB panel.

Mixing flexibility is ensured with full-function talkback to all submasters, auxiliary sends and mix-minus busses. Standard configurations include eight monaural submaster and two stereo master outputs – each with metered mono sum outputs, eight user-configurable auxiliary sends, four mute groups and direct outputs from every input. In addition, the TV-80 has Wheatstone's Event Computer

System for computerized operations and recall of input preselector settings. In the TV-80, the Event Computer system has eight optional active input preselectors.

Wheatstone Corp. designs and manufactures professional broadcast audio equipment. The company also markets a digital audio network router and several lines of studio furniture, as well as a unique studio interface wiring system. ■



present HD local news on a continuous basis.

WRAL installed a customized Wheatstone TV-80 series audio console in their new high-definition control room as part of their daily HD news operation. The control room is located in their new 24,000-square-foot all-digital news studio.

WRAL's selection of Wheatstone's TV-80 series audio console illustrates the station's commitment to delivering the

Studio Specs

Design Team

Mike Jpchurch
Fred Kelly
Rodney Martin
Craig Turner
Trey Semmes

Equipment List

Leitch AMD-880 distribution amps
Quested monitor speakers
2-Digitart II Plus digital audio recorder/players
Sony PCM-R500 digital audio recorder
Marantz FDM331 CD player
B&B Systems, Inc. AM-3B Audio phase scope
Getner DH-22 telephone hybrid
Lexicon 24-bit dual channel processor
Aphex Compellor Model 320A
18-ADC patch panels



JC Studios

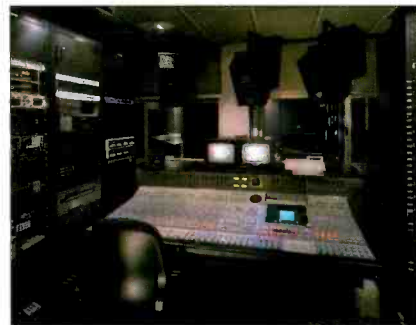
Through a combination of good timing and good connections, TeleVest was able to convert an NBC facility in Brooklyn, NY, into JC Studios, which became the new shooting location for "As the World Turns." Yet, the centuries-old facility brought its fair share of challenges. JC Studios inherited essentially empty and outdated studios and had to start rebuilding from scratch. NBC left behind two older SSL audio consoles in need of upgrading and an assortment of cabling and wiring. The engineering crew had no idea where anything went when they took ownership of the space in

November 1999, and they had only two months to figure it out.

The studio needed major upgrading. They started by putting in all new cameras and tape machines, as well as microphones and mic booms. The SSL 6000 boards worked fine initially, but they were in need of upgrading, especially since JC Studios was building everything digitally and the analog consoles didn't fit. The decision to go with the 32-channel Aysis Air systems was their first step in taking the entire production chain digital. The new audio boards were a good decision because the show is recorded AES/EBU and stays in that format until air. JC Studios has SSL Aysis Air mixers in the studios and a Zaxcom DMX1000 in the edit suite. While the video in the studio is still recorded in NTSC on Digital Betacam VTRs, they didn't lose anything in post because of the serial-digital video editing done there on the GVG-2200 switcher.

One of the best things about the audio installation is the small number of patchbays needed to upgrade to the new system. The new digital system requires only two digital and two analog patchbays in each studio.

The existing studio also had cabling left over from the 1950s – coax with



cloth coverings that was obviously outdated. They replaced it with HD-ready cable because the plan is to take the show to high definition.

Another obstacle was trying to decide which HD format – 1080i or 720p – will emerge as the standard. The show doesn't want to transition to high definition until there is a clear-cut winner, but JC Studios plans to upgrade when that is the case.

Both studios are now up and running with new digital equipment in place that can easily support the migration to high definition. ■

Studio Specs

Design Team

Ron Bernknopf, chief engineer
Paul Stiegelbauer, director of technical operations
Ed Dolan, senior audio engineer
Frank DiMauro, audio engineer

Equipment List

Thomson Digital Betacam VTRs
Ikegami studio cameras and handheld cameras
Ikegami color monitors
Canon lenses
Vinten Quattro studio pedestals
Vinten Vector pan heads
Grass Valley edit system

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Cheetah

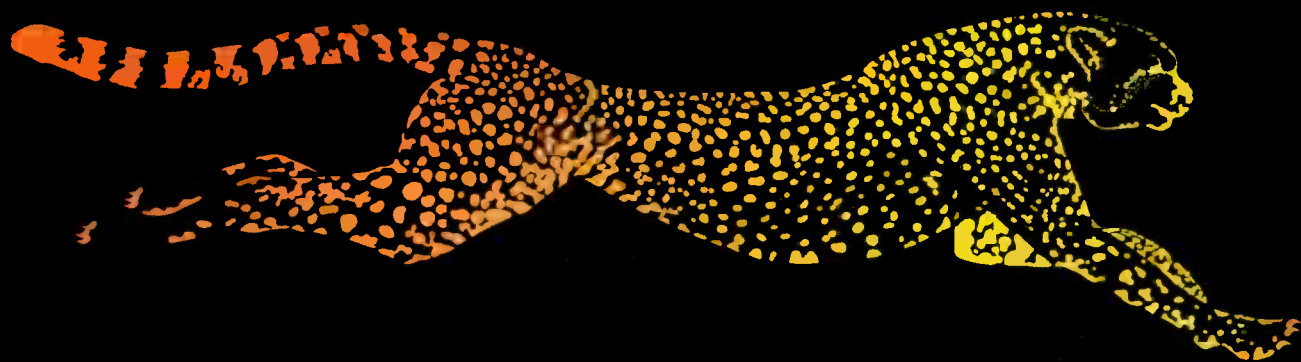
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256x256

512x512



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WCVB

WCVB-TV had an aging fleet of ENG vans that needed to be replaced. The plan was to replace one ENG truck per year, and it was decided to include digital ENG capabilities along with the traditional analog FM technology.

The goals of the new digital ENG facilities were threefold: to investigate digital ENG using COFDM as a way to



compensate for the reduced number of microwave channels available in the Boston market due to new users; to improve the station's existing ENG coverage by eliminating dead zones caused by multipath; and to provide additional news gathering capability by adding the ability for feed tape or the ability to go live while in motion.

The design criteria was to build the first digital truck as a test bed and build the next ones with the lessons learned. Unlike typical ENG vehicles, these trucks have two transmission antennas and two modulation technologies. A 23 dB gain reflector design for fixed operation was implemented as well as a 5 dB omnidirectional antenna for stationary operation where overhead wires are too close and for live shots while in motion.

The transmitters are equipped with traditional analog FM modulators and digital modulators. The dual modulation capability provided by the

CodeRunner equipment allowed a comfort zone for the news department and a diagnostic tool for engineering. The dual antennas provided additional operational flexibility and a safety margin for the crews.

Future use of this equipment for live HD is possible by upgrading the MPEG encoders and decoder. The receivers and transmitters, due to their linearity and phase stability, are able to use higher-density modulation forms and, therefore, would remain unchanged.

With the final implementation, WCVB now has a state-of-the-art fleet consisting of three third-generation digital ENG vans and an SUV equipped



with editing, three onboard lipstick cameras and digital tape editing.

The key vendors were Microwave Radio Communications (MRC) and Wolf Coach. ■

Studio Specs

Design Team

Wolf Coach

Emeric Feldmar and Peter Harper, project managers

Mark Leonard, ENG sales

Rich Wolf, president

Laurie Blake, integration engineer

Microwave Radio Communications

Robert Morrisette, sales engineer

Mike Payne, director of operations

John Wood, Mike Payne and Sal Blatti, project engineers

Equipment List

Wolf Coach Benchmark-III ENG vans

MRC CodeRunner 2 analog and digital transmitter

TANDBERG Evolution 5100 MPEG encoder

TANDBERG 5100 option COFDM modulator

Studio T model 1750 audio mixer

Leitch X+16x8A2 router

Sony BVW and DNW VTRs

MRC CodeRunner 4 receiver



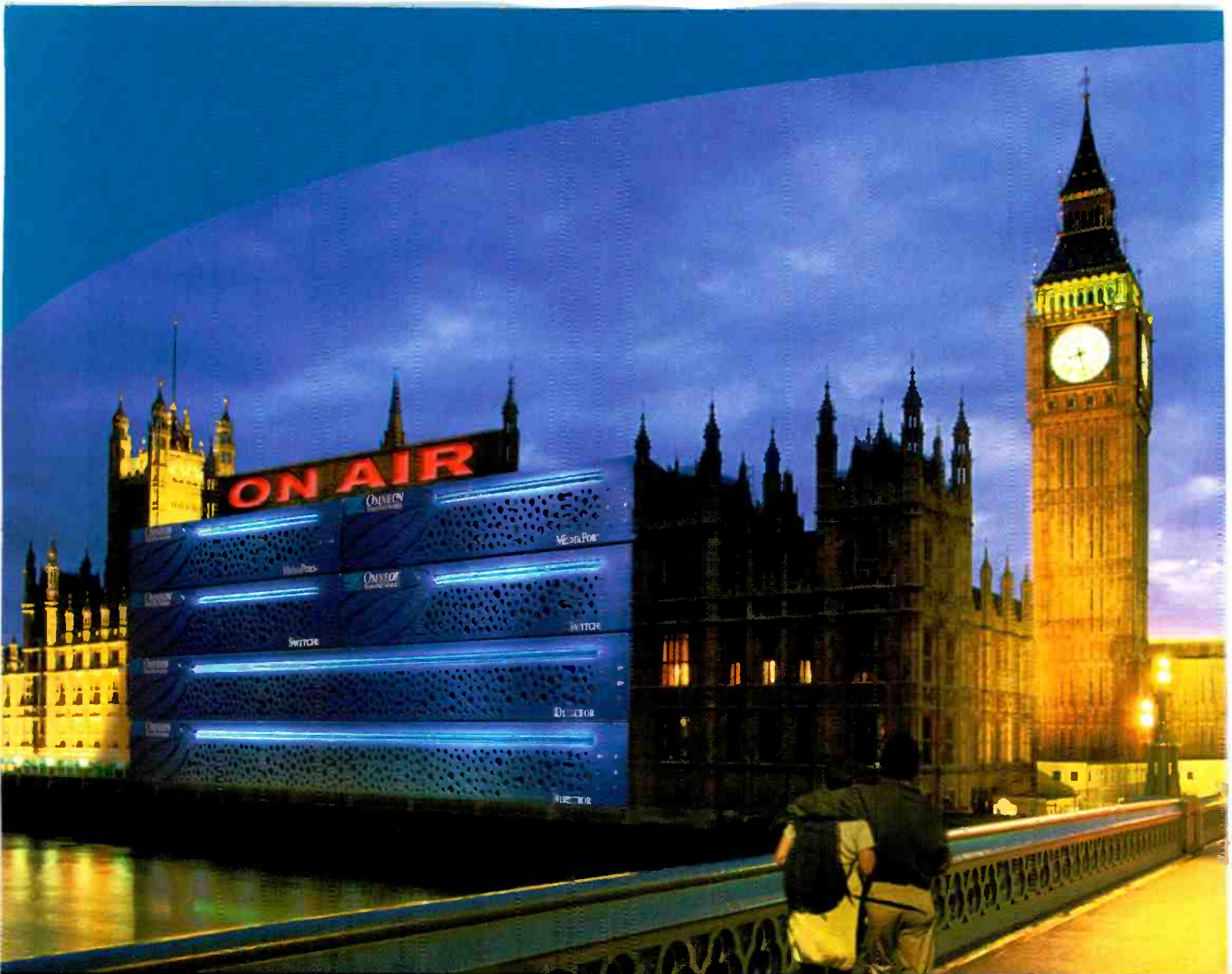
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WFLA

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Design Team

Media General Broadcast Group
 Jim Zimmerman, president of broadcast operations
 Ardell Hill, vice president of broadcast operations
 Rick Rogalla, general manager
 Mark Schaefer, chief engineer
 Rees Associates
 C. Leroy James, project director
 Professional Communications Systems, systems integrator
 Tony Stephens, president
 Glenn Thomason, director of engineering
 Don Hain, director of systems planning

Equipment List

Panasonic DVCPRO tape format
 Grass Valley 7000 routing switcher
 Pinnacle still store
 Chyron iNFINIT!
 Pinnacle MediaStream video servers with Florical automation
 Pluto AirSpace for program playback
 Vinten robotics
 Ikegami HK 388 studio cameras with Canon lenses
 Miranda and Leitch conversion equipment
 Crystal Computer satellite and master control status equipment

The conditions of WFLA's old building, the issues of switching from analog to digital transmission, and having all three of Media General's media outlets in one location led the company to move the station into a new facility. The goals of the facility were to house three media outlets that could share a common facility and resources while maintaining their editorial independence. They also wanted to convert WFLA from analog to being a fully digital station.

Media General relocated WFLA and Tampa Bay Online (TBO) next to the existing Tampa Tribune building. The main goals were to have a building that could easily be reconfigured to accommodate changing technologies. Technical cores and rack rooms were located next to storage spaces and other functional areas that could be potentially relocated.

The difficulty was to determine how all three media outlets could benefit from the use of shared personnel, news-gathering resources, data transmission and archives. Additionally, the new facility needed to be redesigned for future growth and expansion. As for equipping the facility, Professional Communications Systems had to assess the station's equipment needs and how the

new equipment would function with existing equipment. PCS had to determine what could and could not be updated or integrated into the new station.

The key vendors were Grass Valley, Panasonic and Florical. Overall, the system control was complimented by Florical Automation's Airboss and ShowTimer platforms. The primary servers were Pinnacle MediaStream, Pluto Airspace and HD servers.

Overall, the new facility was a success. Each of the media outlets operate separately, yet are able to share resources. WFLA is a fully digital station and, as a result, now has an array of multiprogramming options as well as being able to offer the largest and most fully equipped digital stages in the market. Additionally, the flexibility of the new studios maximizes opportunities to produce a variety of less costly programming to its sister stations. ■

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Contest information on page 64



NY1 News - robotic camera system

Radamec Broadcast Systems has installed one of the world's largest robotic control camera systems at NY1. The system, capable of robotically controlling any one of up to 21 cameras from any of four Touch Screen Panels, is being installed in NY1's new facility located in Chelsea Market on Manhattan's West Side. The new studios are scheduled to launch January 2002. NY1 is Time Warner Cable's 24-hour New York City news channel.

NY1 selected Radamec's system to achieve the smooth broadcast-quality, on-air movements essential in a news environment. NY1 chose to mount Radamec's 435S pan/tilt heads on their new uniPED robotic pedestals. uniPED is a new, low-cost mobile robotic height unit that is fully controllable and adjustable from Radamec control systems and enables an extra dimension of remote control. The 435S is designed to support cameras, lenses and teleprompters up to 110 pounds, and the electromechanical design ensures responsible control, precise repeatability and smooth broadcast quality movement.

One compact Radamec HK 431 pan/tilt head will be mounted above the newsroom to achieve wide shots. The 431 supports camera and lens packages

up to 33 pounds and incorporates agile performance with precise repeatability for slow, smooth on-air movements.

NY1 will also install Radamec's new Weather-Cam, an innovative robotic pan and tilt head designed to endure severe weather conditions. The 433 Weather-Cam, to be located on the roof of the building, provides a reliable and cost-effective solution for achieving broadcast quality coverage of outdoor events. The Weather-Cam can be controlled from any of the four Radamec Touch Screen Panels.

Four identical Touch Screen Panels (TCP), Radamec's most advanced and powerful controller, will be installed to achieve a high level of redundancy. Depending on the user configuration, any TCP will be capable of operating any camera from any position at any

time. The TCPs provide clear, distinctive visual displays with easy to operate interactive touch screens. Video is grabbed and stored on the touch screen, which is divided into twelve positions per 'page'. Shots are labeled and recalled by an operator's simple touch to the desired image. ■

Studio Specs

Design Team

NY1

Jeff Polikoff, director of engineering
A.F. Associates Inc., systems integrator
Radamec

Bret Lukezic, U.S. vice president and general manager
Brahms Lee, U.S. technical manager
Alistar Watt, software designer
Harvey Thompson, hardware designer

Equipment List

uniPED robotic pedestals
435S pan/tilt heads
HK 431 pan/tilt head
HK 433 Broadcast WeatherCam
Touch screen panels
central computer





Activate

Seattle-based Webcasting service provider Activate recognized the growing demand for Internet broadcasting in early 2000, and decided to expand their current facility. In February 2001, Activate premiered Activate Grand Central, which is the industry's largest digital operations center. The center is located in the historic 1914 Black Manufacturing Building and represents a \$20 million investment in software, hardware, networking and broadcast technologies.

Activate felt that the facility of a successful streaming media provider needed to incorporate resources that would enable it to provide application services, signal capture, production and distribution of content ranging in form from compressed MPEG to native resolution HDTV. Activate Grand Central incorporates processes in the broadcast systems infrastructure much like those used in network systems infrastructure.

The central design philosophy for the expansion was to be future-proof, capable of staying current with all of the evolving rich media formats, and compression/encoding/streaming technologies. An integral part of the design philosophy was efficient capital expenditure, format flexibility, Gigabit Ethernet Network structure, advanced

control/monitoring and historic landmark preservation. Activate contracted Doyle Technology Consultants, Inc. to assist in bringing all of these requirements together.

The audio/video infrastructure was built around a 512x512 Nvision Envoy 6904 super-wide-bandwidth digital video routing matrix. The facility utilizes an Nvision Envoy 7256 AES routing matrix incorporating time division multiplexing (TDM) technology for more flexible digital audio routing. Activate's existing PESA Jaguar analog router was repurposed for additional flexible signal-quality monitoring of incoming analog feeds such as satellite, Vyvx and off-air. All encoding and tape-capture workstations have 32-button router panels and all QA and monitoring workstations use full X-Y matrix router control panels.

ADC products were selected for distribution, patching and wiring infrastructure components and connectors. Belden Plenum-grade digital coaxial cable and CAT-6 compliant Mediatwist provided 1.8 million feet of copper interconnection. Panduit CAT-6 connectors and patchfields were used exclusively throughout the LAN and WAN networks.

Network management is achieved

through Activate's proprietary software tools and a routing matrix. This system allows Activate to manage several hundred encode platforms from just a few user stations.

Satellite acquisition is provided with the multiple DH Industries 3.7M C/KuBand TVRO antennas, DTH, and 2.7M antennas.

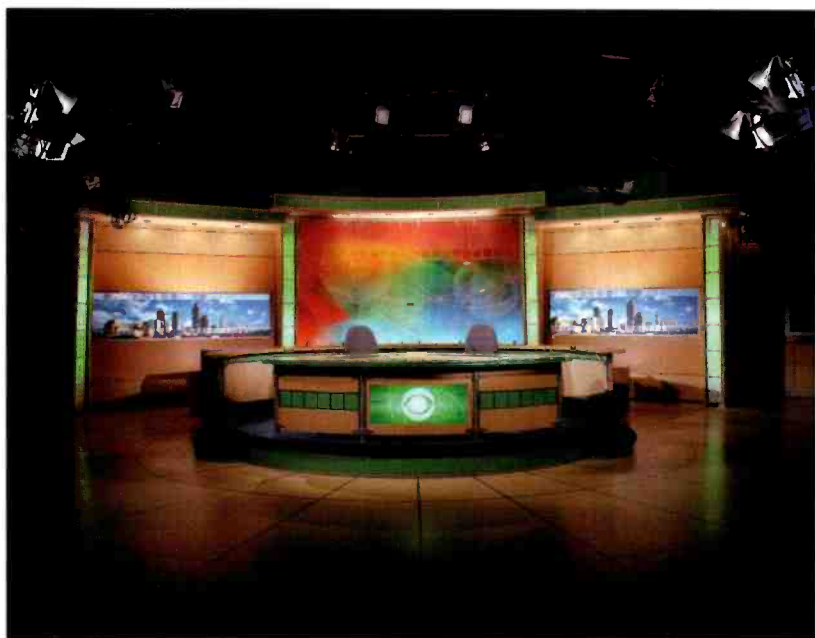
The state-of-the-art Activate Grand Central houses the only fully wideband digital audio/video router and provides the most signal ingress capacity in the streaming media industry. ■

Studio Specs

Design Team

Activate

- Scott Whitcomb, director of broadcast engineering
 - Kerek Edwards, director of broadcast operations
 - Mitch Stewart, manager of technical operations
 - Meissa DeLaurentis, facilities manager
- Doyle Technology Consultants
- Greg Doyle, president
 - Bary Ballanger, director of engineering
 - Alan Cunningham, director of field operations
 - Tory Tarango, project integration manager
- Carroll Construction
- Kely Carroll, construction general contractor
- SPACE Architectural
- Jave Helton



WGCL

WGCL-TV in Atlanta, GA, delivers its news and CBS program lineup from a brand-new building with a digital infrastructure designed by Digital System Technology (DST) to handle the changes and challenges the broadcasting industry faces.

The new 53,000-square-foot facility is built around a 270 Mbits/s serial digital routing and distribution infrastructure. The routing frame and the cabling and patching will enable support of high-definition signals at 1.5 Gbits/s in the future. The station was known as WGNX until July 2000, when it changed its call letters to WGCL to reflect the station's "clear" news image.

DST was selected to consult, manage, design and install the technical facility in cooperation with WGCL's engineering staff. The Austin Company was chosen to design and construct the building. The team built two studios, a combination master control/news support area, central equipment room, newsroom, two production control rooms, a technical shop, multiple news edit rooms, graphic suites, production rooms and satellite earth stations.

WGCL decided on a serial digital video infrastructure, but opted for analog audio for ease of use and economy.

The wideband Grass Valley Group 7500 video router was wired for 256x256, and high-definition boards can be installed when the demand arises. Analog video and audio 64x64 frames were also installed to operate under a common control system.

Cable management is always a challenge, but the 1.5 Gbits/s requirement for video coax (Belden 1694) meant special handling throughout the installation process. Careful attention to rack layouts and equipment layouts in the racks allowed power conduit and broadcast system cabling to follow separate routes.

Studio Specs

Design Team

DST
 Dick White, project manager
 Mickey Kroll, project engineer
 Mike York, construction foreman

Equipment List

GVG M2100 MC switcher package
 GVG Kalypto production switcher package
 GVG routing system package
 Wheatstone audio consoles
 Accom 3000 editor with live video option
 DNF machine control system
 Miranda Kaleido multi-image processors
 Tektronix audio scopes
 Leitch conversion and distribution package



The entire technical plant for WGCL operates continuously on an uninterruptible power supply (UPS). A generator comes online during power failure to maintain the charge on the UPS batteries, and provide lighting and other services in areas where short outages can be tolerated while the generator cranks.

DST managed the budgeting, equipment purchasing, and shipping and receiving logistics throughout the project.

The master control area combines engineering support and coordination with master control operations. The area houses the studio camera control units and, during news events, the personnel needed to manage and coordinate feeds from ENG vans, satellite trucks and the helicopter.

WGCL should be future-proofed for the challenges to come in a top-ten market. ■



Crawford Communications' satellite services facility

Crawford Communications chose Sundance Digital to install two large-scale, multi-channel FastBreak Automation Version 2.0 systems in Crawford Satellite Services, the corporation's service area. The systems furnish a fully mirrored automation solution for a 16-channel operation, as well as a four-channel operation. Sundance Digital

FastBreak Automation V.2.0 to integrate the entire broadcast process, including near-line archive through on-air playback. The systems will control an array of Pinnacle Media-Stream servers and an ASACA DVD library through SGL archive management software. FastBreak Automation V.2.0, the latest generation of Sundance Digital's FastBreak Product range was officially launched at NAB 2001. Based upon the architecture of Sundance Digital's successful FastBreak Automation, the new version incorporates many upgraded features, including support for Microsoft's Windows 2000 operating system and SQL Server 2000.

FastBreak Automation offers robust, scaleable and frame-accurate control of the video server and other station peripherals in either single or multi-channel configurations. Elements may be operator or time-of-day triggered and each may include an unlimited number of secondary events. Optional additions include ListSync for total playlist redundancy, Launch Box, a direct access control panel, and the Sundance Archive Manager.

Crawford Communications continues

to be a leader in the electronic media services industry with innovative talent and technology in a fully integrated facility. The privately owned company provides services for domestic and international clients involved in all facets of television, film, audio, Internet and satellite communications. Crawford Communications has evolved with technology to comprise the best in television network origination and playback, satellite transmission, streaming media/Webcasting, online services, portable satellite truck services and post-production services.

Sundance Digital is a leading provider of cost-effective, high-performance broadcast automation solutions. Sundance products are in use in broadcast facilities worldwide. ■

Studio Specs

Design Team

Pinnacle
Sundance Digital
MCSi

Equipment List

Pinnacle 1600 media servers
ASACA DVD archive
Pinnacle DekoCast character generators
Zandar (multi-screen display)
Sony plasma screens
Snell and Wilcox bypass detection

is a leading provider of television automation solutions located in Irving, TX.

Crawford Satellite Services selected

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KGO-DT

The primary goals and drivers behind KGO's digital production system renovation centered on enhancing KGO's market competitiveness, improving on-air branding, refining overall technical picture quality, enhancing working environment ergonomics and adjacencies, and increasing operational efficiency.

After upgrading its newsroom computer systems to support digital news development, KGO decided to better align its news production and development operations. In addition, KGO wanted to provide for an improved working environment with emphasis on meeting its primary goals.

Fundamental design and project criteria were predicated on renovating KGO's main production control environment to leverage the quality, capabilities and dynamic flexibility of an all-digital production environment. In addition, the goals of the new design were to enhance existing system functionality, redefine workflow and support prospective future technologies. These fundamental design criteria had to be implemented within KGO's budget and operational constraints.

To ensure success, SignaSys employed a multi-phase project approach and addressed KGO's operational consid-

erations such as ratings periods and existing system utilization time frames. Since KGO is a 24/7 operation, special emphasis was placed on system transitional planning and coordinated implementation scheduling. In addition, integrated multi-image display monitoring was implemented at KGO, which allowed for dynamic reconfiguration

of supporting monitor walls. Finally, the audio layer of the KGO system was predicated on AES/EBU digital audio.

KGO specifically selected SignaSys to provide for overall project management, design and installation services. Specifically, SignaSys addressed issues from project analysis and planning to full design and installation. This included overall project budgeting, scheduling and transitional planning, as well as engineering services from conceptual to final systems design, facility requirements, and full system installation and testing.

The KGO production system was founded on an all-digital production environment. The video core is supported by a 4ME Grass Valley Kalypso digital video production system and a four-channel GVEous DVE. Production audio was established on an AES/EBU digital audio format. To support the mixing requirements, a 48-channel SSL Aysis Air digital audio mixing system was selected. This mixing system was primarily chosen due to its overall quality, flexibility and optimal user interface.

Feedback from KGO operations has been extremely positive and the primary design goals have been met or were exceeded. ■

Studio Specs

Design Team

KGO Television

Rich Tom, director of engineering

Lee MacPherson, technical facilities manager

George Kapoulas, engineering management supervisor

SignaSys, Inc.

Mark Brown, project manager and systems architect

Stan Becker, senior systems engineer

Jeff Johnston, project engineer

Don Fox, installation supervisor

Robin Laprade, logistics

Larry Shenosky, vice president of marketing

Equipment List

Grass Valley Kalypso digital production switcher

DVEous digital video effects system

Barco's Hydra multi-image display systems

Vinten robotic camera control systems

Dual Chryon iNFInIT! character generation platforms

HyTec consoles and cabinetry

Tektronix video and audio test and measurement

Sony and Ikegami video monitoring



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KWHY

The goal of KWHY's new service was to provide an initial platform upon which to build a digital station. The competitive environment of the No. 2 DMA indicated that the station provide a digital service sooner rather than later. The goal was to build the required digital transmission facility and plant a digital "seed" at the studio, which was designed to grow into a full digital plant. Equipment was purchased in 1999 and 2000 and was fully implemented by 2001.

KWHY was restricted to building out its new service within its limited space. The engineering and planning process, which was assisted by Thales Broadcast & Multimedia (formerly Thomcast), made maximum use of the little space available – both at the transmitter site and at the studio. At the transmitter site, improvements to tower strength (for the new antennas) and small structural changes were made in the building to provide the room. Making modifications to the studio was more difficult. Ultimately, KWHY built a "VCMR" (Very Cold Machine Room) in the unused space under the reinforced legs of the STL tower. Although the space was small, it provided enough space for 13 new racks.

There were many difficulties in designing and implementing digital in 1999. The entire operation of the station had to be considered, and choices had to be made as to how deep KWHY wanted to get into station operations with the initial implementation of digital.

To help with the selection of equipment and systems engineering, KWHY

Studio Specs

Design Team

Thales Broadcast & Multimedia (former CDS division of Thomcast)
Chesystems
Blue Sky Engineering
DES Transmitter Installation


Equipment List

Thales DCX transmitters
Thales Pearl, Opal and OpenMux software
STL package
Thales Master Control software and equipment
Thales monitoring package
MRC Twinstream STL radios
Moseley MRC2, 1620
Harmonic encoders and THESYS control system
Zenith demodulators
Textronix modulation measurement set
MCAS III automation
N-Vision Envoy 6128 router
Media Stream video server
Leitch upconverter
Aja A/D converter



selected Thales Broadcast & Multimedia. The Thales DCX transmitters were picked as the RF choice due to crew field experience with the unit and for the excellent design engineering in its modulators. KWHY was equally impressed with the end-to-end multimedia solutions offered by Thales, such as the THESYS, Pearl PSIP Manager and the Opal MPEG Gateway. Together, KWHY and Thales laid out a system for the transmitter and for the studio. The studio installation added integration equipment of an Nvision 128x128 router, a MediaStream video platform and a two-channel MCAS III automation system. Equipment decisions were based on both live performance and on proven compatibilities with the station's system choices. ■



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Salt Lake City, UT 84119
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www.avsgmedia.com

Axcera

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Axon Digital Design

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Azden Corp.

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Franklin Square, NY 11010
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B

BarcoNet

3240 Town Point Dr. Ste. 130
Kennesaw, GA 30144
770-590-3600; 800-992-5016
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Belden Electronics Div.

2200 US Hwy 27 S.
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765-983-5200; 800-BELDEN1
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info@belden.com
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Benchmark Media Systems

5925 Court St. Rd.
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Fax: 315-437-8119
info@benchmarkmedia.com
www.benchmarkmedia.com

Bittree

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Fax: 818-500-7062
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Bogen

565 E. Crescent Ave.
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201-818-9500
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Boris FX

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Boston, MA 02210
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Manufacturers/Dealers

BOXX Technologies

9390 Research Blvd.
Kaleid II Ste. 300
Austin, TX 78759
512-835-0400; 877-877-2699
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Broaddata Communications

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Broadcast Microwave Services

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630-208-2200; 800-348-5580
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Broadcast Video Systems

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Editware

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Manufacturers/Dealers

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Entertainment Technology

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Euphonix

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Evertz Microsystems Ltd.

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Extron Electronics

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Fast Forward Video

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kevin@ffv.com
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Heartland Video Systems

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Hi-Tech Enterprises

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Holiday Industries

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L5T 2J2 Canada
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Fax: 905-564-9244
www.larcan.com

Leader Instruments Corp.

6484 Commerce Dr.
Cypress, CA 90630
714-527-9300; 800-645-5104
Fax: 714-527-7490
sales@leaderusa.com
www.leaderusa.com

Lee Filters

2237 N. Hollywood Way
Burbank, CA 91505
818-238-1220; 800-576-5055
Fax: 818-238-1228
mail@leefiltersUSA.com
www.leefiltersUSA.com

Leightronix

2330 Jarco Dr.
Holt, MI 48842
517-694-8000
Fax: 517-694-1600
info@leightronix.com
www.leightronix.com

Leitch

920 Corporate Ln.
Chesapeake, VA 23320-3641
757-548-2300; 800-231-9673
Fax: 757-548-0019
leitch@leitch.com
www.leitch.com

Manufacturers/Dealers

LEL Computer Systems

240 W. Palmetto Park Rd. Ste. 310
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561-347-2242
Fax: 561-347-6276
gjf@lelcs.com
www.lelcs.com

LEMO USA

635 Park Court
PO Box 240B
Rohnert Park, CA 94927-2408
707-579-4144 x1015; 800-579-4144
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Fax: 707-578-0869
info@lemousa.com
www.lemousa.com

Lightware

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www.lightware.com/buyersguide

Link Electronics

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Fax: 573-334-9255
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Listec Video Corp.

2001 Palm Beach Lakes Blvd. Ste. 411
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561-683-3002
Fax: 561-683-7336
sales@lisetec.com
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Logic Innovations

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San Diego, CA 92121
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Fax: 858-455-7273
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Logitek Electronic Systems

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MATCO

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matcoinc@earthlink.net
www.matco-video.com

Matrox Electronic Systems - Video Products Group

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video.info@matrox.com
www.matrox.com/video

Maycom Audio Systems BV

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Media Concepts

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Pixel Instruments Corp.

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Fax: 360-647-7601
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North Hollywood, CA 91606
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Fax: 818-762-0896
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www.primimageinc.com

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info@privatenotes.com
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www.quantel.com

Qwest Digital Media

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877-723-2632; 877-RADAMEC
Fax: 732-846-0544
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www.radamecbroadcast.com

Radlan Communications Services Corp.

461 Cornwall Rd.
Oakville, ON L6J 5C3 Canada
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RCS

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White Plains, NY 10601
914-428-4600
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www.rcsworks.com

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RFS Broadcast

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North Haven, CT 06473
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Fax: 203-239-9260
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www.rfsworld.com

Richland Towers

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Fax: 813-286-4130
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Peoria, IL 61656
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Ross Video

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Ogdensburg, NY, 13669
613-652-4886
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RTI-Research Technology International

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847-677-3000; 800-323-7520
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Manufacturers/Dealers

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Sigma Electronics

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SkyStream Networks

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Storeel Corp.

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2 Which type of facility or operation best describes your primary business classification? (Check only ONE box.)

- 20 TV Station (including Networks & Low-Power TV)
- 26 Combination TV & Radio Station
- 39 Cable (including Networks)
- 45 Telecoms
- 29 Recording Studio
- 30 Teleproduction Facility/Independent Program Producer
- 40 Post-Production Facility
- 50 Streaming Media — Network Provider/ISP/IDC/Telco, Internet Content Provider/Web Publisher, Services, Software Provider
- 31 Microwave, Relay Station or Satellite Company for TV and Cable
- 33 TV Consultant (Engineering or Management)
- 46 Systems Integrator
- 34 TV Dealer or Distributor
- 35 Other (please specify): _____

5 Which of the following types of equipment will you be evaluating for purchase in the next 12 months? (Check ALL that apply.)

1. Audio Products

- 1A Audio consoles/mixers
- 1B Digital audio workstations
- 1C Distribution amplifiers
- 1D Headphones, headsets, intercoms
- 1E Telephone interface systems
- 1F Magnetic tape, audio
- 1G Microphones
- 1L Monitors (speakers)
- 1J Recorders, players
- 1K Switchers, routing
- 1N Audio Processing

2. Video Products

- 2A Camera heads, tripods, pedestals, booms, dollies
- 2B Cameras; lenses
- 2C Graphics, titling, effects
- 2D Nonlinear editing systems
- 2F Editing controllers, systems
- 2G Frame synchronizers, time base correctors
- 2H Lighting systems
- 2T Magnetic tape, video
- 2J Monitors (picture, studio quality)
- 2K Recorders, players
- 2L Robotic camera controls
- 2M Signal processing
- 2N Signal routing, distribution
- 2W Standards, format & scan converters
- 2P Still store systems
- 2Q Switchers, production/master control
- 2R Storage/video servers
- 2S HDTV Equipment
- 2V Virtual Sets
- 2X MPEG compression/encoding systems
- 2Y Projection systems
- 2Z DVD systems

3. Test & Measurement Products

- 3A Analyzers, audio, video, RF
- 3B Audio, video signal generators
- 3C Waveform, vectorscope monitors
- 3D Digital signal testing

4. Miscellaneous Products

- 4A Battery packs, chargers
- 4B Cabinets, racks, consoles
- 4C Cables, connectors
- 4D Carts, cases (equipment, shipping), tools

5. RF Products

- 5B Exciters
- 5C Fiber optics
- 5E Power amplifiers, cavities
- 5F Receivers
- 5G Remote production vehicles, program relays
- 5H Satellite T/R components, electronics
- 5P STL/ENG components, electronics
- 5J Switches, RF coaxial
- 5K Transmitters
- 5L Antenna systems, towers
- 5M Transmitter, remote controls
- 5N Tubes
- 5Q Weather, radar RF products
- 5R Cable/set top/CA systems

6. Automation & Computer Products

- 6A Accessories/peripherals
- 6E Automation systems
- 6H Business automation
- 6T Commercial insertion systems
- 6K Machine control
- 6L Newsroom automation
- 6P Record/playback automation
- 6Q Software, engineering
- 6R Software, production, planning
- 6X Video interface cards
- 6Y Networking products
- 6Z Digital asset management

7. New Media/Internet

- 7A Encoding products
- 7B Internet service providers
- 7C e-commerce technology
- 7D Content creation systems

8. System integration/engineering services

9. None of the Above

3 Which of the following best describes your title? (Check only ONE box.)

A. Company Management:

- 01 Chairman of the Board
- 02 President
- 03 Owner
- 04 Partner
- 05 Director
- 06 Vice President
- 07 General Manager (other than in charge of Engineering or Station Operations)
- 08 Other Corporate/Financial Official

B. Technical Management & Engineering:

- 09 Technical Director/Manager
- 10 Chief Engineer
- 11 Other Engineering or Technical Title

C. Operations & Station Management/ Production & Programming:

- 12 Vice President Operations
- 13 Operations Manager/Director
- 14 Station Manager
- 15 Production Manager
- 16 Program Manager
- 17 News Director
- 18 Other Operations Title

D. Other (please specify): _____

4 Which statement best describes your role in the purchase of equipment, components and accessories? (Check only ONE box.)

- A Make final decision to buy specific makes, models, services or programs
- B Specify or make recommendations on makes, models, services or programs
- C Have no part in specifying or buying

6 What is the budget for equipment and services you are evaluating for purchase in the next 12 months? (Check only ONE box.)

- 1 Less than \$24,999
- 3 \$25,000 - \$99,999
- 5 \$100,000 - \$299,999
- 6 \$300,000 - \$499,999
- 7 \$500,000 - \$999,999
- 8 \$1,000,000 - \$1,999,999
- 9 \$2,000,000 and up

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BROADCAST ENGINEERING, ISSN 0007-1994, is published monthly (except semi-monthly in May and December) by PRIMEDIA Business Magazines & Media Inc., 9800 Metcalf Ave., Overland Park, KS 66212 (primediabusiness.com). Current and back issues and additional resources, including subscription request forms and an editorial calendar, are available on the World Wide Web at broadcastengineering.com.

SUBSCRIPTIONS: Non-qualified persons may subscribe at the following rates: United States and Canada; one year, \$65.00. Qualified and non-qualified persons in all other countries; one year, \$80.00 (surface mail); \$145.00 (air mail). Subscription information: P.O. Box 12937, Overland Park, KS 66282-2937.

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CORPORATE OFFICE: Primedia Business Magazines & Media, 9800 Metcalf, Overland Park, Kansas 66212 • 913-341-1300 • primediabusiness.com

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SONY DSR-250 3-CCD DV & DVCAM

Introducing everything you need in an event camera and more. The new completely digital DSR-250 from Sony is a high image quality reduced size camcorder which has been optimized for shooting events and parties. Every feature you could want is included in this revolutionary acquisition tool.

- 1/3 inch x three 380K pixel (effective 340,000 pixels) CCD's allow two scanning modes: 480 progressive (still) or interlaced (for video) • One touch auto focusing in manual focus mode
- 530 lines of horizontal resolution.
- Switchable aspect ratio 4:3 (TV mode) or 16:9 (Movie mode)
- DIF-801 high resolution 1.5" black & white viewfinder (same as on DSR500/1 & DXC-D35) enables easier focusing. Automatically switches from 4:3 aspect to 16:9.
- 58mm lens with 12x optical zoom.
- Records in DVCAM or DV standard tapes or mini. Up to 270 minute recording in DV mode onto a 184 min. DVCAM tape.
- Manual or automatic functioning. Focus, Iris, Shutter-speed, Zoom, Gain (3 positions and memory).

- Flip out 2.5" 200,000 dot LCD monitor, finally available on a professional camera • Time date stamp • Soft shoulder pad.
- Advanced optical stabilization allowing for a high quality digital zoom out to 24x, with a maximum digital zoom out to 48x
- Assignable time code (Rec Run, Free-run, User-bit)
- 16 bit 2 channel audio recording, or 12 bit 4 channel.
- Digital in/out (IEEE1394) and analog in/out
- Still image capture onto memory stick - Upload graphics from memory stick or USB adapter, software included
- Phantom 48V power • Built in speaker • Directional microphone in pro mic holder. 2 XLR audio inputs
- Wireless remote
- Built in edit controller. Equipped with an i LINK interface, allowing camcorder to serve as edit player or recorder.
- External 12V supply/Connection for light. The DSR-250 is equipped with light output (DC 12 V, maximum 30 watts)



DSR-300A 3-CCD Digital (DVCAM) Camcorder

The affordable DSR-300A actually extends operational convenience with a range of new features and peripheral products. Remarkably compact and lightweight, the improved DSR-300A provides high mobility without compromising picture quality and can be held comfortably on your shoulder through the longest shoots and gives videographers the ability to acquire their footage quickly and easily.

- The DSR-300A has three 1/2" IT Power HAD CCDs to deliver 860 lines of horizontal resolution, 62dB S/N ratio and high sensitivity of F11 at 2000 lux.
- With built-in 26-pin VCR interface, they can feed composite or S-Video output signals to an external recorder for parallel or back-up recordings. VCR recording modes including Parallel, Internal (only) and External (only) are selected via the trigger switch positioned on the operational panel.
- LSI Digital Signal Processor (the very same one used by the DXC-D30 cameras) for a high signal-to-noise ratio of 62 dB.
- Both mini cassettes (PDVM series) and standard cassettes (PDV series)

can be used with the DSR-300A With PDV-184ME (standard), a maximum recording time of 184 minutes can be achieved. They can also play back tapes recorded in the consumer DV format

- For operational convenience while shooting, the Time Code is superimposed on the viewfinder screen or MONITOR OUT screen, even during playback
- DXF-801 viewfinder featuring variable peaking, 3 level tally light and a white LED light with 2 levels of intensity to illuminate the lens setting • IEEE1394 i.Link (out only)



DSR-500WSL 2/3" 16:9 3-CCD (DVCAM) Camcorder

The DSR-500WSL camcorder gives the video journalists the ability to acquire footage quickly and easily because the required functionality and performance was packed into this camcorder. In the meantime, the next generation widescreen TV's have been introduced and the demand for video material in widescreen (16:9) has greatly increased not only in broadcasting, but also in the event production and corporate communications market. To meet this demand, Sony offers this Widescreen Digital Camcorder. The DSR-500WSL offers outstanding picture quality by adopting full Digital Signal Processing and three 2/3-inch (520K) Power HAD WS (Wide Screen) CCDs which are specifically designed for a 16:9 aspect ratio, switchable to 4:3 full screen. The camcorder

extends the mobility, operational convenience and system flexibility with a range of peripheral products. Built-in digital output of the i.LINK interface for backup and simple field editing is just one example. Technological advances in Sony DSP and CCD Technologies, many powerful options and a convenient low price-point make the DSR500WSL a formidable tool for a wide range of applications



DXC-D35/D35WS Dockable (DVCAM) Camcorder

The DXC-D35/D35WS cameras are designed to the highest specifications, providing unprecedented video quality in this price range. The DXC-D35 is at home in the studio or field, docking directly to a host of backs including Betacam SP and DVCAM, as well as studio backs and viewfinders. The highly adjustable picture means that these cameras are ideal for capturing detail in low or changing light, as well as compensating for peoples skin flaws while keeping the rest of the image sharp. DXC-D35WS is switchable 4:3 to wide screen 16:9 ratio.

The DXC-D35WS camera is the latest Sony digital camera designed to the highest technological standards. With the proven Sony DSP technology combined with Sony high performance 16:9 CCD's. This high standard was previously held by the DXC-D30 series now being replaced by the NEW DXC-D35 series. DXC-D35 series feature a new Prism Assembly, new Pre Amplifiers, new DSP Software and a new Digital Encoder resulting in astounding performance. The DXC-D35WS camera fully interfaces with Sony's CCU-TX7 Wideband Component Triax System. It provides 8 set-up files (3 user) as a stand alone. 16 additional scene files (all user settable) are available when combined with the RCP-TX7 remote control panel. The DXC-D35WS is equipped with three 2/3" IT Power HAD CCD's switchable between 16:9 and 4:3 aspect ratio's. The camera docks to DSR-1 DVCAM and DNW-5 Betacam SX recorders for digital video recording, or PUV3 and

- BVV-5 Betacam SP recorders for analog recording.
- 880 TV lines of resolution for DXC-D35
- 850/800 TV lines for D-35WS • Two REC tally lamps
- DXF-601W New Viewfinder Switchable 16:9 to 4:3
- VF lens light with on/off switch • 3 level Tally light
- Display characters on/off switch • Take Tally
- Horizontal and Vertical peaking • Die cast aluminum
- Better flare compensation • Dynafit shoulder pad
- Lower minimum illumination (0.25 lux with HyperGain)
- Better color reproduction at high gain
- Improved dark detail and contrast • New preamplifier, prism and encoder • Better performance at overloads
- Reduced noise at Gain Up • Variable color temperature adjust
- Adjustable 4:3 safety zone when at 16:9
- New HyperGain mode of 420B gain
- Aspect ratio select from Main Menu

JVC

GY-DV500U 1/2-Inch 3-CCD Professional DV Camcorder

The GY-DV500 combines the convenience and cost-effectiveness of Mini DV with the performance and features you need. Incorporate three 1/2-inch 380,000 pixel IT CCDs for superior picture performance (equivalent to 750 lines of resolution) superb sensitivity of F11 at 2000 lux and minimum illumination of 0.75 lux (LoLux mode). Rugged construction with a rigid diecast magnesium housing. Extremely portable, compact and light weight (less than 11 lbs. fully loaded). Additional features like the menu dial and Super Scene Finder assure ease-of-use and shooting flexibility, while the IEEE1394 and RS-232 interface allow integration into various non-linear and post-production systems. A professional camcorder in every sense, the compact, lightweight GY-DV500 redefines acquisition for corporate, educational, cable and broadcast production, as well as wedding videography and multimedia applications.



GY-DV550U 1/2" 3-CCD DV Camcorder

Introducing the Versatile GY-DV550 from JVC. Designed by professionals, for professionals, the GY-DV550 is the world's first DV camcorder to offer studio camera capability. Thanks to the built-in 26-pin interface, you can connect the GY-DV550 to a CCU for remote-controlled studio operation or backup recorder in the field. But that's not all. It also comes with pool feed input/output, so you can transfer image data back and forth to another camera or cameras, making it ideal for special



shooting situations such as press conferences, exclusive interviews, and sporting events. Record isolated camera views (ISO-Cam) during a live multi-camera shoot, making it ideal for parallel shooting at live concerts and other events. Naturally, we've made sure the GY-DV550 is equipped with all the other capabilities you need, including a standard 1/2-inch bayonet mount for use with a great diversity of professional lenses, bidirectional IEEE 1394 (NTSC), two 48 KHz 16-bit digital PCM audio channels, and a built-in SMPTE or EBU timecode reader/generator, as well as XLR microphone inputs, audio outputs, headphones output, and both composite and Y/C outputs. Maximum versatility, top-level performance, and superior cost-efficiency make the GY-DV550 the smart solution for producers who need a camcorder capable of doing double-duty in both the studio and the field.

Ready for EFP remote control (RM-LP57/LP55) The EFP remote connects directly to the GY-DV550 for precise control over the video parameters.

Return video output for Tele-Prompter Tele-Prompter capability assures full support for studio program production. **Genlocking function** To meet the demand for systemization, the GY-DV550 is equipped with a genlocking function that includes SC lock to assure high-resolution pictures.

State-of-the-art 1/2" 3-CCD image pickup Incorporates three 1/2" 380,000 (NTSC)/400,000 (PAL) pixel interline-transfer CCD's. Each CCD is equipped with highly advanced circuitry that eliminates vertical smear when shooting bright lights in a dark room. Lag and image burn are also reduced to miniscule levels, while high sensitivity of F11 at 2000 lux assures creative flexibility and simplifies lighting requirements.

Panasonic AJ-D610WA 2/3" 16:9 IT-3CCD DVCPRO Camcorder

The AJ-D610WA is an affordable DVCPRO camcorder which combines three high sensitivity 2/3" IT CCD's with digital component technology. To create a true broadcast recording, the AJ-D610WA is switchable between 16:9 and 4:3 aspect ratios. A built-in PCMCIA card slot makes it quick and easy to adapt the camera to different shooting conditions. Features Super Gain, Super Iris, and Digital Signal Processing (DSP). The AJ-D610WA can operate with a minimum illumination of 0.5 lux (F1.4, +36 dB Gain), and resolves 750 lines of resolution.



- The AJ-D610WA has three high density (520,000 pixels) 2/3" CCD's. The CCD's feature a large light collecting area that gives the camera a S/N ratio of 63 dB, plus a sensitivity of 111.0 @ 2000 lux.
- The Digital Signal Processing (DSP) helps to deliver a very high quality picture. The user has the ability to adjust different parameters of the camera to accommodate any situation.
- A PCMCIA card slot is built into the operator side of the camera, allowing the set-up (DSP) data to be saved. The saved set-up data can be used to reset the camera parameters.

- The optional AJ-YAP900P Picture Link Board is part of an exclusive Panasonic production data information system which stores shot logging in camera memory and records it on tape during the eject cycle. The logging information can be read by Panasonic's newsBYTE DVCPRO native nonlinear news editing system.
- Exceptional resolution of 750 horizontal lines
- A Super Gain feature is available to boost gain by a full +30 dB or +36 dB for high quality shooting in low light, making it possible to shoot as low as 0.5 lux (F1.4, +36 dB).
- An optional Digital Triax for studio or mobile use is available. • A six speed electronic shutter (1/100 to 1/2000 sec) features Synchro Scan to match the frequency of a computer monitor.



Pickup Device: 2/3" IT Power HAD 1000 16:9 x 2
 Picture Elements: 1038 (H) x 504 (V)
 Filters: Clear, 5300K + 1/8 ND, 5600K, 5600K + 1/64 ND

SONY DNW-9WS 2/3" 16:9 IT-3CCD Betacam SX Camcorder

Equipped with three 2/3 inch 16:9/4:3 switchable Power HAD 1000 16:9 IT CCD's. Designed as a cost effective camcorder to help bridge the transition from 16:9 to 4:3, yet it still maintains a high performance and high mobility. The DNW-9WS weighs less than 14 lbs. including a battery, tape, viewfinder and lens. Includes an integrated slot for the optional WRR-855A wireless audio receiver.



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SONY

DSR-1500 DVCAM Studio Editing Recorder



DVCAM becomes more and more flexible with the introduction of this brand new, half-track width studio editing deck. The DSR-1500 boasts studio editing function capability in a compact size. The new DSR-1500 incorporates the same innovative, high standard technology featured in the DSR-2000. The space-saving size makes the DSR-1500 ideal for installations in OB vehicles and desktop editing systems.

- SDI interface ensures a migration path to Digital Betacam™, Betacam SX™ and SDI-based systems.
- SDI (QSDI) and i.LINK IEEE-1394 interfaces enable a high quality, virtually lossless transfer with DV compression based systems.
- Compatibility to consumer DV (SP mode only) and DVCPRO 25 format recordings in addition to DVCAM, automatically accommodate all cassette sizes without the need for an adapter.
- Analog input interface board which includes component, composite and S-Video is also available as an option.

DSR-1600/1800 DVCAM Studio Editing Player/ Player Recorder



The DSR-1600 is a studio editing player, and the DSR-1800 is a studio editing recorder. Both incorporate innovative technology at an affordable price. Excellent playback of all DV based (25 Mbps) formats and cassette sizes is possible without the need of an adaptor. A jog/search dial is standard, including jog audio. A variety of option boards are available for SDI, SDTI, and i.Link outputs.

- They both provide two selectable audio channel modes: Two channels of 16-bit (48 kHz) Four channels of 12-bit (32 kHz). PCM Digital Stereo recording is used in both modes to ensure superb audio performance with a wide dynamic range and excellent signal-to-noise ratio.
- Automatically adjust for playback of any DV based format, including DV (SP only), DVCAM or DVCPRO 25

DSR-2000 DVCAM Editing Recorder



The DSR-2000 is a highly flexible DVCAM studio deck designed for demanding ENG editing. It can playback all DV (25 Mbps) based formats, including two consumer DV formats (Standard and Long Play), as well as all types of DVCPRO tape as an editing source, without any mechanical tape adapters. Equipped with audio/video pre-read editing and includes a Jog/Shuttle dial that allows two-machine editing. A SMPTE standard MPEG SDTI-CP interface option is available for the DSR-2000 to output an MPEG stream in addition to the optional i.LINK interface. This allows the DSR-2000 to seamlessly link to Betacam SX and other MPEG-based video equipment by means of SDI, i.LINK and MPEG SDTI-CP.

DSR-11 Compact DVCAM VTR



Compact desktop DVCAM recorder. This VTR provides a powerful and cost-effective option for NLE editing systems. Provides basic VTR features, along with an i.LINK (IEEE1394) interface and is compatible with both NTSC and PAL color systems. Designed to be used in either a horizontal or vertical position; A footprint of only 2 3/4" in the vertical position.

- The DVCAM format uses 8-bit component digital recording at 25 Mbps, with Intra-frame 5:1 compression, 500 lines of resolution and 4:1:1 color sampling. A 15 micron track pitch provides superior picture quality, superb multi-generation capability and production flexibility. Two 1/4" ME cassette sizes are available: Standard and Mini.
- Plays and records either a DVCAM format signal or a DV format signal. Both Mini and Standard size cassettes can be used with the DSR-11 without the need of an adaptor

- Play or record in either the NTSC or PAL color systems.
- Equipped with a 4-pin i.LINK (IEEE-1394) interface, for lossless transfer of digital video and audio information with other IEEE-1394 equipped devices. The single 4-pin i.LINK cable can be connected to MAC or PK based NLE systems or to another VTR for degradation-free editing.
- DV EE (electronics to electronics) Cut: Analog input signals can be converted into digital signals, and can be simultaneously output from the i.LINK interface.

UVW-1200/UVW-1400A Betacam SP Player • Player/Recorder

The UVW-1200 and UVW-1400A are non-editing VCRs which deliver Betacam SP quality and offer features for a wide range of playback and recording applications. RGB and RS-232 interface make them especially ideal for large screen, high quality video presentation, scientific research and digital video environments.

- Ideally suited for work in computer environments, because RGB signals can be converted into component signals and vice versa with minimum picture degradation
- 25-pin serial interface allows external computer control of all VCR functions based on time code information. Baud rate can be selected from between 1200 to 38,400 bps
- Built-in Time Base Stabilizer (TBS) locks sync and subcarrier to an external reference signal as well as providing stable pictures. High quality digital dropout compensator further ensures consistent picture performance.
- Equipped with two longitudinal audio channels



- Auto repeat of entire or a specific portion of the tape.
- Built-in character generator can display VTR status, time code, self-diagnostic messages, set-up menu, etc.
- Both read LTC Time Code and UB (User Bits). The UVW-1400A also generates LTC and UB (Free Run/Rec-Run)
- Control of jog, shuttle, playback, record, pause, FF and REW with the optional SVRM-100A Remote Control Unit
- Composite and S-Video as well as component via BNCs which are switchable to RGB output. The UVW-1400A has two switchable sync connectors and a Sync on Green.
- Built-in diagnostic function and hour meter.

UVW-1600/UVW-1800

Betacam SP Editing Player • Betacam SP Editing Recorder

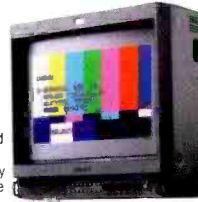
The UVW-1600 and UVW-1800 are the other half of the UVW series. They offer the superiority of Betacam SP with sophisticated editing features. They feature an RS-422 9-pin interface, built-in TBCs and Time Code operation. Inputs/outputs include component, composite and S-Video. All the features of the UVW-1200/1400A PLUS—

- Optional BVR-50 allows remote TBC adjustment.
- Two types of component output: via three BNC connectors or a Betacam 12-pin dub connector.
- RS-422 interface for editing system expansion.
- Frame accurate editing is assured, thanks to sophisticated servo control and built-in time code operation.

PVM-14M2U/14M4U & 20M2U/20M4U 13-inch and 19-inch Production Monitors

Sony's best production monitors ever, the PVM-M Series provide stunning picture quality, ease of use and a range of optional functions. They are identical except that the "M4" models incorporate Sony's state-of-the-art HR Trinitron CRT display technology and have SMPTE C phosphors instead of P22.

- HR Trinitron CRT enables the PVM-14M4U and 20M4U to display an incredible 800 lines of horizontal resolution. The PVM-14M2U and 20M2U offer 600 lines of resolution. M4 models also use SMPTE C phosphors for the most critical evaluation of any color subject.
- Dark tint for a higher contrast ratio (black to white) and crisper, sharper looking edges.
- Each has two composite, S-Video and component input (R-Y/B-Y, analog RGB) For more accurate color reproduction, the component level can be adjusted according to the input system. Optional BKM-101C (video) and BKM-102 (audio) for SMPTE 259M serial digital input
- Beam Current Feedback Circuit
- 4.3/16.9 switchable aspect ratio.
- True multi-system monitors: they handle four color system signals: NTSC, NTSC 4.43 PAL & SECAM.
- External sync input and output can be set so that it will automatically switch according to the input selected.
- Switchable color temp: 6500K (broadcast), 9300K (pleasing picture), User preset: (3200K to 10000K).
- Blue gun, underscan and H/V delay capability



VPL-CS4 SVGA LCD Multimedia Projector



Personal ultra-compact portable projector that goes anywhere and sets up quickly, and delivers bright, clear images. Quiet operation, elegant design and numerous practical features make it ideal for a wide range of uses.

- **Handy and portable:** The VPL-CS4 is ultra-compact and lightweight, weighing only 5 lbs. 5 oz. Images with a brightness of 1000 ANSI lumens are projected with excellent picture quality from three 0.7-inch, true SVGA (800 x 600) resolution LCD panels. Its small size and low weight make it easy to carry in its supplied carrying bag.
- **Quiet operation:** Fan noise is reduced with a new air discharge system, with the exhaust positioned at the front of the unit. • **Credit Card Remote**
- **Digital Zoom:** 4 times Digital Zoom, picture Freeze.
- **Digital Keystone Correction:** up to 15 degrees can be digitally corrected from the On-Screen Display or the supplied remote control unit.
- **APA (Auto Pixel Alignment):** a single-button press and play operation, the display is correctly sized and adjusted for optimum picture performance
- AV inputs: S-Video, RCA video, 15-pin VGA, audio mini
- NTSC/PAL/SECAM • 10.8" x 2.5" 8.4" • 5.3 lbs.

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BROADCAST ENGINEERING (ISSN 0007-1994) is published monthly (except semi-monthly in May and December) and mailed free to qualified persons by Primedia Business, 9800 Metcalf, Overland Park, KS 66212-2216. Periodicals postage paid at Shawnee Mission, KS, and additional mailing offices. Canada Post International Publications Mail (Canadian Distribution) Sales Agreement No. 0956295. POSTMASTER: Send address changes to *Broadcast Engineering*, P.O. Box 12902, Overland Park, KS 66282-2902. CORRESPONDENCE: Editorial and Advertising: 9800 Metcalf, Overland Park, KS 66212-2216 Phone: 913-341-1300; Edit. fax: 913-967-1905. Advert. fax: 913-967-1904. © 2000 by Primedia Business. All rights reserved.

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