SONY

MEMORY STORAGE UNIT

SR-R1000

MULTI PORT AV STORAGE UNIT

PWS-4400
PWS-4500

INTERFACE MANUAL OF GPIO (25-pin) CONNECTOR

1st Edition (Revised 2)

⚠警告

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お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

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1. Interface Setting

1-1. Overview

The GPIO (25-pin) connector (REMOTE 25-pin) of this unit has user-customizable input/output pins.
If you assign commands to input pins, you can control the unit by make or break of input pins. The functions (commands) that can be assigned to the input pins are the commands described in “2. Functions That Can Be Set to Input Pin” or the 9-pin protocol commands.
If you assign statuses to output pins, you can examine the status of this unit by knowing whether the level of output pins are 0 (low) or 1 (high). The functions (status output commands) that can be assigned to the output pins are the commands described in “3. Functions That Can Be Set to Output Pin”.

1-2. Caution on Use of GPIO Remote Control

1. When the control mode is changed to LOCAL from REMOTE
   - Menu
     When the same function as the menu item of this unit is controlled in a REMOTE state, the state of each function is saved and continued even if the function is returned to a LOCAL state.
   - Push button
     When the same function as the push button of this unit is controlled in a REMOTE state, the state of each function is continued even if the function is returned to a LOCAL state.

2. Command execution
   The command assigned to an input pin is received when an applicable connector pin is put into the making state (short: low level) or breaking state (open: high level) for 100 ms or more. The reception of the command is asynchronous with a reference video signal.
   Therefore, the timing with which the command is executed may be delayed by a few frames.

3. Status output
   The output of the status assigned to an output pin is processed in asynchronization with a reference video signal.
   Therefore, the timing with which the status is output to an applicable connector pin may be delayed by a few frames.

1-3. Setting Procedure

1. Determine a command parameter.
   When setting an input pin, find the desired function from the functions described in “2. Functions That Can Be Set to Input Pin” and determine a command parameter according to the description in “1-4. Command Parameter Format of Input Pin”.
   When setting an output pin, find the desired status from the status list described in “3. Functions That Can Be Set to Output Pin” and determine a command parameter according to the description in “1-5. Command Parameter Format of Output Pin”.

2. In a maintenance information menu, set the command parameter to an applicable connector pin.
   In case SR-R1000
   Maintenance information menu
   • Input pin: ALT/ F1 (GPIO SETTING INPUT) key
   • Output pin: ALT/ F2 (GPIO SETTING OUTPUT) key

   Note

   For the maintenance menu described above, refer to “3-5. GPIO Function Setting Menu” of Maintenance Manual Volume 1.

   In case PWS-4400/PWS-4500
   System screen/Remote tab
   • Input pin: GPIO Parallel Input Setup
   • Output pin: GPIO Parallel Output Setup

3. Turn on the power again.

   Note

   Be sure to turn on the power again after saving data when the input/output pin setting of a GPIO (25-pin) connector was changed. This unit may become unstable in operation when it is used without turning on the power again.

1-4. Command Parameter Format of Input Pin

The function that can be set to an input pin is the command of a remote control protocol which this unit can use and a function peculiar to this unit.
Refer to the manual of each protocol for the commands of the corresponding remote control protocol.
For the function peculiar to this unit, refer to the setting data described in “2. Functions That Can Be Set to Input Pin”.

Set command parameters according to the format described below. Each numeric value is expressed using two-digit hexadecimals.
For the actual example of setting, refer to “1-6. Setting Examples of Command Parameter”.

1st byte: PT (Port No.)

Set a port-specified code when using a function for which an input/output port must be specified. Set 00 when using a function for which a port does not require being specified.

- When specifying port A: 01
- When specifying port B: 02
- When specifying port C: 04
- When specifying port D: 08
- In case of a function for which a port does not require being specified: 00

Note

Do not set numeric values other than described above.

2nd byte: SR (Storage No.)

Set the storage that is targeted for the function. Set 00 when using a function for which SRMemory does not require being specified.

In case SR-R1000

- When specifying slot M1: 01
- When specifying slot M2: 02
- When specifying slot M3: 04
- When specifying slot M4: 08
- In case of a function for which a slot does not require being specified: 00

In case PWS-4400/PWS-4500

- When specifying internal memory: 01
- In case of a function for which a slot does not require being specified: 00

Note

Do not set numeric values other than described above.

3rd byte: PC (Pin Condition)

Specify the conditions, under which the specified function is executed, using any of the codes below.

- A function is executed when a connector pin is put into a making state: 00
- A function is executed when a connector pin is put into a breaking state: 01
- Each set function is executed when a pin is put into a making/breaking state: 02

Note

Make: When the level of a connector pin changes from 1 (high) to 0 (low)

Break: When the level of a connector pin changes from 0 (low) to 1 (high)

4th byte: FF (Function Format)

Specify the format of the data, set to the 5th byte or later, using this data.

- For Sony 9-pin protocol: 10
- For VDCP protocol: 11
- For Odetics protocol: 12
- For no function: 00

When the 4th byte is set to 00, the pin does not function irrespective of other setting data.

5th byte or later: FC (Function Codes)

Set command data to the 5th byte or later according to the data format specified in the 4th byte.

Data of 28 byes (maximum) can be set when numeric values other than 02 are set to “3rd byte: PC”.

Set the command data below when 02 is set to “3rd byte: PC”

- Command data for specifying the function used when a connector pin is made for 14 bytes (5th type to 18th byte) of the first half
- Command data for specifying the function used when a connector pin is broken for 14 bytes (19th byte to 32nd byte) of the latter half

1-5. Command Parameter Format of Output Pin

Each information item (status) that this unit has is checked by the specified method, and the obtained result is output. For more details, refer to the Index No. and status used to specify the available status described in “3. Functions That Can Be Set to Output Pin”.
Set parameters according to the format described below. Each numeric value is expressed using two-digit hexadecimals.
For the actual example of setting, refer to “1-6. Setting Examples of Command Parameter”.

1st byte: PT (Port No.)

Set a port-specified code when using a function for which an input/output port must be specified. Set 00 when using a function for which a port does not require being specified.

- When specifying port A: 01
- When specifying port B: 02
- When specifying port C: 04
- When specifying port D: 08
- In case of a function for which a port does not require being specified: 00

Note

Do not set numeric values other than described above.

2nd byte: SR (Storage No.)

Set the storage that is targeted for the function. Set 00 when using a function for which SRMemory does not require being specified.

In case SR-R1000

- When specifying slot M1: 01
- When specifying slot M2: 02
- When specifying slot M3: 04
- When specifying slot M4: 08
- In case of a function for which a slot does not require being specified: 00

In case PWS-4400/PWS-4500

- When specifying internal memory: 01
- In case of a function for which a slot does not require being specified: 00

Note

Do not set numeric values other than described above.

3rd byte: CC (Check Condition)

Using this data, the status is checked under conditions to be selected. An output pin is set to 0 (low) when the conditions are satisfied. It is set to 1 (high) when the conditions are not satisfied.

- Bit test Z: All bits to be checked are 0: 00
- Bit test NZ: Even one of the bits to be checked is other than 0: 01
- Bit test E: The bit to be checked coincides with a reference pattern: 02
- Bit test NE: The bit to be checked does not coincide with a reference pattern: 03

4th byte: DL (Data Length)

Set the number of bytes in the data, to be checked, as described below.

- 1 byte: 01
- 2 bytes: 02
- 3 bytes: 03
- 4 bytes: 04

When this data is set to 00, an output pin does not function irrespective of the setting state of other data.

Note

Refer to "3. Functions That Can Be Set to Output Pin" for the status in which multiple bytes can be checked.

5th byte: N0 (Index No. (MSB))

6th byte: N1 (Index No. (LSB))

Set the index number (Index No.) for specifying the status, to be checked, described in "3. Functions That Can Be Set to Output Pin".

Example: Set as described below when specifying the status whose Index No. is 0200.

- 5th byte: 02
- 6th byte: 00

7th type to 10th byte: M0 to M3 (Mask Pattern 0 to Mask Pattern 3)

Multiple information bits may exist in the status to be checked.

Set a mask pattern, for determining which information bit to check, to the 7th byte to 10th byte.

A maximum of 4-byte mask pattern must be set according to the number of bytes (selected in the 4th byte) in the data to be checked.

Set a mask pattern corresponding to the status with the lowest Index No., among the statuses to be checked, to the 7th byte and then set the mask pattern in the order of the Index No.

For example, set a mask pattern to the 7th and 8th bytes when checking data of two bytes. The data set to the 9th and 10th bytes does not influence any operation.

11th byte to 14th byte: R0 to R3 (Reference Pattern 0 to Reference Pattern 3)

The reference pattern used when checking the status is required when 02: Bit test E or 03: Bit test NE is set to the 3rd byte. The reference pattern is set to the 11th byte through 14th byte.

A maximum of 4-byte reference pattern must be set according to the number of bytes in the data, to be checked, set t the 4th byte.

Set a mask pattern corresponding to the status with the lowest Index No., among the statuses to be checked, to the 11th byte and then set the mask pattern in the order of the Index No.

For example, a standard pattern to the 11th and 12th bytes when checking data of two bytes. The data set to the 13th and 14th bytes does not influence any operation.

1-6. Setting Examples of Command Parameter

The examples of command parameters at input and output pins are given below. Each numeric value is expressed using two-digit hexadecimals.

1st line: The 1st line indicates a data number.
2nd line: The 2nd line indicates a two-character setting item name. (Refer to Section 1-4 or 1-5.)
"--" is displayed in the data position where setting is not required.
3rd line: The 3rd line indicates the actually set parameter.

Note

No problem occurs even if any value is set to data that requires no setting. However, it is recommended to set 00 to the data.

1-6-1. Setting Examples at Input Pin

Example 1 In this setting, the time code generator of input port A is preset to 23:59:30:00 when a connector pin is put into the making state.

Data No.	1	2	3	4	5	6	7	8	9	0	11	12	13	14
Setting item	PT	SR	PC	FF	FC						--	--	--	--
Setting value	01	00	00	10	44	04	00	30	59	23	00	00	00	00
						(After this, parameters are all 00 up to the 32nd data number.)								

Example 2 In this setting, the input signal of input port A is recorded in SRMemory of slot M1 when a connector pin is put into the making state in SR-R1000.
In PWS-4400, input signal of input port A is recorded in the internal memory.

Data No.	1	2	3	4	5	6	7	8	9	0	11	12	13	14
Setting item	PT	SR	PC	FF	FC		--	--	--	--	--	--	--	--
Setting value	01	01	00	10	20	02	00	00	00	00	00	00	00	00
						(After this, parameters are all 00 up to the 32nd data number.)								

1-6-2. Setting Examples at Output Pin

Example 1 In this setting, it is checked that the operation of port D is not in a "LOCAL" state, but in "PLAY" and "SERVO LOCK" states.

Data No.	1	2	3	4	5	6	7	8	9	0	11	12	13	14
Setting item	PT	SR	CC	DL	N0	N1	M0	M1	M2	M3	R0	R1	R2	R3
Setting value	08	00	02	03	02	00	01	01	80	00	00	01	80	00
						(After this, parameters are all 00 up to the 32nd data number.)								

Description
Judging from description in "3. Functions That Can Be Set to Output Pin", it can be checked that BIT-0 of Index No.: 0200 is set to "0", BIT-0 of Index No. 201 is set to "1", and BIT-7 of Index No. 202 is set to "1". Continuous three bytes of Index No. 0200 to Index No. 0202 can be checked by setting DL (Data Length) to 03, and by specifying 02 to N0 and 00 to N1, respectively.
Mask patterns (M0, M1, and M2) become pattern "01, 01, 80" of bits to be checked. An output pin is set low (0) when these bits coincide with "01, 01, 80" of reference patterns (R0, R1, and R2).

Example 2 In this setting, it is detected that a GPIO interface functions effectively.

Data No.	1	2	3	4	5	6	7	8	9	0	11	12	13	14
Setting item	PT	SR	CC	DL	N0	N1	M0	M1	M2	M3	--	--	--	--
Setting value	00	00	01	01	05	00	01	00	00	00	00	00	00	00
	(After this, parameters are all 00 up to the 32nd data number.)													

Description

Judging from description in “3. Functions That Can Be Set to Output Pin”, it can be checked that BIT-0 of Index No. 0500 is set to “1”.

Since only one bit is checked, CC (Check Condition) is prescribed as 01: Bit test NZ. The 11th byte or later becomes invalid data because it is not necessary to set a reference pattern.

2. Functions That Can Be Set to Input Pin

2-1. Control Protocol Command of 9-Pin Connector

The command used when controlling from the outside using a 9-pin connector can be assigned to the input pin of a GPIO (25-pin) connector. The port of the 1st byte must be specified. For a PB or REC command in which storage is used, the storage of the 2nd byte must also be specified. A protocol command is described from the 5th byte of the set data. The setting of check sum is not required.

Refer to the manual of each protocol for which command can be used.
Operation is not normally performed when a command that requests status or a command that does not independently function is assigned. Do not set the command described above.

2-2. Function Peculiar to This Unit

The function, peculiar to this unit, which can be used for control from GPIO is as described below.

2-2-1. SYSTEM BANK RECALL

The setting for which SYSETM BANK RECALL is executed is as described below when a connector pin is put into the making state.
It is not necessary to specify a port and storage.

Data No.	1	2	3	4	5	6	7	8	9	0	11	12	13	14
Setting item	PT	SR	PC	FF	FC					--	--	--	--	--
Setting value	00	00	00	10	30	01	F0	71	xx	00	00	00	00	00
						(After this, parameters are all 00 up to the 32nd data number.)								

Setting value of xx: Set the bank number to be recalled.
SR-R1000
- BANK1: 00
- BANK2: 01
- BANK3: 02
- BANK4: 03
- BANK5: 04
- BANK6: 05
- BANK7: 06
- Factory Setting: FF

PWS-4400/PWS-4500
- BANK1: 00
- BANK2: 01
- BANK3: 02
- Factory Setting: FF

Note

The unit is restarted when this function is executed.

3. Functions That Can Be Set to Output Pin

A status list that can be used when setting a function to an output pin is shown in the table below. Make parameters N0 and N1 described in “1-5. Command Parameter Format of Output Pin” correspond to the Index No. in a status list.

3-1. Index No. 0200 to 020F

Index No. and status name	BIT-7	BIT-6	BIT-5	BIT-4	BIT-3	BIT-2	BIT-1	BIT-0
0200 DATA No.0 of 7X,20						HARD ERROR		LOCAL
0201 DATA No.1 of 7X,20	STANDBY ON		STOP	EJECT	F.REW	F.FWD	REC	PLAY
0202 DATA No.2 of 7X,20	SERVO LOCK		SHUTTLE	JOG	VAR	DIRECT-ION	STILL	CUE UP COMPLETE
0203 DATA No.3 of 7X,20					AUDIO OUT	AUDIO IN	OUT	IN
0204 DATA No.4 of 7X,20								PREROLL or CUE UP
0205 DATA No.5 of 7X,20								
0206 DATA No.6 of 7X,20		STILL LED ON	FWD LED ON	REV LED ON				
0207 DATA No.7 of 7X,20								
0208 DATA No.8 of 7X,20		LOST LOCK						
0209 DATA No.9 of 7X,20								
020A DATA No.A of 7X,20								
020B DATA No.B of 7X,20								
020C DATA No.C of 7X,20								
020D DATA No.D of 7X,20								
020E DATA No.E of 7X,20								
020F DATA No.F of 7X,20								

A port must be specified.
The same status information as the response data of a Sony 9-pin protocol 6x.20 (STATUS SENSE) command can be checked for the specified port.
For the status of Index Nos. 0200 to 020F, the status in the range of multiple bytes can be checked by specifying 02 to 04 for 4th byte: DL of the set data.

3-2. Index No. 0290

Index No. and status name	BIT-7	BIT-6	BIT-5	BIT-4	BIT-3	BIT-2	BIT-1	BIT-0
0290 port remote							GPIO	9pin

A port must be specified. In this status, "1" is set when the specified ports (A to D) are in the remote state.

- BIT-1: The control from GPIO (25P) connector is valid.
- BIT-0: The control from REMOTE 1 to 4 (9P) connector is valid.

3-3. Index No. 0500 to 0506

Index No. and status name	BIT-7	BIT-6	BIT-5	BIT-4	BIT-3	BIT-2	BIT-1	BIT-0
0500 GPIO RDY								RDY
0501 port select button lamp					port D	port C	port B	port A
0502 general warning, error		other error	slot error	port error		other warn	slot warn	port warn
0506 general remote							GPIO	9pin

It is not necessary to specify a port and storage. In this status, the situation of the whole device can be checked.

Multiple bytes cannot be checked. Be sure to specify 01 for 4th byte: DL of the set data.

0500 (GPIO RDY)

In this status, "1" is set when a GPIO (25-pin) interface is enabled after the power is turned on.

0501 (port select button lamp)

Indicates the lamp state of a port select button on the control panel. "1" is set to the bits assigned to each port while the lamp is lighting.

0502 (general warning, error)

In this status, "1" is set in the situation in which an error or warning message is displayed.

- BIT-6: An error on except a port or storage occurs.
- BIT-5: An error related to storage occurs.
- BIT-4: An error related to a port occurs.
- BIT-2: A warning message on except a port or storage occurs.
- BIT-1: A warning message related to storage occurs.
- BIT-0: A warning message related to a port occurs.

0506 (general remote)

In this status, "1" is set when any of the ports is in the "REMOTE" state.

- BIT-1: The control from GPIO (25P) connector is valid.
- BIT-0: The control from REMOTE 1 to 4 (9P) connector is valid.

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