SONY

MEMORY STORAGE UNIT

SR-R1000

MULTI PORT AV STORAGE UNIT

PWS-4400
PWS-4500

PROTOCOL MANUAL (Odetics PROTOCOL)

1st Edition (Revised 2)

⚠警告

このマニュアルは，サービス専用です。
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.

Table of Contents

The Connector Panel of Memory Storage Unit (referred to as STORAGE UNIT) implements a 9-pin connector for REMOTE. This section explains the contents of serial signals processed through this 9-pin connector.

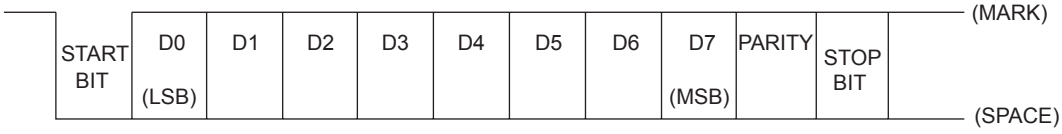
The definition of CONTROLLER and DEVICE is shown in the follows.

"CONTROLLER" means the unit which controls STORAGE UNIT.
"DEVICE" means the unit (STORAGE UNIT) which is controlled.

Example)
When the remote controller is connected with one or more STORAGE UNIT, this remote controller is called CONTROLLER and all STORAGE UNITs are called DEVICE.

1. Interface System Overview

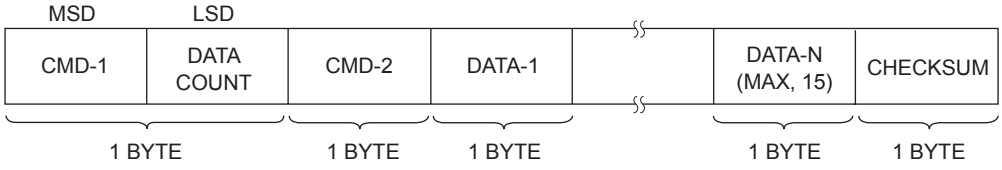
- Conforming to EIA RS-422A.
- Full duplex communications channel is utilized.
- Data is transmitted asynchronously, bit serial, word serial with data exchange between devices.
- Standard transmission rate on the interface bus is 38.4 kilobits per second (kbps).
- The data word utilized by the interface system is as follows.



- 1 START BIT + 8 DATA BITs + 1 PARITY BIT + 1 STOP BIT.
  ODD parity: The total of "1"s in D0+D1+ • • • D7+PARITY equals an odd number.

2. Command Block Format (CMD BLOCK)

The communication between the CONTROLLER and the DEVICE is composed of CMD-1 + DATA COUNT, CMD-2 + DATA and CHECKSUM, and is transmitted from CMD-1 + DATA COUNT in order. When DATA COUNT is zero, the data is not transmitted. When it is not zero, the data corresponding to the value is inserted between CMD-2 and CHECKSUM.



CMD-1: CMD-1 classifies commands into the main groups which indicates the function and direction of commands as follows.

Content of CMD-1

CMD-1	FUNCTION	DIRECTION	
		CONTROLLER	DEVICE
0	SYSTEM CONTROL		→
1	SYSTEM CONTROL RETURN	←	
2	TRANSPORT CONTROL		→
4	PRESET & SELECT CONTROL		→
6	SENSE REQUEST		→
7	SENSE RETURN	←	

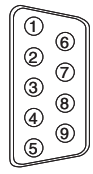
DATA COUNT: DATA COUNT indicates the number of data words attached to the command. (0 to FH)
CMD-2: Specifies a command.
DATA: The number of data words and their contents are defined by the command.
CHECKSUM: The CHECKSUM is the sum of the DATA (D0 to D7) contained in each data word, from CMD-1/DATA COUNT to last data word before CHECKSUM. The CHECKSUM is used to verify data accuracy and reject communication sequence when the bit error is contained.

3. Connector Pin Assignment

Interface connector: 9 pin D-sub miniature female (D-9S)

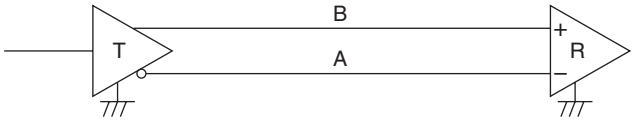
The pin assignment of the CONTROLLER and the DEVICE is shown in the following table.

Signal / Pin	CONTROLLER	DEVICE
1	Frame Ground	Frame Ground
2	Receive A	Transmit A
3	Transmit B	Receive B
4	Transmit Common	Receive Common
5	Spare	Spare
6	Receive Common	Transmit Common
7	Receive B	Transmit B
8	Transmit A	Receive A
9	Frame Ground	Frame Ground



External View

"A" and "B" are defined as shown below.



A < B ⇨"1" (MARK)

A > B ⇨"0" (SPACE)

4. Communication Protocol

1) All communications between the CONTROLLER and the DEVICE will be under the direct supervision of the CONTROLLER.
   When the DEVICE (STORAGE UNIT) receives the COMMAND from CONTROLLER, the following COMMAND is returned.

   - ACK : In case that the DEVICE receives a COMMAND not requiring data
   - COMMAND + DATA : In case that the DEVICE receives a COMMAND requiring data
   - NAK + ERROR DATA : In case that a communication error is detected or an undefined COMMAND is received

2) The CONTROLLER must not transmit additional COMMAND blocks to a DEVICE (STORAGE UNIT) prior to response to a previous COMMAND block.

3) The CONTROLLER must transmit of bytes in a COMMAND block for with intervals less than 10 milliseconds. If a DEVICE (STORAGE UNIT) detects an interruption of a byte in a COMMAND BLOCK that exceeds 10 milliseconds, it executes a TIME-OUT error sequence, voids the receiving COMMAND block, and transmit a NAK (TIME OUT).

4) When a DEVICE (STORAGE UNIT) receives a COMMAND block from the CONTROLLER, the DEVICE must transmit a response within 9 milliseconds.
   Therefore if the CONTROLLER cannot receive the appropriate response from the DEVICE within 10 milliseconds after transmitting the COMMAND block the CONTROLLER detects a communication error, and must execute an appropriate process.

5) When the DEVICE (STORAGE UNIT) detects a communication error, it must immediately transmit a NAK to the CONTROLLER. (The content of an error is shown on the COMMAND tables.)
   When the CONTROLLER receives a NAK, it must immediately stop transmission of the COMMAND block. The DEVICE must not accept a subsequent command within 10 milliseconds after that (except NAK-UNDEFINED command) and must execute a necessary process.

5. Original Specifications of the Unit

5-1. Connection and Preparation

Connection

This unit has four ports A to D. REMOTE 1 (9P) on the connector panel is used for port A, REMOTE 2 (9P) for port B, REMOTE 3 (9P) for port C, and REMOTE 4 (9P) for port D.

Preparation

Perform the following setting by the setup menu.
For how to make settings and specific for each menu, refer to the Operation Manual.

Setting menu of input/output ports

Note

Each item is settable for each port, but we recommend that you make the same settings for all ports to be controlled by the Odetics. Use the PORT SELECT button to select ports to be set.
If different settings for them are required, perform in-depth examination and operation verification of the entire system including the controller in advance.

	Menu item	Setting
1	HOME > F8 (REMOTE 9PIN)	"On"
2	HOME > ALT/F3 (CONTINU)	"Off" (Only when the output port is selected)
3	TC > F1 (TCG SRC)	"preset" (Only when the input port is selected)
4	TC > F3 (RUN)	"Rec" (Only when the input port is selected)
5	TC > F5 (TM SEL)	• Specify "TC" by F5 (TM SEL) key when the value read from the timecode reader or the value generated by the timecode generator is used as a reference value. • Specify "TM2" by F5 (TM SEL) key when the counter is used as a time counter in which the fi le head is set to 0.
6	VIDEO > ALT/F10 (PORT CONFIG)	Make the same settings for all ports to be controlled by the Odetics.

Setting menu of remote connectors

Note

Each item is settable for each remote connector, but we recommend that you make the same settings for all remote connectors (9PIN 1 to 9PIN 4) that use the Odetics.
If different settings for them are required, perform in-depth examination and operation verification of the entire system including the controller in advance.

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	Menu item	Setting
1	HOME > ALT/F10 (REMOTE CONFIG) > F1 (REMOTE SLOT)	Specify the SRMemory card slot for recording or playback. Set “Slot 1”, “Slot 2”, “Slot 3”, or “Slot 4”.
2	HOME > ALT/F10 (REMOTE CONFIG) > F2 (REMOTE PROTOCOL)	Select the communication protocol of Remote (9P) connector to be used. “Odetics”
3	HOME> ALT/F10 (REMOTE CONFIG) > F3 (REMOTE FILELIST)	Specify the method of creating an SRMemory card file list. Set “Editable A”, “Editable B”, “Editable C”, or “Editable D” according to output ports A to D to be controlled.

Tip

In each menu screen, the REMOTE 1 (9P) to REMOTE 4 (9P) are assigned to the function keys F1 to F4. Each press of these function keys changes the setting. If desired setting is obtained, press F10 key to return the menu screen.

PWS-4400/PWS-4500

	Web menu Item/tab	Setting
1	System screen/Remote tab	Select the protocol. Remote Protocol: Odetics
2	Port screen	Set the input port as follows. Remote 9 pin: On TCG Source: Internal Preset Run Mode: Rec Run Timer Select: TC or TM2
3	System screen/Board tab	Set the same settings for the all ports. Click the “Setting” button on the lower part of the screen and configure the input/output boards. Then follow the wizard. Refer to the operation manual for details.
4	Port screen	Set the output ports as follows. Continuous Mode: Single File Normal.

6. Command Table

The marks shown in the tables mean the following contents.

1) Commands marked ○ support the unit as the DEVICE.
   When there is a description in the "RETURN" column, the content and DATA must be returned, and if not (blanc), ACK will be returned.
2) The unit returns a ACK or a STATUS as a RETURN in response to the commands marked △ with no action.

COMMAND	RETURN	SR-R1000	PWS-4400 PWS-4500
00•11 : DEVICE TYPE REQUEST	12•11 : DEVICE TYPE RETURN	○	○
20•00 : STOP	10•01 : ACK	○	○
20•01 : PLAY		○	○
20•02 : REC		○	○
20•04 : STANDBY OFF		△	△
20•05 : STABDBY ON		△	△
20•0F : EJECT		△	△
20•10 : FAST FWD		○	○
20•20 : REWIND		○	○
2X•11 : JOG FWD		○	○
2X•12 : VAR FWD		○	○
2X•13 : SHUTTLE FWD		○	○
2X•21 : JOG REV		○	○
2X•22 : VAR REV		○	○
2X•23 : SHUTTLE REV		○	○
2X•31 : CUE UP WITH DATA		○	○
20•52 : TENSION RELEASE		△	△
44•00 : TIMER -1 PRESET		○	○
44•04 : TIME CODE PRESET		○	○
44•05 : USER'S BIT PRESET		○	○
40•08 : TIMER -1 RESET		○	○
4X•14 : IN DATA PRESET		○	○
4X•15 : OUT DATA PRESET		○	○
40•20 : IN RESET		○	○
40•21 : OUT RESET		○	○
41•36 : TIMER MODE SELECT		○	○
40•40 : AUTO MODE OFF		○	○
40•41 : AUTO MODE ON		○	○
61•0A : TC GEN DATA SENSE	74•08 : GEN TC DATA	○	○
	78•08 : GEN TC & UB DATA	○	○
	74•09 : GEN UB DATA	○	○

COMMAND	RETURN	SR-R1000	PWS-4400 PWS-4500
61•0C : CURRENT TIME SENSE	74•00 : TIMER -1 DATA	○	○
	74•01 : TIMER -2 DATA	○	○
	74•04 : LTC TIME DATA	○	○
	78•04 : LTC TIME & UB DATA	○	○
	74•05 : LTC UB DATA	○	○
	74•06 : VITC TIME DATA	○	○
	78•06 : VITC TIME & UB DATA	○	○
	74•07 : VITC UB DATA	○	○
60•10 : IN DATA SENSE	74•10 : IN DATA	○	○
60•11 : OUT DATA SENSE	74•11 : OUT DATA	○	○
60•12 : A IN DATA SENSE	74•12 : A IN DATA	○	○
60•13 : A OUT DATA SENSE	74•13 : A OUT DATA	○	○
61•20 : STATUS SENSE	7X•20 : STATUS DATA	○	○
AX•02 : RECORD CUE UP WITH DATA	10•01 : ACK	○	○
AX•04 : PREVIEW IN PRESET		○	○
AX•05 : PREVIEW OUT PRESET		○	○
A0•06 : PREVIEW IN RESET		○	○
A0•07 : PREVIEW OUT RESET		○	○
A0•14 : LIST FIRST ID	8X•14 : ID LISTING	○	○
A0•15 : LIST NEXT ID		○	○
A8•18 : ID STATUS REQUEST	81•18 : ID STATUS	○	○

7. Detailed Description of Commands

- Unless otherwise specified, a bit set to 1 is true in bit maps.
  The LSB is the rightmost bit and the MSB is the leftmost bit.
- All numbers are hexadecimal numbers.
- All time values are in frames, seconds, minutes, and hours in BCD. Frames are sent first and hours are sent last.
- Unspecified ports are input or output signal ports (A to D).

00•11: DEVICE TYPE REQUEST
12•11: DEVICE TYPE

The "00•11: DEVICE TYPE REQUEST" command is used for asking the specifications of the STORAGE UNIT used as DEVICE. When the DEVICE receives this command, it attaches 2-byte specification data to "12•11: DEVICE TYPE" and sends the information to the CONTROLLER.

MODEL	DATA-1	DATA-2
SR-R1000	9X	20
PWS-4400	9X	40
PWS-4500	9X	41

Since DEVICE (STORAGE UNIT) can change their own specifications by themselves using menu, the equipment returns current operation mode to CONTROLLER.

SR-R1000/PWS-4400/PWS-4500	
59.94i, 29.97PsF, or 720/60P system:	X = 0
50i, 25PsF, or 720/50P system:	X = 1
23.98PsF or 24 PsF system:	X = 2

10•01: ACK

When a command from the CONTROLLER is received normally, the DEVICE returns this command as acknowledgement.

11•12: NAK

When a communication error is detected or an undefined COMMAND is received, the DEVICE returns this command as not-acknowledgement. BIT-7 to BIT-0 of DATA-1 will be set in accordance with the contents.

[DATA-1]

BIT-7	BIT-6	BIT-5	BIT-4	BIT-3	BIT-2	BIT-1	BIT-0
TIME OUT	FRAMING ERROR	OVERRUN ERROR	PARITY ERROR		CHECKSUM ERROR	SOFTWARE OVERRUN	UNDEFINED COMMAND

20•00: STOP

This command is used to stop operation and drive the DEVICE to the STOP mode. This command does not affect settings related to the AUTO mode.

20•01: PLAY

This command is used to start playback.
When the AUTO mode is enabled, this command starts automatic playback processing in accordance with settings related to the AUTO mode.

20•02: REC

This command is used to drive the DEVICE to the REC mode to start recording.
When File ID that is not contained in the storage is specified by the "AX•02: RECORD CUE UP WITH DATA" command, a file of the File ID is created for recording.
If this command is executed with no File ID specified, a file of File ID "AUTO" is created and recording is started. When a file of File ID "AUTO" already exists in the storage, a file of File ID "AUTO(01)" is created.
After that, files of File ID "AUTO(02)," "AUTO(03)," ... are created.
When the AUTO mode is enabled, this command stars automatic recording processing in accordance with settings related to the AUTO mode.

20•04: STANDBY OFF

This command does not affect operation. An ACK response (10•01) is always sent back.

20•05: STANDBY ON

This command does not affect operation. An ACK response (10•01) is always sent back.

20•0F EJECT

This command does not affect operation. An ACK response (10•01) is always sent back.

20•10: FAST FWD
20•20: REWIND

This command is used to drive the DEVICE to each mode above.

2X•11: JOG FWD
2X•12: VAR FWD
2X•13: SHUTTLE FWD
2X•21: JOG REV
2X•22: VAR REV
2X•23: SHUTTLE REV

When one of the above commands is received, the DEVICE starts running at the playback speed in accordance with speed data defined by the DATA-1 and DATA-2.
When only DATA-1 is given, (X = 1) and the playback speed will be defined as follows.

PLAYBACK SPEED = $10^{(N/32-2)}$, N: SPEED DATA (DECIMAL)

Example)

PLAYBACK	SPEED	DATA
STILL	0	(0H)
0.1 times normal speed	32	(20H)
1.0 times normal speed	64	(40H)
About 2.9 times normal speed	79	(4FH)

When setting more precise value than the playback speed defined by DATA-1, DATA-2 will be added. However, the precise value is a linear approximate value. (X = 2)
When both DATA-1 and DATA-2 are given, the playback speed will be defined as follows.

PLAYBACK SPEED = $10^{(N/32-2)} + N'/256 \times \{10^{[(N+1)/32-2]} - 10^{(N/32-2)}\}$
N: SPEED DATA OF DATA-1 (DECIMAL)
N': SPEED DATA OF DATA-2 (DECIMAL)

2X•31: CUE UP WITH DATA

This command is used to cue up the DEVICE. This command acts as follows according to the number of parameter bytes.

This command also sets File ID and timecode that are the target of the "4X•14:IN DATA PRESET" command.

20•31: Cues up the DEVICE to the beginning of the open file.

24•31: Cues up the DEVICE to the specified timecode position of the open file. The timecode is specified by the 4-byte parameter following the command.

28•31: Opens the file of the specified File ID in automatically playable state and cues up the DEVICE to the beginning of the file. The File ID is specified by the 8-byte parameter following the command. The OUT POINT comes to the end of the file.

2C•31: Opens the file of the specified File ID in automatically playable state and cues up the DEVICE to the specified timecode position. The timecode position is specified by the first 4 bytes of the 12-byte parameter following the command, and the File ID is specified by the other 8 bytes. The OUT POINT comes to the end of the file.

20•52: TENSION RELEASE

This command does not affect operation of the DEVICE. An ACK response (10•01) is always sent back.

44•00: TIMER-1 PRESET

This command is used for presetting the value, which has been given by the DATA-1 through DATA-4, to the TIMER-1 (CTL COUNTER) of the DEVICE.

For the data format, refer to "24•31: CUE UP WITH DATA" command.

44•04: TIMER CODE PRESET

This command is used for presetting the value, which has been given by the DATA-1 through DATA-4, to the TIME CODE of the time code generator.

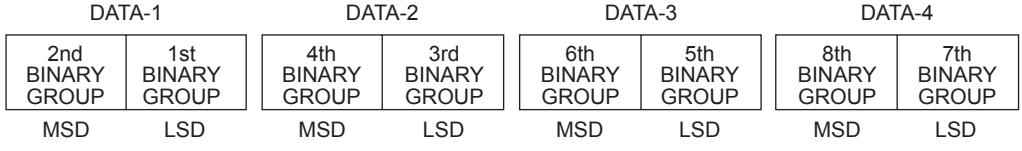
For the data format, refer to "24•31: CUE UP WITH DATA" command.

For the timing, refer to Appendix.

44•05: USER'S BIT PRESET

This command is used for presetting the value, which has been given by the DATA-1 through DATA-4, to the USER'S BIT of the time code generator.

For the timing, refer to Appendix.



40•08: TIMER-1 RESET

This command is used for resetting the TIMER-1 (CTL COUNTER) to zero.

4X•14: IN DATA PRESET

This command is used to set File ID or IN POINT data or both of them in the AUTO mode. This command acts as follows according to the number of parameter bytes. When the DEVICE receives this command, the DEVICE sets File ID or IN POINT data or both of them and, at the same time, performs cue-up that is made when the "2X•31:CUE UP WITH DATA" command is received.

48•14: File ID is specified by the following 8-byte parameter. IN POINT is the timecode at the beginning of the file specified by File ID.

4C•14: IN POINT is specified by the first 4 bytes of the following 12-byte parameter, and File ID is specified by the other 8 bytes.

4X•15: OUT DATA PRESET

This command is used to set OUT POINT data in the AUTO mode. This command acts as follows according to the number of parameter bytes.

40•15: When there is no parameter data, the ID of a file that is open when the command is received is specified for File FD and the timecode at the end of the file is specified for OUT POINT.
When this command is received by the input port, nothing is processed and an ACK response is sent back.

44•15: OUT POINT is specified by the following 4-byte parameter.

40•20: IN RESET

This command is used to disable the specification of IN POINT in the AUTO mode specified by the "4X•14:IN DATA PRESET" command.

40•21: OUT RESET

This command is used to disable the OUT POINT (in the AUTO mode) specified by the "4X•15: OUT DATA PRESET" command.
When this command is received by the input port, nothing is processed and an ACK response is sent back.

41•36: TIMER MODE SELECT

This command is used for selecting the TIMER system used in the AUTO mode by the value of DATA-1. This is used for the IN ENTRY, OUT ENTRY, IN PRESET, OUT PRESET, PRE-ROLL and CUE UP WITH DATA, etc.

[DATA-1] 00 : TIME CODE
01 : TIMER-1
02 : TIMER-2

40•40: AUTO MODE OFF
40•41: AUTO MODE ON

This command is used to set the DEVICE's AUTO mode to ON or OFF.

61•0A: TC GEN DATA SENSE

This command is used for requesting the TIME CODE data that the DEVICE is generating. The DEVICE will make a response with the TIME CODE data according to the content of the DATA-1.

[DATA-1]

BIT-7	BIT-6	BIT-5	BIT-4	BIT-3	BIT-2	BIT-1	BIT-0
			GEN UB				GEN TC

REQUEST COMMAND		RESPONSE COMMAND
DATA-1 = 01: Request for GEN TC	———	"74.08: GEN TIME DATA"
DATA-1 = 10: Request for GEN UB	———	"74.09: GEN UB DATA"
DATA-1 = 11: Request for GEN TC & UB	———	"78.08: GEN TC & UB DATA"

74•08: GEN TC DATA

When the DEVICE receives the "61•0A: TC GEN DATA SENSE" command and its DATA-1 is "01", the TC TIME data generated by the DEVICE will be added to DATA-1 through DATA-4 of the "74•08: GEN TC DATA" command.
For the data format, refer to the "24•31: CUE UP WITH DATA" command.

78•08: GEN TC & UB DATA

When the DEVICE receives the "61•0A: TC GEN DATA SENSE" command and its DATA-1 is "11", the TIME DATA will be added to DATA-1 through DATA-4 of the "74•08: GEN TC DATA" command and the USER'S BIT DATA will be added to DATA-5 to DATA-8.
For the data format, refer to the "24•31: CUE UP WITH DATA" and "44•05: USER'S BIT PRESET" commands.

74•09: GEN UB DATA

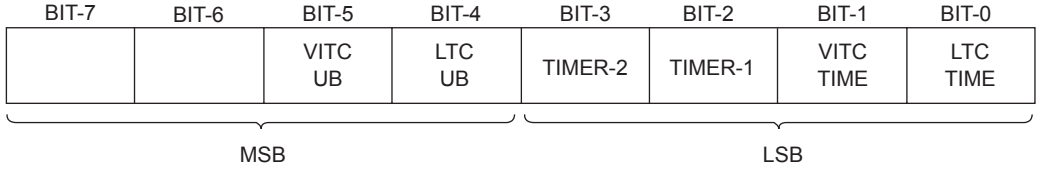
When the DEVICE receives the "61•0A: TC GEN DATA SENSE" command and its DATA-1 is "10", the UB data of TC generated by the DEVICE will be added to DATA-1 through DATA-4 of the "74•09: GEN UB DATA" command.
For the data format, refer to the "44•05: USER'S BIT PRESET" command.

61•0C: CURRENT TIME SENSE

This command is used for requesting the TIME DATA or USER'S BIT. The DEVICE will make a response according to the content of DATA-1.
When accurate time data is requested in the normal playback mode, the following condition must be satisfied.

- Select external reference mode.
- CURRENT TIME SENSE and its return must be completed within the field-2.

[DATA-1] The response command to the request command is as follows.



RESPONSE \ REQUEST DATA-1	01	02	03 *2	04	08	10	20	30 *2	11 *1	22 *1	33 *1, *2
74•00 : TIMER-1 DATA				○							
74•01 : TIMER-2 DATA					○						
74•04 : LTC TIME DATA	○		○								
74•05 : LTC UB DATA						○		○			
78•04 : LTC TIME & UB DATA									○		○
74•06 : VITC TIME DATA		○	○								
74•07 : VITC UB DATA							○	○			
78•06 : VITC TIME & UB DATA										○	○

Notes

*1) If the request DATA-1 equals 11, 22 or 33, TIME DATA is returned by DATA-1 through DATA-4 and USER'S BIT DATA is returned by DATA-5 through DATA-8.

*2) When VITC and LTC are requested at the same time, the USER'S BIT or TIME DATA to be returned is determined in accordance with the table shown below.

UB or TC reading		Return data
LTC	VITC	
OK	OK	LTC
NG	OK	VITC
OK	NG	LTC
NG	NG	LTC

74•00: TIMER-1 DATA

When the DEVICE is required the TIMER-1 data by the "61•0C: CURRENT TIME SENSE" command, the TIMER-1 data will be added to DATA-1 through DATA-4.
At that time, the DF/NDF mode of TIMER-1 is set to BIT-6 of DATA-1.
For the data format, refer to the "24•31: CUE UP WITH DATA" command.

74•01: TIMER-2 DATA

When the DEVICE is required the TIMER-2 data by the "61•0C: CURRENT TIME SENSE" command, the TIMER-2 data will be added to DATA-1 through DATA-4.
At that time, the DF/NDF mode of TIMER-2 is set to BIT-6 of DATA-2.
For the data format, refer to the "24•31: CUE UP WITH DATA" command.

74•04: LTC TIME DATA

When the DEVICE is required the LTC TIME DATA by the "61•0C: CURRENT TIMER SENSE" command, the LTC TIME DATA will be added to DATA-1 through DATA-4.
For the data format, refer to "24•31: CUE UP WITH DATA" command.

78•04: LTC TIME & UB DATA

When the DEVICE is required the LTC TIME DATA and USER'S BIT DATA by the "61•0C: CURRENT TIME SENSE" command, the LTC TIME DATA will be added to DATA-1 through DATA-4 and the LTC USER'S BIT DATA will be added to DATA-5 through DATA-8.
For the data format, refer to the "24•31: CUE UP WITH DATA" and "44•05: USER'S BIT PRESET" commands.

74•05: LTC UB DATA

The DEVICE is required the LTC USER'S BIT DATA by the "61•0C: CURRENT TIMER SENSE" command, the LTC USER'S BIT DATA will be added to DATA-1 through DATA-4.
For the data format, refer to the "44•05: U-BIT PRESET" command.

74•06: VITC TIME DATA

The DEVICE is required the VITC TIME DATA by the "61•0C: CURRENT TIME SENSE" command, the VITC TIME DATA will be added to DATA-1 through DATA-4.
For the data format, refer to the "24•31: CUE UP WITH DATA" command.

78•06: VITC TIME & UB DATA

When the DEVICE is required the VITC TIME DATA and USER'S BIT DATA by "61•0C: CURRENT TIME SENSE" command, the VITC TIME DATA will be added to DATA-1 through DATA-4 and the VITC USER'S BIT DATA will be added to DATA-5 through DATA-8.
For the data format, refer to the "24•31: CUE UP WITH DATA" or "44•05: USER'S BIT PRESET" command.

74•07: VITC UB DATA

The DEVICE is required the VITC USER'S BIT DATA by the "61•0C: CURRENT TIME SENSE" command, the VITC USER'S BIT DATA will be added to DATA-1 through DATA-4.
For the data format, refer to the "44•05: USER'S BIT PRESET" command.

60•10: IN DATA SENSE
60•11: OUT DATA SENSE
60•12: A IN DATA SENSE
60•13: A OUT DATA SENSE

These commands are used for requesting the IN/OUT DATA and the AUDIO IN or AUDIO OUT DATA.
For the data format, refer to the "24•31: CUE UP WITH DATA" command.

REQUEST COMMAND		RESPONSE COMMAND
60•10 : IN DATA SENSE	———	74•10 : IN DATA
60•11 : OUT DATA SENSE	———	74•11 : OUT DATA
60•12 : A IN DATA SENSE	———	74•12 : A IN DATA
60•13 : A OUT DATA SENSE	———	74•13 : A OUT DATA

74•10: IN DATA

When the DEVICE receives the “60•10: IN DATA SENSE” command, the IN DATA will be added to DATA-1 through DATA-4 of the “74•10: IN DATA” command.
For the data format, refer to the “24•31: CUE UP WITH DATA” command.

74•11: OUT DATA

When the DEVICE receives the “60•11: OUT DATA SENSE” command, the OUT DATA will be added to DATA-1 through DATA-4 of the “74•11: OUT DATA” command.
For the data format, refer to the “24•31: CUE UP WITH DATA” command.

74•12: A IN DATA

When the DEVICE receives the “60•12: A IN DATA SENSE” command, the A IN DATA will be added to DATA-1 through DATA-4 of the “74•12: A IN DATA” command.
For the data format, refer to the “24•31: CUE UP WITH DATA” command.

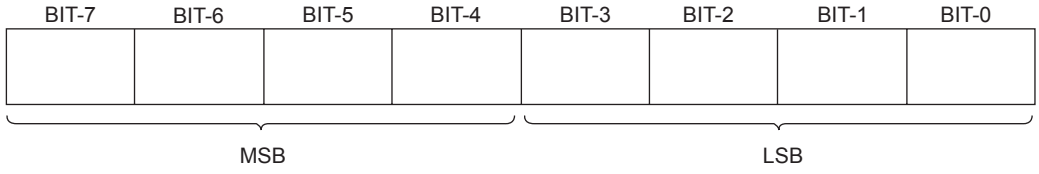
74•13: A OUT DATA

When the DEVICE receives the “60•13: A OUT DATA SENSE” command, the A OUT DATA will be added to DATA-1 through DATA-4 of the “74•13: A OUT DATA” command.
For the data format, refer to the “24•31: CUE UP WITH DATA” command.

61•20: STATUS SENSE

This command is used for requesting the status of the DEVICE.
It specifies the data to be sent back by the “7X•20: STATUS DATA” command according to DATA-1 added to this command.

[DATA-1]



MSD (BIT-7 to 4): Indicates the starting DATA No. of the data to be sent back.
LSD (BIT-3 to 0): Indicates the number of data bytes (1H to FH) to be sent back.

Example) When the DATA-1 of the “61•20: STATUS SENSE” command is “2A”.
The STATUS DATA of the DEVICE will send back ten bytes from the DATA No.2, i.e. DATA No.2 to DATA No.B.

7X•20: STATUS DATA

When the DEVICE receives the “61•20: STATUS SENSE” command, the following data will be sent back in accordance with the request.

SRMASTER series STATUS DATA

	BIT-7	BIT-6	BIT-5	BIT-4	BIT-3	BIT-2	BIT-1	BIT-0
DATA No. 0	BUSY		0			HARD ERROR		LOCAL
DATA No. 1	1	0	STOP	0	F.REV	F.FWD	REC	PLAY
DATA No. 2	SERVO LOCK		SHUTTLE	JOG	VAR	DIRECTION	STILL	CUE UP COMPLETE
DATA No. 3	AUTO MODE						OUT	IN
DATA No. 4								PREROLL OR CUE UP
DATA No. 5								
DATA No. 6								
DATA No. 7								
DATA No. 8								
DATA No. 9							PREVIEW OUT	PREVIEW IN
DATA No. A								
DATA No. B								
DATA No. C								
DATA No. D								
DATA No. E								
DATA No. F								

STATUS DATA No. 0

BIT-7: BUSY

This bit is set to “1” when the DEVICE cannot execute the recording command, playback command, or other commands that require processing time.

BIT-2: HARD ERROR

This bit is set to “1” when there is a problem with the hardware.
For details, refer to the maintenance manual “SELF DIAGNOSTICS”, etc.

BIT-0: LOCAL

This bit is set to “1” when the REMOTE/LOCAL switch on the front panel is set to “LOCAL”.

STATUS DATA No. 1

BIT-5: STOP

This bit is set to “1” when the DEVICE receives the “20•00: STOP” command and goes into the STOP mode. This bit is also set to “1” during GUI display.

BIT-3: F.REV
This bit is set to “1” when the DEVICE receives the “20•20: REWIND” command and goes into the REVERSE mode.

BIT-2: F.FWD
This bit is set to “1” when the DEVICE receives the “20•10: FAST FWD” command and goes into the FORWARD mode.

BIT-1: REC
This bit is set to “1” when the DEVICE receives the “20•02: REC” command and goes into the REC mode.
This bit is also set to “1” when “DATA No. 4/BIT-4 EDIT” is set to “1”.

BIT-0: PLAY
This bit is set to “1” when the DEVICE receives the “20•01: PLAY”, “20•02: REC” or “20•65: EDIT ON” command and goes into the PLAY, REC or EDIT mode.

STATUS DATA No. 2

BIT-7: SERVO LOCK
This bit is set to “1” when the DEVICE is in the condition that the normal-speed run is locked in the PLAY mode.

BIT-5: SHUTTLE
This bit is set to “1” when the DEVICE receives the “2X•13: SHUTTLE FWD” or “2X•23: SHUTTLE REV” command and goes into the SHUTTLE mode.

BIT-4: JOG
This bit is set to “1” when the DEVICE receives the “2X•11: JOG FWD” or “2X•21: JOG REV” command and goes into the JOG mode.

BIT-3: VAR
This bit is set to “1” when the DEVICE is in the following mode.
• VAR mode (“2X•12: VAR FWD” or “2X•23: VAR REV” command is received.)

BIT-2: DIRECTION
This bit shows the direction defined in the DEVICE.
0 = FWD
1 = REV

BIT-1: STILL
This bit is set to “1” when the DEVICE is in the STILL mode of SHUTTLE/JOG/VAR.
This bit is set to “0” when DEVICE is in the STOP mode.

BIT-0: CUE UP COMPLETE
This bit is set to “1” when the “2X•31: CUE UP WITH DATA” or “AX•02: RECORD CUE UP WITH DATA” command was received and its execution has been completed.

STATUS DATA No.3

BIT-7: AUTO MODE
This bit is set to "1" when the DEVICE receives the "40•41:AUTO MODE ON" command.

BIT-1: OUT
This bit is set to "1" when the OUT PRESET data retains valid timecode information in the AUTO mode.

BIT-0: IN
This bit is set to "1" when the IN PRESET data retains valid information in the AUTO mode.

STATUS DATA No.4

BIT-0: PREROLL or CUE UP
This bit is set to "1" when the "2X•31: CUE UP WITH DATA" or "AX•02: RECORD CUE UP WITH DATA" command has been received and is being executed.

STATUS DATA No.9

BIT-1: PREVIEW OUT
This bit is set to "1" when the PREVIEW OUT PRESET data retains valid timecode information in the AUTO mode.

BIT-0: PREVIEW IN
This bit is set to "1" when the PREVIEW IN PRESET data retains valid information in the AUTO mode.

AX•02: RECORD CUE UP WITH DATA

This command is used to specify File ID, start timecode, or both of them before the DEVICE executes recording.
Recording time (duration) can be specified by the OUT DATA PRESET command in advance.
When the REC command is issued after the RECORD CUE UP WITH DATA command is issued, open end recording is performed and the recording is completed upon reception of the STOP command.
When the REC command is issued after the OUT DATA PRESET command is issued, the DEVICE can calculate the recording time (duration) from the timecode at the recording start point and the OUT POINT data value.

Note

Before staring open end recording, clear the set OUT POINT data by the OUT RESET command.

A8•02: File ID is specified by the 8-byte parameter following the command. Timecode 00:00:00:00 is specified at the beginning of recording. If an existing File ID is specified, nothing is performed.

AC•02: RECORD CUE UP WITH START TIME AND FILE ID
The timecode at the recording start point is specified by the first 4 bytes of the 12-byte parameter following the command, and File ID is specified by the other 8 bytes. If an existing File ID is specified, nothing is performed.

AX•04: PREVIEW IN PRESET

This command is used to specify File ID or IN POINT data or both of them in the AUTO mode.
This command acts as follows according to the number of parameter bytes.

A8•04: File ID is specified by the following 8-byte parameter data. The beginning of the file specified by the File ID is specified for the timecode position. If no file of the specified File ID exists, operation is disabled but the ongoing automatic playback operation continues.

AC•04: The starting timecode position is specified by the first 4 bytes of the following 12-byte parameter data, and File ID is specified by the other 8 bytes. If no file of the specified File ID exists, operation is disabled but the ongoing automatic playback operation continues.

AX•05: PREVIEW OUT PRESET

This command is used to specify the OUT POINT timecode of the sub chip that is set by the "AX•04:PREVIEW IN PRESET" command. If this command is used prior to the "AX•04:PREVIEW IN PRESET" command, nothing is processed.

A4•05: The OUT POINT timecode of the file to be used is specified by the following 4-byte parameter.

A0•06: PREVIEW IN RESET

This command is used to disable specification of IN POINT in the AUTO mode.

A0•07: PREVIEW OUT RESET

This command is used to disable specification of OUT POINT in the AUTO mode.

A0•14: LIST FIRST ID

This command is used to request the first File ID data in the file list sorted in the order stored in the storage.
This command can acquire the second File ID data from the top by the "A0•15:LIST NEXT ID" command.

A0•15: LIST NEXT ID

This command is used to request the File ID data following the File ID data that was sent back by the preceding "8X•14 : ID LISTING" command. Using this command continuously can obtain consecutive File ID data.

8X•14: ID LISTING

This command is used to send back File ID data in response to the "A0•14:LIST FIRST ID" command and the "A0•15:LIST NEXT ID" command.

80•14: If the requested File ID does not exist, this command is sent back.

88•14: The requested File ID data is sent back in the 8-byte parameter.

A8•18: ID STATUS REQUEST

This command is used to request the status data of the specified File ID.
The File ID of a file whose status is to be requested is specified by the 8-byte parameter.
A response is obtained from "81•18:ID STATUS".

81•18: ID STATUS

When the DEVICE receives the “A8•18:ID STATUS REQUEST” command, it adds the status data below to the parameter of the “81•18:ID STATUS” command and sends back the command response.

[DATA-1]

BIT-7	BIT-6	BIT-5	BIT-4	BIT-3	BIT-2	BIT-1	BIT-0
						ID OPENED	ID EXIST

BIT-1: ID OPEND

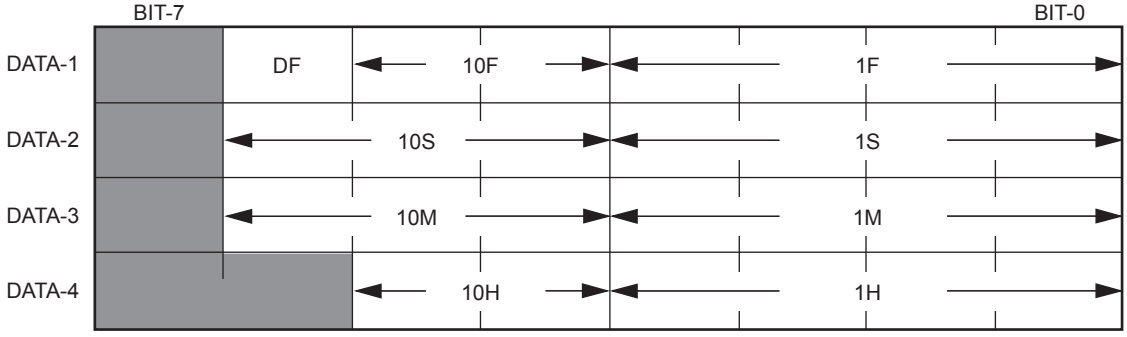
This bit is set to “1” when a file of the specified File ID is open in the port that received the “A8•18:ID STATUS REQUEST” command.

BIT-0: ID EXIST

This bit is set to “1” when a file of the specified File ID exists in the storage.

Time Data Format

The following shows the time data format used by commands such as “24•31: CUE UP WITH DATA”.



Although the shaded null bits have no meaning as time data, they are set in the following cases.

1. DATA-1, BIT-6: DF FLAG (“1” DF, “0” NDF) ••••• NTSC operation mode

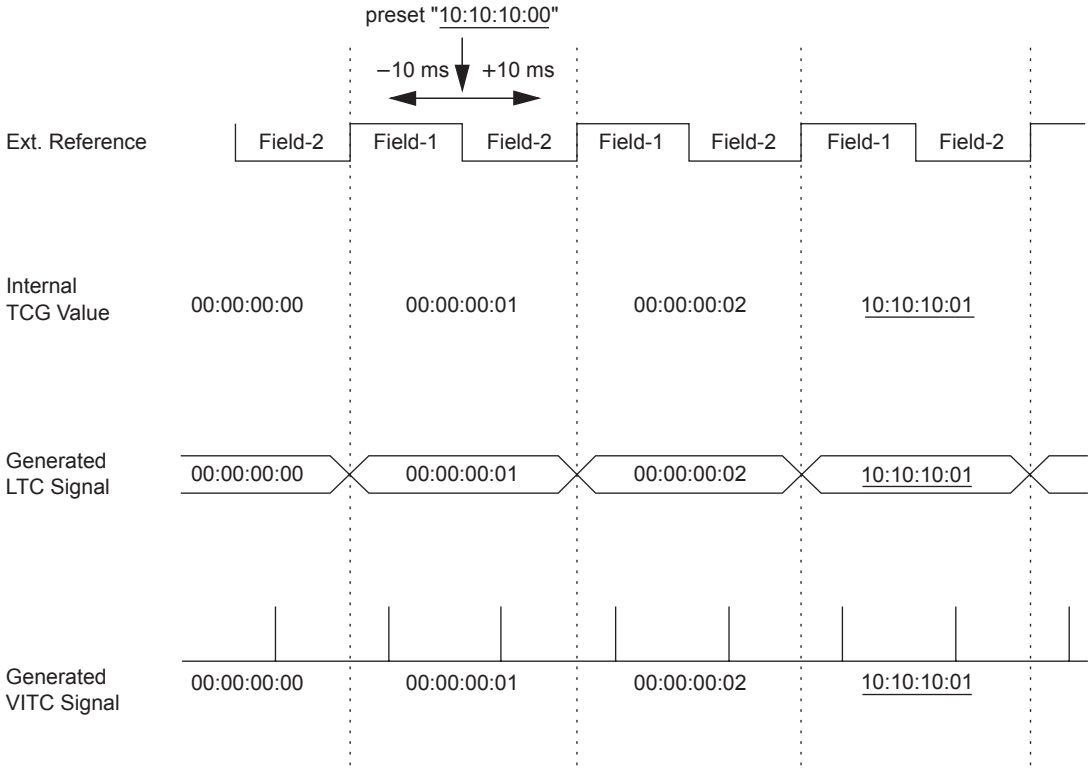
   This bit is set in a response command from DEVICE of “61•0C: CURRENT TIME SENSE” according to the DF or NDF mode of DEVICE.
   It is also set to specify the DF or NDF mode of the TIME CODE GENERATOR of DEVICE of “44•04: TIME CODE PRESET” command.

2. Other bits

   The other bits are defined by SMPTE/EBU in a response command of TIME CODE DATA from DEVICE of “61•0C: CURRENT TIME SENSE” command. Flags conforming to the TIME CODE FORMAT are set in some cases.

Appendix

(1) 44•04 [TIME CODE PRESET], 4X•05 [USER BIT PRESET]



(2) Basic control sequence to continuously play back two or more cuts

1. "40•41: AUTO MODE ON"
   Set the AUTO mode to ON.
2. "4X•14:IN DATA PRESET"
   Set the first cut's File ID and the first cut's first timecode to IN POINT.
3. "4X•15: OUT DATA PRESET"
   Set the first cut's last timecode to OUT POINT.
4. "AX•04:PREVIEW IN PRESET"
   Set the second cut's File ID and the second cut's first timecode to PREVIEW IN POINT.
5. "AX•05:PREVIEW OUT PRESET"
   Set the second cut's last timecode to PREVIEW OUT POINT.
6. "20•01: PLAY"
   Start automatic playback operation.
7. Request status by the "61•20 Status Sense" command and wait until "BIT-0:PREVIEW IN" of STATUS DATA No.9 becomes 0. When playback of the cut registered in PREVIEW starts, "BIT-0:PREVIEW IN" changes from 1 to 0, enabling parameters of the following cut to be registered in PREVIEW.
8. "AX•04:PREVIEW IN PRESET"
   Set the File ID of the following cut and the cut's first timecode to PREVIEW IN POINT.
9. "AX•05:PREVIEW OUT PRESET"
   Set the last timecode of the following cut to PREVIEW OUT POINT.
10. Repeat steps 7 to 9 above until the last cut.

11. When playback is performed until the last cut's last timecode, the DEVICE automatically stops playback.
    Completion of automatic playback can be detected by monitoring status by the "61•20 Status Sense" command.
12. "40•40: AUTO MODE OFF"
    Set the AUTO mode to OFF.

In the actual control, necessary information (such as predicted progress of control and progress of playback) must be monitored.

SR-R1000 (SY)
SR-R1000 (CN)
PSW-4400 (SY)
PWS-4400 (CN)
PSW-4500 (SY)
PWS-4500 (CN) E
9-968-968-03

Sony Corporation

Printed in Japan
2016. 1 08