

Panasonic

"DVCPRO P" Progressive Production System

AJ-PD900WA

2/3" M-FIT 3-CCD "DVCPRO P" Progressive
Camera/Recorder

(NTSC:525)

AJ-PD950A

"DVCPRO P" Progressive Studio VCR
(525/625 switchable)



DVCPRO P

Progressive Production System For DTV B



Based on the DVCPRO P format, this new progressive digital production system readies you for next-generation digital TV. DVCPRO P features a recording rate of 50 Mbps and uses 1/4" tape cassettes, making it possible to record, broadcast and edit 525p video signals with equipment that's as compact and lightweight as equipment for current TV systems.

This digital production system is also exceptionally versatile. The AJ-PD900WA/AJ-PD950A also provides recording and playback of the high-quality 4:2:2 images of the current (525i) TV system in 50 Mbps. Furthermore, in DVCPRO (25 Mbps) mode, these offer the more extended recording time. Above all, AJ-PD950A studio VCR allows switchable 525i/625i recording and playback.

Superior picture quality, performance and versatility make this the ideal mastering system for tomorrow's broadcasting.



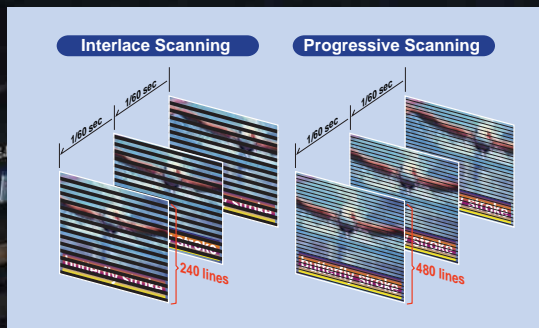
roadcasting

The Progressive System: Superior Picture Quality for the Next Generation

Current TVs use the interlace system, which sends 262.5 lines every 1/60th of a second to form one frame every 1/30th of a second. This progressive (525p) system sends 525 non-interlaced lines every 1/60th of a second, and uses the wider 16:9 aspect ratio as its standard.

The progressive system offers high vertical and temporal resolution and provides superior reproduction of detailed text and graphics. Also, because movie films and computer images are originally non-interlace, they can be used as source materials in high-quality video productions; with the progressive system there's the less picture degradation that otherwise occurs in conversion to the interlace system.

Video technology is now on the verge of fusing computer images, movies and broadcasts. This progressive system is ready to serve as the next-generation broadcast system for digital terrestrial, satellite and CATV broadcasting.



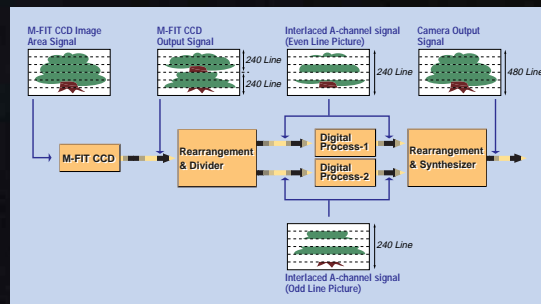
Newly Developed M-FIT CCD Block: Key to Higher Recording Quality

To maximize picture quality, Panasonic developed an advanced new CCD block for the progressive system. This M-FIT* CCD, incorporated in the AJ-PD900WA, divides the progressive signal's 480 lines into odd and even lines. Each set of lines is then processed by a 10-bit digital processing circuit to form the image. The result is a wider dynamic range, higher sensitivity and lower smear, which together add up to superior picture quality.

*'M' for multiple

The DVCPRO P VCR: 50 Mbps Recording Rate (4:2:0p)

The DVCPRO P VCR is based on the DVCPRO format - quickly becoming the de facto standard for digital VCRs - but it doubles the recording rate to 50 Mbps and digitally records 525p component signals (4:2:0p) at a compression ratio of 5:1. This unique compression recording system also allows precise tape editing in 1/30-second units.



Maximum recording time is 33 minutes for camera/recorders and a full 92 minutes for studio VCRs.

Using 1/4" tape cassettes, DVCPRO P VCRs offer the same compact size and light weight as present DVCPRO equipment, and they are exceptionally economical for a progressive production system.

Full Compatibility Among DVCPRO P, DVCPRO50 and DVCPRO

Panasonic's DVCPRO P VCRs are compatible with our DVCPRO family. The AJ-PD900WA camera/recorder, for example, can record in the current (525i) system as well as the progressive system. When recording, apart from DVCPRO P mode, you can either choose DVCPRO50 mode and take advantage of the superior 4:2:2 recording quality, or choose DVCPRO mode for the extended recording time. A single DVCPRO P VCR thus covers a range of progressive high-end production and news gathering applications.

The AJ-PD950A studio VCR allows editing of DVCPRO50's high-quality 4:2:2 signals and can record and play back in DVCPRO mode. This exceptionally versatile unit can also be switched between 525i and 625i for production or broadcasting in the PAL broadcast system.

Available Video Format of Panasonic Progressive Production System

TV System	Recording Format	Aspect Ratio	AJ-PD900WA	AJ-PD950A
525p	DVCPRO P (4:2:0P)	16:9	●	●
		4:3	●	●
		16:9	●	●
525i	DVCPRO 50 (4:2:2)	16:9	●	●
		4:3	●	●
		16:9	●	●
	DVCPRO (4:1:1)	4:3	●	●
		16:9	●	●
		4:3	●	●
625i	DVCPRO 50 (4:2:2)	16:9	-	●
		4:3	-	●
	DVCPRO (4:1:1)	16:9	-	●
		4:3	-	●
		4:3	-	●

●=Available (record and playback), - =Not available

Switches Among Three Recording Systems and the 16:9/4:3 Aspect Ratios: A Single Unit for Everything from News Gathering to High-End Production



AJ-PD900WA

2/3" M-FIT 3-CCD "DVCPRO P" Progressive Camera/Recorder

2/3" 520,000-Pixel M-FIT 3-CCD

Incorporating 520,000 pixels, this advanced new CCD delivers 700 lines of horizontal resolution, high F8.0 (2,000 lux) sensitivity, and low smear. It also allows both progressive and interlace scanning.

Switchable 16:9/4:3 Aspect Ratio

While the photoreceptor of the M-FIT CCD is designed for the wider 16:9 aspect ratio, it switches easily between 16:9 and the conventional 4:3 aspect ratio at DVCPRO50 and DVCPRO mode. When the optional wide-type AJ-VF20W viewfinder is used, the viewfinder automatically switches to match the aspect ratio.

3 Recording Modes: DVCPRO P, DVCPRO50, and DVCPRO

In DVCPRO P mode, the AJ-PD900WA can record 33 minutes of 525p images in the progressive system. It can also record

in the current (525i) system. In DVCPRO50 mode, the AJ-PD900WA records 33 minutes of 50 Mbps 4:2:2 signals, while in DVCPRO mode recording time is doubled.

*When recording in the DVCPRO P or DVCPRO50 format, the recording time will be half that indicated on the DVCPRO cassette.

Compact and Lightweight, with Low Power Consumption

The AJ-D900WA weighs only about 4.8 kg, with viewfinder attached. In full operating condition - with lens, battery and tape - it's small in size and weighs only about 6.6 kg. Power consumption is low, too - 28 W or less when recording.

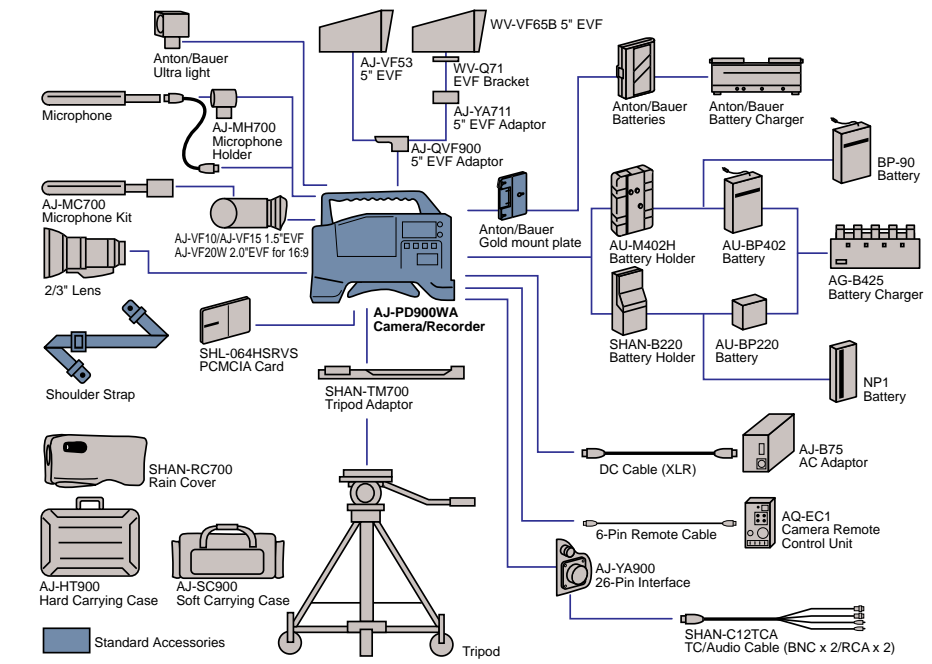
Features of the Camera Section

- Incorporates new 36-MHz sampling, 10-bit A/D, 16-bit digital processing circuit
- Camera setup file can be saved on an IC card (PCMCIA SRAM card)
- Programmable gain selector: -3 to +30 dB

- 6-step high-speed electronic shutter with synchro-scan capability
- Various choice of large, high resolution 1.5"/2.0" EVF available (option)
- External camera control unit (option)

Features of the VCR Section

- 4-channel* (DVCPRO P/DVCPRO50) or 2-channel (DVCPRO) PCM audio recording
- * CH1/CH3, CH2/CH4 are recorded simultaneously.
- Full-color playback via analog composite video output
- One-touch rec review function
- Built-in SMPTE time code generator/reader and TC IN/TC OUT connectors (BNC)
- 26-pin backup VCR connector (AJ-YA900; optional)
- Compatible with a variety of battery systems such as Anton/Bauer
- Built-in monitor speaker



A: Front side camera operations
 B: Rearside VTR settings
 C: Rearside connectors
 D: Rear connector panel

A J - P D 9 0 0 W A S P E C I F I C A T I O N S

General	
Power Supply:	DC 11V to 17V
Power Consumption:	29W (including VF)
Operating Humidity:	Less than 85%
Storage Temperature:	-20 to 60°C (4 °F to 140 °F)
Weight:	About 10.56 lbs (4.8 kg) including VF About 14.52 lbs (6.6 kg) in full operation
Dimensions (W x H x D):	4-13/16" x 8" x 12-5/16" (122.5 x 204 x 313 mm)
Continuous Rec Time:	About 80 min. with Anton/Bauer Trimpack 14 battery
Camera Section	
CCD Elements:	2/3" M-FIT CCD (x 3)
Picture Elements:	520,000 pixels
Optical Filters:	3200K, 5600K+1/4ND, 5600K, 5600K+1/16ND
Quantization:	10 bits
Sampling Frequency	36 MHz
Processing:	36 MHz, 16 bits
Gain:	-3/0/+3/+6/+9/+12/+15/+18/ +21/+24/+30dB
Sensitivity:	2000 Lux at F8.0
Minimum luminance:	2 Lux at F1.4, +30dB
Shutter Speed:	1/100, 1/120, 1/250, 1/500 and 1/1000 sec.
Syncro Scan Sutter:	1/63.2 to 1/201.9 sec.
Video S/N:	60 dB (typical)
Horizontal Resolution:	700 TV lines at center
Vertical Resolution:	450 TV lines
Registration Error:	Less than 0.03% (whole zone, without lens distortion)
Optical System:	F 1.4 prism system
Lens Mount:	2/3" Bayonet type

VTR Section	
Tape:	1/4" DVCPRO50 cassette tape
Tape Speed:	67.640 mm/s (DVCPRO P/DVCPRO50), 33.820 mm/s (DVCPRO)
Max Rec Time:	33 min (DVCPRO P/DVCPRO50), 66 min (DVCPRO)
FF/REW Time:	About 3 min. (using AJ-P66M)

Video	
Sampling Frequency:	Y: 13.5MHz, P _B /P _R : 6.75MHz (DVCPRO50) Y: 27MHz, P _B /P _R : 13.5MHz (DVCPRO P)
Quantization:	8 bits
Error Correction:	Reed-solomon product code
Compression Method:	DCT and Variable-length Coding
Compression Ratio:	3.3:1 (DVCPRO50), 5:1 (DVCPRO P/DVCPRO)
Bit Rate:	50 Mbps (DVCPRO P/DVCPRO50) 25 Mbps (DVCPRO)
Band Width*:	Y: 30Hz to 5.75MHz, +1.0/-3dB P _B /P _R : 30Hz to 2.75MHz, +1.0/-3dB
S/N Ratio*:	More than 55dB
K Factor(2T)*:	Within 2%
Y/C delay*:	Within 20 ns

Audio	
Sampling Frequency:	48kHz
Quantization:	16 bits
Frequency response:	20Hz to 20kHz, ±1.0dB (reference level)
Dynamic range:	More than 85dB (1kHz, AWTD)
Distortion:	Within 0.1% (1kHz, reference level)

Wow & Flutter:	Below measurable limit
Head room:	20dB
Emphasis:	T1=50us, T2=15us(ON/OFF)

Input	
Audio IN:	XLR x 2 (CH1/CH3, CH2/CH4), more than 10 kΩ, balanced, MIC/LINE switchable, MIC: -60/-50/-40dBu, LINE: -6/0/+4dBu
MIC IN:	XLR x 1, 3kΩ, balanced, -60/-50/-40dBu selectable, Phantom +48V
Genlock IN:	BNC x 1, 1.0Vp-p 75Ω
TC IN:	BNC x 1, 0.5 to 18Vp-p, high impedance

Output	
Camera OUT:	BNC x 1, 1.0Vp-p, 75Ω
Video OUT:	BNC x 1, 1.0Vp-p, 75Ω
Audio OUT:	XLR x 1 (CH1/CH2/MIX selectable) +4dBu, balanced, low impedance 12P multiconnector (CH1/CH2) -20dBu, unbalanced, low impedance
TC OUT:	BNC x 1, 1.5Vp-p, low impedance
Phones:	Stereo mini jack x 2

Others	
DC IN:	XLR 4 x 1 DC11V to 17V
DC OUT:	4P x 1, DC11V to 17V, 100 mA
Lens:	12P x 1
ECU:	6P x 1
EVF:	20P x 1
VTR:	26P x 1(option)

*The specifications given above were measured by playing back tapes recorded by this unit on standard DVCPRO P VTRs, using analog component outputs.

High-End Digital Studio VCR for 525p/525i/625i Production



AJ-PD950A “DVCPRO P” Progressive Studio VCR

High-Quality Editing of DVCPRO P/DVCPRO50 Images

In DVCPRO P mode, the AJ-PD950A delivers high-quality progressive images with 4:2:0p digital component signals. It can be switched to DVCPRO50 for high-quality editing of the 4:2:2 digital component signals used in the current TV system. In these modes, recording and playback time is a full 92 minutes using the AJ-5P92L*, L-size cassette.

*When recording in the DVCPRO (25 Mbps) mode, the recording time will be doubled, 184 minutes. When recording in the DVCPRO P or DVCPRO50 format onto a DVCPRO tape, the recording time will be half that indicated on the cassette.

DVCPRO Recording and Playback

The AJ-PD950A also records and plays back in the DVCPRO (25 Mbps) mode. This greatly expands its application range, allowing use of a wide variety of source materials as news images.

4-Channel Digital Audio

The AJ-PD950A is equipped with four channels of high-quality 48-kHz/16-bit digital sound. It's also equipped with a linear audio track for recording cue signals, which adds convenience when searching for edit points.

*The unit has two digital audio channels when used in DVCPRO(25 Mbps) mode.

Recording and Playback in the PAL System (625i)

In DVCPRO50 and DVCPRO modes, the AJ-PD950A can be switched for either recording or playback of the 625i video signals used in the PAL broadcast system by the use of sub panel. It provides digital (SDI) input and output. Inserting the optional AJ-YA951 board allows analog input and analog component output of 625i signals as well.

Built-In 525i Down Converter

The AJ-PD950A incorporates a down converter for converting 525p signals to 525i signals.* This makes it possible to play back a tape recorded in the progressive system and send it on-air in the current system.

*However, the aspect ratio is not converted.

Small Size, Easy Installation

The compact AJ-PD950A has a 4U height and weighs only about 19 kg. This space-saving unit fits into a 19-inch rack for easy mounting in an OB van.

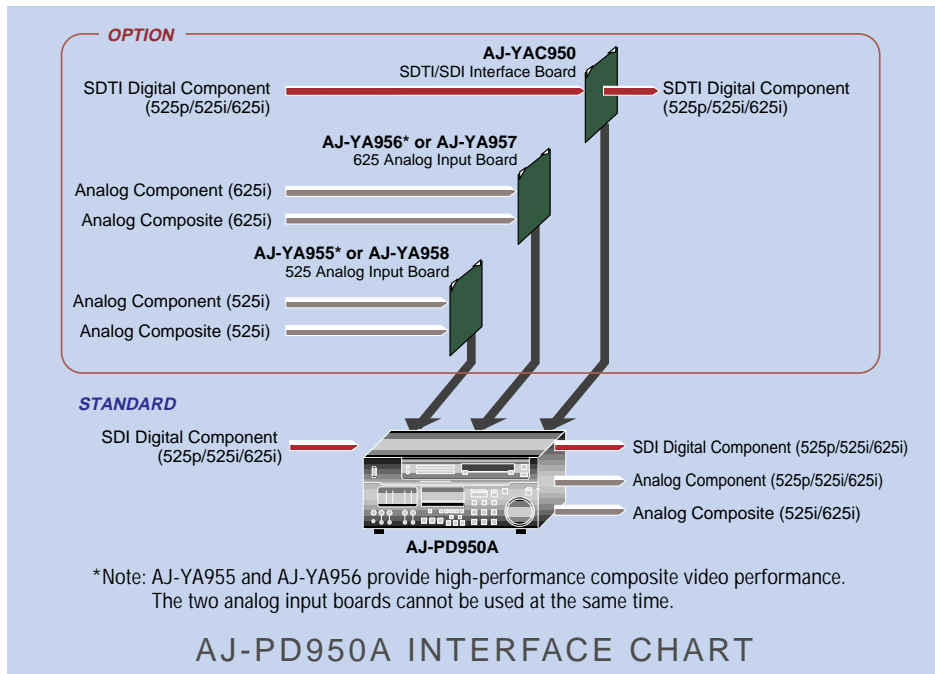
SDI/SDTI Digital Input/Output Capability

- Equipped with SDI (Serial Digital Interface) for input and output of 525p/525i/625i digital component signals.

- SDTI (Serial Data Transport Interface) available by inserting the optional AJ-YAC950 board, which then allows input and output of 525p/525i/625i digital component signals.
- Equipped with AES/EBU digital audio in/out terminals.

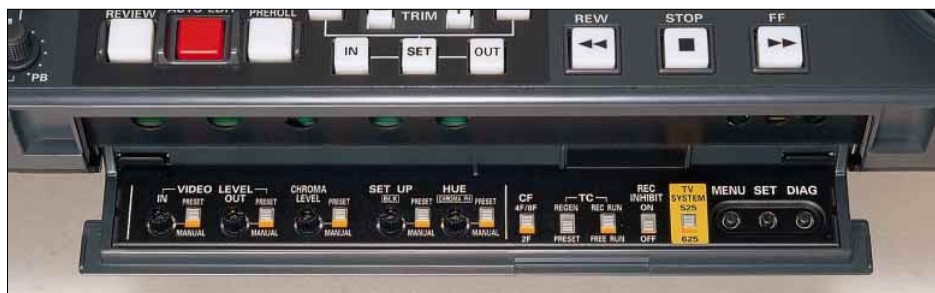
Analog Input/Output and Remote Control

- The unit comes equipped to output composite/component analog video signals. Output of either 525-format or 625-format signals is also possible.
- Select from the following four optional boards for analog video input.
 - AJ-YA955: 525 High-Performance
 - AJ-YA958: 525 Standard
 - AJ-YA956: 625 High-Performance
 - AJ-YA957: 625 Standard
- Comes equipped for analog audio input and output (four channels).
- Comes equipped with RS-422A (9-pin), RS-232C (25-pin) and parallel (25-pin) remote control interfaces.



Complete Editing Functions

- Provides assemble, insert and audio split editing in DVCPRO P and DVCPRO50.
- High-speed shuttle search at 32x normal speed in DVCPRO P and DVCPRO50 modes, and 60x normal speed in DVCPRO mode.
- Digital still and digital slow-motion playback at up to about half normal speed in all modes.



A switch in the lower front subpanel is used to select the 525 or 625 TV system. The settings for the on-screen menu are also made through operating this panel.



Boards containing LSI chips are easily plugged in or removed. Simply add or exchange boards to expand the interfaces.



Rear Panel

General

Power Supply:	AC 120 V ±10%, 50 to 60 Hz
Power Consumption:	300W (full operation)
Operating Temperature:	5°C to 40°C (41°C to 104°C)
Operating Humidity:	10% to 90%
Weight:	41.88 lbs (19 kg)
Dimensions (WxHxD):	16-11/16" x 6-7/8" x 16-3/8" (424 x 175 x 415 mm)
Recording Format:	DVCPRO P/DVCPRO50/DVCPRO
Recording Track:	Digital Video: 525p/525i/625i switchable Digital Audio: 4 channels (50 Mbps) 2 channels (25 Mbps) TC: Subcode area Cue: 1 longitudinal track CTL: 1 longitudinal track
Tape Speed:	67.640mm/s (525), 67.708mm/s (625)
Rec/Play Time:	Max. 92 minutes with AJ-5P92L
Tape:	1/4" metal particle
FF/REW Time:	Less than 3 minutes with AJ-5P92L
Search Speed:	±32x (in color)
Digital Slowmotion:	-0.43x to +0.75x
Editing Accuracy:	±0 frame (TC)
Tape Timer Accuracy:	±1 frame (continuous CTL)
Servo Lock Time:	Within 0.5 sec (color framing/standby ON)

Video

Sampling Frequency:	Y: 13.5MHz, Pb/Pr: 6.75MHz (DVCPRO50) Y: 27MHz, Pb/Pr: 13.5MHz (DVCPRO P)
Quantization:	8 bits
Error Correction:	Reed-solomon product code
Compression Method:	DCT and Variable-length Coding
Compression Ratio:	3.3:1 (DVCPRO50), 5:1 (DVCPRO P/DVCPRO)
Bit Rate:	50 Mbps (DVCPRO P/DVCPRO50) 25 Mbps (DVCPRO)

[\[Digital In/Composite Out\]](#)

525i Band width:	Y: 30Hz to 4.5MHz ±0.5dB
625i Band width:	Y: 25Hz to 4.5MHz ±0.5dB
S/N ratio:	60dB or more
K factor:	1% or less
Y/C Delay:	10 nsec or less

[\[Digital In/Component Out\]](#)

525i Band width:	Y: 30Hz to 5.75MHz ±0.5dB Pb/Pr: 30Hz to 2.75MHz ±0.5dB
625i Band width:	Y: 25Hz to 5.75MHz ±0.5dB Pb/Pr: 25Hz to 2.75MHz ±0.5dB
S/N ratio:	60dB or more
K factor:	1% or less
Y/PB, PR Delay:	10 nsec or less

[\[Component In/Component Out\] with optional AJ-YA955 or AJ-956](#)

525 Band width:	Y: 30Hz to 5.75MHz ±1dB Pb/Pr: 30Hz to 2.75MHz ±1 dB
625 Band width:	Y: 25Hz to 5.75MHz ±1dB Pb/Pr: 25Hz to 2.75MHz ±1 dB
S/N Ratio:	55 dB or more
K factor:	1% or less
Y/C Delay:	10 nsec or less

[\[Component In/Component Out\] with optional AJ-YA957 or AJ-YA958](#)

525i Band width:	Y: 30Hz to 5.5MHz ±1dB, 5.75MHz -2dB Pb/Pr: 30Hz to 2.5MHz ±1dB, 2.75MHz -2dB
625i Band width:	Y: 25Hz to 5.5MHz ±1dB, 5.75MHz -2dB Pb/Pr: 25Hz to 2.5MHz ±1dB, 2.75MHz -2dB
S/N ratio:	55 dB or more
K factor :	1% or less
Y/Pa, Pr Delay:	20 nsec or less

[\[Composite In/Composite Out\] with optional AJ-YA955 or AJ-YA956](#)

525 Band width:	Y: 30Hz to 5.0MHz ±1dB, 5.75MHz -3dB
625 Band width:	Y: 25Hz to 5.0MHz ±1dB, 5.75MHz -3dB
K factor :	1% or less
Y/C Delay:	10 nsec or less

[\[Composite In/Composite Out\] with optional AJ-YA957 or AJ-YA958](#)

525i Band width:	Y: 30Hz to 4.5MHz ±1dB , 5.75MHz -3dB
625i Band width:	Y: 25Hz to 4.5MHz ±1dB, 5.75MHz -3dB
K factor:	1% or less
Y/C Delay:	20 nsec or less

Audio

Sampling Frequency:	48kHz
Quantization:	16 bits
Frequency Response:	20Hz to 20kHz, ±1.0dB (reference level)
Dynamic Range:	More than 90dB (1kHz, emphasis off, "A" weighted)
Distortion:	within 0.05% (1kHz, reference level)
Cross Talk:	Less than -80dB (1kHz, between any 2ch.)
Wow & Flutter:	Below measurable limit
Headroom:	20 dB (525)/18 dB (625)
Emphasis:	T1=50µs, T2=15µsec (ON/OFF)
Cue Track:	300Hz to 6kHz (±3dB)

Video Input

SDI:	BNC x 2 (active through), SMPTE259M-C/294M
Reference:	BNC x 2 (loop-through) 75Ω On/Off
SDTI (Option):	BNC x 2 (active through), SMPTE305M (SDI in serves as a SDTI in, too)
Analog Component:	BNC x 3 (Y/Pb/Pr), (option) Y: 1.0Vp-p, 75Ω Pb/Pr: 0.525/0.757Vp-p, switchable, 75Ω (75% color bar, 0% set up)
Analog Composite :	BNC x 2 (loop-through), (625i/option) 75Ω On/Off

Video Output

SDI:	BNC x 3 (SDI3: Super on/off), SMPTE259M-C/294M
Analog Composite:	BNC x 3 (Video 3: Super on/off)
SDTI (Option):	BNC x 1, SMPTE305M (SDI1 out serves as a SDTI out, too)
Analog Component:	BNC x 3 (Y/Pb/Pr), Y: 1.0Vp-p, 75Ω Pb/Pr: 0.525/0.757Vp-p, switchable, 75Ω (75% color bar, 0% set up)

Video Out Adjustment Range

Composite Video In:	±3 dB
Video Gain:	±3 dB
Chroma Gain:	±3 dB
Chroma Phase:	±30°
Setup:	±14 IRE
Sync Phase:	±8 µs
SC Phase:	±180°

Audio Input

Analog(CH1/2/3/4):	XLR x 4, +4/0/-20 dBu , 600Ω/high-impedance, switchable
Digital(CH1/2, CH3/4):	XLR x 2, AES/EBU
Serial Digital:	BNC x 2, (active through), SMPTE259M-C/272M
Cue:	XLR x 1, +4/0/-20/-60 dBu, 600Ω/high-impedance,switchable

Audio Output

Analog (CH1/2/3/4):	XLR x 4, low-impedance, +4/0/-20 dBu switchable
Digital (CH1/2, CH3/4):	XLR x 2, AES/EBU
Serial Digital:	BNC x 1, SMPTE259M-C/272M,
Cue:	XLR x 1, low-impedance, +4/0/-20 dBu switchable
Monitor:	XLR x 2, low-impedance, +4/0/-20 dBu switchable
Phones:	M6, variable level control, 8Ω

Others

TC IN:	XLR x 1, 0.5 to 8.0 Vp-p
TC OUT:	XLR x 1, 2.0 Vp-p
Remote:	RS-422A IN (D-sub 9 pin) RS-422A OUT (D-sub 9 pin) RS-232C (D-sub 25 pin) Parallel IN/OUT (D-sub 25 pin) Encoder Remote (D-sub 15 pin)

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.
These products may be subject to export regulations.

Panasonic

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