

**PROTECH®**

*Compact Live Switcher*      *VSE-500*

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# Operating Instructions

Before operating the unit, please read this manual thoroughly and retain it for future reference.



# Attention on safety

Please guard.

The case where it is used by professional Tec commodity common optional AC is contained.

It explains the guard without fail to prevent the damage to harm and the property to the person and other people who use it beforehand as follows.

- It divides in the following table, and it explains the level of harm and the damage caused when a usage wrong as the content of the display is disregarded is done.

	Warning	The column of this display is "The possibility of owing the death or the serious injury, etc. is assumed" content.
	Attention	The column of this display is "The possibility that only the possibility or the physical loss or damage in which the trouble is owed occurs is assumed" content.

- It divides by the following picture display, and it explains the kind of the guarded content. (The following are one picture display example.)

	Such a picture display is an attentive "Attention rousing" content that wants to hold.
	Such a picture display is "Prohibition" content that cannot be done.
	Such a picture display is "Compulsion" content executed without fail.






## About the installation

 Warning

	It doesn't put it on an unstable place.		A heavy thing is not put on the power supply code.		It doesn't set it up in the water place.
Prohibition		Prohibition		Water place use prohibition	

## About the processing in abnormal circumstances

 Warning

	When this machine is dropped or is damaged, the power on/off switch is cut.		When water etc. enter in this machine, the power on/off switch is cut.		When the foreign body enters in this machine, the power on/off switch is cut.
The power supply is pulled out.	The power supply is pulled out.	The power supply is pulled out.	The power supply is pulled out.	The power supply is pulled out.	
	Smoke has risen, and when it is abnormal of hearing a strange smell and the sound etc. the power on/off switch is cut.		When the power supply code hurts, it exchanges it.		
The power supply is pulled out.	Compulsion				

## Attention on safety

Please guard.

### About use



### Warning

 <p>Neither a container where water entered on this machine nor a small metallic thing are put.</p> <p>Prohibition</p>	 <p>The foreign body is not inserted, and not dropped from the opening of the equipment.</p> <p>Prohibition</p>	 <p>This machine is not remodeled.</p> <p>Resolution prohibition</p>
 <p>It doesn't use it in the water place.</p> <p>Water place use prohibition</p>	 <p>Neither the back cap, the cabinet nor the cover, etc. of this machine are removed.</p> <p>Resolution prohibition</p>	 <p>It is done to wet the equipment and watertight.</p> <p>Prohibition</p>

### About use



### Attention

### About maintenance

 <p>A heavy thing is not put on this machine.</p> <p>Prohibition</p>	 <p>It doesn't take this machine.</p> <p>Prohibition</p>	 <p>When maintaining it, the switch is turned off for safety.</p> <p>The power supply is pulled out.</p>
 <p>When not using it, the power supply is pulled out for safety.</p> <p>The power supply is pulled out.</p>	 <p>The power supply is pulled out, and an external code is removed when moving.</p> <p>The power supply is pulled out.</p>	 <p>The consultation of an internal cleaning is : to the shop about once a year.</p> <p>Compulsion</p>

## About after-sales service

Our product is a free repair guarantee of one year.  
(I hope the carriage etc. in the customer's share.)

It does to a repair for a fee for the commodity that passes a free guaranteed term.

Please request the repair to the shop or our support center of purchase.

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# Main Features

PROTECH super live switcher is equipped with necessary and enough functions (direct cut by switch, overlap by lever, intercom, auto take, 26-pin camera connector x3) for filed operation. Speedy setting is realized. It is utilized actively in the field recording.

- Direct connection of 3 channels of 26-pin cable is possible.

In addition to 5 channels of composite, the 26-pin input made more speedy setting in the field possible.

- Realized camera switching up to maximum 5 sets.

Overlap switching and cut switching is possible by A bus / B bus switching. It is corresponding to 2 – 5 cameras. Camera shooting in the field is simply realized.

- Equipped with black, white, mat generator

Mat generator makes the white fade and black fade used for stage shooting possible.

- Safety select function

Function not to switch to the unconnected channel is equipped. It prevent miss-switching by fatigue by long shooting.

- 2-camera / 3-camera recording by 1 person is realized by auto take function

Auto take transition time can be set from 0 frame to 199 frames (6.6 seconds) optionally.

Also, auto take is possible by external GP1 signal or existing zoom remote control, etc.

2-camera recording by 1 person is supported strongly by installing pen type auto take switch (AR-53) to pan bar of the tripod which is possible to switch A bus and B bus freely. In addition, 3-camera by 1 person is possible by using VSE-RM1 which can switch 3 cameras.

- Various functions

Direct cut, overlap, auto take

Maximum 5 cameras connection

External remote function which makes 2-camera recording by 1 person possible.

3-camera by 1 person is possible by option (using VSE-RM1)

Equipped with 3 channels of 26-pin camera connector

Intercom function is equipped.

Rack mount is possible.

2 power supply (DC 12V, AC) operation

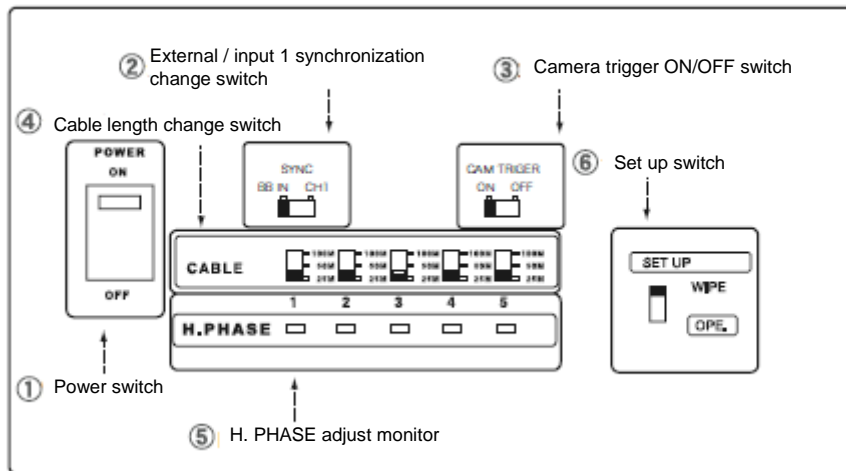
Cable extension (25m, 50m, 100m)

Auto take by GP1 function

External tally out function

# Names and Functions of Parts

## Control panel



### (1) Power switch

Turn ON/OFF the power supplied from AC or DC 12V input.

If both of AC and DC 12V are connected at the same time, it does not cause trouble.

### (2) External / input 1 synchronization change switch

Switch to change the synchronization by external signal or input 1 base to make the system.

Vector scope and wave form monitor are necessary for the synchronization by external signal.

### (3) Camera trigger ON/OFF switch

When 26-pin is used, auto take to main line (PAT.P) by the operation of camera mad with camera trigger is possible. This switch makes this function possible.

### (4) Cable length change switch

When 26-pin is used, auto take to main line (PAT.P) by the operation of camera mad with camera trigger is possible. This switch makes this function possible.

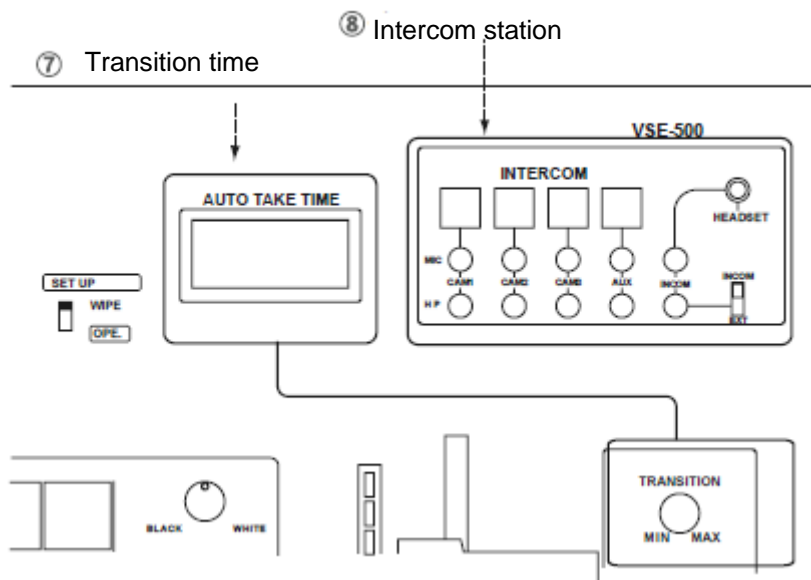
### (5) H. PHASE adjust monitor

When H. PHASE is not adjusted, it lights up to red. When H. PHASE is adjusted, it changes to green.

### (6) Set up switch

When it is set to WIPE side, the picture of camera 1 is displayed in the lower-half and the chosen picture is displayed on the recording monitor. IF the output of camera side is color bar, SC, H. PHASE can be adjusted easily. Set it to OPE side when it is not adjusted.

## Control panel



### (7) Transition time

It can be set from 0 frame to 199 frames. The display by the 3 digit value comes out in the central of the display. The auto take time can be optionally set in the volume of the lower right. It is possible to set for each of 1 frame.

### (8) Intercom station

PROTECH FD-300A can be connected. Can connect with the intercom of Sony camera side by connecting of AUX, 26-pin connector.

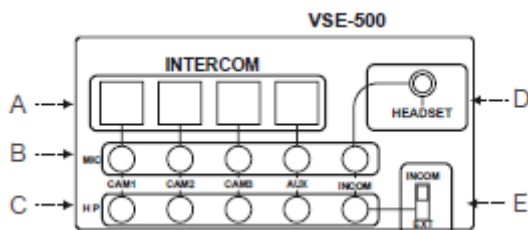
A: Can turn ON/OFF the communication with CAM1, CAM2, CAM3 and AUX by 26-pin connecting.

B,C: Adjustment volume of the microphone and headphone of station side and each intercom.

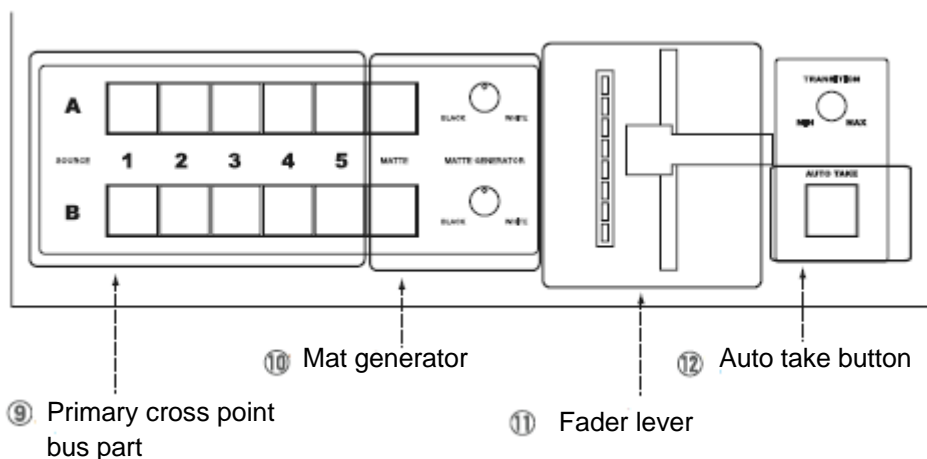
D: Mini stereo Jack (3.5  $\phi$ ) for the headset of station

Note) Headset (FL-301) is option.

E: Change switch for Intercom and AUX input audio monitor. If the output of FS-206 (option) is connected, simple audio monitoring of FS-206 with headset becomes possible by change of switch.



## Connector panel



### (9) Primary cross point bus part

Choose output picture and picture to be mixed. Switch groups are composed of A bus and B bus. In the case of direct choosing, choosing by A bus or B bus becomes possible by the position of the fader lever. That the lever topples over is a selectable bus. If the video signal is not input to 2 – 5, those can not be chosen. It is the false-select prevention function. As the system is synchronized with the No. 1 video signal as reference, switching can not be done without the input signal to No.1. Chosen switch to output lights up to red. Chosen switch not to output lights up to yellow.

### (10) Mat generator

White fade and black fade are possible in A bus and B bus each. Off course, it is possible to make a neutral color from white to the black freely too. It is possible to enter the bus only when A bus or B bus is selected by chose key.

### (11) Fader lever

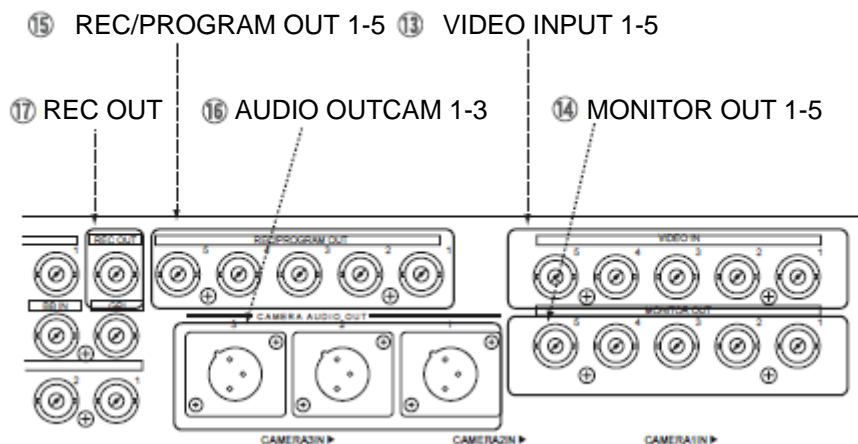
By changing fader lever from A to B or B to A, the special effect for the specialized to overlap can be done. Change of effect transition is displayed with the transition LED. It is possible to confirm from which video signal is input now at a glance.

Note) As it is in the auto take mode after the turning on, move a lever to the end from the end one time.

### (12) Auto take button

Push this button to do the transition of effect automatically. By pushing this switch, effect is done automatically with the set transition time. Button lights up during transition.

## Rear panel



### (13) VIDEO INPUT 1-5

Input NTSC signal. Non synchronized type camera can be used only for No.1 input. Consumer type camera can be used. When VTR is connected, external synchronized signal such as TBC, frame synchronizer, etc is necessary.

### (14) MNITOR OUT 1-5

Through picture of VIDEO INPUT 1-5 outputs every each channel. This output is including a special amplifier. When operating a switcher, it connects with the monitor. The through monitor of the number which is the same as the number of the cameras becomes necessary.

### (15) REC/PROGRAM OUT 1-5

Outputs the video signal with effect. It is most suitable for the monitor for camera man.

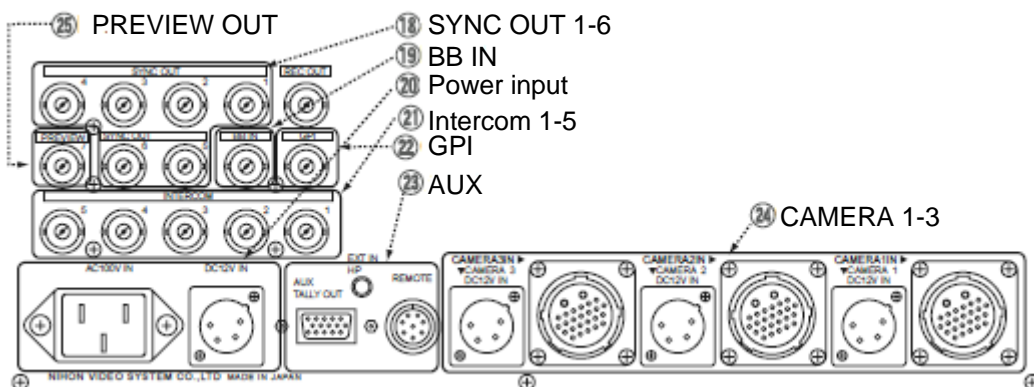
### (16) AUDIO OUTCAM 1-3

Connector to take out the audio of the camera connected to 26-pin connector. It is very convenient when combining with FS-206 (option). Also, it can be used for FS-305/405. Sometimes, Recorder can be used directly too. As the level depends on the camera, confirm 26-pin audio output of the camera in advance. If the signal does not come to a cable with a camera, this function can not be used.

### (17) REC OUT

Output terminal for recording. Same signal as (15) is output. Connected to recorder directly. When the picture of the recorder is disordered, make a deck to external SYNC mode if a deck is equipped with external SYNC mode. Picture is stabilized. This outputs the video signal of CAM1 directly when the power turns off.

## Rear panel



### (18) SYNC OUT 1-6

Connector for external synchronization (GEN-LOCK) to synchronize the whole system. When the external synchronization signal is input to BB IN (19), same signal is output when the No. 1 camera output is used as the reference signal.

### (19) BB IN

Connector to input the reference signal from outside. It becomes effective when the upper part of the panel (2) is set to BB IN.

### (20) Power input

2 WAY type of AC and DC 12V. Supply the power with the supplied AC code or the optional AC/DC power unit. If both of AC and DC are connected, power is consumed from both source. Only one connection is recommended.

### (21) Intercom 1-5

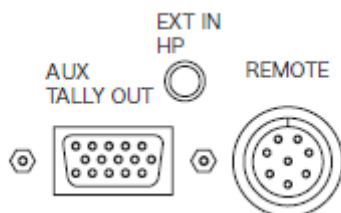
5 sets of PROTECH intercom can be connected directly. Maximum 20 sets of intercom can be connected by cascade connection.

### (22) GPI

If trigger signal is input, the bus is changed from currently used bus to another bus. It makes the liner editing and the remote control operation possible. Overlap is done with the transition time set by (12)

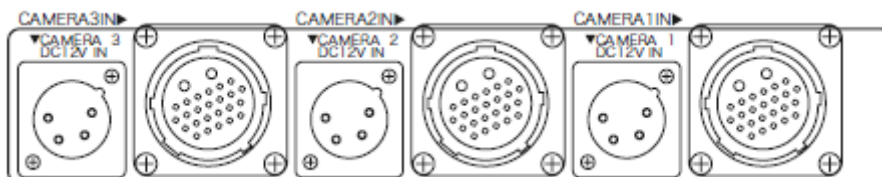
## Rear panel

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### (23) AUX connector

AUX TALLY OUT connector is the connector for 3-camera remote (option: VSE-RM1). As other signals are output, it can be used for expansion. (Refer to the pin assignment.) Audio input to EXT IN HP can be monitored by the headset of the intercom station. REMOTE connector can be connected with PROTECH zoom remote (AS-520(8P)), and auto take can be operated by pushing REC button.



### (24) CAMERA 1-3 (26-pin camera input connector)

26-pin camera input connector 1-3. It can make various system such as 1 camera with 26-pin connection and other cameras with BNC input. Refer to the pin assignment on page 20 and confirm camera and cable. Basically, pin assignment is same as Sony camera. However, conversion by cable will be necessary for some models. Please buy it separately.

BNC cable for SYNC (option) is necessary in case of Sony camera.

Some cameras of other manufacture can be used. Confirm pin assignment table before shooting.

When sending the power by 26-pin, 1 Canon 4P is prepared for 1 26-pin connector.

Optional AC-PROTPACK100S can supply the power from switcher side.

### (25) PREVIEW connector

Picture of not selected is output.

# ***Main operation instructions***

## ■ Necessary equipment for system composition

### 1. 2-camera / 1 person

VSE-500 main unit

Zoom remote AS-520, etc

Camera 2 sets ( 1 set of consumer type is possible. )

Tripod x 2

BNC-BNC cable 3m x 8

ACPROPACK100S x 2

Canon 4P-4P cable x 2

Monitor x 2

### 2. 3-camera / 1 person 26P camera cable connecting

VSE-500 main unit

Camera 3 sets

VTR x 2

Tripod x 3

26P-26P cable x 2

BNC cable 3m x 8

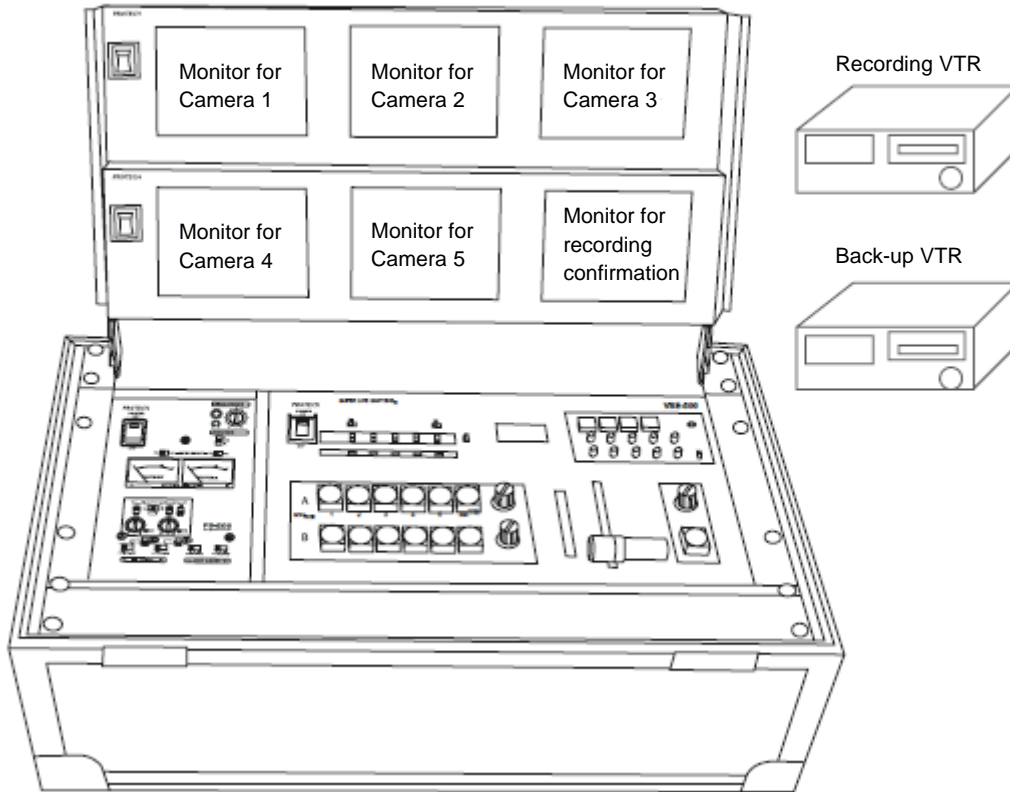
ACPROPACK100S x 2

Canon 4P-4P cable x 2

Monitor x 2

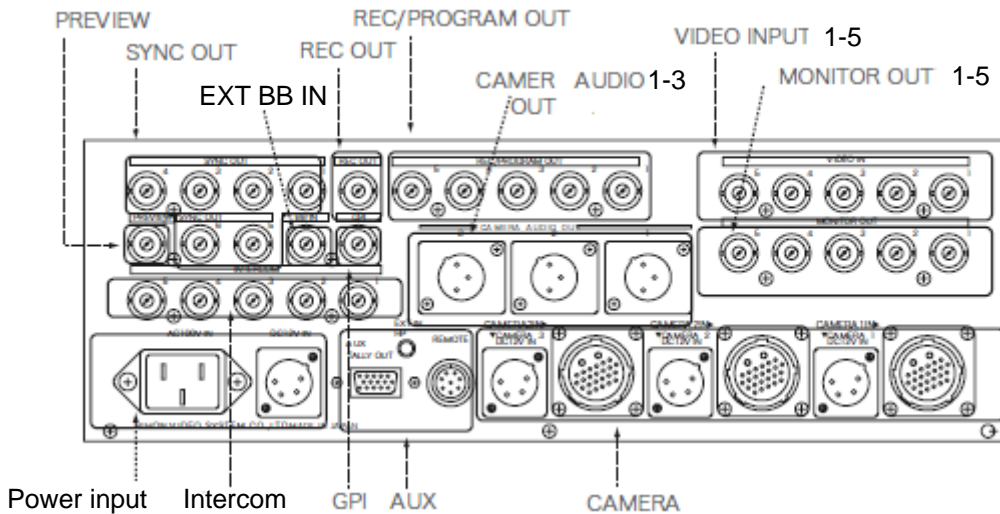
## ■ Basic connecting method

1. Put the switcher to the place where recording can be confirmed and connect cables.

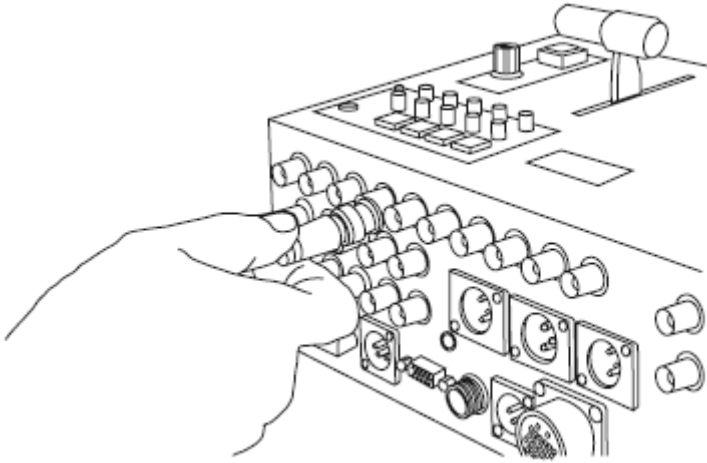


Note) If you do not have 6 monitors (LVM-530 x2), please prepare them separately.

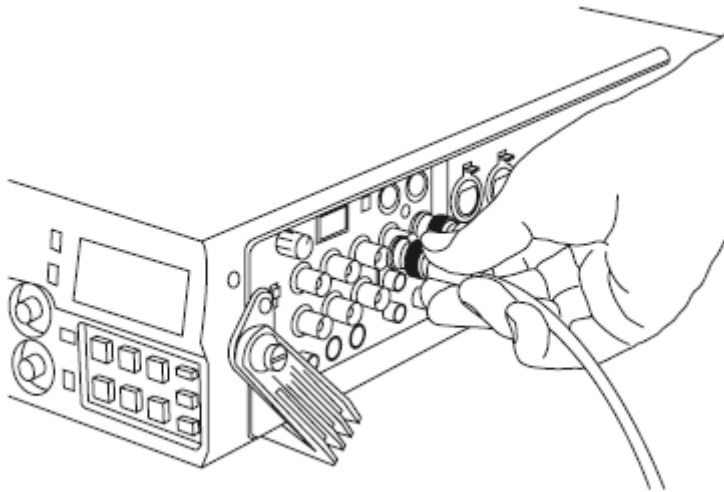
2. Connect MONITOR OUT to video input connector of each monitor for camera 1 – 5 with BNC cables. Turn ON the 75  $\Omega$  termination with monitor. (Some monitors are auto termination. Please refer to the operation manual of monitors.)



3. Connect REC OUT to video input connector of recording VTR. If the power of VSE-500 is turned off, it is designed to output one channel directly. So, if camera is turned on and recording VTR is normal recording mode, recording is possible by 1 camera with the deck turned off.



4. Connect monitors for confirmation to the output of recording VTR.

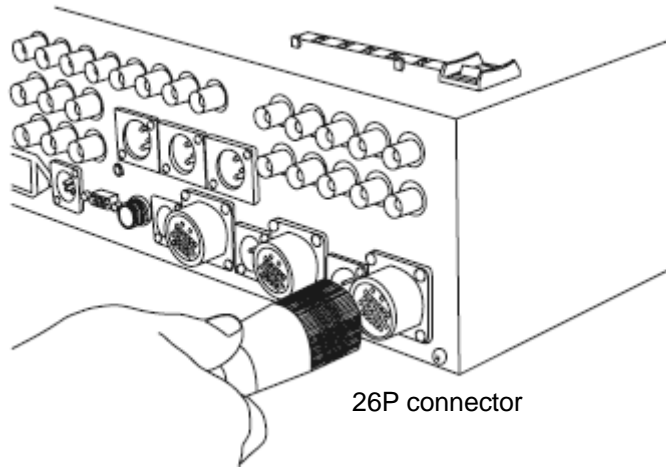


Note) Connect the back-up VTR to PROG OUT. It is a standby deck. Back-up machine is necessary for the system. Please prepare it without fail.



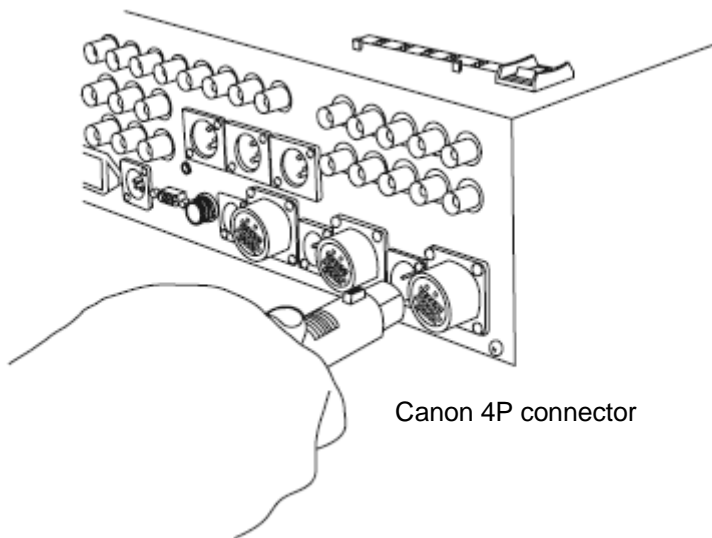
## 5. Camera connection

In the case of 26-pin connection, one-touch connection is possible. Pin assignment is same as Sony pin assignment. In the case of Sony camera, another cable is necessary to take synchronization separately from 26-pin cable. In the case of JVC and Panasonic, synchronization can be taken by the cable conversion.



26P connector

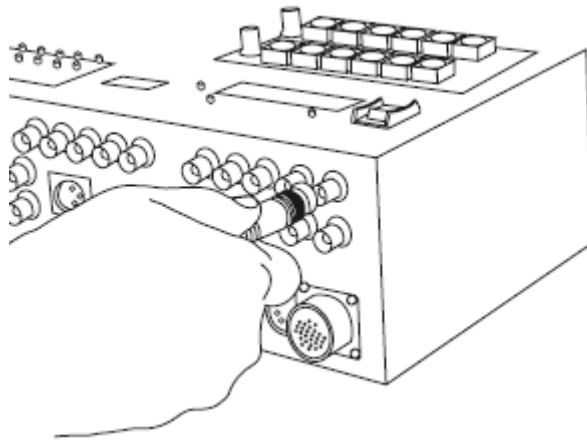
6. When supply the power to the camera via 26-pin cable, connect DC 12V to each Canon 4P connector for the camera.



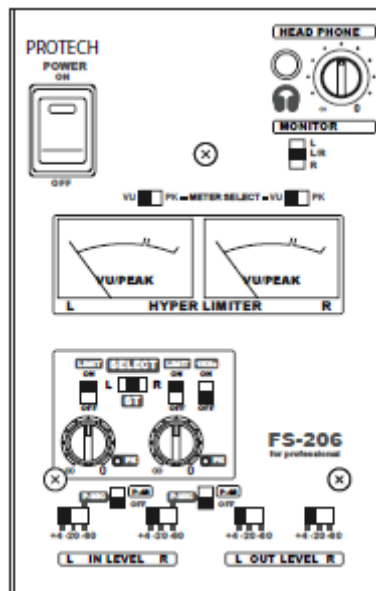
Canon 4P connector

7. Connect SYNC OUT of the main unit to SYNC IN (GENLOCK IN) of the camera. In some camera, description is different like GENLOCK IN/B.B IN/SYNC IN/REF IN/EXT SYNC.

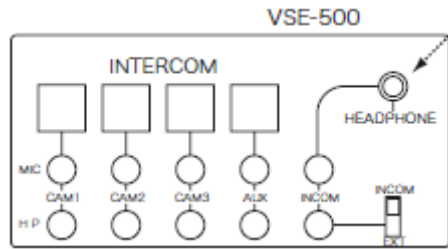
8. Connect VIDEO OUT of the camera to VIDEO INPUT of the main unit with BNC cable.



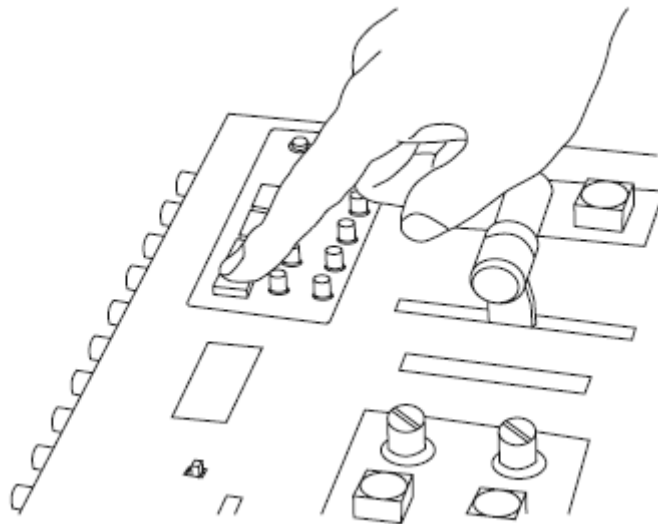
9. When 26-pin cable is used, audio sound of the microphone of the camera can be output from the connector. If the audio limiter FS-206 is used between the main unit and recording VTR, recording of audio sound by suppressing distortion is possible.



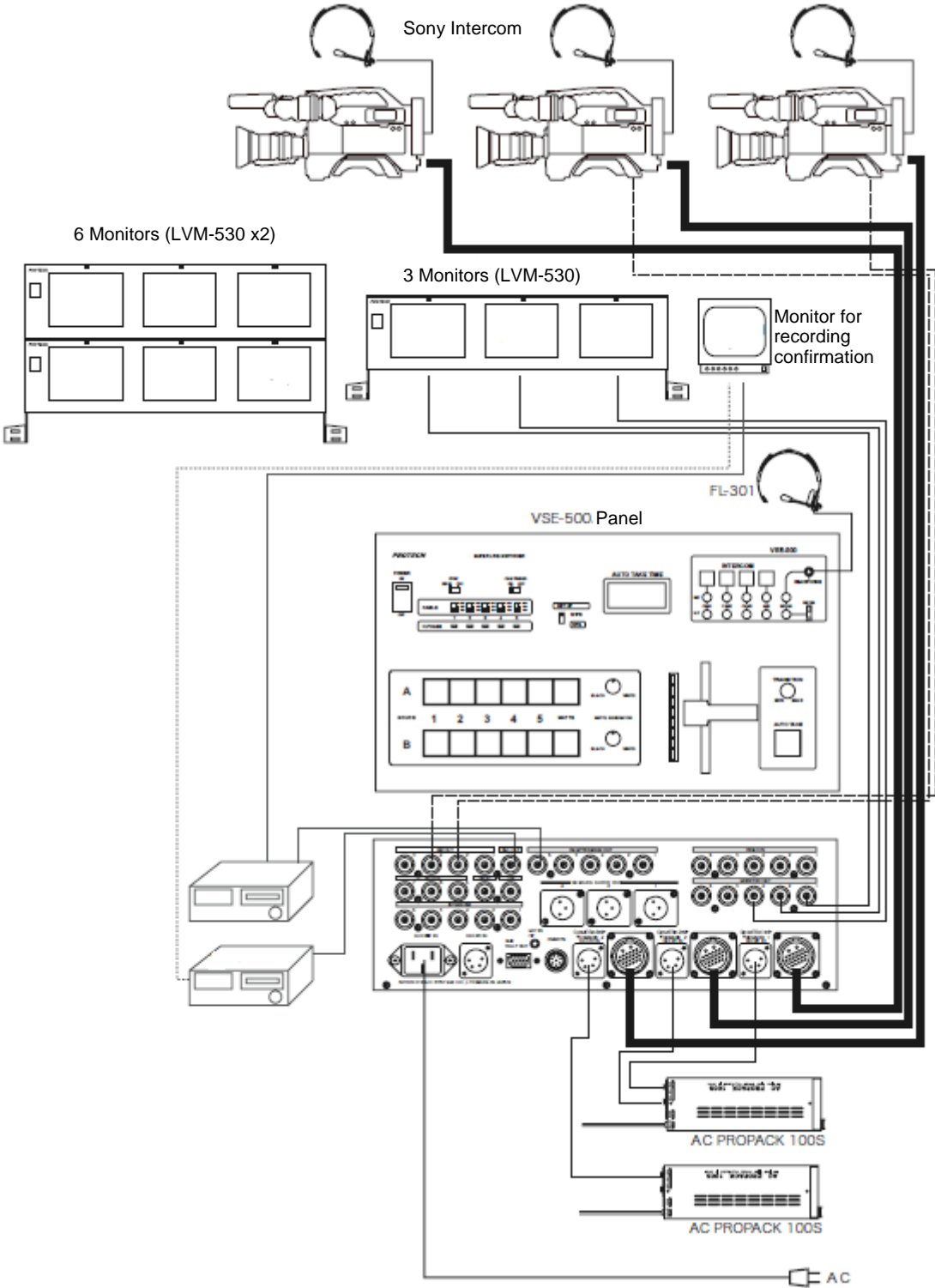
10. When use the intercom, put in the connector of the headset FL-301 (option).



11. 5 sets of the wired intercom FD-300A can be connected to the intercom connector on the rear panel. When Sony camera is used with 26-pin connection, adjust the level of HIC, H.P. by pushing the switch of the CH.



12. Connect the equipment as follows and turn on the power.

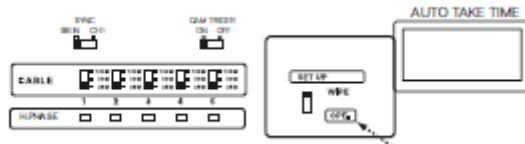


## ■ Camera adjustment

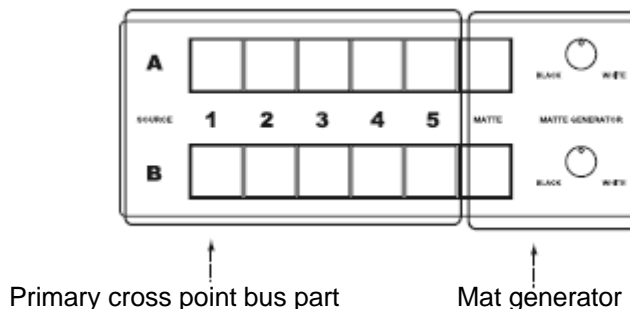
1. It is necessary for VSE-500 to synchronize with the camera and adjust S.C and H. PHASE.
2. Most of professional cameras are equipped with the adjustment function of S.C, H.PHASE.  
Please refer the operation manual of cameras about the adjustment method.

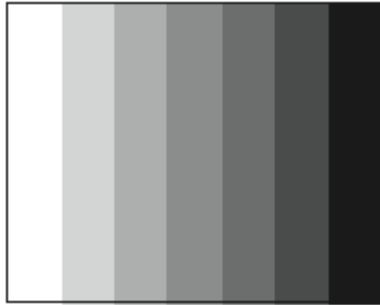
### ① Adjust S.C (sub-carrier)

1. Camera 1 is used as the reference signal.
2. Connect the camera to input 1 and generate color bar. (Please refer to the operation manual of the camera how to generate color bar.)
3. Make it to set-up mode. Set all cameras to color bar mode. Screen is divided to upper and lower by changing WIPE from set-up mode. Watch the picture with the monitors connected with PROG OUT / REC OUT.

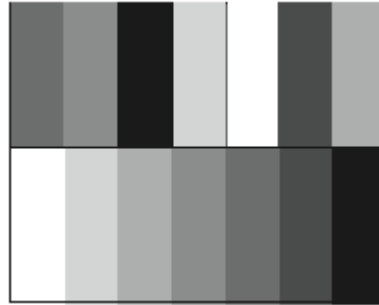


4. Lower part of the screen is the color bar of camera 1 without synchronization. Choose camera 2 by B bus of the primary cross point bus part. In most of case, tone of color of the colored bar is shifted. Adjust the tone here. Adjust S.C of the camera for the tone to become the same as lower part. When confirming in the blue only condition by the monitor equipped with blue only function, it is possible to adjust a color more correctly.





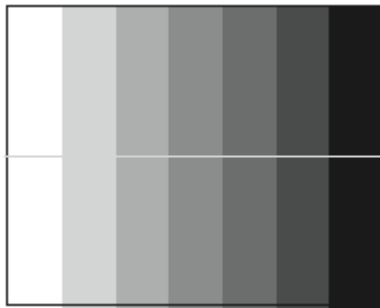
Before set-up.  
Camera 1 is reference  
color bar.



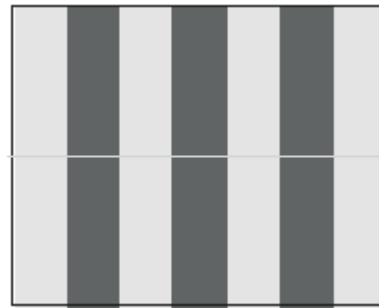
Chosen camera

Camera 1

Set-up mode (WIPE).  
Upper color bar is not  
output correctly before  
Adjustment.



After adjustment of S.C  
of camera. Color  
becomes same and  
set-up finished



Color bar seen by blue  
only mode.  
(Monitor is equipped with  
blue only mode function.)

5. Adjustment of camera 1 and camera2 finished. Next, adjust input 3 of primary cross point B bus part by same method.

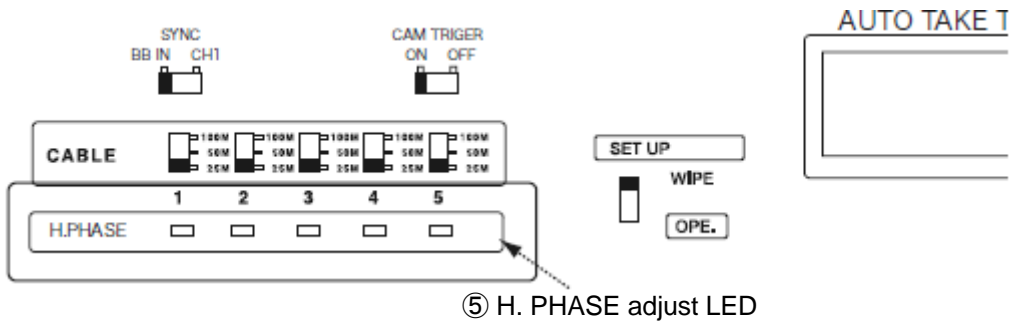
(Note) There are some adjustment method by the camera type as follows;

Adjustment by small + driver.

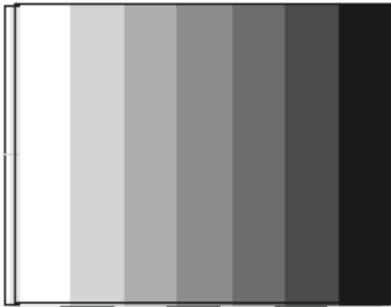
Adjustment by dial switch in menu (recent model of digital camera)

If the combination of the specified cable and camera is decided, adjustment of S.C is not necessary every time. However, confirm all cameras by set-up mode. If S.C is not adjusted, please adjust it without fail.

## ① Adjust H. PHASE

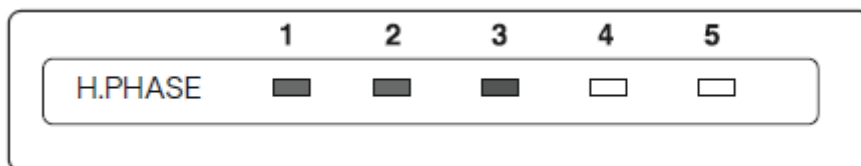


⑤ H. PHASE adjust LED



If H. PHASE is not adjusted, frame moves when the screen is changed A to B or B to A. VSE-500 is replacing the picture with the frame of camera 1. So, switching itself is done without problem, if H. Phase is not adjusted.

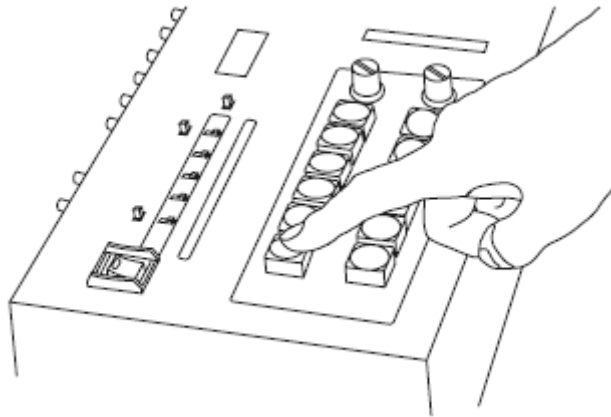
1. H. PHASE LED lights up to green from red by adjusting H. PHASE of camera.  
If it lights up to green, H. PHASE is adjusted correctly.
2. If H. PHASE LED does not light up, the signal is not come. If it does not light up after connecting the camera, check cables if it is connected correctly.



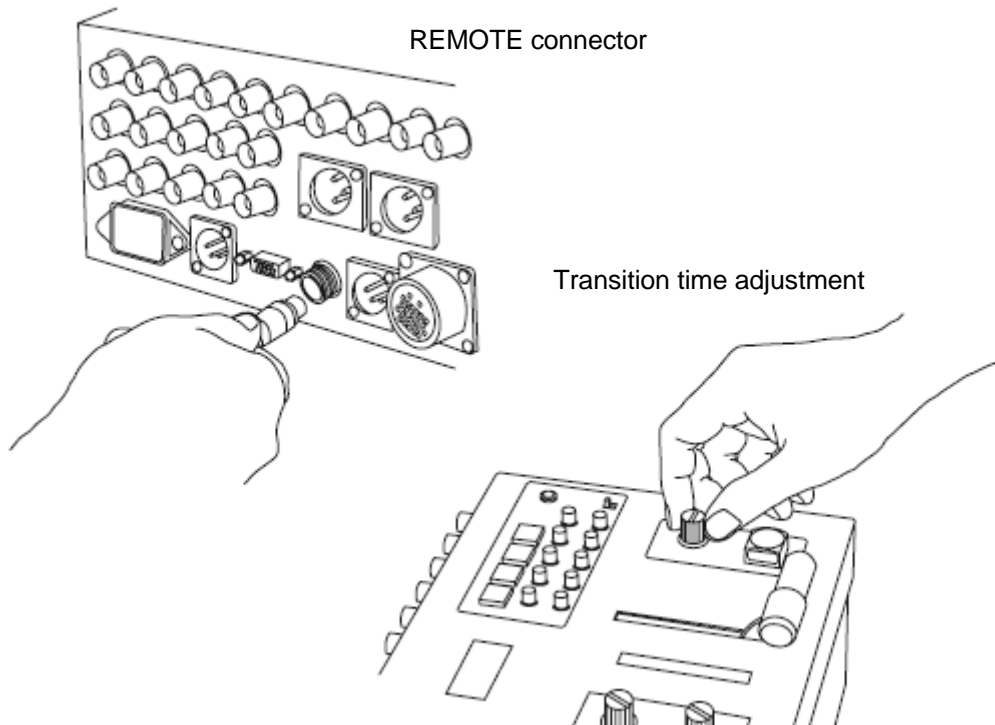
⑤ H. PHASE adjust LED

## ■ Switcher operation

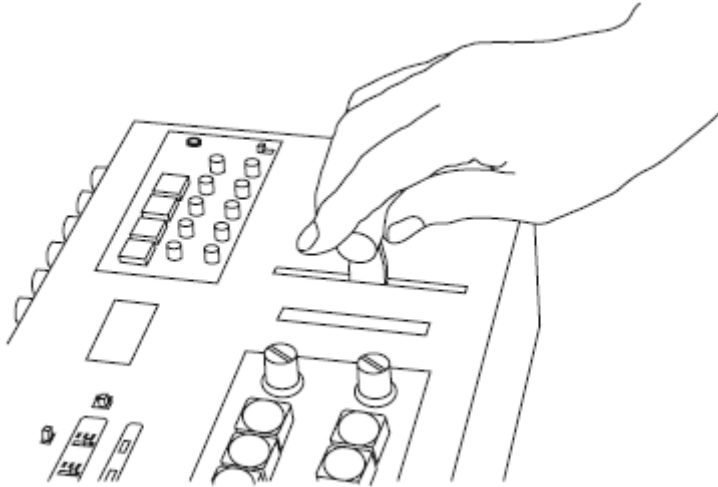
1. Try to operate VSE-500 after connecting and adjusting. As VSE-500 is synchronized with video signal, direct switching is possible.



2. CH chosen by A, B bus lights up. If it is lighting up to red, the CH is output now. Choose CH to output (MIX) next from the bus which is lighting up to orange.
3. Set transition time. If push auto take button, picture changes by MIX with set time. This function can be operated by the trigger switch connected to REMOTE connector on the rear panel.



4. It is possible to MIX freely by using the fader lever. When use the lever, set it to the bus side which is output now.

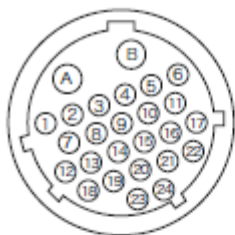


5. If VSE-RM1 (option) is used, remote switching is possible by pushing the button corresponding to CH1, CH2, CH3.

⑤ H. PHASE adjust LED

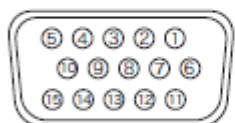
# Pin assignment

## ■ 26-pin input/output terminal



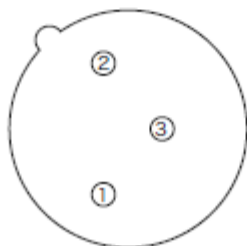
1	VIDEO IN	14	
2	VIDEO SG	15	TALLY
3		16	GEN G
4		17	INCOM G
5		18	PBVIDEO OUT
6		19	PBVIDEO OUT G
7		20	
8		21	GEN X
9	MIC X	22	
10	MIC Y	23	INCOM X
11	MIC G	24	INCOM Y
12	TRG	A	+12V
13		B	GND

## ■ 15-pin input/output terminal



1	TALLY1	6	INCOM G (GND)	11	LED COM
2	TALLY2	7	INCOM H	12	SW1
3	TALLY3	8	INCOM L	13	SW2
4	TALLY4	9	GPI	14	SW3
5	TALLY5	10	GND	15	GND

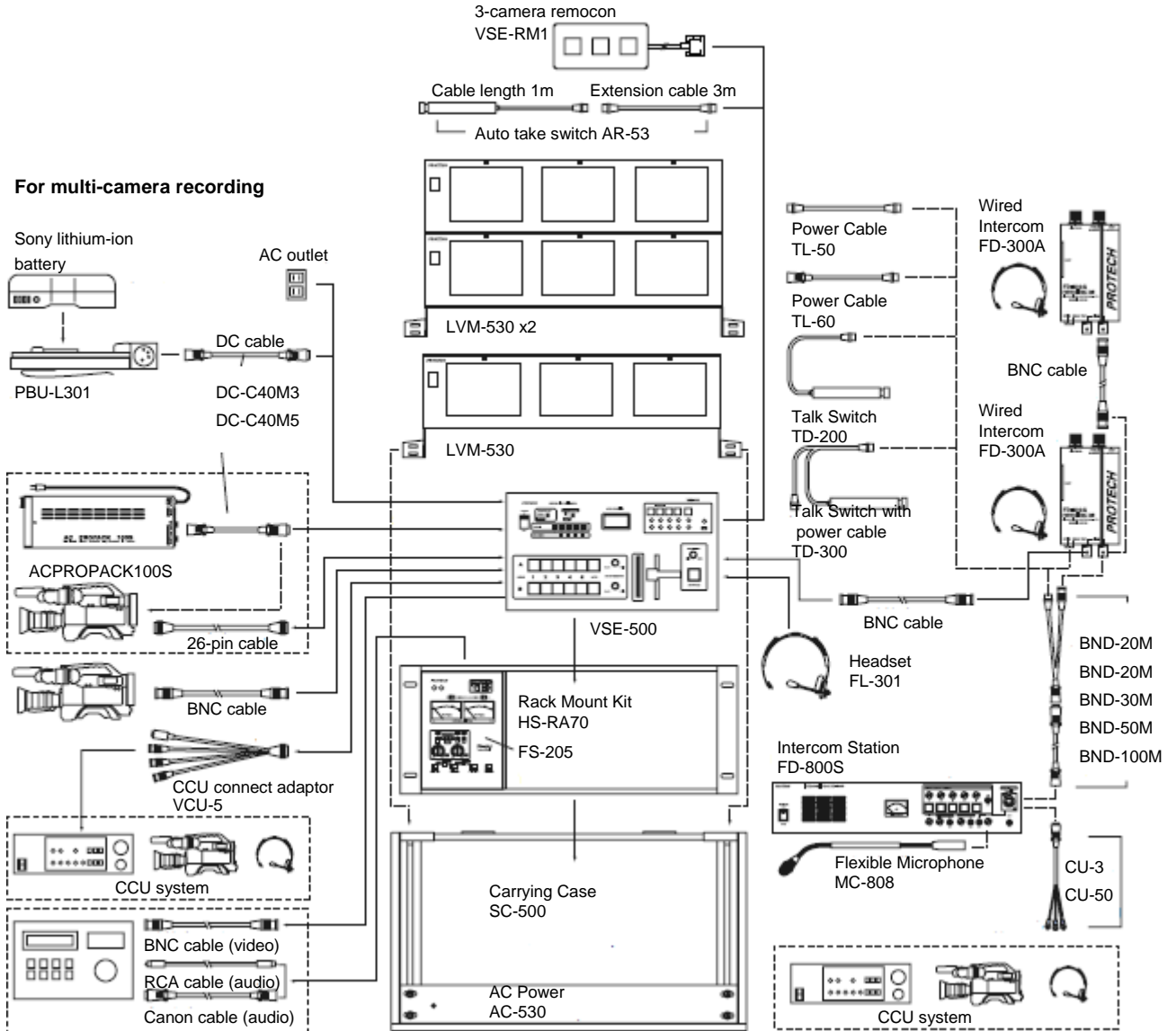
## ■ XLR 3PIN



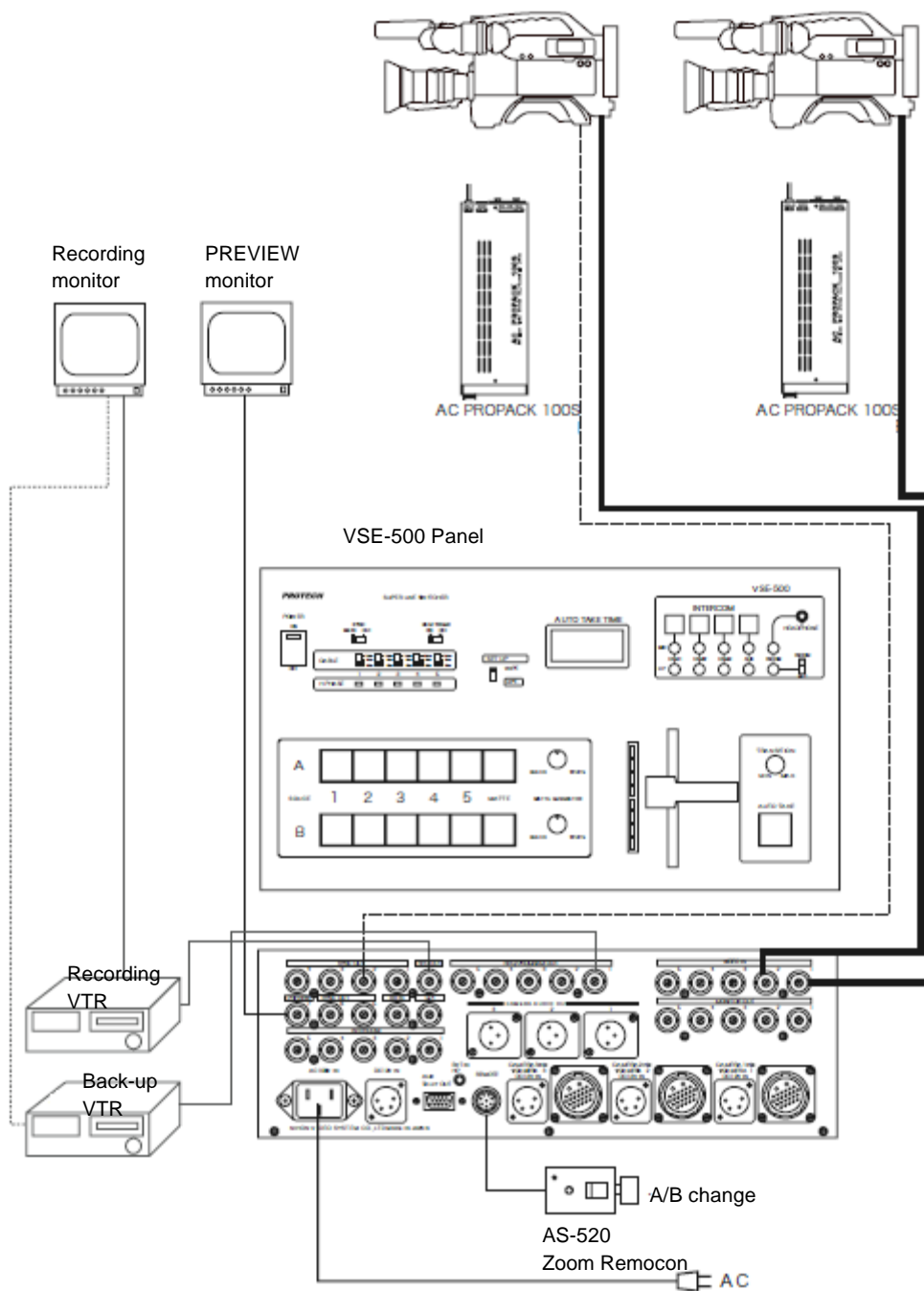
1	GND
2	MIC H
3	MIC L

# Option

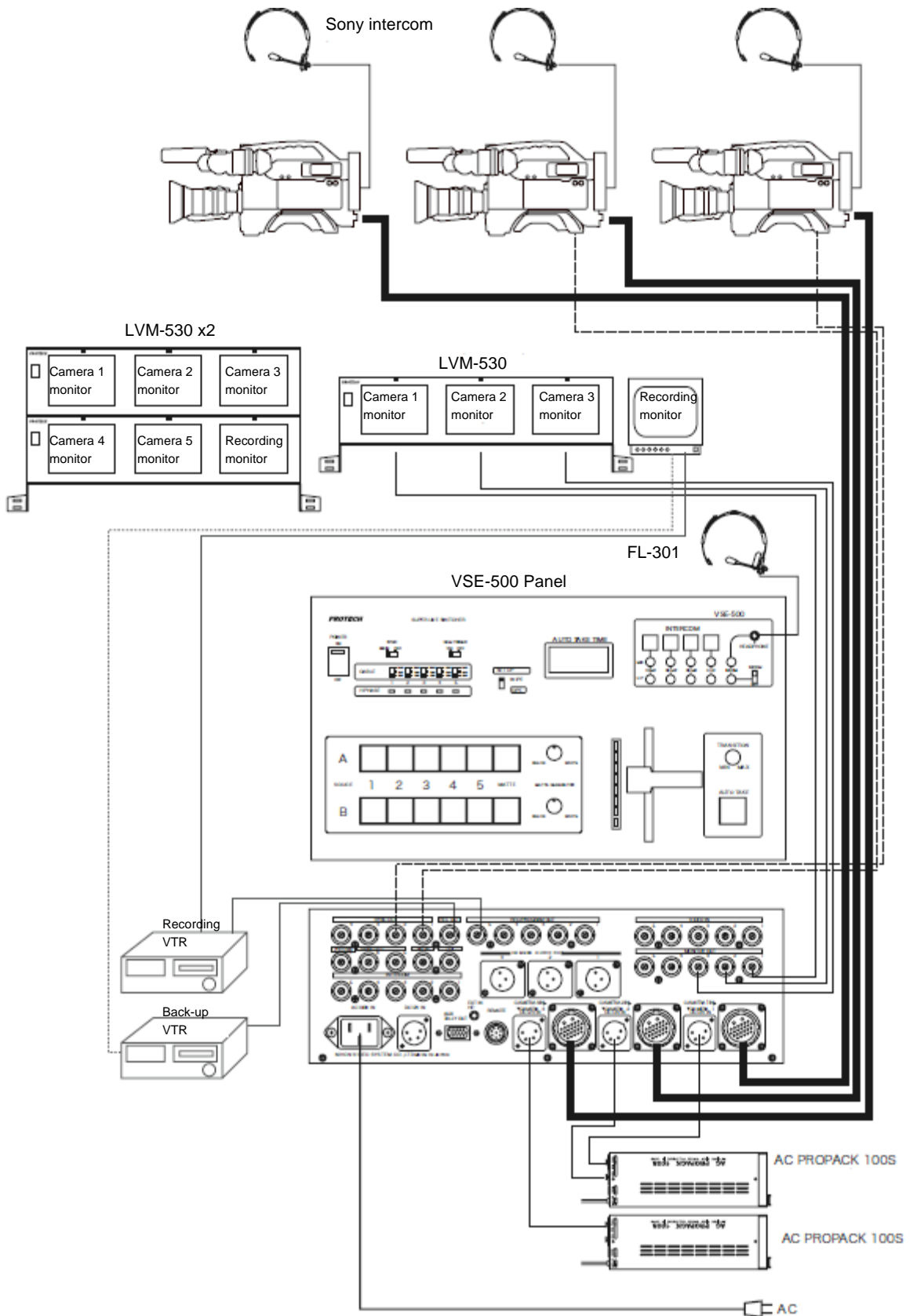
## PROTECH accessory



# 2 camera / 1 person standard system



# 26-pin camera connect standard system





# Main Specifications

Input / Output	Video system	NTSC
	Input signal	Video input: 5 inputs, Composite VBS, 1.0V <sub>p-p</sub> , 75ohm BNC
	Output signal	REC 2, PGM 4 VBS 1.0V <sub>p-p</sub> , 75ohm BNC ±0.5dB
	Frequency characteristic	Composite 100K-5.5MHz Less than ±3dB
Power	Input signal	AC100-240V/DC12V
General	Power consumption	approx. 25W
	Operation temperature	10°C - 40°C
	Dimension	320x105x177mm (WxHxD)
	Weight	approx. 5kg
Accessory	AC cable	