Panasonic
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P2HD

AJ-HPX2100
P2 cam — Memory Card Camera Recorder

Beijing 2008

Official Worldwide
Olympic Partner

HD/SD Multi-Format Recording, High Image Quality and Superb Mobility.

High-End P2 Cam Ushers in a New Era of Video Production.

The AJ-HPX2100 is the first shoulder-mounted memory card camera-recorder (P2 cam) to support HD recording.

The AJ-HPX2100 combines a high-image-quality, high-sensitivity HD camera with a memory card to provide all of the advanced P2 solid-state functions. Its multi-format capability lets you record in 1080i/720p HD or SD.

The AJ-HPX2100 brings new solutions to the production of news and information programs with the recording functions made possible by P2 multi-card slots, such as card selection, hot-swap and loop rec. It also provides immediate transmission with a clip thumbnail display and the convenience of proxy and metadata.

It expands HD's production flexibility by putting IT workflow into your hands with its outstanding mobility, operational readiness and cost-efficiency.

The AJ-HPX2100 offers a host of functionality designed to enhance broadcasting applications, including high-sensitivity digital super gain, DRS (Dynamic Range Stretcher), and digital zoom.

Recording format supported by AJ-HPX2100

	Video Format	Pull Down	Recording Format
HD	1080/50i	--	1080/50i
	1080/25P	2-2	
	1080/59.94i	--	1080/59.94i
	1080/29.97P	2-2	
	1080/23.98P	2-3	
	1080/23.98PA	2-3-3-2	
	720/50P	--	720/50P
	720/25P	2-2	
	720/59.94P	--	720/59.94P
	720/29.97P	2-2	
	720/23.98P	2-3	
SD	576/50i	--	576/50i
	576/25P	2-2	
	480/59.94i	--	480/59.94i
	480/29.97P	2-2	
	480/23.98P	2-3	
	480/23.98PA	2-3-3-2	

HD/SD Multi-Format Recording

By driving the HD CCDs in progressive mode at all times, the AJ-HPX2100 records in a total of 17 HD/SD formats. This meets the needs of news, TV program, and general video production. Because the AJ-HPX2100 supports all of the HD/SD formats used around the world, it can produce videos for overseas broadcasts and for use in overseas markets. It uses the highly reliable DVCPRO HD codec to record in 1080i/720p HD. For SD recording, the AJ-HPX2100's multi-codec capability lets you choose from DVCPRO 50, DVCPRO and DV.

High-Sensitivity F10 Aperture and Digital Super Gain

The high-sensitivity F10 aperture and digital super gain (frame cumulative mode) let the AJ-HPX2100 record with a high S/N ratio[*1] and less of the noise that commonly comes with higher gain. The AJ-HPX2100 also features a line mix function for great fast-action images. The gain, digital super gain and line function can be flexibly combined to achieve highly sensitive recording of up to +74 dB[*2] or to suit different shooting conditions.

*1: Due to the use of image accumulation, the number of recorded frames per second decreases. This results in a frame-by-frame playback effect.

*2: With super gain set at +48 dB, digital super gain (6P cumulative mode) at +20 dB, and line mix at +6 dB.

14-bit Digital Processing with 5-Mode Gamma

In the AJ-HPX2100, we offer a 14-bit A/D conversion system, an upgrade over the conventional 12-bit system. We also incorporated a new high-performance digital signal processing (DSP) circuit. The 12-axis colour correction matrix lets you make fine adjustments in specific colour regions. Functions such as skin detail let you further fine-tune the image.

The DSP circuit also has selectable gamma curves. The mode can be selected from SD, HD, Filmlike 1, Filmlike 2 and Filmlike 3 to expand the video production scope.

48-kHz/16-bit, 4-Channel Digital Audio

The AJ-HPX2100 can record full 48-kHz/16-bit digital audio on all four channels. You can freely select the audio source for each channel, choosing from mic, line, wireless receiver, and others.

A 5-pin XLR jack with 2-channel compatibility is used for the front mic input. Using the AJ-MC900G optional stereo microphone lets you record stereo with a single mic.

New AVC-Intra Option

The optional codec board (under development) allows the use of the new AVC-Intra codec. Based on the H.264 standard, which is today's most advanced motion image compression technology, this codec employs an intra-frame compression system. With it, the AJ-HPX2100 offers a high compression rate, high image quality and extreme editing precision. The AVC-Intra codec has two modes to meet diverse HD production needs. AVC-Intra 100 (1920/4:2:2/ 10 bits) supports full-bit HD and superb image quality, while AVC-Intra 50 (1440/4:2:0/10 bits) provides low-frame-rate, low-cost production.

*The camera-recorder software must be updated to the latest version.

The P2 Card Offers Outstanding Mobility and Reliability

The P2 card (AJ-P2C008HG) offers great flexibility and interoperability with leading NLE systems and boasts a high data transfer speed of 640 Mbps max. It records AV data in the MXF file format. This solid-state memory card is highly resistant to shock and vibration, so it offers high reliability and stable recording in the field. The P2 card brings a totally new level of mobility to outdoor shooting.

It lets the camera start recording immediately from standby mode. Recorded data is automatically stored in blank card areas with no cueing required. This eliminates the risk of accidentally overwriting valuable data.

Recording Functions with Five P2 card Slots

The AJ-HPX2100 has slots for five P2 cards and lets you record continuously onto all five in sequence. It also provides several entirely new recording functions that are possible only with memory cards.

•**Card selection:** The recording slot can be changed (sequential switching) even during recording. This lets you retrieve and transmit just-recorded news material, without interrupting the recording.

•**Hot-swap-rec:** You can replace a full memory card with a blank one while the P2 cam is recording onto a second card. Successively swapping cards this way gives you virtually unlimited recording capability.

•**Loop-rec:** By loop recording onto a specified recording area, you can continue to record over a fixed area.

•**Pre-rec:** While in standby mode, you can continuously store, and subsequently record, up to 15 seconds of video and audio (in DVCPRO). In effect, this lets you record footage of events that occur even before you press the rec start button, giving you a way to "go back" and capture moments you otherwise would have missed.

Clip Thumbnail Function

The P2 cam automatically generates a thumbnail image for each clip. You can view thumbnails on the 3.5" colour LCD monitor on the P2 cam's side. Any of the corresponding clips can be accessed instantly. And you can specify a number of clips for seamless playback or on-air broadcasting.

Each clip can be provided with text memos (in up to 100 locations) and shot markers during or after recording. This makes for easy clip searches when editing.

*Seamless playback is not possible between clips recorded in different formats.

SD Memory Card Slot

The AJ-HPX2100 comes with an SD Memory Card slot. You can create a metadata upload file (produced with P2 Viewer) containing information such as the name of camera operator, the name of the reporter, the recording location, and text memos on an SD Memory Card, and load it as clip metadata.

DRS (Dynamic Range Stretching) Function

DRS recognizes the average brightness of highlight and shadow areas and then automatically adjusts the aperture and uses knee control to suppress blown highlights in the shadow areas. In scenes with mixed dark and light areas, such as when moving from indoors to outdoors, DRS automatically provides a wider dynamic range with minimal blown highlights and blocked shadows, eliminating the need to manually tweak the camera for each specific condition.

Maximum 4x Digital Zoom

The AJ-HPX2100's digital zoom electronically increases the magnification rate of the lens by 2x, 3x or 4x. HD images retain their superior resolution even with zooming, and — unlike when a lens extender is used — brightness is not reduced. It's ideal as both a shooting technique and focusing support.

Scene Files and Lens Files

•**Scene Files:** Store specific camera settings in built-in memory, then retrieve them when needed for quick, easy setup. Four files with settings can be stored in the camera's memory. Files can also be copied onto an SD Memory Card, allowing storage of up to eight files.

•**Lens Files:** Store settings for interchangeable lenses. Eight files can be stored in the camera unit, and 64 (8 x 8) files can be saved on an SD Memory Card.

Shooting Assist Functions

•**Three User Buttons:** Assign a function to each, and then you can select functions with pushbutton ease.

•Auto Tracking White Balance

•**Focus Assist:** Facilitates focusing by displaying the frequency distribution of video signals on a graph.

•**Variable Colour Temperature:** Colour temperature can be adjusted with the jog dial after the white balance is set.

•**Electronic Shutter with Half-Speed:** Six fixed speeds of up to 1/2000 sec, plus "half-speed" (180-degree) slow and synchro-scan capability.

•Rec Review function for easy checking of recorded results

•ND filter (CLEAR, 1/4ND, 1/16ND, 1/64ND) and CC filter (Cross, 3200K, 4300K, 6300K).

USB 2.0 Interface Compatible with Host Mode

In device mode, the P2 cam's card slot can be used to connect a PC as an external device for nonlinear editing and transmission over networks. In host mode, P2 files can be copied onto a hard disk without using a PC.

Digital Backup Recording (HD-SDI/IEEE 1394)

The AJ-HPX2100's standard HD-SDI output simultaneously backs up recordings to an external digital VTR (such as the AJ-HD1400) in sync with the REC start/stop. An IEEE 1394 compliant DVCPRO output terminal (6-pin) is also provided on the AJ-HPX2100. The AJ-HPX2100 can output DVCPRO HD/DVCPRO data without decoding for backup recording with minimum degradation to a digital device like the FS-100 FireStore manufactured by FOCUS. It also enables desktop HD editing when connected to a PC/Mac nonlinear editing system.

The AJ-HPX2100's HD-SDI and IEEE 1394 digital output capabilities allow the use of a wide variety of broadcasting and IT-based devices.

*For system compatibility details, visit our website.
 https://eww.pavc.panasonic.co.jp/pro-av/sales_o/ieee1394/index.html

HD SDI/SD Down-Conversion Output

The AJ-HPX2100 comes equipped with two BNC video line outputs for flexible monitoring or line recording use.
•VIDEO OUT: Switchable between HD-SDI/SD-SDI (down conversion) and analogue composite (down conversion) output.
•MON OUT: Outputs down-converted SD video only. Switchable to analogue composite (thumbnail output possible), VF or Y.

Proxy Data Recording (Option)

Mount an AJ-YAX800G Video Encode Card, and the AJ-HPX2100 records an MPEG4 proxy (low-resolution) data — enhancing news production and simplifying long format program editing, including documentaries and reality television — onto the card along with full-resolution data. The three levels of proxy video available are 1.5 Mbps, 768 kbps and 196 kbps. Proxy data can also be recorded onto an SD Memory Card mounted in the slot provided, for easy viewing on a laptop PC. The encode card, available as an option, lets you upgrade as future image encode systems evolve.

*Proxy data is AV data with low-resolution MPEG4 video and audio containing time code, metadata, and other control information.
*Use of DCF technologies under license from Multi-Format, Inc.

HD/SD SDI Line Recording (Option)

When the HD/SD SDI input board (AJ-YA350G, purchased separately) is installed, HD/SD line recording is possible from SDI (serial digital) input. This is extremely useful in Broadcast applications, including news pool feeds acquisition.
*The input signal must be in the same format as the recording format of the camera-recorder.

New Remote Control Unit

The AJ-HPX2100 comes equipped with a 10-pin RCU terminal for connecting the optional AJ-RC10G Remote Control Unit.
The AJ-RC10G comes with a 10-pin multi-cable that can connect to the AJ-HPX2100's down-conversion video OUT terminal for monitoring at the RCU. The AJ-RC10G provides detailed control of the AJ-HPX2100's camera and recorder functions.

Other System Functions and Options

•DC power supply for the BT-LH900 or LH900A 8.4" LCD monitor
•Colour bar (switchable between SMPTE, ARIB, and full colour) and standard audio signal (1-kHz test tone) output
•Built-in SMPTE/EBU time code generator/reader, with time code In/Out terminal
•Genlock input terminal can also be used as return video (HD-Y/VBS)
•Multiple battery support, including Anton Bauer batteries
•UniSlot® wireless receiver compatible
* UniSlot® is a trademark of Ikegami Tsusinki Co., Ltd.

Designed for Easy Operation

The position, function, and shape of all switches, dials and terminals have been designed in response to feedback from video professionals to allow quick operation and prevent errors for greater reliability.
•The Audio Rec level adjustment features a push lock function.
•The Audio Input level adjustment (front) can be switched ON/OFF and allocated to desired channels.
•A 3-point locking viewfinder mount allows precise adjustment.

SUPPORTING EQUIPMENT AND PERIPHERALS

AJ-HVF21G
2" HD EVF 59.94Hz/50.00Hz switchable

AJ-MC900G
Stereo Microphone
(5-pin)

AJ-MH800G
Microphone Holder

SHAN-TM700
Tripod Adapter

AVC-Intra Codec Board

AJ-YA350G
HD/SD Input Board

SD memory card

AJ-P2C008HG
AJ-P2C004HG
P2 card

AJ-SC900
Soft Carrying Case
*Not available in some areas.

AJ-HT901G
Hard Carrying Case
*Not available in some areas.

SHAN-RC700
Rain Cover
*Not available in some areas.

Anton/Bauer Ultra Light

Anton/Bauer
Battery Charger Package
HTP-T230

Anton/Bauer
Dionic Batery

Anton/Bauer
Battery Charger

Anton/Bauer
TITAN70 AC Adaptor/
Battery Charger

AJ-RC10G
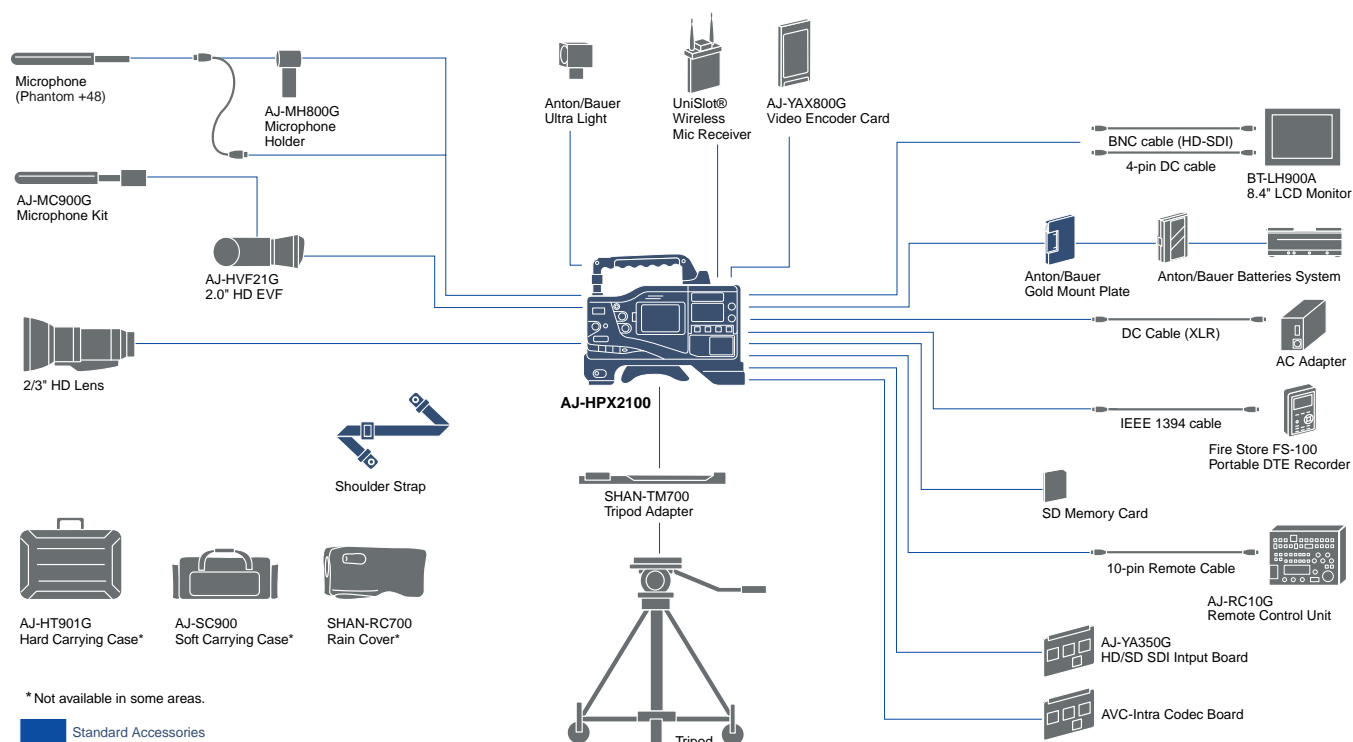RCU (Remote Control Unit)
• 10P Remote Cable 10m

AJ-C10050G
Remote Control Cable (for AJ-RC10G)
• 10P Remote Cable 50m

FireStore FS-100
Portable DTE Recorder (FOCUS Enhancements, Inc.)

BT-LH900A	8.4" HD/SD LCD monitor
BT-LH1700W	17"Wide HD/SD LCD monitor
BT-LH2600W	26"Wide HD/SD LCD monitor

Microphone
(Phantom +48)

AJ-MH800G
Microphone
Holder

AJ-MC900G
Microphone Kit

AJ-HVF21G
2.0" HD EVF

2/3" HD Lens

Shoulder Strap

AJ-HT901G
Hard Carrying Case*

AJ-SC900
Soft Carrying Case*

SHAN-RC700
Rain Cover*

*Not available in some areas.

■ Standard Accessories

Anton/Bauer
Ultra Light

UniSlot®
Wireless
Mic Receiver

AJ-YAX800G
Video Encoder Card

AJ-HPX2100

SHAN-TM700
Tripod Adapter

Tripod

BNC cable (HD-SDI)
4-pin DC cable

BT-LH900A
8.4" LCD Monitor

Anton/Bauer
Gold Mount Plate

Anton/Bauer Batteries System

DC Cable (XLR)

AC Adapter

IEEE 1394 cable

Fire Store FS-100
Portable DTE Recorder

SD Memory Card

10-pin Remote Cable

AJ-RC10G
Remote Control Unit

AJ-YA350G
HD/SD SDI Intput Board

AVC-Intra Codec Board

AJ-HPX2100 SPECIFICATIONS

General Specification

Power Source:	DC 12V (11.0V to 17.0V)
Power Consumption:	36W (LCD Monitor Off) 43W (SDI-IN, AVC-Intra option,LCD Monitor ON)
Operating Temperature:	0°C to 40°C
Keeping Temperature:	–20°C to 60°C
Operating Humidity:	10% to 85%
Operating Time:	Approx. 120 min. (when using DIONIC90 battery)
Weight:	4.5 kg, main unit only, without VF mount
Dimensions (W x H x D):	137 x 209 x 317 mm, without handle and wireless option cover

Camera Section

CCD Elements:	2/3-inch CCD x 3
Picture Element:	Total: 1370 (H) x 744 (W), Active: 1280 (H) x 720 (W)
Optical Filters:	CC: Cross, 3200K, 4300K, 6300K ND: CLEAR, 1/4ND, 1/16ND, 1/64ND
Quantizing:	14 bits
Horizontal Drive Frequncy:	74.25 MHz (50 Hz), 74.1758 MHz (59.94 Hz)
Sampling Frequncy:	74.25 MHz (50 Hz), 74.1758 MHz (59.94 Hz)
Digital Signal Process:	74.25 MHz (50 Hz), 74.1758 MHz (59.94 Hz)
Programmable Gain:	–3/0/+3/+6/+9/+12/+15/+18/+21/+24/+27/+30 dB
Digital Super Gain:	+6/+10/+12/+15/+20 dB
Line Mix Gain:	+6 dB (ON/OFF)
Super Gain:	+30/+36/+42/+48 dB
Shutter Speed:	1/60 (50Hz),1/100 (59.94Hz),1/120/, 1/250, 1/500, 1/1000, 1/2000 sec. and HALF
Syncro Scan Sutter:	1/50.2 to 1/209.5 sec. (50 Hz), 1/25.2 to 1/209.5 sec. (25 Hz), 1/60.3 to 1/249.8 sec. (59.94Hz), 1/30.2 to 1/249.8 sec. (29.97Hz), 1/24.1 to 1/249.8 sec. (23.98Hz),
Lens Mount:	2/3-inch bayonet mount
Optical System:	F1.4 Prizm
Sensitivity:	F10
Minimum Luminance:	0.007lx (F1.4, Super gain +48dB, Digital super gain +20 dB, Line mix gain +6dB)
Video S/N:	54 dB (standard)
Horizontal Resolution:	700 lines (at center standard)
Registration:	Less than 0.03% (whole zone, without lens distortion)

Memory Card Recorder Section

Recording Format:	DVCPRO HD/DVCPRO 50/DVCPRO/DV Format switchable	
Recording Video Signal:	1080/50i, 720/50p, 1080/59.94i, 720/59.94p, 576/50i, 480/59.94i	
Recording Audio Signal:	DVCPRO HD:	48kHz/16bits, 4CH
	DVCPRO 50:	48kHz/16bits, 4CH
	DVCPRO/DV:	48kHz/16bits, (2CH/4CHswitchable)
Recording Media :	P2card	

Recording Playback Time*:when using 8GB P2card AJ-P2C008HG

	by single card	using 5 card slot
DVCPRO HD	Approx. 8 min.	Approx. 40 min.
DVCPRO 50	Approx. 16 min.	Approx. 80 min.
DVCPRO/DV	Approx. 32 min.	Approx. 160 min.

* Time shown above is when you record a series of 1 shot to P2 card. Depending on numbers of shots you record, time will get shorter than the number shown above.

•Digital Video

Sampling Frequncy:	DVCPRO HD:	Y:74.25 MHz
	(50 Hz)	PB/PR:37.125 MHz
	DVCPRO HD:	Y:74.1758 MHz
	(59.94 Hz)	PB/PR:37.0879 MHz
	DVCPRO 50:	Y:13.5 MHz
		PB/PR:6.75 MHz
Quantizing:	8bits	
Video Compression Ratio:	DVCPRO HD	1/6.7 (except 1080-50i/25P which is 1/6.3)
	DVCPRO 50	1/3.3
	DVCPRO/DV	1/5
Video Recording bit Rate:	DVCPRO HD	100 Mbps
	DVCPRO 50	50Mbps
	DVCPRO/DV	25Mbps

•Digital Audio

Sampling Frequncy:	48 kHz (sync. with video)
Quantizing :	16 bits
Frequncy Response:	20 Hz to 20 kHz, ±1.0dB (reference level)
Dynamic Range:	More than 85 dB (1 kHz, AWTD)
Distortion:	Within 0.1% (1 kHz, reference level)
Headroom :	18 dB

Input and Output

GENLOCK IN:	BNC, 1.0 Vp-p, 75 Ω (switchable to VIDEO IN or Return Video)
MONITOR OUT:	BNC x 1, 1.0Vp-p, 75Ω Composite
VIDEO OUT:	BNC x 1, 1.0Vp-p, 75Ω Composite (switchable to HD-SDI/SD-SDI) HD-SDI: 0.8Vp-p, 75Ω, (SMPTE292M/296M/299M) SD-SDI: 0.8Vp-p, 75Ω, (ITU-R.BT656-4/SMPTE259M-C/272M-A)
TC IN:	BNC x 1, 0.5 to 8Vp-p, 10kΩ
TC OUT:	BNC x 1, low-impedance, 2.0±0.5Vp-p
DVCPRO/DV:	6pin (Input and Output), Transfer Speed: 400/200/100 Mbps (selectable) Data: IEEE 1394-1995/1394a-2000, IEC61883-1,2, SPMTE396M standards Control Command: AV/C Command Set
SDI-IN (option):	BNC x 1, 0.8Vp-p, 75Ω (AJ-YA350G) HD: SMPTE292M/296M/299M SD: ITU-R.BT656-4/SMPTE259M-C/272M-A
AUDIO IN : (CH1/CH2)	XLR-3pin x 2, LINE/MIC/MIC+48Vswitchable LINE:-3/0/+4dBu selectable MIC :-60/-50dBu selectable MIC+48V: Phantom +48 V, –60/–50 dBu selectable
MIC IN:	XLR-5pin x 1, -50/–40dBu selectable, Phantom +48 V ON/OFF
WIRELESS IN:	D-sub 25-pin, –40 dBu
AUDIO OUT (CH1/CH2) :	XLR 5-pin, balanced, low-impedance, -3/0/+4 dBu selectable
PHONES OUT:	Stereo Mini Jack x 2
DC IN:	XLR-4-pin x 1, DC12V (11 to 17V)
DC OUT:	4 pin, DC12V (11 to 17V), Max.1.5A
LENS:	12-pin
EVF:	20-pin
ECU:	10pin (for AJ-RC10G)
USB (2.0):	HOST: 4-pin (Type-A), DEVICE: 4-pin (Type-B)

Included Accessories

Shoulder strap, Front audio volume knob (with screw)

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Panasonic®

[Countries and Regions]

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ISO 9001 JQA-0443

ISO 14001 JACO EC98J2010

UKAS ENVIRONMENTAL MANAGEMENT 051

Factories of Systems Business Group have received ISO14001:2004-the Environmental Management System certification.

SP-HPX2100E1

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