MANUAL DE INSTRUCCION INSTRUCTION MANUAL



Congratulations on your purchase of CASIO FA-1 adapter designed for CASIO FX-501P/502P calculators. FXthe to connect The FA-1 adapter is designed exclusively 501P/502P with an ordinary tape recorder,

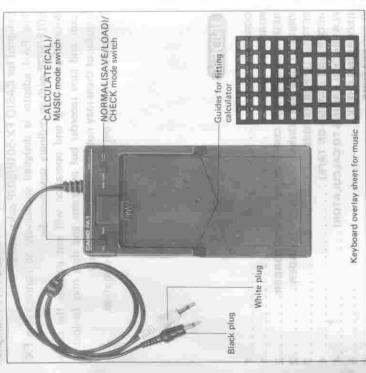
9 calcurecorder but programs and data may be lost the will not damage transfer of them may not be carried out properly. Wrong connections and operation lator and tape

It is advised that you get a good knowledge of operation

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2	2	d	3	-	23	-	0	S	5/2	C	0	15	5	2	O
CONSTRUCTION	PURPOSES	REQUIREMENTS FOR CONNECTING TAPE RECORDER	PRECAUTIONS FOR CONNECTING TAPE RECORDER	SETTING UP FOR RECORDING AND PLAYBACK	RECORDING (SAVING ON TAPE)	PLAYBACK (LOADING TO CALCULATOR)	RECORDING CHECK	MUSIC FEATURE	■ Basic operation	Synthesizing music.	* Analysis, programming, loading program, and playing .	Music feature-summary	CONTENTS OF DEMONSTRATION TAPE PROVIDED	HOW TO PLAY GAMES (DEMONSTRATION TAPE PROVIDED)	SPECIFICATIONS
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-	patter.	-	Select	41	Series.	Series .	Select	Time.			. 90		-	and a	(1)

CONSTRUCTION



PURPOSES

- To keep programs of CASIO FX-501P/502P on magnetic tape
 - To keep data of CASIO FX-501P/502P on magnetic tape
- To load programs kept on magnetic tape to the FX-501P/502P
 - To load data kept on magnetic tape to the FX-501P/502P
 - The following is the unique feature of CASIO.
- their "duration", and "tempo" given as data. Play it back through the You can synthesize music by coding a music program with "notes". tape recorder.

REQUIREMENTS FOR CONNECTING TAPE RECORDER

Tape recorders connectable to the FA-1

Tape recorders and tape decks which use cassette tape, micro-cassette tape or open-reel tape.

Requirements for tape recorder

- The input impedance is more than 10 kilohms and the minimum input level higher than 3 mV at the MICROPHONE or equivalent input terminal of the tape recorder.
- The output impedance is less than 10 ohms and the output level higher than 2.5 V at the EARPHONE, MONITOR, or equivalent output terminal of the tape recorder.
 - in the fre-Distortion of input and output signals is less than 15% quency range of 1 kHz to 3 kHz.

Adding to the above requirements, the tape recorder must be equipped with input and output jacks fitting to mini-plugs. Almost all cassette abe recorders (including radio-cassette tape recorders and cassette tape decks) which are available on markets at present meet the above requireConnection may be possible even if the requirements are not exactly met. When the requirements are not met, the tape recorder and calculator will not be damaged by connection. Note: If the plug and jack do not fit, replace the plug with a suitable

PRECAUTIONS FOR CONNECTING TAPE

Confirm the following to let the tape recorder connected to the FA-1 operate properly.

- The tape recorder's jacks are free from rust and damage
- The magnetic head is clean and not worn excessively.
- The magnetic tape to be used is an ordinary one available on markets and its frequency response is not deteriorated excessively.
- The tape is free from damage and creases. Avoid to make recording on the beginning and end of tape (respectively for about 30 seconds).
 - Operate the tape recorder by batteries if it does not work well with AC line power.

- in the middle of operation. Before removing the calculator, turn off its Fit the calculator to the FA-1 securely. Do not remove the calculator Dower switch.
- mon, it may be impossible to play back tapes on which recording is Use the same recorder for recording and playback. Though it is uncommade with another tape recorder.

SETTING UP FOR RECORDING AND PLAYBACK

Connections

- Connect the FA-1's white plug to the tape recorder's MIC Jack (preferably to the R-channel jack for a stereo tape recorder)
 - Connect the FA-1's black plug to the tape recorder's EAR, MONITOR or EX SP jack (of the same channel as the white plug with a stereo tape recorder)

Recording level adjustment

- Let the automatic level control work if the tape recorder is provided
- Otherwise adjust the level control while recording test data so that the VU meter reads zero.
- Note: Avoid to use such a tape recorder that its level meter pointer deflects very wide.

*Output level adjustment

- Set the volume control at a higher position than an ordinary listening position, in between the center mark and MAX. (MAX is preferable
 - With a stereo tape recorder, set the channel balance control to MAX normally.
- If mixing feature is provided, adjust the SOURCE level to MAX and toward the channel used. the MIC level to MIN.

Miscellaneous adjustment

- Set the TONE, BASS, and TREBLE controls to a medium level.
 - Set the tape selector in accordance with the type of tape.

RECORDING(SAVING ON TAPE)

To save calculator program on magnetic tape:

- Set the FA-1's mode switches at CAL and SAVE/LOAD respectively.
 - Position the tape suitably and record the tape counter reading.
- Depress (co.), [3], (m), and (som in this sequence and input a three-digit file number.
 - St the recorder in the recording mode.
 - Depress Ed.
- * Recording is completed in about 11 to 16 seconds ("0," is displayed). Stop the tape recorder.

o save calculator data on magnetic tape:

- Set the FA-1's mode switches at CAL and SAVE/LOAD respectively. Position the tape suitably and record the tape counter reading.
- Depress (mg), (II), (m), and (m) in this sequence and input a three-digit file number.
- Start the tape recorder in the recording mode.
 - Depress [6]
- *Recording is completed in about 9 to 13 seconds ("0." is displayed). Stop the tape recorder.

PLAYBACK(LOADING TO CALCULATOR)

- "To load a program or programs from a magnetic tape back to the calculator:
- To load all programs at a time:

recorded counter reading.

- Set the FA-1's mode switches at CAL and SAVE/LOAD respectively. Position the tape so that the tape counter reads 1 or 2 before the
- Depress w, B, M, M(PROGRAM ALL CLEAR), M, and win this sequence and input the three-digit file number given at the time of saving.
 - Start the tape recorder in the playback mode.
- (file number)" is displayed during playback, * Loading is completed in about 11 to 16 seconds ("0," is displayed) 03: Depress 國.
- Note: If the program is not found, operation ends with error ("E" dis-Stop the tape recorder. played).

To load a program:

Follow steps 1 and 2 above.

Depress 🗠 🗓 , 🖻 , end 🖬 to delete Pn. Successively depress 🕪 and is and input the three-digit file number given at the time of saving. Finally depress Pa to designate the program to load.

Follow steps 4, 5, and 6 above. Loading is completed in about 11 to 16 seconds

To load data from a magnetic tape to the calculator:

- Set the FA-1's mode switches at CAL and SAVE/LOAD respectively. Position the tape so that the tape counter reads 1 or 2 before the re-
- Depress (1), (1), (1), and (10) in this sequence and input the three-digit file number given at the time of saving. corded counter reading.
 - Memory need not be cleared in advance.
 - Start the tape recorder in the playback mode.
- (file number)" is displayed during playback. *Loading is completed in about 9 to 13 seconds ("0." is displayed). Depress 區.
 - Stop the tape recorder.

RECORDING CHECK

- Be sure to check programs or data saved on a magnetic tape by the following procedure,
- · Loading operation need not be checked unless "E" is displayed. It normally ends satisfactorily
- Rewind the tape to the position where recording started. Operate the for a program (we, I for data), m, im, file number, starting the calculator and tape recorder for playback in the sequence of ma Set the FA-1's mode switches at CAL and CHECK respectively.
- If "E" is displayed, check connections and control settings and make Recording is made correctly unless the calculator displays "E". tape recorder, and [50].

recording again.

MUSIC FEATURE

 You can enjoy composing, arranging and playing music with the system of CASIO FX-501P/502P, FA-1 adapter and a tape recorder.

Basic operation

Set the FA-1's mode switches at MUSIC and SAVE/LOAD respectively.

In the WRT mode, program music by representing notes and their Put the codes of notes into the M-registers of the calculator.

duration by code numbers.

Execute the program in the RUN mode. You will listen to the music through the tape recorder, (Record the music on a magnetic tape and play it back if the tape recorder does not allow to monitor recording.

Put the codes of notes into the M-registers.



The FX-501P is capable of memorizing 15 notes in M0 through M9 and M.0 through M.4 (see the note below). The FX-502P memorizes up to 20 notes in M0 through M9 and M.0 through M.9.

Note: The L-registers (for parentheses) can be used as M.O to M.4 only when the FA-1 is connected to the FX-501P and the mode switch is set at MUSIC.

 Designate the duration of notes and rests using keys as summarized below.

Key	
Duration of rest	~ E ~ ()
Key	
Duration of note	55-16
Key	Men
Duration of note	54

Install the keyboard overlay sheet designed for music. You will see musical symbols on it. This manual and library description use the ordinary notation of notes and rests.

· Put a tempo code into the MF register.

anno odilla i		A	- AF-				1			
Tempo (J≒)	28	56	84	112	140	168	196	224	252	280

Tempo is represented by the number of quarter notes to be played in The the key represents the slur and the key the tie. a minute.

Slur: to play successive notes by gliding from one to another Example:



Tie: to indicate that two successive notes of the same pitch are to be played unbroken Example:



Synthesizing music Example



n m = 4 n in 1 N m m n = # n

n

N m m # **#** in Ø ω m ın F ın

Analysis, programming, loading program, and playing Step 1 | Analysis

How many different notes are used in the example? Six notes (Do, Re, Mi, Fa, Sol and La) are used. Put the codes of the notes used into the M-registers. FA-1: "MUSIC" "SAVE/LOAD" Calculator: RUN Mode (mod 1)

92 Fa Do

Sol→ 82

Man 22

110

Re

La → 72 Ma E Put a tempo code into the MF register.

Put "7" in the MF register for the example whose tempo is designated as 224 quarter notes per minute.

· Program the music according to the score. Step 2| Programming

	~~1		
		-54	C
		-	26
	-21		
	-71		
	-		
	- 31		
	-61		
		-	C
	- 1	-	(M
		-	C
	-51		
	- 4		
	- 61		
	- 4	-	3
		200	-
	-		
	-1		
		-	3
	-	- 4	-
	-4		
	- 53		
	-21		
	- 14		
	-1		
	-1		
	-51		
	- 1		
		-	484
	-53		U
	-		
			C
	-1	-	-86
		100	//29
	- 121		
			PL
		-	d
			. 74
	-		
	-61		
			W.
		-	M
	- 1		c
	-01		
			U
		-	-13
		-3	100
	200		
	-81		į.
×	-	-	50
e	5		
7	-		
3	2		
b	201	Street, or	*
s	AR:		

-	2	Re	-	m	Ē	-	
1 00 m	2	Re	1	n	Z	-	
		Ē		4	TI B	-	
-	3	Ē	-	4	Ta	-	
-	4	T	7	Ю	Sol		
	4	Fa	-	ເດ	Sol	-	
-0	ເດ	Sol	-0	N	Re	-0	
-	0	La	7	e	Ē	-	
0	9	La	-	m	ž	-	
-	2	Sol	-	4	Fa	-	
-	ĸ	Sol	3	4	Fa	~	
-	+	Do	-	ß	Sol	-	
-	-	Do	-	10	Sol	-	

Step 3 Loading program

Calculator: WRT mode (ﷺ ☑) Load the program as "PO".

************ PO 11, 11, 15, 15,

Terminate the music program with this command.

-

Ni

Connect the FA-1's white plug only to the tape recorder's MIC jack. Connect an earphone to the tape recorder's EARPHONE or MONI-Step 4 | Playing TOR jack.)

- Load a tape on the tape recorder and put it in the recording mode. The tape may be stationary. ri
 - *You will listen to the music through the earphone. If the tape recorder is provided with mixing feature, no earphone is needed and Put the calculator in the RUN mode (歐山) and depress 题 you will listen to the music through the speaker.
 - if recording is made on it. Then you can play it back through the The music ends when the calculator displays "0.". Rewind the tape speaker (with the earphone disconnected).

Music feature-Summary

- The system of the FX-501P/502P, the FA-1, and a tape recorder is The music feature is a kind of programmed operation. At this time the needed to play music.
 - FA-1's mode switch must be set at MUSIC.
- calculator just as recording ordinary programs and data with the FA-1's To save music programs and register data on magnetic tape, operate the (At the CAL position, the keys do not represent notes and rests.) mode switches set at CAL and SAVE/LOAD.
 - To reload music programs and data saved on a magnetic tape, operate the calculator just as reloading ordinary programs and data with the Note: When the FX-501P's L-registers are used to keep the codes of FA-1's mode switches set at CAL and SAVE/LOAD
- notes, set the mode switches at MUSIC and SAVE/LOAD to load data into the registers.

CONTENTS OF DEMONSTRATION TAPE PROVIDED

 The demonstration tape provided has the following contents. (" Normal position)

Sakura Sakura (program) for FX-501P (register data) Contents " (register data) Number ordering game Sakura Sakura (music) Suess-number game Für Elise (program) Bombarding game Für Elise (music) Hit-mole game Blank 300 200 200 400 500 800 File No. (in seconds) Time 1'45" 2'40" 3,02,, 3,30,, 4,00,1 4'30" 2.00,, 5'30" 6.00, counter reading Tape 0

Note: Fill the columns of tape counter reading by yourself since it varies

Blank

Take-stone game Hit & Blow game

700 800

6,30,, 7,00,7

Set the FA-1's mode switch at MUSIC only to reload the register data of "Sakura Sakura". with the tape recorder.

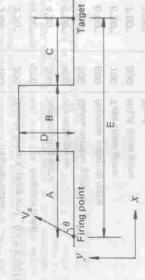
HOW TO PLAY GAMES (DEMONSTRATION TAPE PROVIDED)

Bombarding game

Description

This is a game to bombard a target. The calculator holds data A, B, C, D, and W shown at left, But the player knows E and W only. (B and D is the width and height of a barrier existing between the firing point and the target.) The player inputs initial velocity V_{α} (m/sec) and firing angle θ (degrees) considering the wind direction W.

- W (wind direction)



Requirements for the shell to pass over the barrier: Gravitational acceleration g = 9.8 [m/sec²] Traveling distance of shell in t seconds

$$x = (V_0 \cos \theta + W)t = V_X t$$
$$y = V_0 \sin \theta t - \frac{1}{2} gt^2 = V_y t - 4.9t^2$$

$$\frac{V_{\lambda}}{V_{\lambda}} A - \frac{4.9}{V_{\lambda}^3} A^3 > D$$

$$\frac{V_X}{V_X} = \frac{V_X}{V_X^2} (A+B)^2 > D$$

 V_X V_X^* Firing range when the above requirements are met: $X_{\text{END}} = \frac{V_X V_Y}{4 \text{ Q}}$

Remark		Distance to target	Wind direction Wind velocity	HLT displayed at bottom	Dag of A	Barrier not exceeded	,				Hit 227 meters beyond target	Manufacture and	or 31 three-se	3 3	Paramoter Paramoter	Second	Hit target shown by "SOS"		3' 65 badinu	the set to diff.	
Read-out		1831 000.	34.	HLT O.	О,	ОпОпО.	1831¤0¤0.	34.	м.т 0,	Ö	227.	1831000.	34.	HLT O.			505.	Dino of second		gang the wint on puril	
Data input operation	(MODE) 1	64		2	(%) 100個	30 00	The state of the s		9	(火。) 120個	(9) 45 EE	mek imploom imin mad by and	distributed, the calculate	DV		the Supplied in	(9) 42 EX	 Displayed repeatedly 		official and first holy and a	
Step	1	-	2	3	4	2	9	7	00	ற	10		12	13	14	15	91	. 11	82	6.	00

Hit-mole game

Description

You press keys designated by calculator's messages. Your reflex and Three games are included as explained below. nimbleness will be tested.

1, P0 program

aning Column 1 1 2	co
Column	2
Column	-
A a B a C. Number of remaining problems problems at right shown at right shown at right	

Example

When "1"2"9,'is displayed, you have nine problems remaining and are requested to press key . The displaying lasts for about one second. If you make no input during the time, you will lose the chance. When all ten trials are completed, the calculator displays how many times you have succeeded,

P1 program 5

A DO DC. Message

n this grame, divide the displayed number (A) by four and input the If 6008, is displayed for example, depress

> -Number of remaining -Number in question problems

key 🗈 .

residual.

P2 program n

This is the same as the P1 program but that the number (A) may have two digits.

Row

Number guessing game	1	1	Trans. String	
Ť	Step	Data input operation	Read-ont	Remark
The calculator holds a secret number which is smaller than 50.		(MORE) (1)		
Referring to messages, you guess the secret number. As you input a number, the calculator displays a message which indicates an area	-	PO	000000	PAUSE state
where the secret number is included.	2	35	35.	a welmyn A - B
2500	8		000035	PAUSE state Smaller than 35
E Commelo	4	15	15.	
lot the carret number he 25	Ŋ		1500035.	PAUSE state Greater than 15 and
1st massans	9	25	25.	smaller than 35.
Ouop 50. (The secret number is between 0 and 50.)	7	Digital self-the annual transfer	Ŕ	Hit at 3rd trial
	00		00000	
Lower limit	6			
Upper limit	_		00000	0.000
	2			
OnOn35. (The secret number is between 0 and 35.)	=	Straffering.		mercent extensive
If train forms 3 m	12		Pario de la	
3rd message	2			Total Selected
150035. (The secret number is between 15 and 35.)	14			1.
If you input 25 4th message	15			4
Н	16			
	17			
2. Mercent	8		101200000000000000000000000000000000000	
That is the sentence the Comments but that the newton 199 larger	61		adi Indiana	
650	20		Section 1	
1.0				

	451236789.	432156789.	123456789.	345129876.	345126789.	154326789.	123456789.				451287639	A Stratument	W 1090 LB - W	Thrift.		To majoring year	451287639.	451236789.	432156789.	123456789.	-18-
MOOF 1	2 2	E	I	3 80	M		[2]				To retry with	4 MH 1	5 MJ S	****		6 W 6	<u>8</u>		[23]	Id	
	-	2	m	4	ro.	9	7	∞	o	0	=	12	-3	14	15	91	17	-	61	20	
D) (D) (D)	ge nine digits generated randomly into the ascer	vel code of 1 to 9 (1: easiest, 9: hardest) and de of the corresponding level will be displayed. Use ke	ropriately.				00000	00000)	04		imber of steps (depressing keys). nitial number;			1000						1.64
	I loom	(MOR) 1	1 2 PO 2 P	2 PZ	2 P2 P2 P3 P3 P3 P3 P3 P3 P9	2 PP	1 2 PO 2 PO 3 PO 5 5 PO 5 PO 5 PO 5 PO 5 PO 5 PO	1 2 PO 2 PO 3 PO 4 3 PO 6 PO	2 PP	gits generated randomly into the ascending 1 2 PO	1 2 PO PZ 3 PO PZ 5 PZ	gits generated randomly into the ascending 1 2 2 2 2 2 2 2 2 2	gits generated randomly into the ascending 1	gits generated randomly into the ascending 1 2 PG 2 PG 4 Seponding level will be displayed. Use keys. PG 3 PG	gits generated randomly into the ascending 1 2 2 80 4 2 80 6 2 80 6 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	gits generated randomly into the ascending 1 2 80 2 80 2 80 2 80 2 80 2 80 2 80 3 80 3	gits generated randomly into the ascending 1 2 PP 4 2 PP 4 1	gits generated randomly into the ascending 1 2 PPG 6 1 1 2 PPG 6 1 1 2 PPG 6 1 2 PPG 6 1 2 PPG 6 1 3 PPG 7 1 4 3 PPG 7 1 5 PPG 6 1 6 PPG 7 1 7 PPG 1 1 7 PPG 1 1 8 PPG 1 1 8 PPG 1 1 1 To retry with 1 1 1 To retry with 1 1 1 To retry with 1 1 1 PPG 1 1 PP	gits generated randomly into the ascending 1 2 2 2 2 2 2 2 2 2	gits generated randomly into the ascending 1 2 PPO 4 11: easiest, 9: hardest) and depress 2 PPO 4 PPO 10 PP	gits generated randomly into the ascending 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

Remark

0.7 You and the calculator take a stone or stones alternately. You will win (1) The calculator will generate and display the number of stones in The calculator takes one to three stones at its turn automatically. Number of stones left by calculator's last play Number of stones left by your last play You have choices of (2) to (4) above at subsequent turns. To let the calculator play first Depress [8] . ➤ Number of stones left by calculator -Number of stones left at present ◆ Number of stones left at present ■ Number of stones left by you To take three stones Depress [9] . You have choices of tactics. At your first turn: To take two stones Depress 2. To take a stone Depress FII. if the last one is left for the calculator. (Kept displayed for about a second) the range of 4 to 59. At calculator's turn Contents of display: 00000000 00000000 At your turn Description Rules: (E)

Take-stone game

	1	-	-			_	_	_				_	_								
Remark	di.	Di-Inform	Kept displayed for about a second		Kept displayed for		Kept displayed for about a second		Kept displayed for about a second		Kept displayed for about a second		Kept displayed for	You lose.	: X	(You win.)	PO '0'P	Albana alam mana mala			
Read-out	Notice Value Bate	000023	0023022	23"22"21.	22021018.	21018017.	18017014.	17014013.	14013010.	1401009.	100906.	90605.	69594.	50401.	Nam 1945al anti-Tarfal	(E.)	The Work below to				
Data input operation	(MODE) (4)	(Pa)	(Take a stone) [P]		(Take two stones) P2		(Take three stones) [P3]	The property of the filters of the second	(Take three stones) [23]		(Take three stones) (P3)	Carlo date in the manner	(Take a stone) [P1]	Adv mayor in the second	White the second to the second		LANT GARANT IN THE		The Street North		
Step	1	-	2	3	4	10	9	7	00	6	0.1	Ξ	12	13	14	15	9	17	∞_	61	20

-20-

Hit-and-blow game

Description

Guess a 4-digit number

Operation:

- (A four-digit random number consisting of different digits is 1) Let the calculator hold a four-digit number by the following operation. Key operation: wa, (The calculator is now in the RUN mode), (), generated and held by the calculator.)
 - Guess the number the calculator holds by inputting a four-digit [6] (: numeric key).
 - The calculator judges whether you are right or not.

Example:

If your guess is "5432" (key operation: 图, 田, 国, 国, 图), the calculator Let us assume the calculator holds "1234". displays:

 Number of right digits but in wrong positions - Number of right digits in right positions (called (called "blows", "4" and "2" in this case) "hits", "3" in this case) 1. (1 hit and 2 blows) - Means first trial 20 10

Referring to the message displayed, you make a guess several times until When your guess "hits" the secret number (key operation: 1, 2, 3, 4, Po), the calculator displays: the right number is reached.

(You have succeeded at the n-th trial.) ċ 00 40

Now the game ends.

To restart the game with a new secret number, depress in and in

Remark			1 hit & 2 blows	1 blow	2 hits & 1 blow	1 hit & 2	3 hits	You have succeeded at	the 6th trial.												
Read-out	Sand Pare	0.	10201.	00102.	20103.	10204.	30005.	4-0-6.						Intellaboral							
Data input operation	(L) (MOG) (L)		5432 10	8901	5231 @	7241 19	1236回	1234 酌	00000					N BOW HE LEVEL				organistic at the second			
Step	1	-	2	3	4	ro.	9	7	00	6	0.1	=	12	13	14	2	91	(7	80	61	20

SPECIFICATIONS

Model: Output terminal: Input terminal:

nput terminal:

Power source: Power consumption:

Usable temperature: Dimensions:

Weight:

FA-1 (designed for CASIO FX-501P/502P) approx. 3 kilohms, output level: 3 white mini-plug, output impedance:

- 50 V black mini-plug, input impedance: approx. 10 kilohms, input level: 2.5

Kansas City standards Data recording format:

0.001 W (together with FX-501P/502P) 25.5mmH x 88mmW x 173mmD (1"H x 3-1/2"W x 6-3/4"D) 0°C-40°C (32°F-104°F) supplied by FX-501P/502P

155 g (5.5 oz)