

## **AR-3000** AUDIO RECORDER

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### RS-232C Reference

**AR-3000 RS-232C Reference version 1.0**

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**- Contents -**

<b>Section1 Introduction</b> .....	1
1.1 If You Have Been Using the AR-2000.....	1
 <b>Section2 Setup</b>	
2.1 About the RS-232C Interface .....	1
2.1.1 Connector and Cable .....	1
2.2 Handshaking .....	1
2.3 Setup Procedure .....	2
2.4 Connections with the Computer.....	2
2.5 Computer Settings .....	2
2.6 AR-3000 Settings.....	2
2.6.1 Baud Rate .....	2
 <b>Section3 Overview of Commands</b>	
3.1 Command Structure.....	3
3.1.1 Communication Protocol.....	3
3.1.2 Command Format .....	5
3.1.3 About Input Parameters.....	5
3.1.4 About Output Parameters .....	5
3.2 Precautions .....	5
 <b>Section4 Details of each Command</b>	
4.1 Commands Transmitted from the External Device (Computer) to the AR-3000 .....	6
4.2 Details of Commands Sent from the External Device (Computer) to the AR-3000 .....	7
4.2.1 Control Commands	
PA Specifying the Playback Phrase.....	7
PE Playback Pause / Restart Playback.....	7
PL Playback Start.....	8
RL Playback from the Middle of a Phrase.....	8
ST Halting Playback/Recording.....	8
AE Starting Time-Stamped Recording.....	9
RE Start Recording .....	9
RM Record Ready Mode.....	10
4.2.2 Editing Commands	
DM Enable Execution of Editing Commands.....	11
CD Delete Card.....	11
CP Copy Card .....	11
CO Convert Card .....	11
FM Format Card .....	12
LS Recorded Phrase Protect Mode .....	12

LW	Recorded Phrase Protect Mode .....	12
SP	System Copy .....	13
PC	Copy Phrase.....	13
PD	Delete Phrase .....	13
PI	Seek and Set Playback Points at the Locations of Silent Portions.....	13
PT	Delete Audio Outside the Playback Points (Phrase Truncate).....	13
PV	Divide Phrase .....	14
PM	Join Phrase .....	14
TS	Time Stretch.....	14
RC	RDAC-Mode Convert .....	14
RT	Recording-Type Convert .....	15
4.2.3 Setting Commands		
CV	Card Name Settings.....	16
PU	Pattern Phrase Settings .....	16
PS	Pattern Phrase Settings .....	17
SS	Song Phrase Settings .....	17
SU	Phrase Settings .....	18
PN	Phrase Name Settings .....	18
PR	Phrase Repeat Settings.....	18
PO	Control Out Settings.....	19
PP	Playback Point Settings.....	19
LP	Loop Play Settings .....	19
PY	Delay Time Settings.....	19
VM	Play Volume Settings.....	20
FD	Fade In and Fade Out Settings.....	20
MP	Playback Tempo for MIDI Settings .....	20
TT	Time Stamp Settings .....	20
MS	MIDI Settings.....	21
ME	MIDI Settings.....	21
NM	MIDI Note Map Settings .....	22
MM	MMC Mode Settings .....	22
MT	MTC Settings.....	22
BR	Communication Speed Settings .....	23
CE	Program(Count) Playback Settings .....	23
DC	Display Contrast Settings .....	23
DP	Direct Playback Settings .....	24
DL	Direct Playback Settings .....	24
SM	System Settings.....	25
CI	Control Input Mode Settings.....	25
AL	AR-LINK Settings.....	26
DN	Dual Mono Mode Settings .....	26
LT	Line Out(Thru) Settings .....	26

EQ	Equalizer Settings.....	27
VT	Input Volume Thru Settings.....	27
BO	Busy Out Settings.....	27
DO	Display Parameter Settings.....	28
4.2.4 Request Commands		
2Q	Pattern Phrase Setting Contents Request.....	28
3Q	Pattern Phrase Setting Contents Request.....	28
GQ	Song Phrase Setting Contents Request.....	28
AC	Activity Sensing (Verify AR-3000 Unit Activity).....	28
AQ	Reset the Phrase Output Counter.....	29
CQ	Card Setting Contents Request.....	29
DQ	Direct Playback Setting Contents Request.....	29
IQ	MIDI Setting Contents Request.....	29
JQ	MIDI Setting Contents Request.....	29
LQ	Display Contrast Setting Request.....	30
MQ	Card Remaining Capacity Request.....	30
NQ	MIDI Note Map Setting Contents Request.....	30
PQ	Phrase Setting Contents Request.....	30
QQ	Phrase Setting Contents Request.....	31
SQ	System Setting Contents Request.....	31
YQ	System Setting Contents Request.....	31
TQ	Time Stamp Request.....	32
UQ	Program (Count) Playback Setting Contents Request.....	32
VR	Version Request.....	32
4.2.5 Reply Commands		
ACK	Response to Normal Reception of a Command.....	33
ER	Reply to the AR-3000 When an Error Has Occurred.....	33
Xon/Xoff	Allow or Disable Transmission. Used for Handshaking.....	33
4.3	Commands Sent from the AR-3000 to the External Device (Computer).....	33
4.4	Details of Commands Sent from the AR-3000 to the External Device (Computer).....	33
4.4.1 Setting Output Commands		
CS	Card Setting Output.....	33
PU	Pattern Phrase Setting Output.....	34
PS	Pattern Phrase Setting Output.....	34
SS	Song Phrase Setting Output.....	34
SU	Phrase Setting Output.....	35
RU	Phrase Setting Output.....	36
MS	MIDI Setting Output.....	38
ME	MIDI Setting Output.....	38
NM	MIDI Note Map Setting Output.....	39
AC	Active Sensing Reply.....	40
CE	Program (Count) Playback Setting Output.....	40

CR	Card Remaining Capacity Output .....	40
DC	Display Contrast Setting Output.....	40
DP	Direct Playback Setting Output.....	41
SM	System Setting Output .....	41
SY	System Setting Output .....	42
TI	Time Stamp Settings .....	43
VR	Version Output.....	43
CC	Card Insertion Status Output.....	44
%%	Card Operation Progress Status Output.....	44
PE	Output the Elapsed Time from the Start of the Phrase.....	44
AE	Output the Total Number of Phrases Recorded on the Card.....	45

#### 4.4.2 Reply Commands

ER	Replies When an Error Has Occurred .....	45
ACK	Acknowledge Normal Status, Indicate Normal Reception of a Command .....	46
Xon/Xoff	Allow or Disable Transmission. Used for Handshaking.....	46

## Section5 Appendix

5.1	AR-3000 Commands List .....	47
5.1.1	AR-2000 Compatible Commnads List.....	47
5.1.2	AR-3000 Commands (Commands Newly Added with the AR-3000) List.....	49
5.2	Characters That Can Be Used In Phrase Names and Card Names.....	50
5.3	Sample Algorithms	
5.3.1	Playing Back a Phrase .....	51
5.3.2	Recording ( Nomal Recording ) .....	52
5.3.3	Recording ( Time-Stamped Recording ) .....	53
5.3.4	Verifying the Parameters of All Phrases Starting with the Lowest-Numbered Phrase.....	54
5.3.5	Deleting a Phrase .....	55

## Section1 Introduction

This manual explains how to control the AR-3000 using RS-232C. For details on the operation of the AR-3000 itself, refer to the AR-3000 owner's manual. This manual assumes that you have a basic understanding of computers. For explanations of computer terminology or operation, please refer to commercially available manuals.

**The contents of this manual are subject to change without notice.**

### 1.1 If You Have Been Using the AR-2000

The AR-3000's command set, which employs RS-232C, is designed to be backwardly compatible with the AR-2000. This means it is possible for you to continue using the control system you have used with the AR-2000. However, since the AR-3000 and AR-2000 are not functionally identical in every respect, some functions cannot be used. For more information, check the included specifications.

## Section2 Setup

### 2.1 About the RS-232C Interface

RS-232C is a standardized type of serial interface. The connections which are used by the AR-3000 are discussed below.

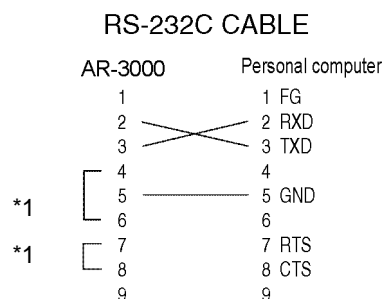
#### 2.1.1 Connector and Cable

##### Connector specifications

Pin No.	Signal Name	Pin Connection
1	NC	
2	RXD	
3	TXD	
4	DTR	
5	GND	
6	DSR	
7	RTS	
8	CTS	
9	NC	

\* The AR-3000 is equipped with a D-sub 9-pin type female connector. In the case of connecting by female – female crossing cable, use gender changer.

##### Cable specifications \*2



\*1 This is already connected in inside of the AR-3000. (4 – 6, 7 - 8)

\*2 At least three line(RXD, TXD, GND) should be connected as shown in a figure.

### 2.2 Handshaking

If the AR-3000's processing speed is slower than the speed at which data is transmitted from the computer, measures must be taken to avoid data loss. Conversely, data loss will also occur if data is transmitted from the AR-3000 faster than the computer can process it.

For these reasons, the AR-3000 uses "Xon/Xoff" handshaking.

The external computer can control transmission from the AR-3000 in the same way.

The ASCII code signal name for Xon is DC1, which is 11H.

The ASCII code signal name for Xoff is DC3, which is 13H.

## 2.3 Setup Procedure

Here is the procedure for setting up the external computer and the AR-3000.

- 1) Connections with the computer  
Use an RS-232C cable to connect the two devices. Refer to "2.4 Connections with the computer."
- 2) Turn on the power for the AR-3000 and the computer
- 3) Computer settings  
Set the communication parameters. Refer to "2.5 Computer settings."
- 4) AR-3000 settings  
Set the communication parameters. Refer to "2.6 AR-3000 settings."
- 5) Operate the AR-3000  
Transmit data between the external computer and the AR-3000.

## 2.4 Connections with the Computer

- 1) Turn off the power of the AR-3000 and the computer.
- 2) Use the appropriate cable to connect the RS-232C -compatible connector of the computer to the RS-232C connector located on the rear panel of the AR-3000. Refer to "2.1.1 Connector and Cable" for the appropriate cable to use.

## 2.5 Computer Settings

- 1) Communication parameters for the computer
 

Communication method	start - stop system (asynchronous) full duplex
Baud rate	4800 / 9600 / 19200 BPS 38400 BPS (for compatibility with legacy models : AR-2000 / AR-1)
Parity	none
Data length	8 bits
Stop bit	1 bit
Code set	ASCII
Xon Xoff	on

If you are using MS-DOS, the above settings can be made using the "SPEED" and "SWITCH" commands. For details on these settings, refer to your MS-DOS owner's manual.

## 2.6 AR-3000 Settings

When using the AR-3000 via RS-232C, the baud rate must be specified.

Also, in order for it to be controlled via RS-232C, the AR-3000 must not be in the Mode menu (the MODE indicator must not be lit).

### 2.6.1 Baud Rate

If the AR-3000's power is turned on when a card is not inserted, the baud rate will default to 9600 bps. If a card is then inserted, the settings will change to the settings which are contained in the card. However this will occur only for the first-inserted card, and subsequently inserted cards will be ignored. If you wish to modify the baud rate during operation, use the following procedure on the AR-3000 to change it.

## Baud Rate Settings

Set the baud rate to the desired value. (Refer to owner's manual p.118)

- 1) Press the MODE button.
- 2) Rotate the SELECT knob to select "7.1 Baud rate."
- 3) Press the SELECT knob.
- 4) Rotate the SELECT knob to select the baud rate.  
Baud rate = 4800, 9600, 19200, 38400 bps  
Select the same setting as on the computer.
- 5) Press the SELECT knob. Rotate the SELECT knob to select "Yes"  
Press the ENTER button to set the baud rate.
- 6) Press the MODE button.

## Section3 Overview of Commands

The AR-3000 and the computer communicate using commands.

### 3.1 Command Structure

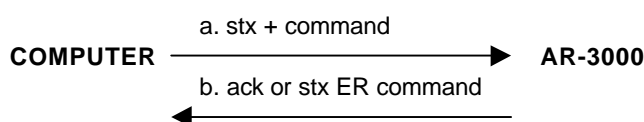
Commands consist of STX (02H) + two uppercase characters.

However, the Type 0 commands listed later are exceptions to this.

#### 3.1.1 Communication Protocol

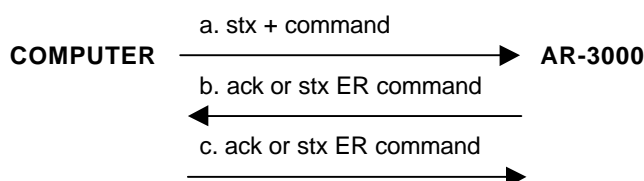
Depending on the command, four types of communication protocol are used between the computer and the AR-3000. As also explained in chapter 4, the ACK referred to in this document is ASCII code 06H (ACK), and the ER command is a command that transmits/receives an error.

- 1) When telling the AR-3000 to perform an operation or make a setting.  
This is done using the 4.2.1 Control and 4.2.3 Setting commands explained in chapter 4.  
Commands use the following procedure.



- a. The command is sent from the computer to the AR-3000.
- b. If the command is received correctly, the AR-3000 will transmit an ACK command. If not, it will transmit an ER command.

- 2) To verify the settings of the AR-3000  
This is done using the 4.2.4 Request command explained in chapter 4. The command to check the setting status of the AR-3000 uses the following procedure.

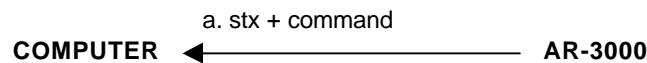




- a. The command is sent from the computer to the AR-3000.
- b. If the command was received correctly, the AR-3000 will transmit its settings as the Setting output command. If the command was received incorrectly, the AR-3000 will transmit an ER command.
- c. If the output from the AR-3000 is received correctly, send an ACK command. This ACK may be omitted, and is not absolutely necessary. If not correctly, an ER command "ER:0;" can be sent to the AR-3000. The AR-3000 will re-transmit the Setting output command that was output instep "b". This command may also be omitted, and is not absolutely necessary. You may instead re-do the sequence from step "a".

3) Commands originating automatically from the AR-3000

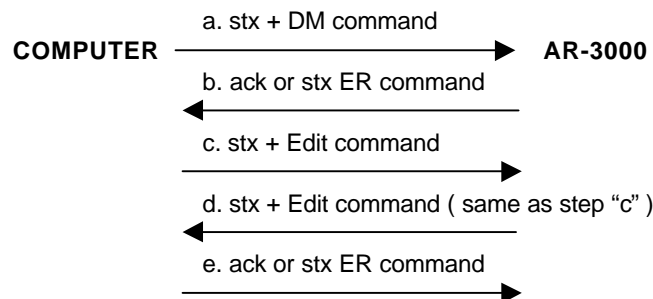
Some commands are transmitted automatically from the AR-3000. The two commands CC (card insertion status output) and %% (completion status output when a card operation takes place) fall in this category, and use the following procedure.



- a. The AR-3000 will automatically transmit the command. There is no need to return an ACK, etc.

4) Commands accompanied by confirmation

The 4.2.2 Edit command explained in chapter 4 is of this type. To prevent accidental erasure of data, edit commands are executed after entering Delete mode. Commands use the following procedure.



- a. Transmit the DM command. The AR-3000 will enter Delete mode.
- b. If the DM command is received correctly, an ACK will be returned. If there is a command error, the ER command will be returned and the AR-3000 will automatically exit Delete mode.
- c. If no error has occurred, transmit the command you wish to execute.
- d. To confirm, the AR-3000 will send back the command that it received in step "c".
- e. If the command is correct, send an ACK. This will cause the command to be executed. Then, after receiving the command, the AR-3000 will automatically exit Delete mode. If the command is an error, you can send an ER command "ER:1;". The command will be canceled, and the AR-3000 will exit Delete mode.

### 3.1.2 Command Format

Commands (control signals) have several formats.

Type 0: Those consisting only of a control code.

' ; ' etc. is not attached. These consist only of a control code.

Example) **ACK**

Type 1: Commands with no parameters

These commands end in ' ; '

Example) **stxST;**

Type 2: Commands with parameters.

Command : parameter, parameter . . . ;

Command and parameter are separated by a colon ' : '

Parameter and parameter are separated by a comma ' , '

A semicolon ' ; ' is placed at the end of the parameter.

### 3.1.3 About Input Parameters

1) Generally, parameters use decimal notation, and are variable length.

Example) **stxDC:10; stxDC:5;**

Example) **stxMP:A1,30; ,stxMP:A20,255;**

2) Characters in a card name etc. are enclosed in double quotation marks ( " ).

Example) **stxCV:0,"ABCDEFGH",0;**

3) The phrase and the card slot are specified together.

Example) **stxPA:A1;** ( plays back phrase 1 of card A )

\* A01 , A001 or A0001 is the same as A1.

### 3.1.4 About Output Parameters

1) Generally, parameters use decimal notation, and are variable length.

But phrase name and time are fixed length.

Example) phrase name( A1 – A999 , B1 – B999 ) : A001 , A020 , A300 , \_.

Example) phrase name( A1000 , B1000 ) : A1000 , B1000

Example) Time : 00H00M06S14F7S / 05M40S / 00S04F / 30S0 \_.

### 3.2 Precautions

1) After you make settings, erase, or copy, we recommend that you call up the AR-3000 internal memory data and check the contents.

2) While the computer and the AR-3000 are communicating, please avoid the following actions, which could result in destruction of the data in the card.

- Inserting or removing the memory card.
- Moving the protect switch of the card.
- Disconnecting the RS-232C cable. ...etc.

## Section4 Details of each Command

### 4.1 Commands Transmitted from the External Device (Computer) to the AR-3000

The following 5 types of command are transmitted from the external device to the AR-3000. "External" in these explanations refers to the computer. "AR" refers to the AR-3000.

#### 1) Control (execute) commands

These command signals cause the AR-3000 to operate; e.g., playback or record. The player functions use mostly these commands.

#### 2) Editing commands

To prevent accidental erasure of data, edit commands are executed after entering Delete mode. Commands are executed using the following procedure.

1. External to AR      The DM command is sent, and the AR-3000 enters Delete mode.
2. AR to External      When the command is received correctly, an ACK is returned. If the command is not correct, an error code is returned, and Delete mode is automatically exited.  
\* When no command is received for two minutes, the Delete mode is automatically exited.
3. External to AR      If no error has occurred, transmit the command to be executed.
4. AR to External      The command transmitted in step 3 will be re-transmitted for confirmation.
5. External to AR      If the command is correct, transmit an ACK command. The command will be executed, and Delete mode will be exited automatically. If the command is an error, transmit an ER command "ER:1;". Delete mode will be exited automatically.

#### Commands valid when in Delete mode

##### External to AR

CD : Delete Card	CP : Copy Card
CO : Convert Card	FM : Format Card
LS : Recorded phrase protect mode	LW : Recorded phrase protect mode
SP : System copy	PC : Copy Phrase
PD : Delete Phrase	RC : Convert recording type
PT : Delete the silent portions (Truncate)	
PV : Divide Phrase	
PM : Combine phrase	TS : Time Stretch
RC : RDAC-Mode Convert	PI : Seek and set playback points at the locations of silent portions

In Delete mode, when a command other than an Edit command is received by the AR-3000, it will automatically exit Delete mode, and execute that command. If the AR-3000 receives an Edit command when not in Delete mode, it will transmit an ER command, and ignore the Edit command that was received.

## 3) Setting commands

These commands are used to set AR-3000 parameters from the external device.

## 4) Request commands

This command causes the AR-3000 to output the status of its current settings. When a Request command is transmitted to the AR-3000, the AR-3000 will transmit the requested contents as the Setting output command. In this case, an ACK will not be returned. However for the AC and AQ commands, an ACK will be output. If the command was not correct, an ER command will be returned.

## 5) Reply commands

Reply commands are necessary for communication control, for example to notify that a command was received correctly.

## 4.2 Details of Commands Sent from the External Device (Computer) to the AR-3000

Commands compatible with the AR-2000 are marked as shown below (relevant symbol appears before name).

- = Commands for the AR-2000/AR-3000 (those common to both the AR-2000 and AR-3000)
- > Commands for the AR-3000 (commands newly added with the AR-3000)
- < Commands for the AR-2000 (for the AR-2000; includes items that cannot be used with the AR-3000)

### 4.2.1 Control Commands

#### Playback Commands

##### **= PA(PhrAse)**

Function: Specifying the playback phrase

Syntax: **stxPA:** \*\*\*\*, \*\*\*\*, ....., \*\*\*\* ;  
                   a    a            a  
                   a Phrase number

Example) **PA:A1,A3,B5;**

Specify A0001 and A0003 and B0005 as the playback phrases.

The specified phrases are consecutively played back from the left.

*Note:* A maximum of 100 phrases can be specified in one line.

*Be sure that the phrase numbers are registered (i.e., for which data exists).*

##### **= PE (PausE)**

Function: Playback pause / Restart playback

Syntax: **stxPE;**

*Note:* When this command is sent during phrase playback, the AR-3000 stops playback and enters the paused state. Sending the PE command again releases the pause, and playback resumes from where it was paused. When operation is paused with the PE command, the AR-3000 outputs the elapsed time from the start of the phrase to the point where paused. (Refer to AE command 4 . 4 . 1 )

**Caution:**The command is not compatible with the Dual Mono.  
**Phrases other than audio phrases cannot be specified.**

**= PL (PLay)**

Function: Playback start

Syntax: **stxPL;**

*Note: If the playback phrase has not been specified, the minimum default value (normally A001) will be used. The phrases specified by the PA command will be played back consecutively.*

**\* If Dual Mono Mode is ON**

Since phrases will be played back from the L or the R output depending on whether they are odd or even numbered phrases, phrases specified by the PA command will automatically be assigned to the playback memory; odd-numbered phrases will be played back from the L output, and even-numbered phrases will be played back from the R output. It is not possible to playback the L and R channels independently.

**= RL ( Relative time pLay )**

Function: Playback from the Middle of a Phrase

Syntax: **stxRL: \* , \*\*H\*\*M\*\*S\*\*F ;****stxRL: \* , \*\*H\*\*M\*\*S ;**

a b

a Locate Forward / Backward

b Offset Time

0 Backward

0H0M0S0F – 11H59M59S

1 Forward

0H0M0S0F – 11H59M59S\*\*F

Example) **stxRL:1,0H10M59S0F;**

- After specifying a phrase: Playback begins 10 minutes 59 seconds from the beginning of the phrase of the specified number.

- While playback is paused: Playback begins from the point that is 10 minutes 59 seconds after the point where the pause was initiated.

*Note: The number of digits for \*\*F (frame) increases according to the value of MTC type. The range in which the offset time can be specified is valid only within a single phrase. An offset time that exceeds the recording time for the phrase cannot be specified. (The AR-3000 outputs an ER command.) You can play back a phrase from a point offset by a specified time before or after a paused point by sending this command while playback is paused (see the PE command).*

*\* When "Return Specified" is issued with an offset time longer than elapsed time: The phrase is played back from the beginning.*

*\* When "Forward Specified" is issued with an offset time longer than the remaining time: An ER command is output and playback is not carried out. (The paused state remains in effect, so specify a new offset time and send an RL command again.)*

**Caution: The command is not compatible with the Dual Mono.  
Phrases other than audio phrases cannot be specified.**

**= ST (STop)**

Function: Halting playback/recording

Syntax: **stxST;**

**Recording Commands****= AE (Auto inc rEc start)**

Function: Starting Time-stamped Recording

Syntax: **stxAE:** \*\*\*\*, \*\*, \*\*, \*\*, \*\*, \*\*, \*, \*, \* ;  
                   a    b    c    d    e    f    g    h    i

a year ( 1998 – 2050 )	h RDAC-Mode
b month ( 1 – 12 )	0 Linear
c day ( 1 – 31 )	1 Mode 1
d hour ( 0 – 23 )	2 Mode 2
e minutes ( 0 – 59 )	3 Mode 3
f second ( 0 – 59 )	4 H – Linear
g RDAC-Grade	I Recording Type
0 Announce	0 Mono
1 Long 2	1 Stereo
2 Long 1	
3 Standard	
4 High	
5 S-High	

Example) **stxAE:2001,3,1,8,59,0,0,1,0;**

Add a time stamp for “2001” “March” “1” “8:59:00” and start recording with “Announce” “Mode1” “Mono.”

*Note: The time information given in the command can be stored in the recorded phrase as a time stamp.*

*The AR-3000 starts recording immediately when it receives an AE command. (It is not necessary to send an RE command.)*

*The phrase number is automatically assigned to a free number where nothing is recorded. Use the ST command to stop recording.*

*Also, the AR-3000 automatically returns the total number of phrases recorded on the card when it receives an AE command. (Refer to AE command 4 . 4 . 1 )*

**= RE (REc start)**

Function: Start recording

Syntax: **stxRE;**

*Note: When using the RE command, you must first use the RM command to put the unit in Record ready mode. To stop recording, use the ST command.*

*Recording starts when audio higher than the trigger level is input. the following four types of trigger recording settings are available.*

*OFF: Trigger recording is not performed.*

*LOW: Recording starts when audio higher than -45dB.*

*MID: Recording starts when audio higher than -36dB.*

*HIGH: Recording starts when audio higher than -27dB.*

**= RM (Rec Mode)**

Function: Record ready mode

Syntax: **stxRM: \*\*\*\*, \*, \*, \*, \*, \*, \*, \* ;**  
           a b c d e f g

- a Phrase number
- b RDAC-Grade
  - 0 Announce
  - 1 Long 2
  - 2 Long 1
  - 3 Standard
  - 4 High
  - 5 S-High
- c RDAC-Mode
  - 0 Linear
  - 1 Mode1
  - 2 Mode2
  - 3 Mode3
  - 4 H-Linear
- d Recording type
  - 0 Mono
  - 1 Stereo
- e Trigger recording
  - 0 Off
  - 1 Low
  - 2 Mid
  - 3 High
- f Recording Source
  - 0 LINE - IN
  - 1 MIDI - IN
  - 2 LINE + MIC - IN
  - 3 DIGITAL - IN
- g Time base
  - 0 192
  - 1 240

Example) **RM:A1,3,2,1,0,1,1;**

This sets as follows; phrase "A0001", RDAC-Grade "STANDARD", RDAC-Mode "MODE2",

Recording type "STEREO", Trigger recording "OFF", recording source "MIDI-IN", and Time base "240".

*Note: MIDI recording refers to the recording of MIDI messages .  
 If recording source is "MIDI-IN", it will enter Record ready mode for a MIDI phrase.*

**Caution: It is not possible to specify a phrase number which has already been recorded.  
 If you wish to re-record a phrase that is already recorded, use the PD command to delete the phrase, and then transmit the RM command.**

## 4.2.2 Editing Commands

### = DM (Delete Mode)

Function: Enable execution of editing commands.

Syntax: **stxDM;**

*Note: In order for editing commands to be executed, the DM command must be used to put the unit into Delete mode. For the communication protocol, refer to 4.1 2) Editing commands.*

**Caution: When Delete mode is exited, the AR-3000 will automatically output a CC command. The AR-3000 automatically escapes from the Delete mode two minutes after the DM command is issued. To run editing commands, send a DM command again to enter the Delete mode.**

### Card Editing

#### = CD (Card Delete)

Function: Delete Card

Syntax: **stxDM;**

**stxCD: \* ;**

a

a Card in slot

0 Card in slot A

1 Card in slot B

Example) **CD:0;**

Erase all phrases from a PC card in slot A.

#### = CP (Card coPy)

Function: Copy Card

Syntax: **stxDM;**

**stxCP;**

*Note: This copies the contents of the card in slot A to the card in slot B.*

#### > CO ( Card cOnvert for AR-3000 )

Function: Convert Card

Syntax: **stxDM;**

**stxCO: \* , \* ;**

a b

a Convert type

0 AR-3000 to AR-2000

1 AR-2000 to AR-3000

b Select card

0 Card in slot A to Card in slot A

1 Card in slot A to Card in slot B



**= FM (ForMat)**

Function: Format Card

Syntax: **stxDM;****stxFM: \* , \* , \* ;**

a b c

a Card in slot

0 Card in slot A

1 Card in slot B

b Maximum number of phrase

0 250

1 500

2 1000

c Reserved ( 0 or 1 )

Example) **FM:0,1,0;**

The card in slot A is formatted as follows; the maximum number of phrases "500".

*Note: The type and capacity of the card is detected automatically.**Use only cards which the AR-3000 is able to use.***= LS (phrase Lock Switch)**

Function: Recorded phrase protect mode

Syntax: **stxDM;****stxLS: \* ;**

a

a Select ON/OFF

0 OFF

1 ON

2

*Note: Recorded Phrase Protect setting must be made using card slot A.**(This setting cannot be made for card slot B.)***> LW (phrase Lock sWitch for AR-3000)**

Function: Recorded phrase protect mode

Syntax: **stxDM;****stxLW: \* , \* ;**

a b

a Card Slot

0 Card in slot A

1 Card in slot B

b Select ON/OFF

0 OFF

1 ON

**= SP (Setting coPy)**

Function: System copy

Syntax: **stxDM;**  
**stxSP;***Note: This copies the settings of the card in slot A to the card in slot B.***Phrase Editing****= PC (Phrase Copy)**

Function: Copy phrase

Syntax: **stxDM;**  
**stxPC: \*\*\*\* , \*\*\*\* ;**  
          a    b

a Phrase number of the copy source

b Phrase number of the copy destination

Example) **PC:A1,A3;**

This copies the contents of phrase "A0001" to phrase "A0003".

**= PD (Phrase Delete)**

Function: Delete phrase

Syntax: **stxDM;**  
**stxPD: \*\*\*\* ;**  
          a  
a Phrase number**= PI (Phrase silencer)**

Function: Seek and set playback points at the locations of silent portions

Syntax: **stxDM;**  
**stxPI: \*\*\*\* ;**  
          a  
a Phrase number*Note: Only audio phrases can be specified.***> PT (Phrase Truncate for AR-3000)**

Function: Delete audio outside the playback points (Phrase Truncate)

Syntax: **stxDM;**  
**stxPT: \*\*\*\* ;**  
          a  
a Phrase number*Note: Only audio phrases can be specified.*

**> PV (Phrase diVide for AR-3000)**

Function: Divide Phrase

Syntax: **stxDM;**  
**stxPV: \*\*\*\*, \*\*H\*\*M\*\*S\*\*F\*S, \*\*\*\*, \*\*\*\* ;**  
                  a          b          c      d

- a Phrase number
- b divide time ( 0H0M0S0F0S - 23H59M59S\*\*F9S )
- c Write-destination Phrase number
- d Write-destination Phrase number

*Note: Only audio phrases can be specified.  
The number of digits for \*\*F (frame) increases according to the value of MTC type.*

**> PM (Phrase coMbine for AR-3000)**

Function: Join phrases

Syntax: **stxDM;**  
**stxPM: \*\*\*\*, \*\*\*\*, \*\*\*\* ;**  
                  a      b      c

- a Src 1 Phrase number
- b Src 2 Phrase number
- c Write-destination Phrase number

*Note: Only audio phrases can be specified.*

**> TS (Time Stretch for AR-3000)**

Function: Expanding or compressing the playback time without changing the pitch

Syntax: **stxDM;**  
**stxTS: \*\*\*\*, \*\*\*\*, \*\*\*\* ;**  
                  a      b      c

- a Source Phrase number
- b The degree of stretching
- c Write-destination Phrase number

*Note: Only audio phrases can be specified.*

**> RC (Rdac-mode Convert for AR-3000)**

Function: RDAC-Mode Convert

Syntax: **stxDM;**  
**stxRC: \*\*\*\*, \*\*\*\*, \*\*\*\* ;**  
                  a      b      c

- a RDAC-Mode
  - 0 Linear
  - 1 Mode1
  - 2 Mode2
  - 3 Mode3
  - 4 H-Linear
- b Source Phrase number
- c Write-destination Phrase number

*Note: Only audio phrases can be specified.*

**> RT (Recording - Type convert for AR-3000)**

Function: Recording - Type convert

Syntax\_1: (Stereo to Mono)

**stxDM;**

**stxRT: 0,\*\*\*\*,\*\*\*\* ;**

a b c

a Recording Type

0 Stereo to Mono

b Source Phrase number

c Write-destination Phrase number

Syntax\_2: (Stereo to Mono1 , Mono2)

**stxDM;**

**stxRT: 1,\*\*\*\*,\*\*\*\*,\*\*\*\*;**

a b c d

a Recording Type

1 Stereo to Mono1 , Mono2

b Source Phrase number

c Write-destination Phrase number 1

d Write-destination Phrase number 2

Syntax\_3: (Mono1 , Mono2 to Stereo)

**stxDM;**

**stxRT: 2,\*\*\*\*,\*\*\*\*,\*\*\*\*;**

a b c d

a Recording Type

1 Mono1 , Mono2 to Stereo

b Source Phrase number 1

c Source Phrase number 2

d Write-destination Phrase number 2

*Note: Only audio phrases can be specified.*

### 4.2.3 Setting Commands

#### Card Settings

##### = CV (Card Volume label)

Function: Card name setting

Syntax: **stxCV:** \* , "\*\*\*\*\*" , \*\*\*\*\* ;  
                   a       b       c

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Card name (up to 8 characters)
- c Reserved (Only '0')

Example) **stxCV:0,"ABCDEFGH", 0;**

This specifies a name of "ABCDEFGH" for the card in slot A.

#### Pattern Phrase Settings

##### < PU (Pattern phrase set Up for AR-2000)

Function: Pattern Phrase settings

Syntax: **stxPU:** \*\*\*\* , \* , \*\*\*\* , \*\*S\* , .... , \*\*\*\* , \*\*S\* ;  
                   a    b   c   d    ....   c    d

- a Pattern Phrase number
- b Pattern Phrase Playback mode
  - 0 Sequence
  - 1 Random
- c Phrase number to be played back
- d Delay Time (0S0 - 59S9)

Example) **PU:A1,0,A5,5S0,A10,15S1,B151,10S0;**

For phrase number "A001", this registers a "Sequential playback" pattern phrase consisting of the following; phrase number "A0005", a delay of "5 seconds", phrase number "A0010", a delay of "15.1 seconds", phrase number "B0151", and a delay of "10 seconds".

*Note: A maximum of 100 phrases can be specified in one line.  
 For the pattern phrase number, specify a phrase number where nothing is recorded.  
 For the playback phrase number, Audio phrases, MIDI phrases, and pattern phrases can be specified.*

**> PS (Pattern phrase Set up for AR-3000)**

Function: Pattern Phrase settings

Syntax\_1: (Sequence or Random 1)

**stxPS:** \*\*\*\* , \* , \* , \*\*\* , \*\*\*\* , \*\*\* , \*\*S\* , .... , \*\*\* , \*\*\*\* , \*\*\* , \*\*S\* ;  
           a   b c d   e f   g   ....   d   e f   g

a Pattern Phrase number

b Pattern Phrase Playback mode

0 Sequence

1 Random 1

c Researved (Only '0')

d Playback Sequence

e Phrase number to be played back

f Playback Volume (10 – 100 : 10% - 100%)

g Delay Time (0S0 - 59S9)

Syntax\_2: (Random 2 or Random 3)

**stxPS:** \*\*\*\* , \* , \* , \*\*\* , \*\*\*\* , \*\*\* , \*\*S\* , .... , \*\*\* , \*\*\*\* , \*\*\* , \*\*S\* ;  
           a   b c d   e f   g   ....   d   e f   g

a Pattern Phrase number

b Pattern Phrase Playback mode

2 Random 2

3 Random 3

c Interrupt phrase interval ( 1 – 25 )

d Playback Sequence( 1 – 100 : phrases , 101 – 128 : interrupt phrases )

e Phrase number to be played back

f Playback Volume ( 10 – 100 : 10% - 100% )

g Delay Time (0S0 - 59S9)

\*On specification, delay time cannot be set for interrupt phrase. Please send one value of 0S0-59S9.

*Note: A maximum of 128 phrases can be specified in one line.*

*For the pattern phrase number, specify a phrase number where nothing is recorded.*

*For the playback phrase number, Audio phrases, MIDI phrases, and pattern phrases can be specified.*

**> SS (Song phrase Set up for AR-3000)**

Function: Song Phrase settings

Syntax: **stxSS:** \*\*\*\* , \*\*\*\* , \*\*H\*\*M\*\*S\*\*F\*S , .... , \*\*\*\* , \*\*H\*\*M\*\*S\*\*F\*S ;  
           a    b           c           ....   b           c

a Song Phrase number

b Phrase number to be played back / STOP ( To specify the ending point )

c Start point of phrase / End point of song phrase

*Note: A maximum of 100 phrases can be specified in one line.*

*For the song phrase number, specify a phrase number where nothing is recorded.*

*For the playback phrase number, Audio phrases can be specified.*

*The number of digits for \*\*F (frame) increases according to the value of MTC type.*

## Phrase Settings

### < SU (phrase Set Up for AR-2000)

Function: Phrase settings

Syntax: **stxSU:** \*\*\*\* , "\*\*\*\*\*" , \*\*\* , \*\*S\* , \* , \*\*M\*\*S , \* , \*\*M\*\*S , \*\*\* , \* ;  
                   a          b          c      d      e      f      g      h      I      j

- a Phrase number
- b Phrase name (up to 12 characters)
- c Playback Volume (10 - 100)
- d Delay Time (0S0 - 59S9)
- e Repeat Playback
  - 0 OFF
  - 1 ON
- f Repeat interval (0M0S - 59M59S)
- g Control Output
  - 0 OFF
  - 1 ON
- h Offset time of control output (0M0S - 59M59S)
- i Tempo (5 - 260)
- j Reserved (Only '0')

Example) **SU:A001,"ABCDEFGHGIJK",100,10S5,1,5M0S,1,5M10S,120,0;**

For phrase number "A001", this sets as follows; Phrase name "ABCDEFGHGIJK", Playback Volume "100%", Delay Time "10.5 seconds", Repeat Playback "ON", Repeat interval "5 minutes", Control Output "ON", Offset time of control output "5min10sec", and Tempo "120".

*Note: Be sure to specify an already recorded phrase as the phrase number.*

### > PN (Phrase Name set up for AR-3000)

Function: Phrase Name settings

Syntax **stxPN:** \*\*\*\* , "\*\*\*\*\*";  
                   a          b

- a Phrase number
- b Phrase name (up to 12 characters)

### > PR (Phrase Repeat set up for AR-3000)

Function: Phrase Repeat settings

Syntax: **stxPR:** \*\*\*\* , \*, \*\*, \*\*M\*\*S;  
                   a      b      c      d

- a Phrase number
- b Repeat
  - 0 OFF
  - 1 ON
- c The number of repetitons
  - 0 ENDLESS
  - 1 1
  - |
  - 99 99
- d Repeat interval (0M0S - 59M59S)

**> PO (Phrase control Out set up for AR-3000)**

Function: Control Out settings

Syntax: **stxPO: \*\*\*\* , \*,\*\*M\*\*S;**  
          a   b   c

- a Phrase number
- b Control Out
  - 0 OFF
  - 1 ON
- c Offset Time (0M0S - 59M59S)

**> PP (phrase Playback Point set up for AR-3000)**

Function: Playback Point settings

Syntax: **stxPP: \*\*\*\* , \*\*H\*\*M\*\*S\*\*F\*S, \*\*H\*\*M\*\*S\*\*F\*S;**  
          a                   b                   c

- a Phrase number
- b Start (0H0M0S0F0S - 23H59M59S\*\*F9S)
- c End (0H0M0S0F0S - 23H59M59S\*\*F9S)

*Note: The number of digits for \*\*F (frame) increases according to the value of MTC type.*

**> LP (phrase Loop set up for AR-3000)**

Function: Loop Play settings

Syntax: **stxLP: \*\*\*\* , \*, \*, \*\*H\*\*M\*\*S\*\*F\*S, \*\*H\*\*M\*\*S\*\*F\*S;**  
          a   b c           d                   e

- a Phrase number
- b Loop Play
  - 0 OFF
  - 1 ON
- c The number of loops
  - 0 ENDLESS
  - 1 1
  - |
  - 99 99
- d Loop 1 position (0H0M0S0F0S - 23H59M59S\*\*F9S)
- e Loop 2 position (0H0M0S0F0S - 23H59M59S\*\*F9S)

*Note: The number of digits for \*\*F (frame) increases according to the value of MTC type.*

**> PY (Phrase delaY set up for AR-3000)**

Function: Delay Time settings

Syntax: **stxPY: \*\*\*\* , \*\*S\*\*F;**  
          a   b

- a Phrase number
- b Delay Time (0S0F - 59S\*\*F)

*Note: The number of digits for \*\*F (frame) increases according to the value of MTC type.*



**> VM(phrase VoluMe set up for AR-3000)**

Function: play Volume settings

Syntax: **stxVM: \*\*\*\*\* , \*\*\*;**

a b

a Phrase number

b Play Volume %(10 - 100)

**> FD (phrase FaDe set up for AR-3000)**

Function: Fade In and Fade Out settings

Syntax: **stxFD: \*\*\*\*,\*,\*\*S\*,\*,\*\*S\*;**

a b c d e

a Phrase number

b Fade In Type

0 OFF

1 Time 1

2 Time 2

3 Time 3

4 ( 0S1 - 59S9 )

c Fade In Time ( 0S1 - 59S9 )

\* This parameter is ignored when fade out type is 0 to 3. Please send one value of 0S1-59S9.

d Fade Out Type

0 OFF

1 Time 1

2 Time 2

3 Time 3

4 ( 0S1 - 59S9 )

e Fade Out Time ( 0S1 - 59S9 )

\* This parameter is ignored when fade out type is 0 to 3. Please send one value of 0S1-59S9.

**> MP(phrase Midi temPo set up for AR-3000)**

Function: Playback tempo for MIDI settings

Syntax: **stxMP: \*\*\*\*\* , \*\*\*;**

a b

a Phrase number

b MIDI tempo( 5 - 260 )

**> TT(phrase Time sTamp set up for AR-3000)**

Function: Time Stamp settings

Syntax: **stxTT: \*\*\*\*\* , \*\*\*\*,\*\*,\*\*,\*\*,\*\*,\*\*,\*\*;**

a b c d e f g

a Phrase number

b year( 1998 - 2050 )

c month( 1 - 12 )

d day( 1 - 31 )

e hour( 0 - 23 )

f minute( 0 - 59 )

g second( 0 - 59 )

**MIDI Settings****= MS (Midi Set up)**

Function: MIDI settings

Syntax: **stxMS:** \*, \*\*, \*, \*, \*, \*\* ;

a b c d e

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b MIDI Receive Channel
  - 0 (OFF)
  - 17 (ALL)
  - 1-16 (MIDI Channel)
- c MIDI OUT
  - 0 (OUT)
  - 1 (THRU)
- d MIDI Note Trigger
  - 0 (Trigger)
  - 1 (Gate)
- e Device ID (1 - 32)

**> ME (Midi sEt up for AR-3000)**

Function: MIDI settings

Syntax: **stxME:** \*, \*, \*, \*, \*, \* ;

a b c d e

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b MIDI Note On Velocity
  - 0 (OFF)
  - 1 (ON)
- c MIDI Panpot
  - 0 (OFF)
  - 1 (ON)
- d MIDI Expression
  - 0 (OFF)
  - 1 (ON)
- e MIDI Note Output
  - 0 (OFF)
  - 1 (ON)

**= NM (Note Map)**

Function: MIDI note map settings

Syntax: **stxNM:** \* , \*\*\*\* , ..... , \*\*\*\* ;  
           a 2 ..... 129

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B

2 – 129 : 128 phrase numbers which you wish to assign to note numbers from C to G9

- 2 Phrase number assigned to note number C-
- |
- 129 Phrase number assigned to note number G9

**> MM (MMc set up for AR-3000)**

Function: MMC Mode settings

Syntax: **stxMM:** \* , \* ;  
           a b

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b MMC Mode
  - 0 OFF
  - 1 Master
  - 2 Slave

**> MT (MTc set up for AR-3000)**

Function: MTC settings

Syntax: **stxMT:** \* , \* , \* , \* , \* ;  
           a b c d e

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Sync Source
  - 0 Internal
  - 1 MTC
- c Sync Out
  - 0 Off
  - 1 MTC
- d MTC Type
  - 0 30
  - 1 29N
  - 2 29D
  - 3 25
  - 4 24
- e MTC Error Level ( 0 - 10 )

**System Settings****= BR (Baud Rate)**

Function: Communication speed setting

Syntax: **stxBR:** \* , \* ;

a b

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Baud rate
  - 0 (4800)
  - 1 (9600)
  - 2 (19200)
  - 3 (38400)

*Note: Even if you use this command to specify the communication speed of the card, that of the AR-3000 will not be changed. It can be changed by turning on again or by setting from the front panel of the AR-3000 itself.*

**= CE (Count play sEt up)**

Function: Program (Count) Playback setting

Syntax: **stxCE:** \* , \* , \*\*\*\* , \*\*\*\* , .... , \*\*\*\* ;

a b c c .... c

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Program Playback pattern( 1 - 5 )
- c Phrase number to be played back (up to 100 phrases)

Example) **CE:0,1,A1,A2,A3,A4,A5;**

This registers A0001,A0002,A0003,A0004,and A0005 into the Program Playback pattern 1 of card A.

**= DC (Display Contrast)**

Function: Display contrast setting

Syntax: **stxDC:** \*\*\* ;

a

- a Display contrast ( -10 - +10)

**= DP (Direct Play)**

Function: Direct Playback setting

Syntax: **stxDP:** \* , \*\*\*\* , \*\*\*\* , .... , \*\*\*\* ;  
           a b c .... q

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b - q Phrase number which you wish to assign to control input pin
  - b (CH1)
  - c (CH2)
  - |
  - q (CH16)

Example) **DP:0,A1,\_,A3,A4,\_,A16;**

The setting will be written to "Card A", and the phrases will be assigned to the control input pin as follows; A0001 to CH1,....,A0003 to CH3, A0004 to CH4,...., and A0016 to CH16.

*Note: For unused direct channels, specify "----".  
 If you specify "PLAY" instead of a phrase, you can playback directly the phrase shown in the display by the control input pin.*

**> DL (Direct pLay for AR-3000)**

Function: Direct Playback setting

Syntax: **stxDL:** \* , \*\*\*\* , \*\*\*\* , .... , \*\*\*\* , \* ;  
           a b c .... q r

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b - q Phrase number which you wish to assign to control input pin
  - b (CH1)
  - c (CH2)
  - |
  - q (CH16)
- r Direct Playback Method
  - 0 Normal playback
  - 1 First-In playback
  - 2 Last-In playback
  - 3 Sequence playback

Example) **DL:0,A1,\_,A3,A4,..,A16,0;**

The setting will be written to "Card A", and the phrases will be assigned to the control input pin as follows; A0001 to CH1,....,A0003 to CH3, A0004 to CH4,...., A0016 to CH16, Direct Playback "Normal playback".

*Note: For unused direct channels, specify "----".  
 If you specify "PLAY" instead of a phrase, you can playback directly the phrase shown in the display by the control input pin.*

**< SM (System for AR-2000)**

Function: System settings

Syntax: **stxSM:** \* , \* , \* , \* , \* , \* ;  
          a b c d e f

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Line Input select
  - 0 Mute : Line Thru ON , Volume 0%
  - 1 Mix : Line Thru ON , Volume 100%
  - 2 OFF : Line Thru OFF
- c Channel Playback (Dual Mono mode)
  - 0 OFF
  - 1 ON
- d Control Input select
  - 0 Normal playback : for Direct Playback
  - 1 Last-In playback : for Direct Playback
  - 2 Sequence playback : for Direct Playback
  - 3 Program(Count) playback
  - 4 Binary playback
- e Binary Playback Input Trigger
  - 0 Level: Level On , Edge Off
  - 1 Edge: Level Off , Edge On
- f Busy Output
  - 0 All On: Delay Time On , Phrase Playback On , Repeat Interval On
  - 1 Delay On: Delay Time On , Phrase Playback On , Repeat Interval Off
  - 2 Repeat On: Delay Time Off , Phrase Playback On , Repeat Interval On
  - 3 All Off: Delay Time Off , Phrase Playback On , Repeat Interval Off

Example) **stxSM:0,0,0,0,1,0;**

System data will be written to “Card A”, and settings will be made for Line Input select “MUTE”,

Channel Playback “OFF”, Control Input select “Normal playback”, Binary Playback Input Trigger Mode “Edge”, and Busy Output “All On.”

*Note: Use LS to protect a recorded phrase.*

**> CI (Control In setup for AR-3000)**

Function: Control Input Mode setting

Syntax: **stxCi:** \* , \*\*\*\* , \*\*\*\* , .... , \*\*\*\* ;  
          a b c .... q

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Control Input Mode
  - 0 Direct Play
  - 1 Program(Count Play)
  - 2 Binary Play
  - 3 Terminal REC
- c Direct Playback Method
  - 0 Normal
  - 1 First In
  - 2 Last In
  - 3 Sequence

- d Binary Playback Trigger Settings Level
  - 0 Off
  - 1 On
- e Binary Playback Trigger Settings Edge
  - 0 Off
  - 1 On
- f The Method used for specifying the phrase ( Terminal Recording )
  - 0 Binary 1
  - 1 Binary 2

**> AL (ArLink setup for AR-3000)**

Function: AR-LINK setting

Syntax: **stxAL:** \* , \* ;

a b

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b AR-LINK Mode
  - 0 Off
  - 1 Master
  - 2 Slave

**> DN (Dual moNo mode setup for AR-3000)**

Function: Dual Mono Mode setting

Syntax: **stxDN:** \* , \* ;

a b

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Dual Mono Mode
  - 0 Off
  - 1 On

**> LT (Line Thru setup for AR-3000)**

Function: Line Out(Thru) setting

Syntax: **stxLT:** \* , \* , \*\* , \*\*S\* , \*\*S\* ;

a b c d e

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Line Thru
  - 0 Off
  - 1 On
- c Thru Volume % ( 0 - 100)
- d Fade Out ( 0S5 - 59S9)
- e Fade In ( 0S5 - 59S9)

**> EQ (Equalizer setup for AR-3000)**

Function: Equalizer setting

Syntax: **stxEQ:** \* , \* , \*\*\* , \* , \*\*\* , \* , \*\* ;  
          a b c d e f g

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Equaizer
  - 0 Off
  - 1 On
- c Equalizer Low Gain dB ( -12 - +12 )
- d Equalizer Low Frequency
  - 0 200Hz
  - 1 400Hz
- e Equalizer High Gain dB ( -12 - +12 )
- f Equalizer High Frequency
  - 0 3kHz
  - 1 6kHz
- g Equalizer Attenuation dB( -12 - 0 )

**> VT (input Volume Thru for AR-3000)**

Function: Input Volume Thru setting

Syntax: **stxVT:** \* , \* ;  
          a b

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Input Volume Thru
  - 0 Off
  - 1 On

**> BO (Busy Out for AR-3000)**

Function: Busy Out setting

Syntax: **stxBO:** \* , \* , \* , \* ;  
          a b c d

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b During Delay Time
  - 0 Off
  - 1 On
- c During Phrase Play
  - 0 Off
  - 1 On
- d During Repeat Int
  - 0 Off
  - 1 On



**> DO (Display Off parameter for AR-3000)**

Function: Display Parameter setting

Syntax: **stxDO:** \*, \*, \*, \* ;

a b c d

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Display Sleep
  - 0 Off
  - 1 On
- c Sleep Time (0M30S - 59M59S)

**4.2.4 Request Commands****< 2Q (pattern phrase reQuest for AR-2000)**

Function: Pattern Phrase setting contents request

Syntax: **stx2Q:** \*\*\*\* ;

a

- a Pattern Phrase number

*Note: This is a request for when the phrase type is pattern phrase.  
(\* refer to PU command)*

**> 3Q (pattern phrase reQuest for AR-3000)**

Function: Pattern Phrase setting contents request

Syntax: **stx3Q:** \*\*\*\* ;

a

- a Pattern Phrase number

*Note: This is a request for when the phrase type is pattern phrase.  
(\* refer to PS command)*

**> GQ (sonG phrase reQuest for AR-3000)**

Function: Song Phrase setting contents request

Syntax: **stxGQ:** \*\*\*\* ;

a

- a Song Phrase number

*Note: This is a request for when the phrase type is song phrase.  
(\* refer to SS command)*

**= AC (Active)**

Function: Activity sensing (Verify AR-3000 unit activity)

Syntax: **stxAC;**

*Note: Normally, an ACK command will be output from the AR-3000 by using this command.  
During recording , playback or playpause, the Phrase number will be output.*

**= AQ (All reQuest)**

Function: Reset the Phrase Output Counter

Syntax: **stxAQ: \* ;**

- a
- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
  - 2

*Note: This sets the Phrase Output Counter to the lowest-numbered phrase of the phrases registered in the card. Use this command before you wish to output the settings of all phrases by using the PQ command, for example when you confirm the initial settings.*

**= CQ (Card reQuest)**

Function: Card setting contents request

Syntax: **stxCQ: \* ;**

- a
- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B

*Note: refer to CS command*

**= DQ (Direct play reQuest)**

Function: Direct Playback setting contents request

Syntax: **stxDQ: \* ;**

- a
- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B

*Note: refer to DP command*

**< IQ (mIdi set up reQuest for AR-2000)**

Function: MIDI setting contents request

Syntax: **stxIQ: \* ;**

- a
- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
  - 2

*Note: refer to MS command*

**> JQ (midi set up reQuest for AR-3000)**

Function: MIDI setting contents request

Syntax: **stxJQ: \* ;**

- a
- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B

*Note: refer to ME command*

**= LQ (disPLay contrast reQuest)**

Function: Display Contrast setting request

Syntax: **stxLQ;**

*Note: refer to DC command*

**= MQ (Memory reQuest)**

Function: Card remaining capacity request

Syntax: **stxMQ;**

*Note: refer to CR command*

**= NQ (Note map reQuest)**

Function: MIDI note map setting contents request

Syntax: **stxNQ: \* ;**

a

a Card in slot

0 Card in slot A

1 Card in slot B

*Note: refer to NM command*

**< PQ (Phrase reQuest for AR-2000)**

Function1: Phrase setting contents request

Syntax: **stxPQ: \*\*\*\* ;**

a

a Phrase number

*Note: The phrase settings for the specified phrase number will be output.*

*The value of the Phrase Output Counter (described below) will not change.*

*(---> refer to the SU command)*

Function2: If the phrase number is not specified as a parameter, the AR-3000 will output the phrase settings for automatically incremented phrase number by the Phrase Output Counter.

Syntax: **stxPQ;;**

*Note: The incremented value will skip phrase numbers which are not recorded yet, and will be up to the next recorded phrase number. If the PQ command is used to request output even after the setting information of the last phrase has been output, the AR-3000 will output "stx ER:101;"*

*In the case of a Pattern Phrase, you must use the separately described 3Q command to request output of the settings. (---> refer to 3Q command)*

**\* About the Phrase Output Counter**

The AR-3000 contains the Phrase Output Counter. The maximum value of this counter is the maximum phrase number of each card. The counter is reset (i.e., to the lowest phrase number) by the AQ command. So you can request each phrase settings of all phrases in the card by sequentially using the PQ command's function 2 after resetting the counter.

**> QQ (phrase reQuest for AR-3000)**

Function1: Phrase setting contents request

Syntax: **stxQQ: \*\*\*\* ;**  
           a  
           a Phrase number

*Note: The phrase settings for the specified phrase number will be output.  
 The value of the Phrase Output Counter (described below) will not change.  
 (\* refer to the RU command)*

Function2: If the phrase number is not specified as a parameter, the AR-3000 will output the phrase settings for automatically incremented phrase number by the Phrase Output Counter.

Syntax: **stxQQ;**

*Note: The incremented value will skip phrase numbers which are not recorded yet, and will Be up to the next recorded phrase number. If the PQ command is used to request output even after the setting information of the last phrase has been output, the AR-3000 will output "stx ER:101;".  
 In the case of a Pattern Phrase, you must use the separately described 3Q command to request output of the settings. (\* refer to 3Q command)*

**\* About the Phrase Output Counter**

The AR-3000 contains the Phrase Output Counter. The maximum value of this counter is the maximum phrase number of each card. The counter is reset (i.e., to the lowest phrase number) by the AQ command. So you can request each phrase settings of all phrases in the card by sequentially using the QQ command's function 2 after resetting the counter.

**< SQ (System reQuest for AR-2000)**

Function: System setting contents request

Syntax: **stxSQ: \* ;**  
           a  
           a Card in slot  
           0 Card in slot A  
           1 Card in slot B

*Note: refer to SM command*

**> YQ (sYstem reQuest for AR-3000)**

Function: System setting contents request

Syntax: **stxYQ: \* ;**  
           a  
           a Card in slot  
           0 Card in slot A  
           1 Card in slot B

*Note: refer to SY command*

**= TQ (Time stamp reQuest)**

Function1: Time Stamp request

Syntax: **stxTQ: \*\*\*\*;**

a

a Phrase number

0 Card in slot A

1 Card in slot B

*Note: Output the recording start time information for the specified phrase. (Refer to 4.4.1 TI Command.) The AR-3000 outputs an ER command for phrases in which time information is not recorded.*

Function2: Time Stamp request

If the phrase number is not specified as a parameter, the AR-3000 will output the Time Stamp information for automatically incremented phrase number by the Phrase Output Counter.

Syntax: **stxTQ;;**

*Note: The incremented value will skip phrase numbers which are not recorded yet, and will be up to the next recorded phrase number. If the TQ command is used to request output even after the setting information of the last phrase has been output, the AR-3000 will output "stx ER:101;"*

**= UQ (coUnt play reQuest)**

Function: Program (Count) Playback setting contents request

Syntax: **stxUQ: \*, \* ;**

a b

a Card in slot

0 Card in slot A

1 Card in slot B

b Program Playback patterns(1 - 5)

*Note: refer to CE command*

**= VR (VeRsion)**

Function: Version request

Syntax: **stxVR;**

*Note: The AR-3000 will output the "model name" and "version".  
(\* refer to the 4.4.1 VR command for the AR-3000)*

### 4.2.5 Reply Commands

#### = ACK

Function: Response to normal reception of a command

Syntax: **ACK (06H)**

#### = ER (ERror)

Function: Reply to the AR-3000 when an error has occurred

Syntax: **stxER: \* ;**

a

a Error number

0 Send this command to the AR-3000 when the output of the AR-3000 could not be read (In the case of a request command, the AR-3000 will re-transmit the Setting output command.)

1 Send this command when the output of the AR-3000 for confirmation is incorrect in Delete mode. Then the command you transmitted will be canceled, and the AR-3000 will automatically exit Delete mode.

#### = Xon (11H)/Xoff (13H)

Function: Allow or disable transmission. Used for handshaking.

Syntax: **Xon** is **11H** only (transmission permitted)

**Xoff** is **13H** only (transmission disabled)

## 4.3 Commands Sent from the AR-3000 to the External Device (Computer)

The following two types of commands are sent from the AR-3000 to an external device. In this explanation, "external device" refers to the computer. "AR" refers to the AR-3000.

### 1) Setting output commands

These commands output the current setting status of the AR-3000. They are output in response to a request command from the external device.

### 2) Reply commands

Reply commands are necessary for communication control, such as acknowledgment that a command was correctly received, etc.

## 4.4 Details of Commands Sent from the AR-3000 to the External Device (Computer)

### 4.4.1 Setting Output Commands

#### = CS (Card Set)

Function: Card setting output

Syntax: **stxCS: \* , "\*\*\*\*\*" , \* , \* , \* , \* , \* , \* ;**

a b c d e f g

a Card in slot

0 Card in slot A

1 Card in slot B

b Card name (8 characters)

c Reserved

d Reserved

e Maximum number of phrase

0 (250)

1 (500)

1 (1000)

- f Card ID (Created automatically)
- g Reserved

*Note: refer to CQ command*

### Phrase Settings

#### < PU (Pattern phrase set Up for AR-2000)

Function: Pattern Phrase setting output

Syntax: **stxPU:** \*\*\*\* , \* , \*\*\*\* , \*\*S\* , .... , \*\*\*\* , \*\*S\* ;  
           a   b   c   d   ....   c   d

- a Pattern Phrase number
- b Pattern Phrase Playback mode  
0 (Sequence)  
1 (Random)
- c Phrase number to be played back
- d Delay Time (00S0 - 59S9)

*Note: refer to 2Q command*

#### > PS (Pattern phrase Set up for AR-3000)

Function: Pattern Phrase setting output

Syntax: **stxPS:** \*\*\*\* , \* , \* , \*\* , \*\*\*\* , \*\* , \*\*S\* , .... , \*\* , \*\*\*\* , \*\* , \*\*S\* ;  
           a   b c d   e f   g   ....   d   e f   g

- a Pattern Phrase number
- b Pattern Phrase Playback mode  
0 (Sequence)  
1 (Random 1)  
2 (Random 2)  
3 (Random 3)
- c Interrupt phrase interval  
( Sequence , Random 1 : 0 / Random 2 , Random 3 : 1-25 )
- d Playback Sequence
- e Phrase number to be played back
- f Playback Volume(10 - 100 : 10% - 100%)
- g Delay Time(0S0 - 59S9)

*Note: refer to 3Q command*

#### > SS (Song phrase Setup for AR-3000)

Function: Song Phrase setting output

Syntax: **stxSS:** \*\*\*\* , \*\*\*\* , \*\*H\*\*M\*\*S\*\*F , .... , \*\*\*\* , \*\*H\*\*M\*\*S\*\*F ;  
           a   b   c   ....   b   c

- a Song Phrase number
- b Phrase number to be played back / STOP ( To specify the ending point )
- c Start point of phrase / End point of song phrase

*Note: refer to GQ command*

*The number of digits for \*\*F (frame) increases according to the value of MTC type.*

**< SU (phrase Set Up for AR-2000)**

Function: Phrase setting output

Syntax: **stxSU:** \*\*\*\* , "\*\*\*\*\*", \* , \* , \* , \* , \*\* , \*\*S\* , \* , \*\*M\*\*S , \* , \*\*M\*\*S , \*\* , \* , \*\*\*\*\*;  
          a        b        c d e f g    h I j k l m n o

- a Phrase number
- b Phrase name (up to 12 characters)
- c Phrase type
  - 0 Phrase
  - 1 Pattern Phrase
  - 2 MIDI Phrase
  - 3 Song Phrase
- d RDAC-Grade
  - 0 Announce
  - 1 Long 2
  - 2 Long 1
  - 3 Standard
  - 4 High
  - 5 S-High
- e RDAC-Mode
  - 0 Linear
  - 1 Mode 1
  - 2 Mode 2
  - 3 Mode 3
  - 4 H-Linear
- f Recording Type
  - 0 Mono
  - 1 Stereo
- g Playback Volume (10 - 100)
- h Delay Time (0S0 - 59S9)
- I Repeat Playback
  - 0OFF
  - 1 ON
- j Repeat interval (0M0S - 59M59S)
- k Control Output
  - 0 OFF
  - 1 ON
- l Offset time of control output (0M0S - 59M59S)
- m Tempo (5 - 260)
- n reserved (Only '0',zero)
- o Phrase size (unit: byte)

*Note: refer to PQ command*



**> RU (phRase set Up for AR-3000)**

Function: Phrase setting output

Syntax: **stxRU:** **\*\*\*,"\*\*\*\*\*",\*,\*,\*,\*,\*\*S\*,\*,\*\*M\*\*S\*,\*\*M\*\*S\*,\*\*S\*,\*\*S\*,**  
**a b c d e f g h i j k l m n o p q**  
**\*\*H\*\*M\*\*S\*\*F\*\*S, \*\*H\*\*M\*\*S\*\*F\*\*S,\*,\*, \*\*H\*\*M\*\*S\*\*F\*\*S, \*\*H\*\*M\*\*S\*\*F\*\*S,\*\*\*,\*\*\*\*;**  
**r s t u v w x y**

- a Phrase number
- b Phrase name (up to 12 characters)
- c Phrase type
  - 0 Phrase
  - 1 Pattern Phrase
  - 2 MIDI Phrase
  - 3 Song Phrase
- d RDAC-Grade
  - 0 Announce
  - 1 Long 2
  - 2 Long 1
  - 3 Standard
  - 4 High
  - 5 S-High
- e RDAC-Mode
  - 0 Linear
  - 1 Mode 1
  - 2 Mode 2
  - 3 Mode 3
  - 4 H-Linear
- f Recording Type
  - 0 Mono
  - 1 Stereo
- g Playback Volume (10 - 100)
- h Delay Time (0S0 - 59S9)
- I Repeat Playback
  - 0 OFF
  - 1 ON
- j Repeat Count
  - 0 ENDLESS
  - |
  - 99 99
- k Repeat interval (0M0S - 59M59S)
- l Control Output
  - 0 (OFF)
  - 1 (ON)
- m Offset time of control output (0M0S - 59M59S)

- n Fade In Type
  - 0 OFF
  - 1 Time 1
  - 2 Time 2
  - 3 Time 3
  - 4 ( 0S1 - 59S9 )
- o Fade In Time ( 0S1 - 59S9 )
- p Fade Out Type
  - 0 OFF
  - 1 Time 1
  - 2 Time 2
  - 3 Time 3
  - 4 ( 0S1 - 59S9 )
- q Fade Out Time ( 0S1 - 59S9 )
- r Start (0H0M0S0F0S - 23H59M59S\*\*F9S)
- s End (0H0M0S0F0S - 23H59M59S\*\*F9S)
- t Loop Play
  - 0 (OFF)
  - 1 (ON)
- u The number of loops
  - 0 ENDLESS
  - 1 1
  - |
  - 99 99
  - Loop play Off
- v Loop 1 position (0H0M0S0F0S - 23H59M59S\*\*F9S)
- w Loop 2 position (0H0M0S0F0S - 23H59M59S\*\*F9S)
- x Tempo (5 - 260)
- y Phrase size (unit: byte)

*Note:* refer to QQ command

*The number of digits for \*\*F (frame) increases according to the value of MTC type.*

**MIDI Settings****< MS (Midi Set up for AR-2000)**

Function: MIDI setting output

Syntax: **stxMS:** \*, \*\*, \*, \*, \*\*, \*

a b c d e

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b MIDI Receive Channel
  - 0 OFF
  - 17 ALL
  - 1 - 16 MIDI Channel
- c MIDI OUT
  - 0 OUT
  - 1 THRU
- d MIDI Note Trigger
  - 0 Trigger
  - 1 Gate
- e Device ID ( 1 - 32 )

*Note: refer to IQ command***> ME (Midi sEt up for AR-3000)**

Function: MIDI setting output

Syntax: **stxME:** \*, \*\*\*\*, \*, \*, \*\*, \*, \*, \*, \*, \*, \*, \*, \*, \*, \*, \*

a b c d e f g h i j k l m n

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b MIDI Receive Channel
  - 0 OFF
  - 17 ALL
  - 1-16 MIDI Channel
- c MIDI OUT
  - 0 OUT
  - 1 THRU
- d MIDI Note Trigger
  - 0 Trigger
  - 1 Gate
- e Device ID ( 1 - 32 )
- f MIDI Note On Velocity
  - 0 OFF
  - 1 ON
- g MIDI Panpot
  - 0 OFF
  - 1 ON

- h MIDI Expression
  - 0 OFF
  - 1 ON
- i MIDI Note Output
  - 0 OFF
  - 1 ON
- j MMC Mode
  - 0 OFF
  - 1 Master
  - 2 Slave
- k Sync Source
  - 0 Internal
  - 1 MTC
- l Sync Out
  - 0 Off
  - 1 MTC
- m MTC Type
  - 0 30
  - 1 29N
  - 2 29D
  - 3 25
  - 4 24
- n MTC Error Level ( 0 - 10 )

*Note: refer to JQ command*

#### **= NM (Note Map)**

Function: MIDI note map setting output

Syntax: **stxNM:** \* , \*\*\*\* , ..... , \*\*\*\* ;  
           a 2 .... 129

- a card in slot
  - 0 Card in slot A
  - 1 Card in slot B

2-129:128 phrase numbers which you assigned to note numbers from C- to G9

2 Phrase number assigned to note number C-

|

129 Phrase number assigned to note number G9

*Note: refer to NQ command*

**System Settings****= AC (Active)**

Function: Active sensing reply  
 Syntax: **stxAC:** \* , \*\*\*\* ;  
           a b  
 a Status of AR-3000  
   0 During playback  
   1 During recording  
   2 During recording pause  
   3 During playback pause  
 b Phrase number

*Note: During Dual Mono Mode, this is output twice.  
 refer to the 4.2.4 AC command*

**= CE (Count play sEt up)**

Function: Program (Count) Playback setting output  
 Syntax: **stxCE:** \* , \* , \*\*\*\* , \*\*\*\* , .... , \*\*\*\* ;  
           a b c c .... c  
 a Card in slot  
   0 Card in slot A  
   1 Card in slot B  
 b Program Playback patterns ( 1 - 5 )  
 c Phrase number to be played back (up to 100 phrases)

*Note: refer to UQ command*

**= CR (Card Remain)**

Function: Card remaining capacity output  
 Syntax: **stxCR:** \*\*\*\*\* , \*\*\*\*\* ;  
           a b  
 a Remaining capacity of card A  
 b Remaining capacity of card B

*Note: unit: byte. refer to MQ command  
 If the card is in AR-2000 format, AR output '0' for remaining capacity.*

**= DC (Display Contrast)**

Function: Display Contrast setting output  
 Syntax: **stxDC:** \*\*\* ;  
           a  
 a Display contrast ( -10 - +10 )

*Note: refer to LQ command*

**= DP (Direct Play)**

Function: Direct Playback setting output

Syntax: **stxDP:** \* , \*\*\*\* , \*\*\*\* , .... , \*\*\*\* ;  
           a b     c     ....   q

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b - q Phrase number which you assigned to control input pin
  - b CH1
  - c CH2
  - |
  - q CH16

*Note:* For unused direct channels, "----" is output. "PLAY" will be output for the direct channel which plays back the phrase shown in the display. (--> refer to DQ command)

**< SM (System for AR-2000)**

Function: System setting output

Syntax: **stxSM:** \* , \* , \* , \* , \* , \* ;  
           a b c d e f

- a Card in slot
  - 0 Card in slot A
  - 1 Card in slot B
- b Line Input select
  - 0 Mute
  - 1 Mix
  - 2 OFF
- c Channel Playback (Dual Mono Mode)
  - 0 OFF
  - 1 ON
- d Control Input select
  - 0 Normal playback
  - 1 Last-In playback
  - 2 Sequence playback
  - 3 Program playback
  - 4 Binary playback
- e Binary Playback Input Trigger
  - 0 Level
  - 1 Edge
- f Busy Output
  - 0 All On
  - 1 Delay On
  - 2 Repeat On
  - 2 All Off

*Note:* refer to SQ command



- s Input Volume Thru
  - 0 Off
  - 1 On
- t Busy Out - During Delay Time
  - 0 Off
  - 1 On
- u Busy Out - During Phrase Play
  - 0 Off
  - 1 On
- v Busy Out - During Repeat Int
  - 0 Off
  - 1 On
- w Display Sleep
  - 0 Off
  - 1 On
- x Display Sleep - Sleep Time ( 0M30S - 59M59S )

*Note: refer to YQ command*

#### **= TI( Time stamp Info.)**

Function: Time Stamp settings

Syntax: **stxTI:** \*\*\*\*\* , \*\*\*\*,\*\*,\*\*,\*\*,\*\*,\*\*;  
                   a      b  c  d  e  f  g

- a Phrase number
- b year( 1998 - 2050 )
- c month( 1 - 12 )
- d day( 1 - 31 )
- e hour( 0 - 23 )
- f minute( 0 - 59 )
- g second( 0 - 59 )

*Note: refer to TQ command*

#### **= VR (VeRsion)**

Function: Version output

Syntax: **stxVR:** "\*\*\*\*\*", "\*\*\*\*\*", \*\* ;  
                   a          b      c

- a Model name
- b Version
- c Reserved (fixed at two space characters)



**= CC (Card Condition)**

Function: Card insertion status output

Syntax: **stxCC: \* , \* ;**  
a b

- a Status of card slot A
  - 0 Not inserted
  - 1 Inserted
- b Status of card slot B
  - 0 Not inserted
  - 1 Inserted

*Note: This is transmitted automatically when a card is inserted or removed. This also occurs automatically for verification after the Delete mode has been exited.*

**= %% (%?)**

Function: Card operation progress status output

When a card operation is performed, this tells what percent has been completed.

Syntax: **stx%%: \*\*\* ;**  
a

- a Percent ( 0 - 100 )

*Note: ACK output will terminate this.*

This is transmitted automatically in response to the following commands.

- CD Delete Card
- CO Convert Card
- LS Lock Switch
- SP Copy Settings
- PD Delete Phrase
- PT Phrase Truncate
- PM Combine Phrase
- RC R-DAC Mode Convert
- CP Copy Card
- FM Format Card
- LW Lock Switch
- PC Copy Phrase
- PV Divide Phrase
- TS Time Stretch
- RC Recording Type Convert

**= PE (PausE)**

Function: Output the elapsed time from the start of the phrase

Syntax: **stxPE;**

Syntax: **stxPE: \*\*H\*\*M\*\*S\*\*F\*S ;**  
a b c d e

- a hour ( 0 - 23 )
- b minutes ( 0 - 59 )
- c second ( 0 - 59 )
- d frame ( 0 - \*\* )
- e subframe ( 0 - 9 )

*Note: When operation is paused with the PE command, the AR-3000 outputs the elapsed time from the start of the phrase to the point where paused.  
The number of digits for \*\*F (frame) increases according to the value of MTC type*

**= AE ( Auto inc rEc start )**

Function: Output the total number of phrases recorded on the card

Syntax: **stxAE: S\*\*\*\* ;**

a

a the total number of phrases recorded on the card

*Note: This is output when AR receives an AE command.*

### 4.4.2 Reply Commands

**= ER (ERror)**

Function: Replies when an error has occurred.

Syntax: **stxER: \* ;**

a

a Error number

0 Syntax error

This error occurs when correct reception was not possible, such as when the syntax of the command was incorrect or inappropriate.

1 The specified phrase does not exist, or the phrase number is incorrect. This error will also be output if a phrase number is specified for a card which is not inserted.

2 Busy error.

The AR-3000 is currently recording or playing back. When the AR-3000 is recording or playing back, it will process only the following commands.

	Control commands	Request commands
During Recording	PA , ST	AC
During Play	PA , ST , PE	AC
During Play Pause	PA , ST , PE , RL	AC

3 An editing command was received when the AR-3000 was not in Delete mode.

4 This error occurs if a setting/delete/record command is transmitted while the write protect switch of the card is ON.

5 This error occurs when the total number of phrases specified by the PA, PU, or CE commands exceeds the maximum value (100), or when the specified parameter value is outside of the limit of the maximum value.

6 This error occurs when the characters being set for a phrase name or card name exceed the maximum value.

7 This error occurs when characters other than numerals (0 - 9) are used to specify an integer.

8 This error occurs when you attempt to specify a previously recorded phrase as a pattern phrase.

9 This error occurs when you attempt to record or copy a phrase on an already recorded phrase.

10 There is no remaining card capacity.

20 The command could not be executed for some other reason.

- 21 Unsupported card or Incorrect format. Please change cards or format card.
- 100 The AR-3000 received a "2Q" or "3Q" command even though the specified phrase was not a pattern phrase.
- 101 A "PQ" or "TQ" command is used to request output even after the setting information of the last phrase has been output.
- 102 The AR-3000 received an RE command even though it was not in record-ready mode.
- 202 There is no time information for the specified phrase.
- 300 The command is not compatible with the Dual Mono mode.
- 301 Specify a time parameter within the phrase recording time.
- 302 Phrases other than audio phrases cannot be specified.
- 303 Phrases other than MIDI phrases cannot be specified
- 304 Phrases other than audio phrases, MIDI phrases, and pattern phrases cannot be specified.
- 305 There is no blank phrase.
- 306 In the Delete mode, only editing commands are processed.
- 307 Before sending an RL command, first specify a phrase with the PA command.
- 308 The Dual Mono mode supports only monaural phrases.
- 309 The settings cannot be output, because it is expanded function in AR-3000. Please use the request command corresponding to AR-3000.
- 310 To execute the edit operation, transmit "ACK". To cancel the delete operation, Transmit "stxER:1" .
- 311 The AR-3000 received a "GQ" command even though the specified phrase was not a song phrase.
- 312 There is no signal input from the Digital In jack. Send signals from the digitally connected equipment.
- 313 The command does not correspond to the selected phrase.
- 314 Phrase Join cannot be executed unless the RDAC-Grade, RDAC-Mode, and recording type are the same for both phrases.
- 315 A card in AR-2000 format was inserted in either slot A or B (or both). Or the syntax of the command was incorrect or inappropriate.

*Note: When these commands occur, commands from the external device will be ignored.*

**= ACK**

Function: Acknowledge normal status, indicate normal reception of a command

Syntax: **ACK (06H)**

**= Xon (11H) / Xoff (13H)**

Function: Allow or disable transmission. Used for handshaking.

Syntax: **Xon** is **11H** only (transmission permitted)

**Xoff** is **13H** only (transmission disabled)

## Section5 Appendix

## 5.1 AR-3000 Commands List

## 5.1.1 AR-2000 Compatible Commands List

## # Commands transmitted from the external device (computer) to the AR-3000

## # Control Commands

## # Playback Commands

<b>PA</b>	PhrAse	Specifying the playback phrase	type2
<b>PE</b>	PausE	Playback pause / restart	type1
<b>PL</b>	PLay	Playback start	type1
<b>RL</b>	Relative time pLay	Playback from the middle of a phrase	type2
<b>ST</b>	STop	Halting playback/recording	type1

## # Recording Commands

<b>AE</b>	Auto inc rEc start	Starting time-stamped recording	type2
<b>RE</b>	REc start	Start recording	type1
<b>RM</b>	Rec Mode	Record pause	type2

## # Editing Commands

<b>DM</b>	Delete Mode	Enable execution of editing commands	type1
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## # Card Editing

<b>CD</b>	Card Delete	Delete card	type2
<b>CP</b>	Card coPy	Copy card	type1
<b>FM</b>	ForMat	Format card	type2
<b>LS</b>	phrase Lock Switch	Recorded phrase protect mode	type2
<b>SP</b>	Setting coPy	System copy	type1

## # Phrase Editing

<b>PD</b>	Phrase Delete	Delete phrase	type2
<b>PC</b>	Phrase Copy	Copy phrase	type2
<b>PI</b>	Phrase sIlencer	Delete silence (Truncate)	type2

## # Setting Commands

## # Card Settings

<b>CV</b>	Card Volume label	Card name setting	type2
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## # Phrase Settings

<b>SU</b>	phrase Set Up	Phrase settings	type2
<b>PU</b>	Pattern phrase set Up	Pattern phrase settings	type2

## # MIDI Settings

<b>MS</b>	Midi Set up	MIDI settings	type2
<b>NM</b>	Note Map	MIDI note map settings	type2

## # System Settings

<b>BR</b>	Baud Rate	Communication speed setting	type2
<b>CE</b>	Count play sEt up	Program(Count) Playback setting	type2
<b>DC</b>	Display Contrast	Display contrast setting	type2
<b>DP</b>	Direct Play	Direct playback setting	type2
<b>SM</b>	SysteM	System settings	type2

## # Request Commands

<b>2Q</b>	pattern phrase reQuest	Pattern phrase setting contents request	type2
<b>AC</b>	ACtive	Activity sensing(Verify AR-3000 unit activity)	type1
<b>AQ</b>	All reQuest	Reset the phrase output counter	type2
<b>CQ</b>	Card reQuest	Card setting contents request	type2

<b>DQ</b>	Direct playback reQuest	Direct playback setting contents request	type2
<b>IQ</b>	mIdi set up reQuest	MIDI setting contents request	type2
<b>LQ</b>	disPLay contrast reQuest	Display contrast setting request	type1
<b>MQ</b>	Memory reQuest	Card remaining capacity request	type1
<b>NQ</b>	Note map reQuest	MIDI note map setting contents request	type2
<b>PQ</b>	Phrase reQuest	Phrase setting contents request	type2
<b>SQ</b>	System reQuest	System setting contents request	type2
<b>TQ</b>	Time stamp reQuest	Time stamp request	type2
<b>UQ</b>	coUnt playback reQuest	Program(Count) playback setting contents request	type2
<b>VR</b>	VeRsion	Version request	type1
<b># Reply Commands</b>			
<b>ER</b>	ERror	Reply to the AR-3000 when an error has occurred	type2
<b>ACK(06H)</b>		Response to normal reception of a command	type0
<b>Xon(11H)/Xoff(13H)</b>		Allow or disable transmission	type0
<b># Commands sent from the AR-3000 to the external device</b>			
<hr/>			
<b># Setting Output Commands</b>			
<b>CS</b>	Card Set	Card setting output	type2
<b># Phrase Settings</b>			
<b>PU</b>	Pattern phrase set Up	Pattern phrase setting output	type2
<b>SU</b>	phrase Set Up	Phrase setting output	type2
<b># MIDI Settings</b>			
<b>MS</b>	Midi Set up	MIDI setting output	type2
<b>NM</b>	Note Map	MIDI note map setting output	type2
<b># System Settings</b>			
<b>AC</b>	ACtive	Active sensing reply	type2
<b>CC</b>	Card Condition	Card insertion status output	type2
<b>CE</b>	Count playback sEt up	Program(Count) playback setting output	type2
<b>CR</b>	Card Remain	Card remaining capacity output	type2
<b>DC</b>	Display Contrast	Display contrast setting output	type2
<b>DP</b>	Direct Play	Direct playback setting output	type2
<b>SM</b>	System	System setting output	type2
<b>TI</b>	Time stamp Info.	Time stamp setting output	type2
<b>VR</b>	VeRsion	version output	type2
<b>%%</b>	??	Card operation progress status output	type2
<b>AE</b>	Auto inc rEc start	Output the total number of phrases	type2
<b>PE</b>	PausE	Output the elapsed time	type2
<b># Reply Commands</b>			
<b>ER</b>	Error	Replies when an error has occurred	type2
<b>ACK(06H)</b>		Acknowledge normal status, indicate normal reception of a command	type0
<b>Xon(11H)/Xoff(13H)</b>		Allow or disable transmission	type0

## 5.1.2 AR-3000 Commands (Commands Newly Added with the AR-3000) List

### # Commands transmitted from the external device (computer) to the AR-3000

#### # Editing Commands

##### # Card Editing

<b>CO</b>	Card cOnvert	Convert card	type2
<b>LW</b>	Lock sWitch	Recorded phrase protect mode	type2

##### # Phrase Editing

<b>PT</b>	Phrase Trancate	Delete phrase	type2
<b>PV</b>	Phrase diVision	Divide phrase	type2
<b>PM</b>	Phrase coMbine	Combine phrase	type2
<b>TS</b>	Time Stretch	Time stretch	type2
<b>RC</b>	Rdac-mode Convert	RDAC-Mode convert	type2
<b>RT</b>	Recording Type convert	Recording type convert	type2

#### # Setting Commands

##### # Phrase Settings

<b>PS</b>	Pattern phrase Set up	Pattern phrase settings	type2
<b>SS</b>	Song phrase Set up	Song phrase settings	type2
<b>PN</b>	Phrase Name set up	Phrase name settings	type2
<b>PR</b>	Phrase Repeat set up	Phrase repeat settings	type2
<b>PO</b>	Phrase control Out set up	Phrase control out settings	type2
<b>PP</b>	phrase Play Point set up	Phrase play point settings	type2
<b>LP</b>	phrase LooP set up	Phrase loop settings	type2
<b>PY</b>	Phrase delaY set up	Phrase delay settings	type2
<b>VM</b>	phrase VoluMe set up	Phrase volume settings	type2
<b>FD</b>	phrase FaDe set up	Phrase fade settings	type2
<b>MP</b>	Midi temPo set up	Midi tempo settings	type2
<b>TT</b>	Time sTamp set up	Phrase settings	type2

##### # MIDI Settings

<b>ME</b>	Midi sEt up	MIDI settings	type2
<b>MM</b>	MMc set up	MMC settings	type2
<b>MT</b>	MTc set up	MTC settings	type2

##### # System Settings

<b>DL</b>	Direct pLay	Direct play setting	type2
<b>CI</b>	Control In set up	Control in setting	type2
<b>AL</b>	ArLink set up	AR-LINK setting	type2
<b>DN</b>	Dual moNo mode set up	Dual mono mode settings	type2
<b>LT</b>	Line Thru set up	Line thru setting	type2
<b>EQ</b>	EQualizer set up	Equalizer setting	type2
<b>VT</b>	Volume Thru set up	Volume thru setting	type2
<b>BO</b>	Busy Out set up	Busy out setting	type2
<b>DO</b>	Display Off set up	Display off settings	type2

##### # Request Commands

<b>3Q</b>	pattern phrase reQuest	Pattern phrase setting contents request	type2
<b>GQ</b>	sonG phrase reQuest	Song phrase setting contents request	type2
<b>JQ</b>	midi set up reQuest	MIDI setting contents request	type2
<b>QQ</b>	phrase reQuest	Phrase setting contents request	type2
<b>YQ</b>	sYstem reQuest	System setting contents request	type2

# **Commands sent from the AR-3000 to the external device**

# **Setting Output Commands**

# **Phrase Settings**

<b>PS</b>	Pattern phrase Set up	Pattern phrase setting output	type2
<b>SS</b>	Song phrase Set up	Song phrase setting output	type2
<b>RU</b>	phRase set Up	Phrase setting output	type2

# **MIDI Settings**

<b>ME</b>	Midi sEt up	MIDI setting output	type2
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# **System Settings**

<b>SY</b>	SYstem	System setting output	type2
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**Caution1:**

STX(02H) is attached to top of the command, and some commands has parameters with it. In this commands list, STX(02H) and parameter are omitted.

**Caution2:**

- Type0: Those consisting only of a control code.
- Type1: Commands with no parameters.
- Type2: Commands with parameters

**5.2 Characters That Can Be Used in Phrase Names and Card Names**

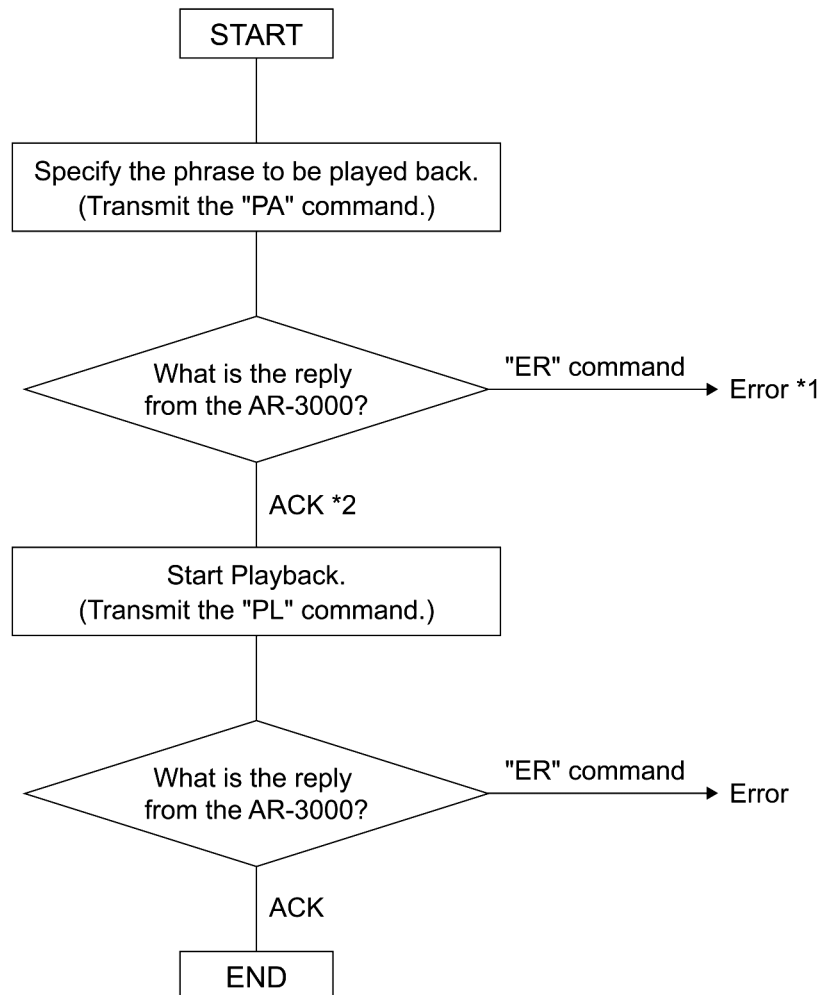
Blank locations in this table cannot be used. However, 20H is used as a space character.

		Lower 4 Bit															
		0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
H i g h e r  4 B i t	0																
	1																
	2	! # \$ % & ( ) -															
	3	0 1 2 3 4 5 6 7 8 9															
	4	@ A B C D E F G H I J K L M N O															
	5	P Q R S T U V W X Y Z [ ] ^ _															
	6																
	7																
	8																
	9																
	a																
	b																
	c																
	d																
	e																
	f																

### 5.3 Sample Algorithms

The following are some examples of processing algorithms.

#### 5.3.1 Playing Back a Phrase



\*1 Refer to the error number to determine the cause. Is the command format incorrect?

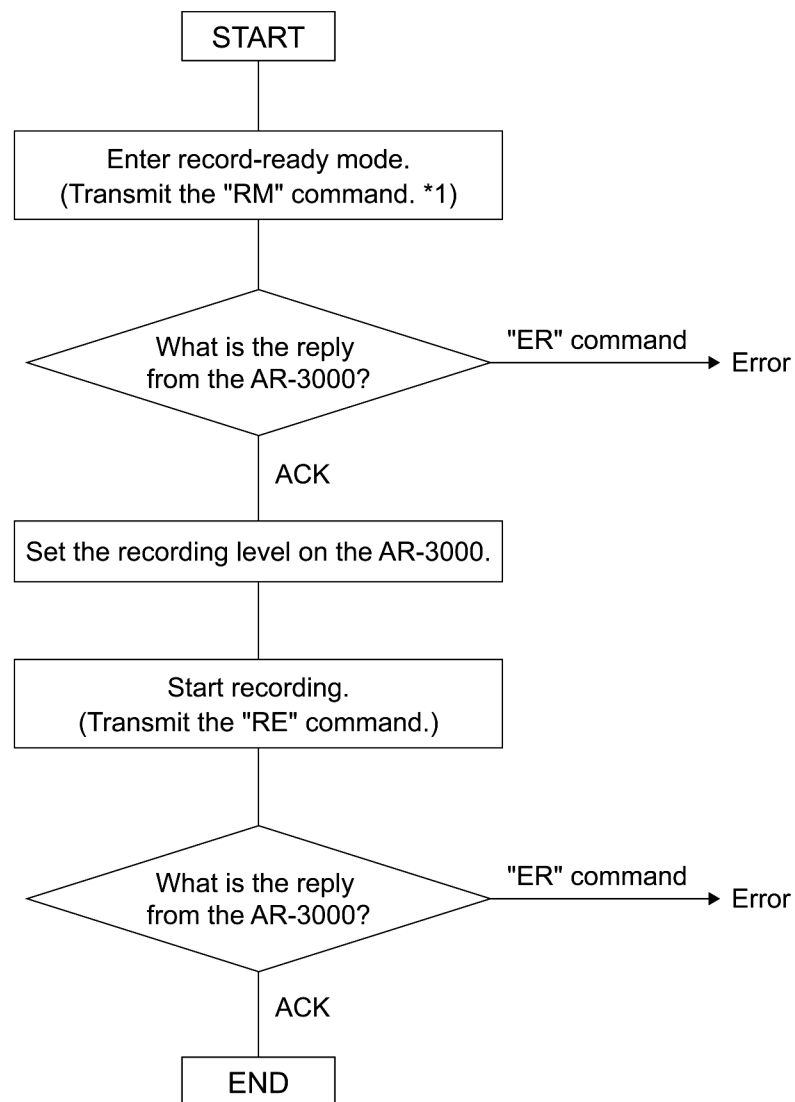
\*2 "ACK" will be output if the AR-3000 correctly recognizes the command.

*Note:*

- You can check the operating status by transmitting the "AC" command.
- You can stop playback by transmitting the "ST" command.



### 5.3.2 Recording ( Nomal Recording )

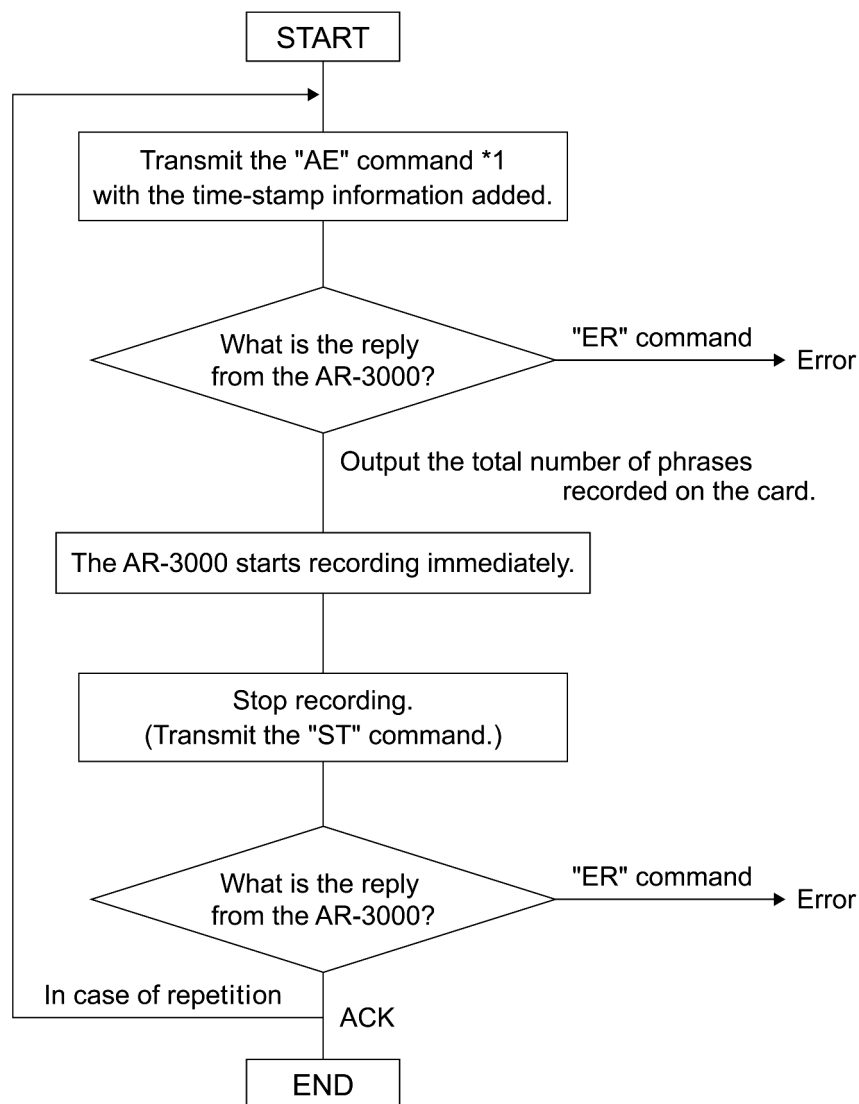


\*1 Setting such as RDAC-Grade and RDAC-Mode are made by " RM " command parameters.

*Note:*

- *You can check the operating status by transmitting the " AC " command.*
- *You can stop recording by transmitting the " ST " command.*

### 5.3.3 Recording ( Time-Stamped Recording)

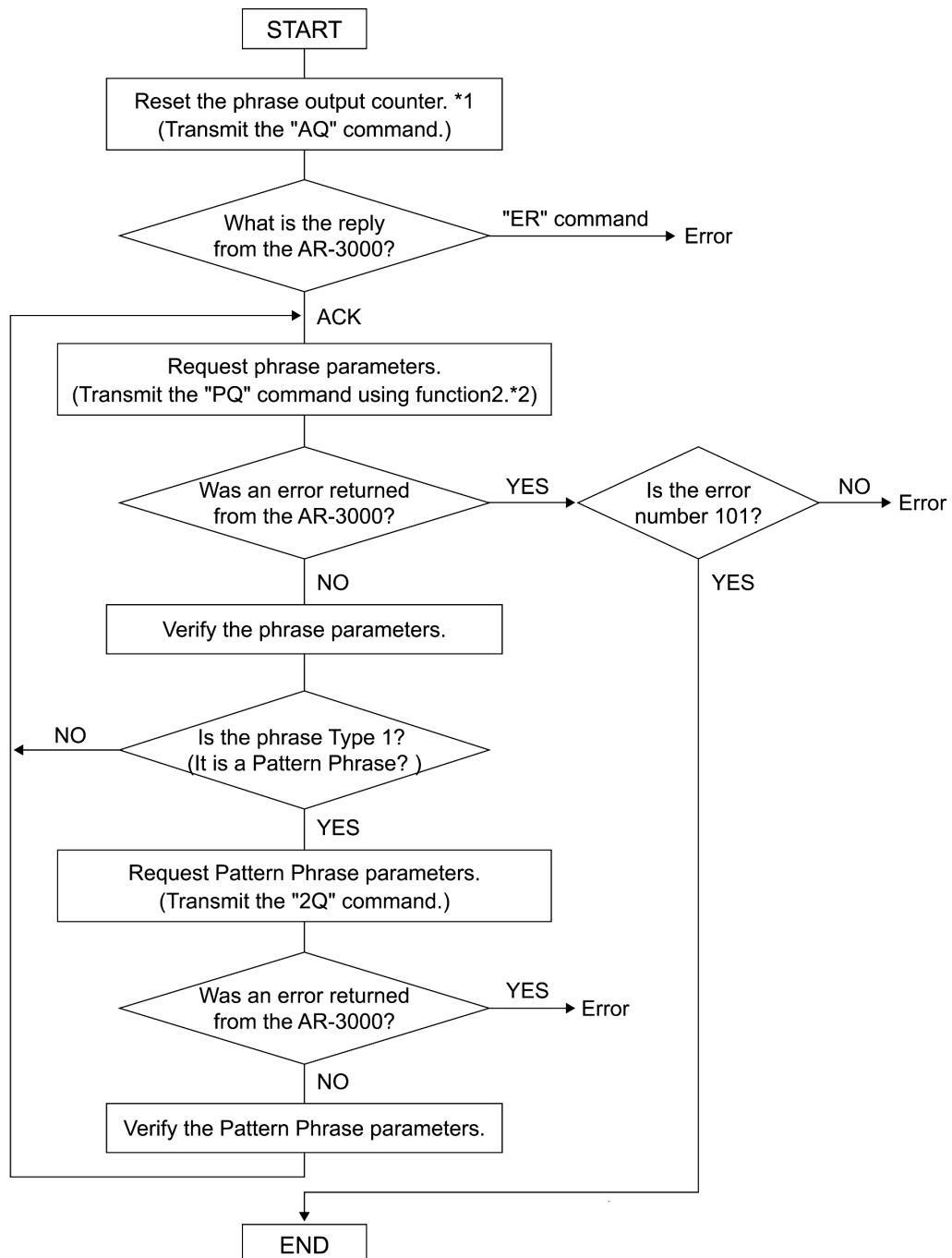


\*1 Setting such as RDAC-Grade and RDAC-Mode are made by " AE " command parameters.

*Note:*

- You can check the operating status by transmitting the " AC " command.

### 5.3.4 Verifying the Parameters (Data Settings) of All Phrases Starting with the Lowest-Numbered Phrase



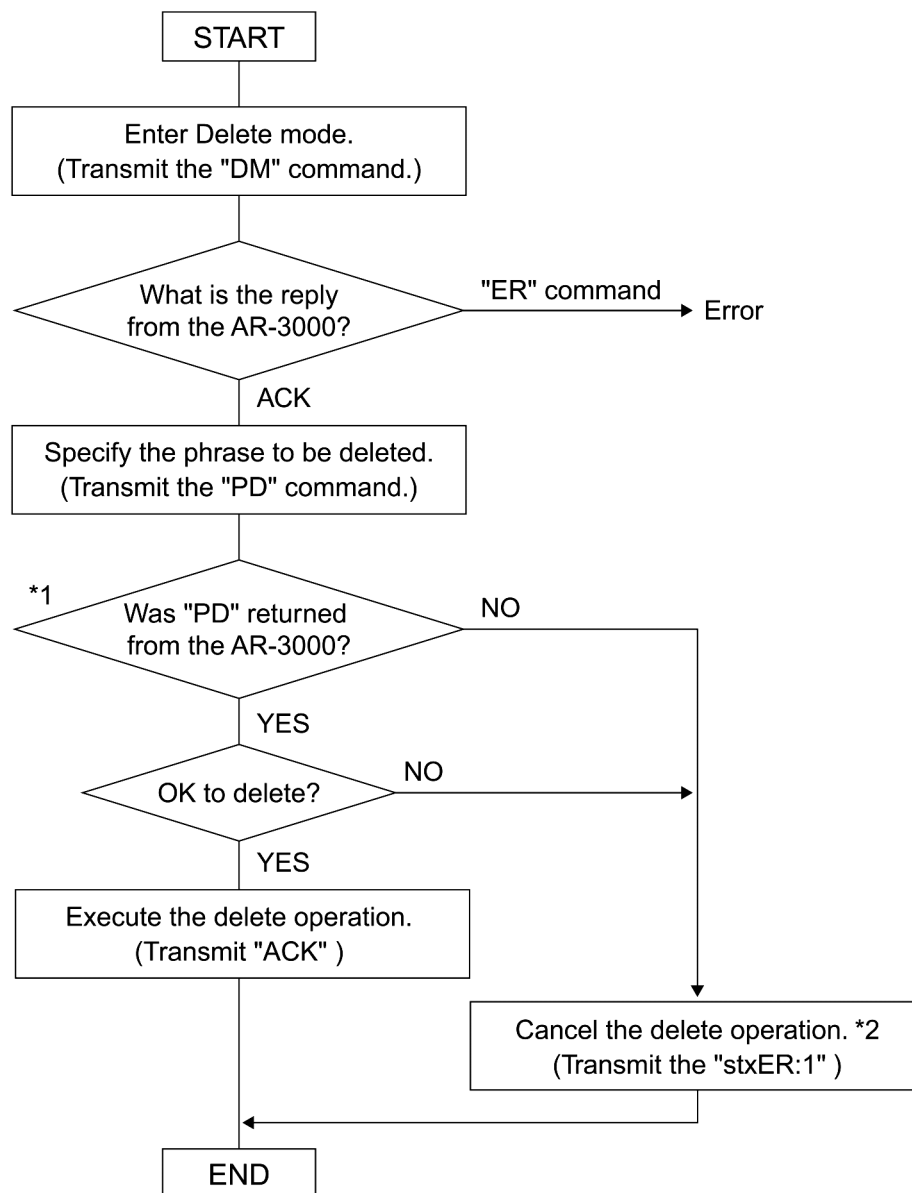
#### \*1 What is the Phrase Output Counter?

The AR-3000 has an internal counter for phrase output. When a phrase is output, the phrase that corresponds to the AR-3000's counter will be output. The maximum value will be the highest phrase number of each card. This will be reset by the AQ command (to the lowest phrase number).

#### \*2 What is PQ Command Function 2?

If the phrase number is not specified by a parameter, the AR-3000 will automatically increment the phrase output counter, and will output the corresponding phrase. The incremented value will skip phrase numbers which are not recorded yet, and will be up to the next recorded phrase number. If the PQ command is received to request output after the last phrase has been output, the AR-3000 will output an ER command (Error number 101).

### 5.3.5 Deleting a Phrase



\*1 The AR-3000 will return the same " PD " command for confirmation.

\*2 By transmitting "stxER:1:" you can exit Delete mode.

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