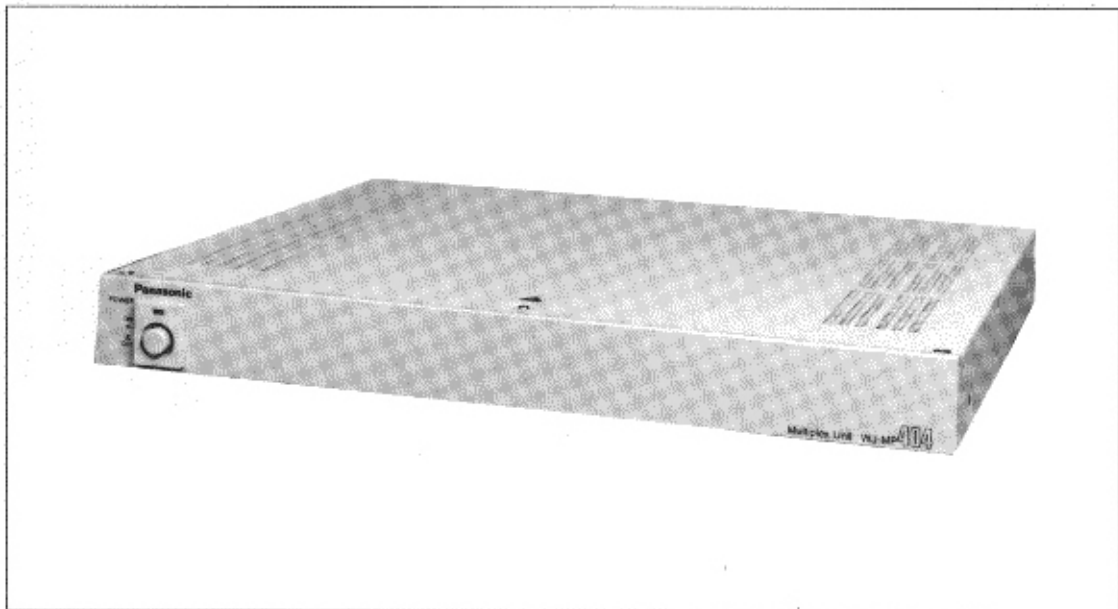


Operating Instructions

Multiplex Unit
WJ-MP404




Panasonic®

Before attempting to connect or operate this product, please read these instructions completely.


CONTENTS

PREFACE	2
FEATURES	2
PRECAUTIONS	2
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS	3
FUNCTIONAL BLOCK DIAGRAM	5
SETTING UP OF THE CABLE-LOSS COMPENSATION SWITCH	6
SYSTEM CONNECTION	7
HOW TO SET UP THE UNIT NUMBER	8
SYSTEM ERROR TABLE	9
RACK MOUNTING	10
SPECIFICATIONS	10
STANDARD ACCESSORIES	10
MAJOR OPTIONAL ACCESSORIES	10

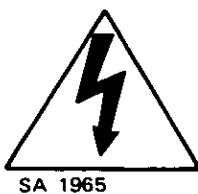


CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For U.S.A.

Warning:
This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instruction manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

For CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

The serial number of this product may be found on the bottom of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. WJ-MP404

Serial No. _____

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

PREFACE

The Panasonic Multiplex Unit WJ-MP404 multiplexes the control data supplied from a System Controller WV-CU300 onto the video signal. WJ-MP404 enables data transmission of four channels to the selected camera location.

The System Controller WV-CU300, Sequential Switcher WJ-SQ508, Audio Mix & Selector WJ-DA464 and other system components provide maximum design flexibility and expansion capability. There are many system combinations possible which are left to the customer's creativity.

FEATURES

- Multiplexes the vertical timing pulse onto the video signal, providing vertical genlock for roll free switching.
- Control data separation.
- Master/Slave system configuration provides control of up to 64 cameras with 16 WJ-MP404 Multiplex Units.
- 3-step cable-loss compensation switches for each camera input.

PRECAUTIONS

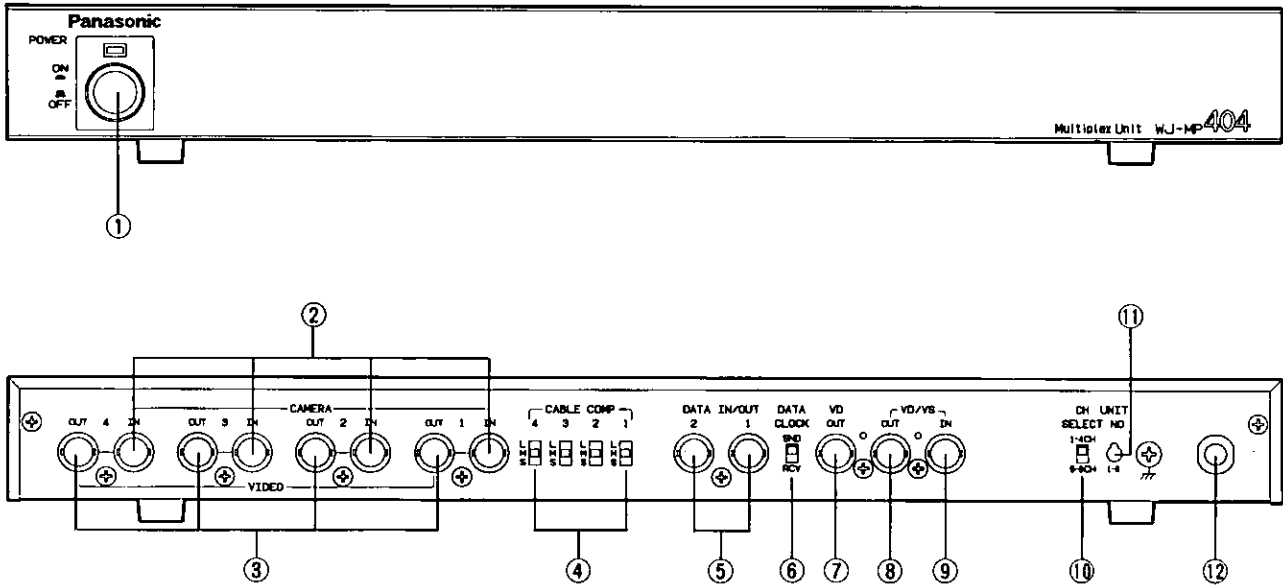
- Do not attempt to disassemble the instrument. In order to prevent electric shock, do not remove screws or covers. There are no user-serviceable parts inside. Do refer all servicing to qualified service personnel.
- Do not abuse the instrument. Avoid striking, shaking, etc. It could be damaged by improper handling or storage. Do handle the instrument with care.
- Do not use strong or abrasive detergents when cleaning the instrument body. Do use a dry cloth to clean the instrument when dirty. In case the dirt is hard to remove, use mild detergent and wipe gently.
- Do not expose the instrument to water or moisture, and do not operate in wet area. Do take immediate action if ever the instrument does become wet. Turn the power off and refer servicing to qualified service personnel. Moisture can damage the instrument and also create the danger of electric shock.
- Do not use the instrument in an extreme environment where high temperature or high humidity exist. Use the instrument under conditions where temperatures are within 14°F - 122°F (-10°C - +50°C), and humidity is below 95%.
- As this unit multiplexes the control signal on the vertical blanking period, equipment that utilize a similar multiplexing method may not function properly when connected to this unit.
- Set the Mode Selection Switch (LOCAL/REMOTE) on the specified camera, such as WV-BL600 or WV-CL700 series, to the REMOTE position when connecting it with this unit.
- All necessary procedures with regard to the installation of this product should be made by qualified service personnel or System Installers.

Important:

Before actual installation and wiring of the system components has been made, you are strongly recommended to draw a complete system diagram to set up the Station number, Unit number, position of the CH SELECT, signal flow of the Data Clock and other necessary switches.

Keep this diagram and refer it when the more system components are installed to expand the system.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



1. Power ON/OFF switch (POWER ON/OFF)

Note:

When the power of the Multiplex Unit is turned off in a multi-station system, the branched stations will not be controlled properly.

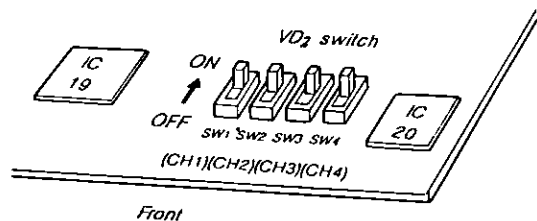
2. Camera Input Connectors (CAMERA IN 1/2/3/4)

These connectors accept the color or B/W composite video signal of the camera (WV-BL600 or WV-CL700 series). Also the multiplexed video signals from the Receiver (WV-RC100 or WV-RC150) will be connected here.

Remarks:

1. The camera signal contains the FM audio signal, the control data and the vertical timing pulse.
2. When the cameras other than WV-BL200/WV-BL600/WV-CL300/WV-CL700 series are used for the inputs for WJ-MP404, the sync noise will be seen on the video monitor. To avoid this noise, turn the VD2 switch on the circuit board to off position. The sync mode of the camera should be set to Line Lock mode.

The VD2 switches have been set to on position at factory. Ask the qualified service personnel for setting up the switches.



3. Video Output Connectors (VIDEO OUT 1/2/3/4)

The camera video signals separated from the multiplexed camera signals are obtained at these connectors.

Note:

The video output signal contains the FM audio signal.

4. Cable-loss Compensation Switches (CABLE COMP, 1/2/3/4, L/M/S)

These switches are used to set the most suitable position of the cable-loss compensator for each camera input signal. The video output signals at the Video Output Connector (3) are compensated. The suitable switch position and its approximate cable length are as follows.

S: up to 1.300ft (394m)

M: 1.300ft (394m) to 2.300ft (697m)

L: 2.300ft (697m) to 3.000ft (909m)

(with RG-59U, BELDEN 9259 or equivalent)

Note:

Refer to pages 5 and 6 for system connection and its maximum cable length.

Important:

When this switch is set improperly, the camera may not be controlled properly.

5. Data Input/Output Connector (DATA IN/OUT 1/2)

These connectors both send and receive control data to and from other WJ-MP404's (or WV-CU300/WJ-SQ508) in the system. Also, the data clock signal is either sent or received from these connectors (depending on send or receive mode set up). See page 7 for additional information on connecting the data bus between multiple units.

Note:

1. These connectors are automatically terminated with 75Ω when a cable is connected to one of these connectors.
2. The data bus line should be originated from WJ-MP404 and finished at any unit. The Data Clock Switch of the first unit only should be in "SND" position. The rest of other units should be in "RCV" position.
3. The data bus line should be looped through all units and never be discontinued the connection in the system.

6. Data Clock Switch (DATA CLOCK SND/RCV)

When the data clock is supplied to the Data Input/Output Connectors (5), turn this switch to the RCV position.

The WJ-MP404 is recommended to use as a supplier of the data clock to the system. Turn this switch to the SND position.

Note:

In the system, only one unit should have "SND" position.
The other units should have "RCV" position.

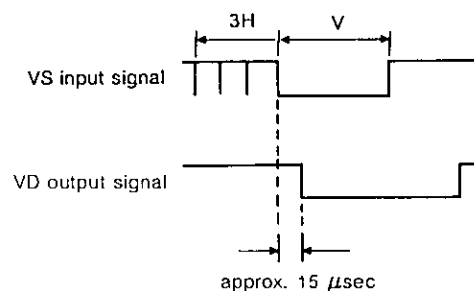
7. VD Output Connector (VD OUT)

The VD (Vertical Drive) pulse is provided at this connector to be supplied to another WJ-MP404 for synchronizing the system.

Notes:

1. The internal VD or the looping-through external VD will be provided at this connector.

2. When the VS signal is supplied to the VD/VS Input Connector (9), the VD output signal from the VD Output Connector (7) will be delayed by approximately $15\mu\text{sec}$ to the V-sync of VS input signal.



8. VD/VS Output Connector (VD/VS OUT)

Either the VD (Vertical Drive) pulse or the VS (Video, Sync) signal is provided at this connector to be supplied to the another WJ-MP404 for synchronizing the system.

Note:

This output is a looping through output of the VD/VS Input Connector (9). These input and output are connected internally.

9. VD/VS Input Connector (VD/VS IN)

Either the VD (Vertical Drive) pulse or the VS (Video, Sync) signal can be supplied to this connector for synchronizing the system.

Notes:

1. This input is a looping through to the VD/VS Output Connector (8).
2. When the VD (or VS) signal is supplied to the VD/VS Input Connector (9), turn the VD/VS selection switch (SW5) on the circuit board to the VD (or VS) position. The VD/VS selection switch (SW5) has been set to the VS position at factory. Ask the qualified service personnel for setting up the switch.
3. The external sync signal should meet with EIA RS-170 and should not contain any jitter such as a VTR playback signal.

10. Channel Selection Switch (CH SELECT, 1-4CH/5-8CH)

When the multiplexed video signals from camera sites NO.1 to NO.4 are supplied to WJ-MP404, set this switch to 1-4 CH position.

When the multiplexed video signals from camera sites NO.5 to NO.8 are supplied to WJ-MP404, set this switch to 5-8 CH position.

11. Unit Number Selection Switch (UNIT NO 1-8)

In case where the Unit Number has to be specified, set this switch to the proper number, by referring to the procedures for setting the Unit Number on page 7.

Notes:

- 1. There are ten numbers on this switch. However, the NO.0 and NO.9 are of no use.
- 2. The unit number will not be displayed on the monitor TV.
- 3. The Unit Number set on the WJ-MP404 should match the Unit Number set on the WJ-SQ508.
This switch will be used along with the Channel Selection Switch (13) for numbering a WJ-MP404. Refer page 7 for setting up the unit number.

12. Power Cord

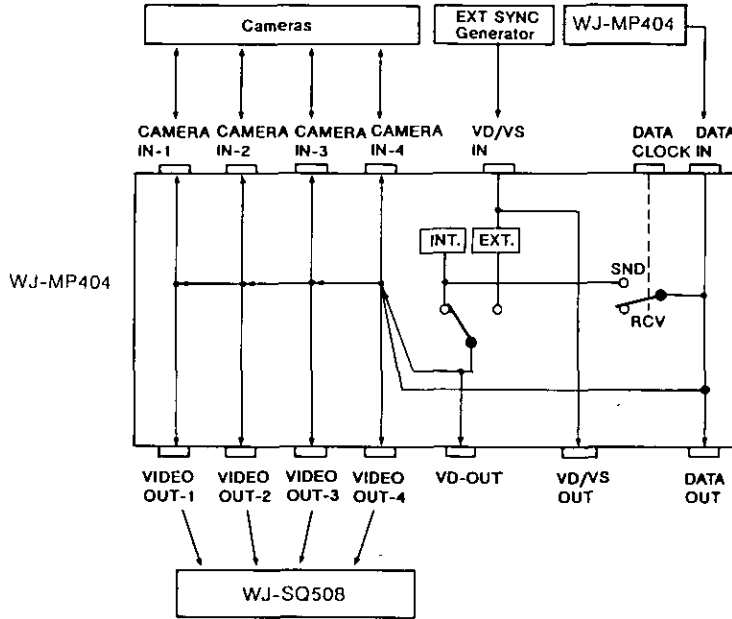
FUNCTIONAL BLOCK DIAGRAM

The following diagram shows a simplified signal flow of the WJ-MP404.

- The control data from another WJ-MP404 is supplied to the DATA IN connector and is multiplexed on the camera signals.

When the Data Clock Switch (6) is "SND" position, the oscillated clock signal is added on the control data signal.

- The external VD/VVS signal is added on the camera signals.

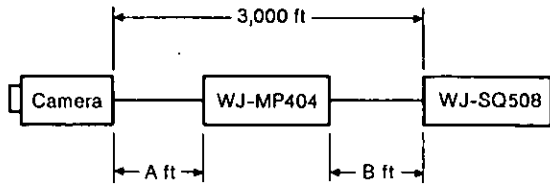


SETTING UP OF THE CABLE-LOSS COMPENSATION SWITCH

The maximum cable length in the system is approximately 3,000 ft as explained at item 4 on page 4.

See the diagram below and set up the cable-loss compensation switch for each unit accordingly.

<Example-1>



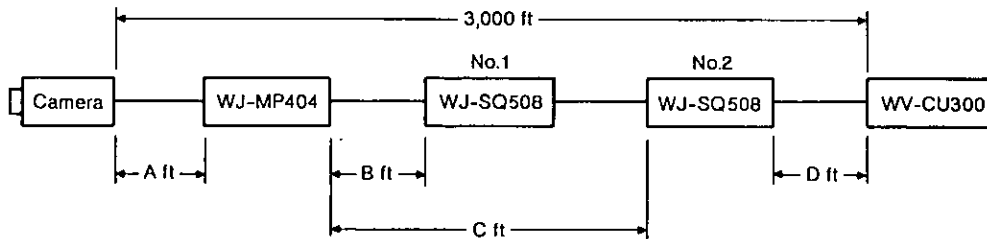
(1) Setting up of WJ-MP404

Position of the switch of WJ-MP404	
$0 \leq A < 1300$	→ S
$1300 \leq A < 2300$	→ M
$2300 \leq A < 3000$	→ L

(2) Setting up of WJ-SQ508

Position of the switch of WJ-MP404	Position of the switch of WJ-SQ508
S: $0 \leq A + B < 1300$	→ S
S: $1300 \leq A + B < 2300$	→ M
S: $2300 \leq A + B < 3000$	→ L
M: $1300 \leq A + B < 2300$	→ S
M: $2300 \leq A + B < 3000$	→ M
L: $0 \leq A + B < 3000$	→ S

<Example-2>



(1) Setting up of WJ-MP404

Same as Example-1, item-1.

(2) Setting up of No.1 WJ-SQ508

Same as Example-1, item-2.

(3) Setting up of No.2 WJ-SQ508

Replace "A + B" of the table in Example-1, item-2 with the "A + C + D" of the diagram above.

Note:

The distance D should not be long due to no cable-loss compensation switch on WV-CU300.

SYSTEM CONNECTION (Example)

The following system diagram shows one of the possible system combinations.

Eight cameras are used in this system. But only four cameras will be synchronized by WJ-MP404.

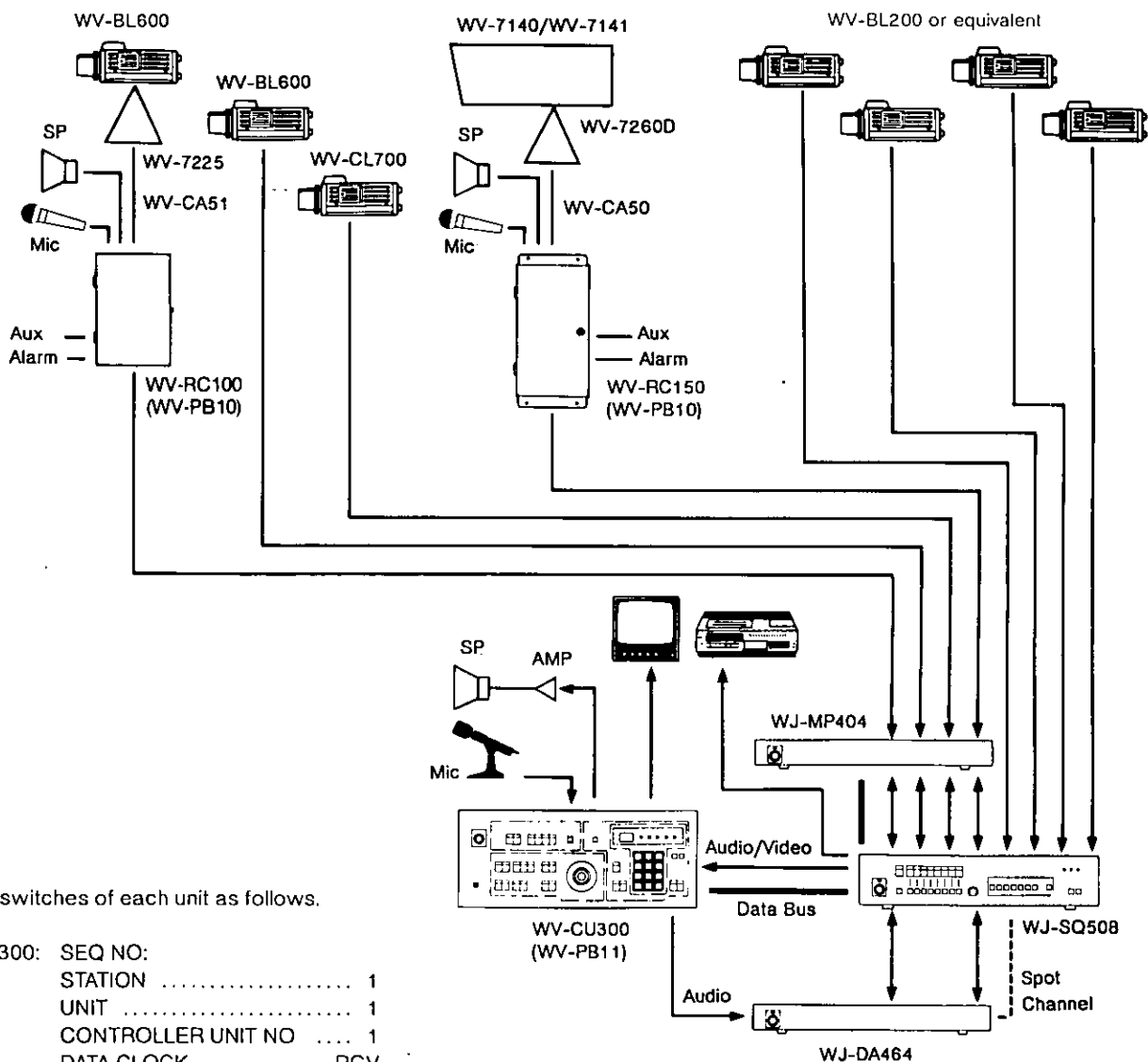
Remarks:

1. It is recommended to install WJ-DA464 in between WV-CU300 and WJ-SQ508 with the connection of the video cables.
 2. Set the Data Clock Switch (6) of the WJ-MP404 to the SND position.
Set the Data Clock Switch (6) of the WV-CU300 to the RCV position.
- Connect the coaxial cable(s) between the camera(s) and the Camera Input Connectors (2) of WJ-MP404.

- Connect the coaxial cable(s) between the Video Output Connectors (3) of WJ-MP404 and the Video Input Connector(s) of WJ-SQ508.
- Connect the coaxial cable between the Data Input/Output Connector (5) of WJ-MP404 and that of WJ-SQ508.

Notes:

1. Refer to the MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS on page 3 for more information on connections and setting up switches.
 2. Also refer to the Operating Instructions of the other system components for the wiring of the necessary products.
- In the system, the WJ-MP404 should be in "SND" position.
The WV-CU300 should be in "RCV" position.



Set the switches of each unit as follows.

- WV-CU300: SEQ NO:
 STATION 1
 UNIT 1
 CONTROLLER UNIT NO 1
 DATA CLOCK RCV
- WJ-MP404: DATA CLOCK SND
 CH SELECT 1-4CH
 UNIT NO 1
- WJ-SQ508: MASTER/SLAVE MASTER
 STATION NO 1
 UNIT NO 1

HOW TO SET UP THE UNIT NUMBER

The system shown below as an example consists of 16 cameras, four WJ-MP404 Multiplex Units, two WJ-SQ508 Sequential Switchers, and one WV-CU300 System Controller.

As can be seen in the diagram, the 16 cameras are directly connected to the four WJ-MP404 Multiplex Units, or via WV-RC100/RC150 Receivers.

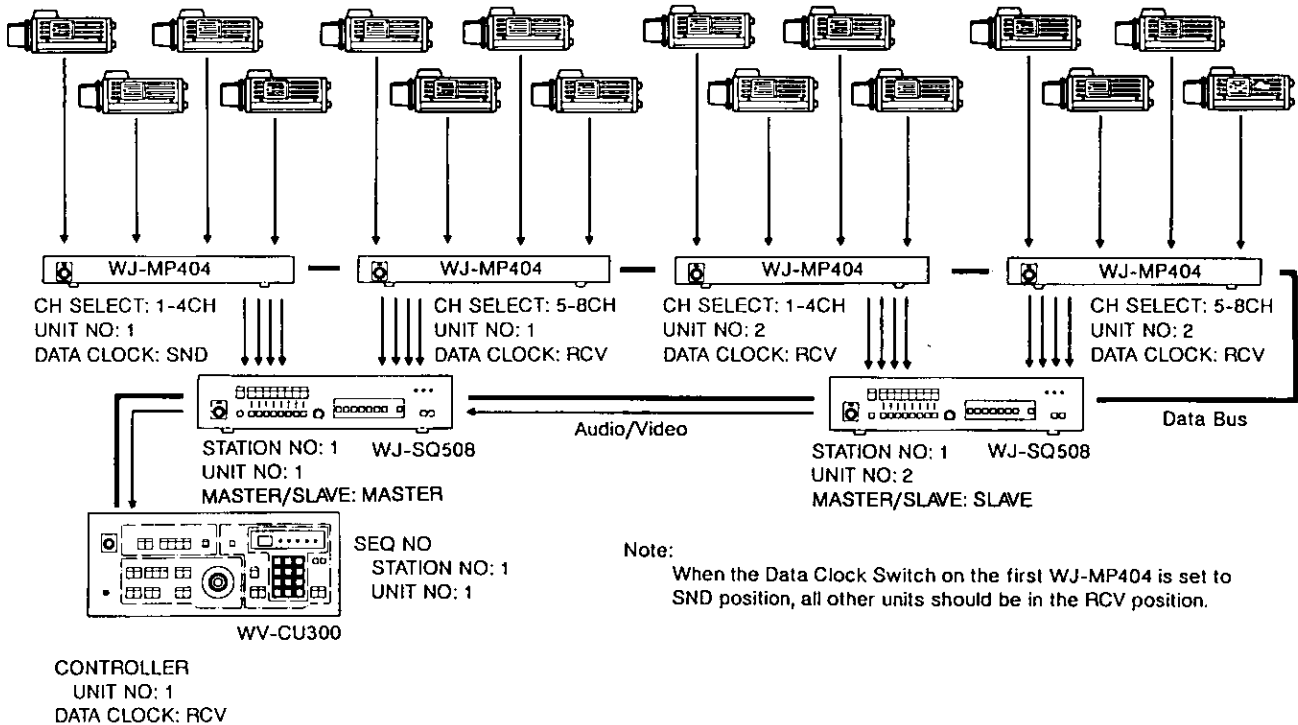
Note:

Up to four cameras can be connected to each WJ-MP404 Multiplex Unit. Therefore, a total of 16 cameras can be connected to the system shown.

Two WJ-MP404 Multiplex Units can be connected to each WJ-SQ508 Sequential Switcher so that a total of four WJ-MP404 Multiplex Units can be connected to this system. A single WV-CU300 System Controller can control up to eight Sequential Switchers. Thus, in this application, only one controller is needed to control all operations.

The unit number, along with the station number and channel select, form a type of address code for each individual piece of equipment in the system. When properly set up, each piece of equipment will have its own unique code that identifies that unit and only that unit.

- Hook up cameras from NO.1 to NO.4 to the 1st WJ-MP404. In this case, turn the Channel Selection Switch (13) to 1-4CH position and set the Unit Number Selection Switch (14) to NO.1 position.
- Hook up cameras from NO.5 to NO.8 to the 2nd WJ-MP404. In this case, turn the Channel Selection Switch (13) to 5-8CH position and set the Unit Number Selection Switch (14) to NO.1 position.
- Hook up those two WJ-MP404 to the 1st WJ-SQ508. Then, set the Unit Number Selection Switch of the 1st WJ-SQ508 to NO.1 position.
- Repeat same procedure mentioned above for the rest of eight (8) cameras. But set the Unit Numbers on the WJ-MP404s and WJ-SQ508 to NO.2. Refer to the system diagram as shown below.
- Do not use the NO.0 and NO.9 of the Unit Number Selection Switch (14).



Note: When the Data Clock Switch on the first WJ-MP404 is set to SND position, all other units should be in the RCV position.

SYSTEM ERROR TABLE

- When a system component has its controls set up incorrectly, an error indication will appear automatically on the video monitor of the WV-CU300.

In this case, refer to the table below and reset the controls to their correct positions.

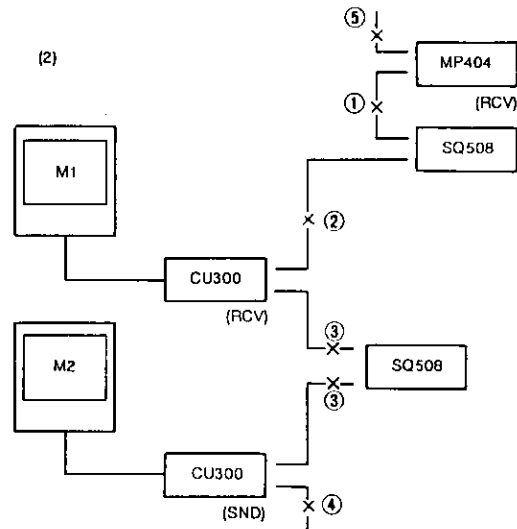
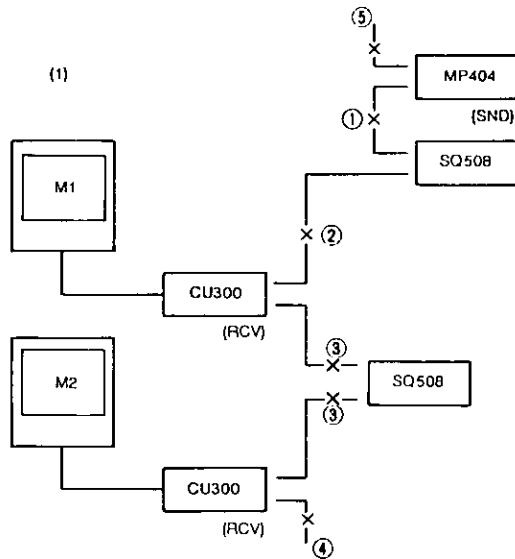
	Cause	Location where error exists and its error indication			Remedy
		WV-CU300	WJ-SQ508	WJ-MP404	
A1	<ul style="list-style-type: none"> Data Clock Switch of all WJ-MP404s & WV-CU300s are set to RCV position Broken data bus line even in RCV position 	CU ERROR: A1			Designate 1 unit as data clock supplier & set switch to "SND".
A2	Data Clock Switches of two or more WJ-MP404 & WV-CU300 are set to SND position	CU ERROR: A2		MP ERROR: A2	Set only 1 unit's Data Clock Switch to "SND" position.
B1	SEQ Unit No. is set to 1-0; 1-9; 2-0; 2-9; 3-0 or 3-9.	CU ERROR: B1	The buzzer sounds		Correct Unit Number Switch setting on WJ-SQ508 or WV-CU300.
B2	Controller No. is set to 0, 6, 7, 8 or 9.	CU ERROR: B2			Correct Controller Unit Number Switch setting.
C1	Unit No. of components are duplicated within the same station.	CU ERROR: C1	Refer to the operating instructions of WJ-SQ508.	MP ERROR: C1	Correct Unit Number Switch setting on duplicated component.
D1	Broken data bus line or non-termination.	CU ERROR: D1		MP ERROR: D1	Check data bus cabling for defective connector, cable, etc.

Note on error A2:

The last component which has set its Data Clock Switch to the SND position becomes the error location.

Remark:

With a broken data bus line or non-termination, 2 kinds of error indications are available on each monitor as shown below. The difference between these systems is the location of the "SND" unit.



Trouble point	Error indication on M1 monitor	Error indication on M2 monitor
(1)	CU ERROR: A1	CU ERROR: A1
(2)	CU ERROR: A1	CU ERROR: A1
(3)	MP ERROR: D1	CU ERROR: A1
(4)	MP ERROR: D1	MP ERROR: D1
(5)	MP ERROR: D1	MP ERROR: D1

Trouble point	Error indication on M1 monitor	Error indication on M2 monitor
(1)	—	CU ERROR: D1
(2)	—	CU ERROR: D1
(3)	CU ERROR: A1	CU ERROR: D1
(4)	—	CU ERROR: D1
(5)	—	CU ERROR: D1

RACK MOUNTING

- When WJ-MP404 is to be mounted on a EIA rack, use a rack mount angle (provided) and screws (provided).

Note:

Avoid a vibration to the rack.

SPECIFICATIONS

Power Supply:	120V AC, 60 Hz
Power Consumption:	Approx. 18W max.
Input	
Camera In:	× 4; 1Vp-p/75Ω composite video signal, 0.5Vp-p/75Ω data signal, 2.2Vp-p vertical timing pulse and 0.13Vp-p/75Ω FM audio signal multiplexed
Output	
Video Out:	× 4; 1Vp-p/75Ω (FM mixed signal) - BNC
VD Out:	× 1; 4Vp-p/75Ω
In/Out	
VD/VS In/Out:	× 2; Loop through signal with auto termination VD: 4Vp-p/75Ω, VS: 1Vp-p/75Ω
Data In/Out:	× 2; Loop through signal with auto termination Sync on Data, 1Vp-p/75Ω
Control Switches:	Unit NO, Cable Compensation SW1-4: S/M/L Channel Selection Switch
Ambient Operating Temperature:	14°F - 122°F (-10°C - +50°C)
Ambient Operating Humidity:	Less than 95%
Dimensions:	16-9/16"(W) × 1-3/4"(H) × 13-3/4"(D) [420(W) × 44(H) × 350(D) mm]
Weight:	8.8 lbs. (4.0 kg)

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

STANDARD ACCESSORIES

Rack Mount Angle	1 set
Screws for Rack Mount Angle (M3)	8 pcs.

MAJOR OPTIONAL ACCESSORIES

Sequential Switcher	WJ-SQ508
Receiver	WV-RC100, WV-RC150
Audio Board	WV-PB10
Camera	WV-BL200 series, WV-BL600 series WV-CL300 series, WV-CL700 series

Panasonic

Communications & Systems Company

Division of Matsushita Electric Corporation of America

CLOSED CIRCUIT VIDEO EQUIPMENT DIVISION

Executive Offices: One Panasonic Way, Secaucus, New Jersey 07094

Regional Offices

Northeast Region: 50 Meadowland Parkway, Secaucus, NJ 07094 (201) 348-7303
Southeast Region: 1854 Shackelford Court, Suite 115, Norcross, GA 30093 (404) 925-6835
Midwest Region: 425 E. Algonquin Road, Arlington Heights, IL 60005 (708) 640-5168
Southwest Region: 4500 Amon Carter Blvd., Ft Worth, TX 76155 (817) 685-1117
Western Region: 6550 Katella Ave., Cypress, CA 90630 (714) 373-7265

MATSUSHITA ELECTRIC OF CANADA LIMITED

5770 Ambler Drive, Mississauga, Ontario, Canada L4W 2T3 (416) 624-5010

PANASONIC SALES COMPANY

DIVISION OF MATSUSHITA ELECTRIC OF PUERTO RICO, INC.

San Gabriel Industrial Park, 65th Infantry, Ave. KM. 9.5 Carolina, Puerto Rico 00630 (809) 750-4300