FANUC CNC Simulator OPERATOR'S MANUAL

Copyright © 2015 FANUC CORPORATION

								FANUC CNC Simulator OPERATOR'S MANUAL
							Draw No.	A-45101E Sheet 1/48
Ed.	Date	Design		Descripti	on		FA	NUC CORPORATION
	Date Oct 09, 2015 Design K.Honma Apprv K.Kusakabe							

CONTENTS

S	AFETY P	RECAU	JTION	S		•••••		4
	DEF	INITION O	F WARN	ING, CAUTION, A	ND NOTE			4
	_						BACKUP BATTERY AND	5
_								
1	FAN	JC CNO	C Simu	lator	•••••	•••••		7
	1.1							
		1.1 Fea 1.2 Con	tures ····	n the appointmention				7
	1.2			_				
		.2.2 Har	dware spe	ecifications of CNC	Simulator ······			8
		.2.3 CN	C Simulat	$\operatorname{or} \operatorname{bodv} \cdots \cdots$				9
		.2.6 Mag	chine Ope	rator's Panel ······				11
	1		•					
	1.3							
		.3.1 Sys	tem type					13
	1.4			-				
		4.1 List	ode that ca	an be commanded ·				20
		.4.3 Init	ial setting	parameters				23
		.4.4 Aux	kiliary fun	ction ······				29
	1.5							
	1.5	WIOLI1-	·LANGUA	GE DISPLAT		•••••		30
2	ADD	ITIONA	L INFO	RMATION		•••••		31
	2.1	BACKI	NG UP A	ND RESTORING	CNC DATA			31
		2.1.2 Bac	king up C	NC data ·····				32
	2	2.1.3 Res 2.1.3.1	toring CN	C data ······				·····33
		2.1.3.1	2 Inputtir	g a parameter ······				33
		2.1.3.3	_	_				
	2.2	_						
	2	2.2.2.1	PMC Se	quence Program				36
		2.2.2.2 $2.2.2.3$	I/O conf	guration ·····				37
		2.2.2.4	Sample	for Machining Center				$\cdots \cdots 42$
		2.2.2.5 $2.2.2.6$	CNC_Si	mulator-Text_e.ppt ··	anual andf			42
		2.2.2.7						
							FANUC CNC Simu	lator
					Т	itle	OPERATOR'S MAN	
							T	
					Dra No	aw	A-45101E s	heet 2/48
					140	J.		
Ed.	Date	Design		Description	──┤.	-	NUC CORPOR	ATION
	Date	Oct 09, 2015	Design	Apprv		AI	NOC CORPOR	ALIUN

2.3	EC	DIT OF PMC SEQUENCE PROGRAM AND I/O CONFIGURATION DATA43
2.4	TR	ROUBLESHOOTING43
2.5	RE	EPLACING A MEMORY BACKUP BATTERY AND FAN MOTORS44
2	2.5.1 2.5.2 2.5.3 2.5.4	For Replacing a Lithium Battery 44 Lithium Battery replacement procedure 44 For Replacing Fan motors 46 Fan motors replacement procedure 46
2.6	FIX	XING PALTE48
2.7	CC	ONTACT INFORMATION48

				Title	FANUC CNC Simulator OPERATOR'S MANUAL
				Draw No.	A-45101E Sheet 3/48
Ed.	Date Date	Design Oct 09, 2015	Description Apprv	FA	NUC CORPORATION

SAFETY PRECAUTIONS

DEFINITION OF WARNING, CAUTION, AND NOTE

This manual includes safety precautions for protecting the user and preventing damage to FANUC CNC Simulator (called CNC Simulator below). Precautions are classified into **Warning** and **Caution** according to their bearing on safety. Also, supplementary information is described as a **Note**. Read the **Warning**, **Caution** and **Note** thoroughly before attempting to use CNC Simulator.

⚠ WARNING

Applied when a danger of death or serious injury is assumed to occur if the approved procedure is not observed.

↑ CAUTION

Applied when a danger of minor or moderate injury or equipment damage is assumed to occur is the approved procedure is not observed.

NOTE

Applied when supplementary information other than Warning and Caution is indicated.

SAFETY PRECAUTIONS

This section describes the safety precautions related of CNC Simulator.

⚠ WARNING

- 1. When installing CNC Simulator, please be sure to disconnect the power cable from CNC Simulator. Otherwise, electric shock and breakdown can occur.
- 2. Please install CNC Simulator in a horizontal and flat location. Alternatively, please fix the body using a fixing plate that includes in CNC Simulator. If it is installed in an unstable place, there is a possibility of injury by rollover or fall down.
- 3. Please do not put heavy objects on the power cable. It may cause fire or electric shock.
- 4. Please use CNC Simulator under input rating voltage. If you enter the outside of input rating voltage, there is a possibility that fire, electric shock or failure may occur. Please refer to "Hardware specifications of CNC Simulator" with respect to input rating voltage.
- 5. When you move CNC Simulator, please remove all cables that are connected. Otherwise, damaged cable can cause fire, electric shock or failure.
- 6. Be sure to ground CNC Simulator. CNC Simulator will be grounded by the ground pin of the power cable. Otherwise, electrical shock may occur.

						Title	FANUC CNC Simulator OPERATOR'S MANUAL A-45101E Sheet 4/4	
						Draw No.	A-45101E Shee	t 4/48
Ed.	Date	Design	Design	Description	n Apprex	FA	NUC CORPORA	ΓΙΟΝ

↑ WARNING

- 7. Please use the appropriate power cable. Use of an inappropriate cable can cause fire or electric shock. Please refer to "About power cable" with respect to power cable.
- 8. Please do not be electrified in the state of removing the back board. It may cause fire or electric shock.
- 9. Do not disassemble, repair or modify CNC Simulator. It may cause fire or electric shock.
- 10.If you notice any abnormal status such as abnormal noise, abnormal odor, smoke, in energized state CNC Simulator, shut it off at once. These faults can cause fire and breakdown. It may cause fire or electric shock.

NOTE

Since CNC Simulator is a precision instrument, please carefully handle. Do not subject the unit to strong shocks, or fall.

SAFETY PRECAUTIONS FOR REPLACING THE MEMORY BACKUP BATTERY AND FAN MOTORS

This section describes the safety precautions related to the replacing the memory backup battery and fan motors. Replacing work must be undertaken only by a qualified technician.

⚠ WARNING

- 1. When replacing a battery and fan motors, please be sure to disconnect the power cable from CNC Simulator. Otherwise, electric shock and breakdown can occur.
- 2. Be careful not to damage internal cables of CNC Simulator. Otherwise, fire, electrical shock and failure can occur.
- 3. When working, wear suitable clothes with safety taken into account. Otherwise, injury and electrical shock can occur.
- 4. Do not work with your wet hands. Otherwise, electrical shock and damage to electrical circuits can occur.
- 5. Using other than the recommended lithium battery may result in the battery exploding. Replace the battery only with the specified lithium battery (A02B-0323-K102).

EMC PRECAUTIONS

This section describes the EMC precautions related of CNC Simulator.

NOTE

 CNC Simulator is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

							Title	FANUC CNC Simulator OPERATOR'S MANUAL
							Draw No.	A-45101E Sheet 5/48
Ed.	Date Date	Design Oct 09, 2015	Design			FA	NUC CORPORATION	

NOTE

- CNC Simulator may cause interference if used in residential areas. Such use
 must be avoided unless the user takes special measures to reduce
 electromagnetic emissions to prevent interference to the reception of radio and
 television broadcasts.
- 3. There may be potential difficulties in ensuring electromagnetic compatibility in other than industrial environments, due to conducted as well as radiated disturbances.
- 4. CNC Simulator is a group 1, class A product according to EN55011. This means that this product does not generate and/or use intentionally radiofrequency energy, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material or inspection/analysis purpose and that it is suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.
- 5. CNC Simulator is intended to be used in the industrial electromagnetic environment.

KOREAN KC MARK PRECAUTIONS

This section describes the KC mark precautions related of CNC Simulator.

NOTE

This equipment is industrial (Class A) electromagnetic wave suitability equipment and seller or user should take notice of it, and this equipment is to be used in the places except for home.

이 기기는 업무용(A급) 전자파적합기기로서 판 매자 또는 사용자는 이 점을 주의하시기 바라며 가정외의 지역에서 사용하는 것을 목적으로 합니다.

					Title	Title FANUC CNC Simulator OPERATOR'S MANUAL		
					Draw No.	A-45101E Sheet 6/	48	
Ed.	Date	Design Oct 09, 2015	Design	Description Appre	FAI	NUC CORPORATIO	N	

1 FANUC CNC Simulator

1.1 OVERVIEW

FANUC CNC Simulator (called CNC Simulator below) can be training the operation and the program of CNC with an actual unit.

1.1.1 Features

- Ready for use without setup and usable immediately
- Mill and Lathe system switchable on one simulator
- MANUAL GUIDE *i* installed for easy programming
- Equipped with E-stop switch, manual pulse generator and universal power unit

Basic operation and movement are the same as other CNC of FANUC, refer to various manuals of CNC. The manuals related to Series 0*i*- MODEL F are described as an example.

Table 1.1 (a) Related manuals

Manual name	Specification number
DESCRIPTIONS	B-64602EN
CONNECTION MANUAL (FUNCTION)	B-64603EN -1
OPERATOR'S MANUAL (Common to Lathe System/Machining Center System)	B-64604EN
OPERATOR'S MANUAL (For Lathe System)	B-64604EN-1
OPERATOR'S MANUAL (For Machining Center System)	B-64604ENA-2
PARAMETER MANUAL	B-64610EN
PMC	
PMC PROGRAMMING MANUAL	B-64513EN
Operation guidance function	
MANUAL GUIDE $m{i}$	B-63874EN
(Common to Lathe System/Machining Center System) OPERATOR'S MANUAL	
MANUAL GUIDE $m{i}$ (For Machining Center System) OPERATOR'S MANUAL	B-63874EN -2

1.1.2 Constraints on the specification

- Since CNC of CNC simulator is exclusive goods, it cannot be used by attaching it to the machine.
- CNC simulator cannot add the number of axes and optional functions.
- The servo and spindle motors cannot be connected with CNC Simulator, and cannot be moved. (Use the drawing function of MANUAL GUIDE *i* for the confirmation of the made program.)
- As for CNC Simulator, the necessary parameters for the basic operation are set automatically. However, the parameters set beforehand automatically might be insufficient according to the function to use. For this case, adding sets the necessary parameters, and confirms the function. It is similar for the PMC sequence program.

				I Title I				FANUC CNC Simulator OPERATOR'S MANUAL	
							Draw No.	A-45101E Sheet 7/48	
Ed.	Date	Design		Description		FΔI	NUC CORPORATION		
	Date	Oct 09, 2015	Design	Design Apprv			I ANDO GOM GMANC		

↑ WARNING

When the program made by CNC Simulator executes an actual machine, never attempt to machine a workpiece without first checking the operation of the machine. Before starting a production run, ensure that the machine is operating correctly by performing a trial run using, for example, the single block, feedrate override, or machine lock function or by operating the machine with neither a tool nor workpiece mounted. Failure to confirm the correct operation of the machine may result in the machine behaving unexpectedly, possibly causing damage to the workpiece and/or machine itself, or injury to the user.

1.2 HARDWARE SPECIFICATIONS

1.2.1 Environmental Conditions outside CNC Simulator

CNC Simulator cannot be used in machine shop environments because it is designed by assuming the use in office environments.

The following table lists the environmental conditions required to CNC Simulator.

Table 1.2.1 (a) Environmental Conditions

Ambient temperature of CNC Simulator	Operating	0°C ~ 40°C		
	Nonoperating (including storage and transportation)	-20°C ~ 60°C		
I I commindity o	Normal	75%RH or less, no condensation		
Humidity	Short period (less than 1 month)) 95%RH or less, no condensation		
	Operating	4.9m/s ² (0.5G) or less		
Vibration	Nonoperating (including storage and transportation)	9.8m/s² (1.0G) or less		
Environment		office environments		

1.2.2 Hardware specifications of CNC Simulator

The following table lists the hardware specifications of CNC Simulator. Please particular attention to the input rating.

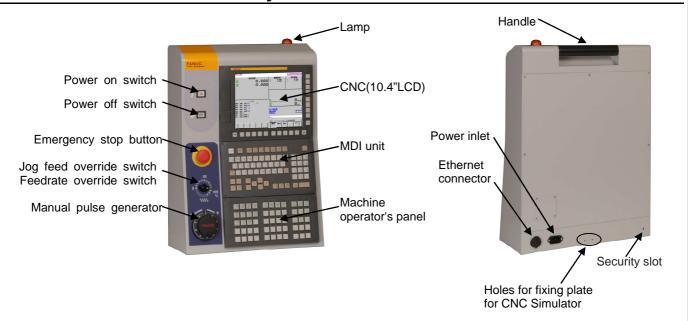
Table 1.2.2 (a) Hardware Specifications

Ordering Code	A02B-0158-B100
Dimensions	421mm x 220mm x 608mm(W x D x H)
Weight	11.5kg
Input Rating	AC100V to AC240V, 0.8A to 0.4A, 50/60Hz
Power Consumption	40W
Power Inlet	IEC-60320-C13
Display	10.4"LCD
Operating part	MDI unit, Machine operator's panel, Emergency stop button, Manual pulse generator, Override switch
Input and Output Media	USB memory, CF card
Communication Interface	Ethernet (10BASE-T/100BASE-TX, With auto-negotiation function)

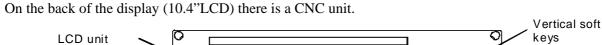
							Title	FANUC CNC Simulator OPERATOR'S MANUAL	
							Draw No.	A-45101E Sheet	8/48
Ed.	Date Date	Design Oct 09, 2015	Design				FAI	NUC CORPORATI	ON

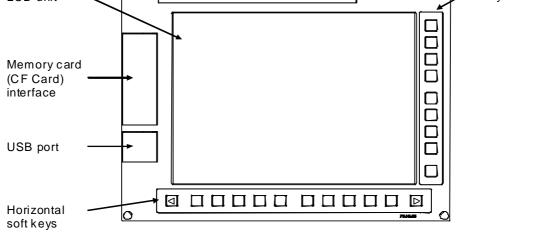
Others	Security slot: for a security cable Fixing plate for CNC Simulator: Please use when there is a possibility of rollover or fall of CNC Simulator.
Note	Cannot connect motor units. External interface available on CNC Simulator is the only Ethernet interface. Other external interface on the CNC unit is not available. Ethernet cable can be up to 100 m long. Please do not use the long cable more than necessary. Please use shielded cable if noisy environment.

1.2.3 CNC Simulator body



1.2.4 Display unit





Draw No. A-45101E Sheet 9/4			Title	FANUC CNC Sim OPERATOR'S MA		
				A-45101E	Sheet	9/48

Ed. Date Design Description
Date Oct 09, 2015 Design Apprv

FANUC CORPORATION

NOTE

- This USB port is dedicated to a USB memory. Do not connect other USB devices to the port. It is not guaranteed that every commercially available USB memory can operate normally. For example, a USB memory with a security function does not operate.
- 2. In LCD, some of their pixels may fail to light or stay constantly lighting because of their characteristics. Please be forewarned that these phenomena are not faults.

By pressing a soft key on MDI unit after a function key, the corresponding screen of the function can be displayed.

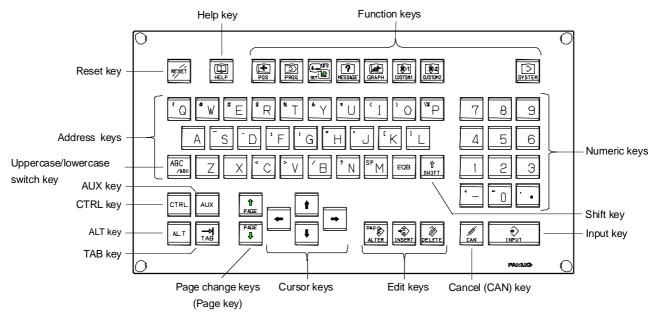
Continuous menu key: displays the next menu soft keys.

Return menu key: returns the soft keys to the above menu indication.

If you want to display the next menu of soft keys of each screen, press the continuation menu key. If you want to return to the menu screen selection, press the return menu key.

1.2.5 MDI unit

MDI unit is QWERTY key type.



The major keys to use in MDI unit are described below.

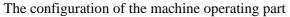
Table 1.2.5 (a) The major keys to use in MDI unit

Name Explanation						
RESET key	Press this key to reset the CNC, to cancel an alarm, etc.					
INPUT key	To set the data in the key input buffer to the offset register, etc., press the <input/> key. This key is equivalent to the [INPUT] key of the soft keys, and either can be pressed to produce the same result.					
CANCEL (CAN) key	Press this key to delete the last character or symbol input to the key input buffer.					

						Title	FANUC CNC Simulator OPERATOR'S MANUAL
						Draw No.	A-45101E Sheet 10/48
Ed.	Date Date	Design Oct 09, 2015	Design	Description	on Apprv	FA	NUC CORPORATION

Name	Explanation						
	Press these keys when editing the program.						
Edit kovo	<alter> : ALTER</alter>						
Edit keys	<insert> : INSERT</insert>						
	<delete> : DELETE</delete>						
	Press these keys to switch display screens for each function.						
	POS : Press this key to display the position screen.						
	PROG : Press this key to display the program screen.						
Function keys	OFS/SET : Press this key to display the offset/setting screen.						
	SYSTEM : Press this key to display the system screen.						
	MESSAGE: Press this key to display the message screen.						
	GRAPH : Press this key to display the MANUAL GUIDE <i>i</i> .						

1.2.6 Machine Operator's Panel



Date

Oct 09, 2015 Design

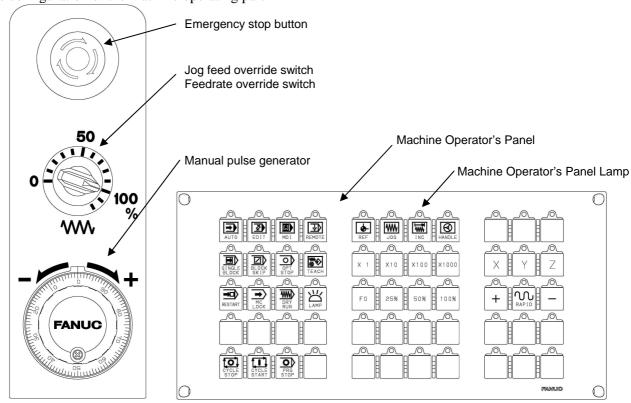


Table 1.2.6 (a) Machine operator's panel

Key	Description	Usage	Lamp
AUTO	Memory operation	Press this key in case of Memory operation.	Turning on the lamp when entering Memory operation mode
EDIT	Memory edit	Press this key in case of Memory edit.	Turning on the lamp when entering Memory edit mode.
MDI	Manual data input	Press this key in case of Manual data input.	Turning on the lamp when entering Manual data input mode.
REMOTE	DNC operation	Press this key in case of DNC operation in memory card.	Turning on the lamp when entering DNC operation mode.
REF	Manual reference	Press this key in case of	Turning on the lamp when entering

				Title	FANUC CNC Simulator OPERATOR'S MANUAL
				Draw No.	A-45101E Sheet 11/4
Ed.	Date	Design	Description	FΛ	NUC CORPORATION

Key	Description	Usage		Lamp
	position return	Manual reference posit return.	ion	Manual reference position return mode.
JOG	Jog feed	Press this key in case of feed.		Turning on the lamp when entering Jog feed mode.
INC	C Incremental feed Press this key in case of Incremental feed.		Turning on the lamp when entering Incremental feed mode.	
HANDLE	Manual handle feed	Press this key in case of Manual handle feed.	of	Turning on the lamp when entering Manual handle feed mode.
SINGLE BLOCK	Single block	Press this key in case of performing the operation the program by block (S block).	n of	Turning on the lamp when entering Single block mode. Blinking when entering Automatic operation stop state.
BLOCK SKIP	Optional block skip	Press this key in case of skipping the program be with "/ (slash)" (Optional skip).	lock	Turning on the lamp when entering Optional block skip mode.
OPT STOP	Optional stop	Press this key in case of stopping the program be commanded in the program.	y M01	Turning on the lamp when pressing this key. Blinking when entering Single block stop by M01.
TEACH	Teach in jog Teach in handle	Press this key in case of teaching in Jog feed or Handle feed.	of	Turning on the lamp when entering Teach in Jog feed or Teach in Handle feed mode.
x1,x10,x100,x1000	manual handle feed magnification x1,x10,x100,x1000	Select keys in case of changing the magnifica the per scale division o Manual pulse generato	f	Turning on the lamp of the selected magnification.
X,Y,Z	Axis selection	Select the axis to feed feed, Incremental feed Manual Handle feed. (Note) "Y" is used only Machining Center systematics.	or in	Turning on the lamp of the selected axis.
RESTART	Program restart	Press this key in case of restarting Automatic op from the middle of prog	of eration ram.	Turning on the lamp when pressing this key.
MC LOCK	Machine lock	Press this key in case of performing the operation program in Machine loostate.	n of	Turning on the lamp when entering Machine lock mode.
DRY RUN	Dry run	Press this key in case of performing the operation program in Dry run spe	on of ed.	Turning on the lamp when entering Dry run mode.
LAMP	Lamp	Press this key in case of turning on the LED lam top of the body.		Turning on the lamp when pressing this key. Blinking during an alarm.
F0,25%,50%,100%	F0 rate	Select keys to change to override of Rapid travel speed.		Turning on the lamp of the selected magnification.
+,-	+,-	Press each key in case feeding the plus or mindirection in Jog feed or Incremental feed.	us	Turning on the lamp during pressing this key.
RAPID	Manual rapid	Press this key in case of	of Jog	Turning on the lamp when pressing
			Title	FANUC CNC Simulator OPERATOR'S MANUAL
			Draw No.	A-45101E Sheet 12/48
Date Desi Date Oct 09	gn Descrip , 2015 Design	tion Apprv	FAI	NUC CORPORATION

Key	Description	Usage	Lamp		
	traverse rate	feed at Rapid traverse speed.	this key.		
CYCLE STOP	Feed hold	Press this key in case of pausing Program operation.	Blinking when entering Feed hold state.		
CYCLE START	Cycle start	Press this key in case of starting Automatic operation (Cycle start).	Turning on the lamp when entering Cycle start state.		
PRG STOP	Program stop	-	Blinking when entering Automatic operation stop state by M00.		

1.2.7 About power cable

FANUC is preparing power cables of the following as the option. In areas where plug shape and the rating voltage of the cable do not fit, you cannot use these power cables.

In that case, you must prepare a conversion adapter or a power cable itself. If you will select a power cable by yourself, prepare a cable that adapted to the supply voltage on your region and the input rating of CNC Simulator.

Table 1.2.7 (a) Specification of power cables

Ordering Code	Electrical Ratings		The power supply side plus	CNC Simulator side inlet		
Orgering Code		Current	The power supply side plug	CNC Simulator side inlet		
A02B-0158-J001#US	125V	7A	Type-B (NEMA5-15P)	(IEC-60320-C13)		
A02B-0158-J001#EU	250V	6A	Type-E/F (CEE7/7)			

↑ WARNING

Please use the appropriate power cable. Use of an inappropriate cable can cause fire or electric shock.

1.3 SYSTEM CONFIGURATION

1.3.1 System type

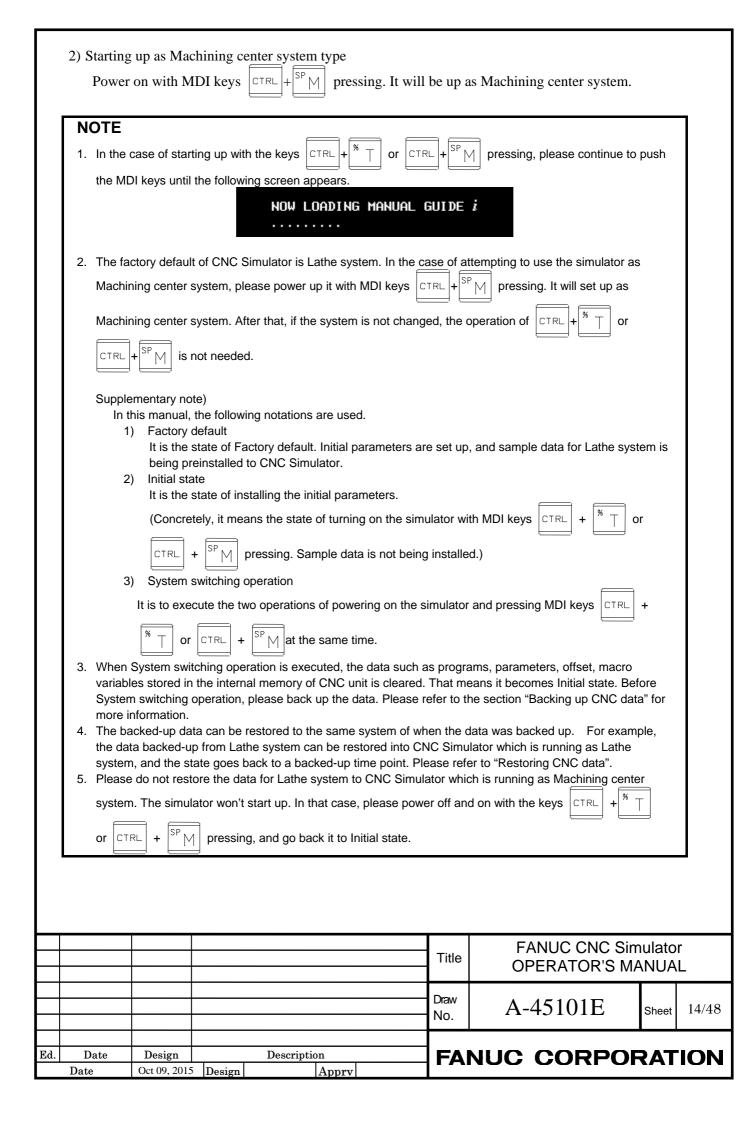
When powering on CNC Simulator, two types of Lathe system and Machining center system can be selected by the following operation.

1) Starting up as Lathe system type

Power on with MDI keys |CTRL| + |%| + |%| pressing. The simulator will be up as Lathe system.

		Title	FANUC CNC Sim OPERATOR'S MA		
		Draw No.	A-45101E	Sheet	13/48

Ed. Date Design Description
Date Oct 09, 2015 Design Apprv FANUC CORPORATION



1.3.2 Machine configuration

Machine configuration of each CNC Simulator system CNC is as follows.

Table 1.3.2 (a) Machine configuration

System type	Number of paths	Number of feed axes	Number of spindle axes
Lathe system	1-path	2 axes(X axis,Z axis)	1 spindle
Machining center system	1-path	3 axes(X axis,Y axis,Z axis)	1 spindle

NOTE

Number of feed axes and spindle axes is the number of axes on simulation. You cannot actually rotate servo and spindle motors.

1.4 SOFTWARE SPECIFICATIONS

1.4.1 List of Specification

Features supported by CNC Simulator are shown in the following table. Meaning of the symbols is as follows.

- ✓ : Without adding to parameters and signals, it will be available.
- * : By setting parameters and signals, it will be available. (If you make a system switching, the parameters will return to the initial state.)
 - For example, in case of using the extended axis names, it will be available by setting the parameter.
- : Unavailable

Item	Specifications	Т	M
Controlled axis			
Axis name	X,Z	✓	-
Axis name	X,Y,Z	-	✓
Axis name expansion	Max 3 characters	*	*
Arbitrary axis name setting		✓	✓
High precision oscillation function		✓	✓
Increment system	IS-A, IS-B Initial setting is IS-B.	✓	✓
Inch/metric conversion	Initial setting is metric.	✓	✓
Interlock	All axes/each axis/each direction/block start/cutting block start	*	*
All-axis Machine Lock		✓	✓
Each-axis Machine Lock		*	*
Emergency stop		✓	✓
Overtravel		*	*
Stored stroke check 1		✓	✓
Stored stroke check 2,3		*	*
Mirror image		*	*
Chamfering on/off		✓	✓
Operation			
Automatic operation (memory)		✓	✓
MDI operation		✓	✓
DNC operation with memory card		✓	✓
Schedule function		✓	✓

<u> </u>		,		_			
				Title	FANUC CNC Simulator OPERATOR'S MANUAL		
				Draw No.	A-45101E	Sheet	15/48
E 4	Data	Dogiem	Description		NULO CORROL		

Ed. Date Design Description
Date Oct 09, 2015 Design Apprv

Item	S	pecifica	tions	Т	M
Program number search				✓	✓
Sequence number search				✓	✓
Sequence number comparison and stop				✓	✓
Program restart				✓	✓
Tool retract and recover				*	*
Wrong operation prevention				✓	✓
Dry run				✓	✓
Single block				✓	✓
Jog feed				✓	✓
Manual reference position return				✓	✓
Manual handle feed				√	✓
Manual handle feed rate	×1, ×10,×100,×1000			√	√
Incremental feed	×1, ×10,×100,×1000			√	√
Jog and handle simultaneous mode	,,			√	√
Interpolation functions				1	
Positioning				√	1
Single direction positioning				-	∨
Exact stop mode				- -	· ·
Tapping mode				V ✓	√
Cutting mode				√	√
Exact stop				√	√
Linear interpolation				· /	· ✓
Circular interpolation				V ✓	√
Dwell				· /	<i>'</i>
Helical interpolation				 	√
Thread cutting, synchronous cutting				/	· ✓
Multi threading				· /	· ✓
Thread cutting retract				· /	-
Continuous threading				✓	√
Variable lead thread cutting				√	_
Circular thread cutting				✓	_
Skip				*	*
Reference position return				/	√
Reference position return check				√	√
Movement from reference position				√	√
2nd reference position return				✓	√
3rd/4th reference position return				✓	✓
Feed function	1				
Rapid traverse override	F0, 25, 50, 100%			✓	✓
Feed per minute	1 0, 20, 00, 10070			1	√
Feed per revolution				✓	√
Without position coder feed per revolution				√ ·	· ✓
Without position coder constant surface					
speed control				✓	✓
Rapid traverse linear	Initial setting is Rapid tr	averse b	ell-shaped	1	
acceleration/deceleration	acceleration/deceleration			*	*
Rapid traverse bell-shaped					,
acceleration/deceleration				✓	√
Linear acceleration/deceleration after	Initial setting is Bell-type	e acceler	ation/ deceleration after	*	*
cutting feed interpolation	cutting feed interpolatio			*	*
Bell-type acceleration/ deceleration after				✓	✓
		ī		•	
		T:41 -	FANUC CNC S	imul	ator
		Title	OPERATOR'S I	MAN	UAL
		+			
+ +		Draw	A-45101E		
		No.	A-43101E	Sh	eet
Date Design Descri	intion		IUC CORPO	1	\ T '
Desci.	-P	ГАГ	IUC CURPL	/K/	1 1

cutting feed interpolation						1
Smart overlap				*	*	<u> </u>
Linear acceleration/deceleration before	_		tion/deceleration before	✓	1	
cutting feed interpolation		cutting feed interpolation				4
Feedrate override	0~120% (10% Step)				*	
Jog override	0~120% (10% Step)			✓	✓	
Override cancel				*	*	_
Automatic corner deceleration				✓	✓	4
Feedrate control with acceleration in				✓	1	
circular interpolation						4
Al contour control I				✓	✓	4
Bell-type acceleration/deceleration before				✓	1	
look ahead interpolation						
Rigid tapping bell-shaped				✓	1	
acceleration/deceleration						_
Rapid traverse block overlap				*	*	
Program input						_
Program code	EIA/ISO			✓	✓	1
Label skip				✓	✓	
Parity check	Horizontal and vertical	parity		✓	✓	1
Control in/out		•		✓	✓	1
Max. programmable dimension	±9 digits (R,I,J and K is	s ±12 dio	nits)	✓	✓	
Program file name	32 characters		<i>y 1</i>	√	✓	1
Sequence number	N8 digit			√	√	1
Absolute/incremental programming	Combined use in the s	ame blo	ck	√	√	1
Maximum specified incremental amount	Combined doc in the s	arric bio	<u>or</u>	<u> </u>		-
check				✓	✓	
Decimal point programming/ pocket						-
calculator type decimal point				✓	✓	
programming				•	•	
Input unit 10 time multiply				√	√	_
				√	√	-
Diameter/radius programming Plane selection				√	*	-
				∨	√	-
Polar coordinate command				*	∨	4
Coordinate system setting				<i>\</i>	∨	4
Workpiece coordinate system				<u> </u>	<u> </u>	4
Workpiece coordinate system preset	40 :			√	√	4
Addition of workpiece coordinate system	48 pairs			*	*	-
Manual absolute on and off						-
G code system	Initial setting is G code	system	A.	√	-	-
Programmable data input				√	√	4
Programmable parameter input				✓	✓	4
Sub program call	10 folds nested			✓	✓	4
Custom macro				✓	✓	4
Addition of custom macro common	#100 ~ #199, #500 ~ #	999		✓	1	
variables						1
Canned cycles				✓	-	1
Multiple repetitive cycle				✓	-	1
Multiple repetitive cycle II	Pocket profile			✓	-	1
Canned cycles for drilling				✓	✓	
Circular interpolation by R programming	R,I,J,K 12digit			✓	✓	
			FANUC CNC S	imul	ator.	
		Title		-		
			OPERATOR'S N	//AIN	UAL	
		Dmiri		T		
	<u> </u>	Draw	A-45101E	Sh	eet	17/48
		No.				
		l				
Date Design Descri		FAI	NUC CORPO	RA	IT	ON
Date Oct 09, 2015 Design	Apprv	l				-

Specifications

M

Item

	Item		Specificat	ions	Т	M
Automatic co	orner override				-	✓
Scaling					-	✓
Coordinate s	system rotation				✓	✓
3-dimension	al coordinate system					✓
conversion						ľ
Programmal	ole mirror image				✓	✓
Figure copyi	ng				-	✓
G code prev	enting buffering				✓	✓
Coordinate s	ystem shift				✓	-
Guidance fu	ınction					
MANUAL GU	JIDE i				✓	✓
Auxiliary/Sp	pindle speed function					
Auxiliary fun		M8 digit			✓	✓
Auxiliary fun					*	*
	M/S/T/B interface				*	*
	ction output in moving axis				*	*
Spindle spee		S5 digit			✓	✓
Spindle over					*	*
Rigid tapping					✓	✓
	on/Tool compensation	·				
Tool function	-	T6+2(Tool sele	ction + Tool offse	t number)	√	_
1 ooi ranotioi		T8 digit	011011 1 1001 01100	t Hambor)	_	✓
Tool offset p	airs	32-pairs			√	✓
Tool offset n			veen deometry an	d wear, or between cutter	Ė	
. OOI OHOOLH	ioniory o	and tool length	-	a mour, or botwoon outlet	-	✓
Tool length of	offset	and tool longth	23		-	√
Tool offset					√	✓
	Fool nose radius				-	
compensation					✓	✓
	ry/wear compensation				✓	_
Editing ope						
	n storage size	512Kbyte			1	1
	egisterable programs	400 programs			-/	-/
Part progran		400 programs			✓	✓
Program pro					· ·	· /
Password fu					· /	·
Playback	ICHOIT				V ✓	→
Background	oditina				✓	· /
	ogram editing				V ✓	✓
	orogram management				*	*
Setting and						
Status displa					V /	V
Clock function					√	1
Current posi					√	√
	nment display				√	√
	etting and display				*	*
	heck sum function				-	
Alarm displa					✓	√
Alarm history					√	√
Operation hi					√	√
n .	d parts count display				✓	✓
Run hour an				FANUC CNC S	imul	ator
Run hour an			Title	OPERATOR'S N		
Run hour an				OI LIVATOR 3 N	vi/\IN	υAΓ
Run hour an						
Run hour an			Draw			
Run hour an			Draw No.	A-45101E	Sh	eet
Run hour an			Draw No.	A-45101E	Sh	eet
Run hour an	Design Des	scription	No.	A-45101E		

Item	Specific	ations	Т	M
Actual cutting feedrate display			✓	✓
Display of spindle speed and T code at all			√	✓
screens				
Directory display of floppy cassette			✓	✓
Software operator's panel			✓	✓
Software operator's panel general			✓	✓
purpose switch				
Multi-language display	English		✓	✓
	Japanese (Chinese character)		✓	✓
	German		✓	✓
	French		✓	✓
	Spanish		✓	✓
	Italian		√	√
	Chinese (Traditional Chinese)		✓	√
	Chinese (Simplified Chinese)		√	√
	Korean		√	√
	Portuguese		✓	✓
	Dutch		✓	✓
	Danish		√	√
	Swedish		√	✓
	Hungarian		√	√
	Czech		<u>√</u>	√
	Polish		<u>√</u>	√
	Russian		√	√
	Turkish		√	√
	Romanian		√	√
	Bulgarian		√	√
	Slovak		√	√
	Finnish		√	√
	Vietnamese		√	√
	Indonesian		✓	✓
Dynamic display language switching			*	*
Data protection key	4 types			
Erase CRT screen display			√	√
Help function			√	√
Self-diagnosis function			✓	✓
Display of hardware and software			\checkmark	✓
configuration CNC screen display	CNC Application Development	Kit	*	*
	(A08B-9010-J555#ZZ12) is ne	cessary.		
Dual screen of CNC screen display			✓	✓
function				·
Data input/output				
Memory card input/output			✓	✓
USB memory input/output	Initial setting is Memory card in	nput/output.	*	*
Screen hard copy			✓	✓
Interface function				
Embedded Ethernet			✓	✓
PMC				
PMC function	24,000 steps		✓	✓
Ladder Dividing Management Function	•		*	*
	·			
	Title	FANUC CNC Si	_	
		OPERATOR'S M	AN	UAL
	Draw	A-45101E	Sh	eet
	No.	71 1010111	311	001
Date Design Descri	ption FAI	NUC CORPO	R/	TI
	Apprv	INDU DURFU	/	~

Specifications	Т	М
	✓	✓
	✓	✓
	✓	✓
	Specifications	Specifications T ✓ ✓

Others

Status output signal	NC ready, servo ready, etc.	✓	✓
----------------------	-----------------------------	---	---

NOTE

Date

Oct 09, 2015 | Design

The above list, such as acceleration/deceleration, also includes features that are not able to confirm its effect in CNC Simulator.

1.4.2 G code that can be commanded

G code that can be commanded by CNC Simulator, are as follows.

Table 1.4.2 (a) G code list

Table 1.4.2 (a) G code i	G co	de
Function	T (G code system A)	M
Positioning (rapid traverse)	G00	G00
Linear interpolation (cutting feed)	G01	G01
Circular interpolation CW	G02	G02
Helical interpolation CW	-	G02
Circular interpolation CCW	G03	G03
Helical interpolation CCW	-	G03
Dwell	G04	G04
G code preventing buffering	G04.1	G04.1
Al contour control	G05.1	G05.1
Al contour control (advanced preview control compatible command)	G08	G08
Exact stop	G09	G09
Programmable data input	G10	G10
Tool retract and recover	G10.6	G10.6
Programmable data input mode cancel	G11	G11
Polar coordinates command cancel	-	G15
Polar coordinates command	-	G16
Plane selection	G18	G17/ G18/G19
Input in inch	G20	G20
Input in mm	G21	G21
Stored stroke check function on	G22	G22
Stored stroke check function off	G23	G23
Reference position return check	G27	G27
Automatic return to reference position	G28	G28
In-position check disable reference position return	G28.2	G28.2
Movement from reference position	G29	G29
2nd, 3rd and 4th reference position return	G30	G30
In-position check disable 2nd, 3rd, or 4th reference position return	G30.2	G30.2
Skip function	G31	G31
Threading	G32	G33
Variable lead threading	G34	-
Circular threading CW	G35	-
Circular threading CCW	G36	-

Ed. Date Design Description				
	Draw No.	A-45101E	Sheet	20/48
	Title	FANUC CNC Simulator OPERATOR'S MANUAL		

		G co	de		1	
Function		T (G code system A)	М			
Tool radius/tool nose radius compensation : preserve vector		G38	G38			
Tool radius/tool nose radius compensation : corner circular interpolat	tion	G39	G39	l		
Tool radius/tool nose radius compensation : cancel		G40	G40	١		
Tool radius/tool nose radius compensation : left		G41	G41			
Tool radius/tool nose radius compensation : right		G42	G42			
Tool length compensation +		-	G43	1		
Tool length compensation -		-	G44	•		
Tool offset : increase		-	G45			
Tool offset : decrease		-	G46	;		
Tool offset : double increase		-	G47	•		
Tool offset : double decrease		-	G48		1	
Tool length compensation cancel		-	G49		1	
Scaling cancel		-	G50)	1	
Coordinate system setting or max spindle speed clamp		G50	-		1	
Programmable mirror image cancel		G50.1	G50.	1	1	
Workpiece coordinate system preset		G50.3	-		1	
Auxiliary function output in moving axis		G50.9	G50.	9	1	
Scaling		-	G51		1	
Programmable mirror image		G51.1	G51.		1	
Local coordinate system setting		G52	G52		1	
Machine coordinate system setting		G53	G53		1	
Workpiece coordinate system 1~6 selection		G54~G59	G54~G		-	
Single direction positioning		-	G60		-	
Exact stop mode		G61	G60 G61		1	
Automatic corner override		-	G62		1	
		G63	G63		-	
Tapping mode		G64	G64		-	
Cutting mode Magra call			G65		-	
Macro call		G65 G66	G66		1	
Macro modal call A					1	
Macro modal call B		G66.1	G66.			
Macro modal call A/B cancel		G67	G67		-	
Coordinate system rotation start or 3-dimensional coordinate converse mode on	sion	-	G68			
Coordinate system rotation start		G68.1	-			
Coordinate system rotation cancel or 3-dimensional coordinate conversion mode off		-	G69	١		
Coordinate system rotation cancel		G69.1	-		1	
Finishing cycle		G70	-		1	
Stock removal in turning		G71	-		1	
Stock removal in facing		G72	-		1	
Outer diameter/internal diameter drilling cycle		G75	-		1	
Figure copying (rotary copy)		-	G72.	1	1	
Figure copying (linear copy)		_	G72.		1	
Peck drilling cycle		_	G73		1	
Pattern repeating cycle		G73			1	
Left-handed tapping cycle/Left-handed rigid tapping cycle		-			1	
		G74	- 514		1	
End face peck drilling cycle Fine boring cycle		-	 G76		1	
		G76	G/0	·	1	
Multiple-thread cutting cycle			-		1	
Canned cycle cancel		G80	G80	1	<u></u>	
	Title	FANUC COPERATO				
	Draw No.	A-4510	1E	Sheet	21/	
		<u> </u>		<u> </u>		
Date Design Description		NUC COF				

Apprv

	G code	•
Function	T (G code system A)	М
Drilling cycle or spot boring cycle	-	G81
High precision oscillation function	G81.1	G81.1
Drilling cycle or counter boring cycle	-	G82
Peck drilling cycle	_	G83
Cycle for face drilling	G83	-
High-speed peck drilling cycle	G83.5	
Peck drilling cycle	G83.6	_
Tapping cycle/Rigid tapping cycle	-	G84
Cycle for face tapping/ Cycle for face rigid tapping	G84	-
Boring cycle	-	G85
Cycle for face boring	G85	-
Boring cycle	-	 G86
Back boring cycle	-	G87
Cycle for side drilling	G87	Goi
,	G87.5	<u> </u>
High-speed peck drilling cycle		
Peck drilling cycle	G87.6	-
Boring cycle	-	G88 -
Cycle for side tapping/ Cycle for side rigid tapping	G88	
Boring cycle	-	G89
Cycle for side boring	G89	-
Absolute programming	-	G90 -
Outer diameter/internal diameter cutting cycle	G90	
Incremental programming	-	G91
Checking the maximum incremental amount specified	G91.1	G91.1
Setting for workpiece coordinate system or clamp at maximum spindle speed	-	G92 _
Threading cycle	G92	
Workpiece coordinate system preset	-	G92.1
Feed per minute	-	G94
End face turning cycle	G94	-
Feed per revolution	-	G95
Constant surface speed control	G96	G96
Constant surface speed control cancel	G97	G97
Canned cycle : return to initial level	-	G98
Feed per minute	G98	-
Canned cycle : return to R point level	-	G99
Feed per revolution	G99	-

NOTE

The above list, such as AI contour control (G05.1), also includes the G code that cannot be confirmed the effect in CNC Simulator.

						Title	FANUC CNC Simu OPERATOR'S MAN		
						Draw No.	A-45101E	Sheet	22/48
Ed.	Date Date	Design Oct 09, 2015	Design	Description	n Appry	FA	NUC CORPOR	AT	ION

1.4.3 Initial setting parameters

When shipping from the factory, the following values for the initial setting parameters are set. If you make the system switching operation also, the initial setting parameters will be returned to the following values.

NOTE

Date

Oct 09, 2015 | Design

When in parameters of the axial type, that value is listed only one, please interpret as the same value to all axes are set.

Table 1.4.3 (a) Initial setting parameters list

Parameter No.	Meaning of parameters	Т	М
No.20	Input/output device selection, or interface number for a foreground input device	4	4
No.101#0	The number of stop bits 0: 1 1: 2	1	1
No.101#7	Feed before and after the data at data output 0: Output 1: Not output	1	1
No.103	Baud rate	10	10
No.138#5	The schedule operation function is: 0: Disabled. 1: Enabled.	1	1
No.138#7	DNC operation from the memory card and external device subprogram call from the memory card are: 0: Not performed. 1: Performed.	1	1
No.313#0	NC data output function is: 0: Disabled. 1: Enabled.	1	1
No.1005#3	 When a reference position is already set: 0: Manual reference position return is performed with deceleration dogs. 1: Manual reference position return is performed using rapid traverse without deceleration dogs, or manual reference position return is performed with deceleration dogs, depending on the setting of bit 7 (SJZ) of parameter No.0002. 	1	1
No.1006#3	The move command for each axis is based on: 0: Radius specification 1: Diameter specification	X=1 Z=0	X=0 Y=0 Z=0
No.1020	Program axis name for each axis	X=88 Z=90	X=88 Y=89 Z=90
No.1022	Setting of each axis in the basic coordinate system	X=1 Z=3	X=1 Y=2 Z=3
No.1320	Coordinate value I of stored stroke check 1 in the positive direction on each axis	999999.0	999999.0
No.1321	Coordinate value I of stored stroke check 1 in the negative direction on each axis	-999999.0	-999999.0

				Title	FANUC CNC Sim OPERATOR'S MA		
				Draw No.	A-45101E	Sheet	23/48
Ed.	Date	Design	Description	FΔ	NUC CORPOR	 2ΔΤ	ION

Parameter No.	Meaning of parameters	Т	М
No.1402#0	Feed per revolution without the position coder (function for converting feed per revolution F to feed per minute F in the feed per revolution mode (G95)) is: 0: Not used 1: Used	1	1
No.1405#2	The function for constant surface speed control without the position coder is: 0: Not used 1: Used	1	1
No.1410	Dry run rate	5000.0	5000.0
No.1420	Rapid traverse rate for each axis	12000.0	12000.
No.1421	F0 rate of rapid traverse override for each axis	1000.0	1000.0
No.1423	Feedrate in manual continuous feed (jog feed) for each axis	3000.0	3000.0
No.1424	Manual rapid traverse rate for each axis	10000.0	10000.
No.1425	FL rate of the reference position return for each axis	300.0	300.0
No.1428	Reference position return feedrate for each axis	5000.0	5000.0
No.1430	Maximum cutting feedrate for each axis	10000.0	10000.
No.1432	Maximum cutting feedrate for all axes in the acceleration/deceleration before interpolation Acceleration/deceleration after interpolation for cutting feed in a mode of	10000.0	10000.
No.1602#3	look-ahead acceleration/deceleration before interpolation such as the Al contour control mode: 0: Exponential acceleration/deceleration or linear acceleration/ deceleration is used. (The setting of bit 6 (LS2) of parameter No. 1602 is followed.) 1: Bell-shaped acceleration/deceleration is used.	1	1
No.1602#6	Acceleration/deceleration after interpolation for cutting feed in a mode of acceleration/deceleration before interpolation such as the AI contour control mode: 0: Exponential acceleration/deceleration is used. 1: Linear acceleration/deceleration is used.	1	1
No.1604#0	When automatic operation is started, the state equivalent to the specification of G5.1Q1 for Al advanced preview control (M Series) / Al contour control is: 0: Not set 1: set	1	1
No.1610#0	Acceleration/deceleration in cutting feed or dry run during cutting feed 0: Exponential acceleration/deceleration is applied. 1: Linear acceleration/deceleration after interpolation is applied.	1	1
No.1610#1	Acceleration/deceleration in cutting feed or dry run during cutting feed 0: Exponential acceleration/deceleration or linear acceleration/ deceleration is applied. (depending on the setting in bit 0 (CTLx) of parameter No. 1610) 1: Bell-shaped acceleration/deceleration is applied.	1	1
No.1610#4	Acceleration/deceleration in jog feed 0: Exponential acceleration/deceleration is applied. 1: The same acceleration/deceleration as for cutting feedrate is applied. (Depending on the settings of bits 1 (CTBx) and 0 (CTLx) of parameter No. 1610)	1	1
No.1620	Time constant T or T1 used for linear acceleration/deceleration or bell-shaped acceleration/deceleration in rapid traverse for each axis	200	200
	I Title I	CONC S TOR'S N	

				Title	FANUC CNC Simulator OPERATOR'S MANUAL
				Draw No.	A-45101E Sheet 24/48
Ed.	Date	Design	Description	FΛ	NUC CORPORATION

Apprv

Oct 09, 2015 Design

Date

Parameter No.	Meaning of parameters	Т	M
No.1621	Time constant T ₂ used for bell-shaped acceleration/deceleration in rapid traverse for each axis	48	48
No.1622	Time constant of acceleration/deceleration in cutting feed for each axis	64	64
No.1624	Time constant of acceleration/deceleration in jog feed for each axis.	64	64
No.1625	FL rate of exponential acceleration/deceleration in jog feed for each axis	100.0	100.0
No.1626	Acceleration/deceleration time constant in threading cycles for each axis	64	64
No.1627	FL rate for acceleration/deceleration in threading cycles for each axis	100.0	100.0
No.1660	Maximum allowable acceleration rate in acceleration/deceleration before interpolation for each axis	2000.0	2000.0
No.1671	Maximum allowable acceleration rate in acceleration/deceleration before interpolation for linear rapid traverse for each axis	2000.0	2000.0
No.1672	Acceleration change time of bell-shaped acceleration/deceleration before interpolation for linear rapid traverse	48	48
No.1711	Inner determination angle (θp) for inner corner override	-	90.0
No.1712	Override value for inner corner override	-	80
No.1713	Start distance (Le) for inner corner override	-	3.0
No.1714	End distance (Ls) for inner corner override	-	3.0
No.1732	Minimum allowable feedrate for the deceleration function based on acceleration in circular interpolation	100.0	100.0
No.1735	Maximum allowable acceleration rate for the deceleration function based on acceleration in circular interpolation for each axis	1500.0	1500.
No.1737	Maximum allowable acceleration rate for the deceleration function based on acceleration in AI contour control for each axis	1500.0	1500.
No.1738	Minimum allowable feedrate for the deceleration function based on acceleration in AI contour control	100.0	100.0
No.1769	Time constant for acceleration/deceleration after cutting feed interpolation in the acceleration/deceleration before interpolation mode	16	16
No.1772	Acceleration change time of bell-shaped acceleration/deceleration before interpolation	48	48
No.1783	Maximum allowable feedrate difference for feedrate determination based on corner feedrate difference	500.0	500.0
No.1788	Maximum allowable acceleration change rate in feedrate determination based on acceleration change for each axis	500.0	500.0
No.1789	Maximum allowable acceleration change rate in feedrate determination based on acceleration change for each axis (linear interpolation)	500.0	500.0
No.1790	Ratio of change time of the rate of change of acceleration in smooth bell-shaped acceleration/deceleration before interpolation	5	5
No.3003#0	Interlock signal for all axes 0: Enabled 1: Disabled	1	1
No.3003#2	Interlock signals for each axis 0: Enabled 1: Disabled	1	1
No.3003#3	The interlock signal for each axis direction is: 0: Valid. 1: Invalid.	1	1
No.3004#5	The overtravel limit signal is: 0: Checked 1: Not checked	1	1

					Title	FANUC CNC Simulator OPERATOR'S MANUAL	
					Draw No.	A-45101E Sheet 25,	/48
Ed.	Date Date	Design Oct 09, 2015	Design	Description Apprv	FAI	NUC CORPORATIO	N

Parameter No.	Meaning of parameters	Т	М
No.3021	Address to which an axis signal is assigned	X=0 Z=2	X=0 Y=0 Z=0
No.3105#0	The actual speed is: 0: Not displayed 1: Displayed	1	1
No.3105#2	The actual spindle speed is: 0: Not displayed 1: Displayed	1	1
No.3106#4	The operation history screen is: 0: Not displayed 1: Displayed	1	1
No.3196#0	A modification history of tool offset data is: 0: Not recorded. 1: Recorded.	1	1
No.3196#1	A modification history of workpiece offset data/extended workpiece offset data/workpiece shift (T series) is: 0: Not recorded. 1: Recorded.	1	1
No.3196#2	A modification history of parameters is: 0: Not recorded. 1: Recorded.	1	1
No.3196#3	A modification history of custom macro common variables is: 0: Not recorded. 1: Recorded.	1	1
No.3201#6	With an M02, M30, or M99 block, program registration is assumed to be: 0: Completed 1: Not completed	1	1
No.3205#5	When the background editing is started without inputting the program name in the key: 0: Program to be edited is initialized (to the state where no selection is made). 1: The editing of the previously edited programs is continued. (Continued editing is possible only when last edited time is not changed (to allow continued editing).)	1	1
No.3206#7	CNC screen dual display function is: 0: Disabled. 1: Enabled.	1	1
No.3301#7	A screen hard copy function is: 0: Disabled. 1: Enabled.	1	1
No.3403#6	When the same address two or more times are specified in one block: 0: The address specified last is valid. 1: It is treated as a program error and the alarm PS5074, "ADDRESS DUPLICATION ERROR" is issued.	1	1
No.3405#3	As a G code to be used with the automatic tool offset function is: 0: G36/G37 is used. 1: G37.1/G37.2/G37.3 is used.	1	-
No.3741	Maximum spindle speed for gear 1	10000	1000
No.5114	Return value of high-speed peck drilling cycle	3.0	3.0
No.5115	Clearance value in a peck drilling cycle	3.0	3.0

					Т	Γitle	FANUC CNC Simulator OPERATOR'S MANUAL
					Dra No	raw Io.	A-45101E Sheet 26/4
Ed.	Date Date	Design Oct 09, 2015	Design	Description Apprv	F	FAI	NUC CORPORATION

Parameter No.	Meaning of parameters	Т	М
No.5134	Clearance value in multiple repetitive canned cycles G71(T series), G71.7(M series) and G72(T series),G72.7(M series)	3.0	3.0
No.5148	Tool retraction direction after orientation in a fine boring cycle or back boring cycle	-	X=0 Y=0 Z=-1
No.5200#2	Rigid mode when a rigid mode cancel command is specified (G80, 01 group G code, reset, etc.): 0: Canceled after rigid tapping signal RGTAP <gn061.0> is set to "0". 1: Canceled before rigid tapping signal RGTAP <gn061.0> is set to "0".</gn061.0></gn061.0>	1	1
No.5203#5	As acceleration/deceleration for rigid tapping cutting feed: 0: Linear acceleration/deceleration is used. 1: Bell-shaped acceleration/deceleration is used.	1	1
No.5209#2	When a dwell (address P) command is not included in a block for lathe-system rigid tapping: 0: Dwelling at the bottom of a hole is not performed. 1: The dwell (address P) command specified in the block for drilling is valid.	1	1
No.5261	Time constant for acceleration/deceleration in rigid tapping for each gear (first gear)	200	200
No.5365	Bell-shaped acceleration/deceleration time constant in rigid tapping (first-stage gear)	40	40
No.5401#0	Scaling on this axis: 0: Invalidated 1: Validated	-	1
No.5440	Positioning direction and overrun distance in single direction positioning	-	1.0
No.6200#0	As a skip signal, the skip signal SKIPP <gn006.6> is: 0: Invalid. 1: Valid.</gn006.6>	1	1
No.7003#0	When the manual absolute is on and manual operation is executed in reset state or automatic operation stop state, the movement amount of the manual operation is: 0: Reflected to the movement amount of the first absolute command. 1: Reflected to the coordinate system at the cycle start.	1	1
No.7100#0	Manual handle feed in JOG feed mode or incremental feed in the manual handle feed is: 0: Invalid. 1: Valid.	1	1
No.7100#1	In the TEACH IN JOG mode, the manual pulse generator is: 0: Disabled. 1: Enabled.	1	1
No.7105#1	Manual handle for I/O Link connection is: 0: Automatically set. 1: Manually set.	1	1
No.7113	Manual handle feed magnification m	100	100
No.7114	Manual handle feed magnification n	1000	1000
No.7310	Ordinal number of an axis along which a movement is made in dry run after program restart	X=1 Z=2	X=1 Y=2 Z=3
No.8375	Maximum oscillation feedrate	10000.0	10000

						Title	FANUC CNC Simulator OPERATOR'S MANUAL	
							Draw No.	A-45101E Sheet 27/48
Ed.	Date Date	Design Oct 09, 2015	Design	Descriptio	on Apprv		FAI	NUC CORPORATION

Parameter No.	Meaning of parameters	Т	М
	Trouble diagnosis function is:		
No.8850#0	0: Available.	1	1
	1: Not available.		
	The periodic maintenance screen is:		
No.8901#7	0: Displayed.	1	1
	1: Not displayed.		
No.9071	P code number for MANUAL GUIDE i	91	90
No.9072	Block number for dealing with Macro sentence continuously in Execute	20	20
110.9072	Macro program	20	20
	When the file of specified name already exists on memory card or USB		
N= 44200#4	memory,		,
No.11308#1	0: It is not overwritten	1	1
	1: It is overwritten.		
	If a program or a folder exists in the target folder when the deletion		
	operation is done specifying the folder:		
No.11364#3	0: The folder is not deleted.	1	1
	1: The folder and programs/folders in the target folder are deleted.		
	When the rapid traverse is linear interpolation type and time constant		
	acceleration/deceleration type, the rapid overlap is:		
No.11602#3	0: Invalid.	1	1
	1: Valid.		
	When GOTO statement using stored sequence numbers is enabled and		
	memory operation of a program on the Data Server/the Memory card is		
No 11651#1	executed, sequence numbers in the program are:	1	1
No.11651#1	0: Stored.	'	'
	1: Not stored.		
No.12300		19	19
110.12300	X address of the 1st. manual pulse generator	19	19
N= 40440#4	The servo information screen is:		,
No.13112#1	0: Displayed.	1	1
	1: Not prohibited.		
N. 40440#0	The spindle information screen is:		
No.13112#2	0: Displayed.	1	1
	1: Not prohibited.		
	If an inch-metric switch command is executed at a position other than 0 of		
No.14000#1	the machine coordinate,	1	1
	0: Alarm is not issued.		-
	1: Alarm PS5362, "CONVERT INCH/MM AT REF-POS" is issued.		
	Icon is:		
No.14702#0	0: Vertical.	1	-
	1: Horizontal (chuck located on the left side).		
	The X coordinate in the ZX plane contour program is:		
No.14704#6	0: Output as a radius value.	1	-
	1: Output as a diameter value.		
No.14706	Number of Workpiece coordinate for main spindle	16	20
	When function key <graph> is pressed, the MANUAL GUIDE i</graph>		
No.14794#5	0: Does not start.	1	1
•	1: Starts.		
	By block length of the linear interpolation, speed control with acceleration		
	on each axis and speed control with change of acceleration on each axis;		
	1 on sach and and opera control with change of accordation on each axis,	1	1
No.19517#1	0: Are not invalidated.	-	

						Title	FANUC CNC Simulator OPERATOR'S MANUAL
						Draw No.	A-45101E Sheet 28/48
Ed.	Date Date	Design Oct 09, 2015	Design	Description	on Apprv	FA	NUC CORPORATION

Parameter No.	Meaning of parameters	Т	М		
No.25650#0	High precision oscillation function is 0: Disabled. 1: Enabled.	1	1		
No.27003#0	The machining center machine 0: Does not include the X-axis, Y-axis, and Z-axis 1: Includes the X-axis, Y-axis, and Z-axis	-	1		
No.27004#0	Hole machining, facing, contouring, pocketing, grooving, and XY plane				
No.27060#1	During roughing and bottom finishing				
No.27096#4	Outer thread milling cycle is :		1		
No.27120#1	In the turning cycle input screen, the tab of [RESID MACH] is: 0: Not displayed. 1: Displayed.	1	-		
No.27310#2	The coordinate axis name of animation drawing is : 0: Not displayed (conventional specification).	1	1		
1: Displayed (new specification). In machining simulation (tool path), the tool path is: 0: Deleted after enlargement, reduction, movement, or rotation. (conventional specification) 1: Not deleted after enlargement, reduction, movement, or rotation. (new specification)			1		
No.27311#1	If the workpiece coordinate is changed in performing machining simulation, the drawing is: 0: Performed on the same workpiece coordinate as one on the top of simulation. 1: performed on it.	-	1		

1.4.4 Auxiliary function

Oct 09, 2015 | Design

Date

The other M codes except them return a completion signal immediately without any action in a ladder program.

Fig.1.4.4 (a) Auxiliary functions

-	İ	rig. 1.4.4 (a) Auxiliary functions					
M code	Function Description	Usage					
M00	Program stop	M00 suspends program execution. The program is resumed by pressing CYCLE START key on Machine operator's panel.					
M01	Optional program stop	M01 suspends program execution. The program is resumed by pressing CYCLE START key on Machine operator's panel. M01 becomes active when OPT STOP key is only pressed, and this is the difference from M00.					
M02	End of program	M02 indicates the end of a program. The execution point of a program goes back the beginning.					
M03	Forward spindle rotation	M03 is a command to rotate a spindle clockwise.					
M04	Reverse spindle rotation	M04 is a command to rotate a spindle counterclockwise.					

				Title	FANUC CNC Simulator OPERATOR'S MANUAL
				Draw No.	A-45101E Sheet 29/48
Ed.	Date	Design	Description	ΕΛ	

M05	Spindle stopped	M05 is a command to stop a spindle.							
M29	Rigid tapping mode	M29 starts Rigid tapping mode. It can be used together with spindle control.							
M30	End of tape	M30 indicates the end of a program. The execution point of a program goes back the beginning.							

1.4.5 User application

The following functions cannot be used.

- Macro Executor
- C Language Executor
- FANUC PICTURE

1.5 MULTI-LANGUAGE DISPLAY

CNC Simulator supports 24 languages (Refer to Table 1.4.1 (a)). English is pre-selected in Factory default and Initial state. The other languages can be switched by the following procedures.

- Procedure

1. Press the function key

Oct 09, 2015 | Design

Date

2.Press the return menu key \square , and press the continuous menu key \square four times. The soft key [LANGUAGE] will appear.

3.Press the soft key[LANGUAGE]. The following menu appears.



Fig.1.5 (a) Language screen

- 4. Move the cursor on the desired language by using the cursor keys (There are three pages of the language list).
- 5.Press the soft key[(OPRT)], and then [APPLY]. A language will be changed to the desired one.

Ь,							
					Title	FANUC CNC Sim OPERATOR'S MA	
					Draw No.	A-45101E	Sheet 30/48
Ed.	Date	Design	Descriptio	on	FAI	NUC CORPOR	RATION

2 ADDITIONAL INFORMATION

2.1 BACKING UP AND RESTORING CNC DATA

CNC Simulator becomes Initial state by System switching operation. It is recommended to back up the data like programs and parameters before System switching operation.

2.1.1 Selecting External I/O device

CNC data can be backed up to Memory card and USB memory, and the two devices can be selected by Setting screen. The default is the setting of Memory card, and the value "4" is pre-set to I/O channel parameter. If attempting USB memory, please change as follows.

NOTE

The following shows the procedure from the point of when CNC Simulator just turns on. In the case of having operated something after the power-on, the procedures for finding the desired Setting screen may be different from the following.

- Procedure

- 1.Enter MDI mode.
- 2. Press the function key
- 3.Press the return menu key

, and then the soft key [SETTING]. The following screen appears.

```
SETTING (HANDY)
PARAMETER WRITE= (0:DISABLE 1:ENABLE)
               = 0 (0: OFF
TU CHECK
                            1:0N)
OUTPUT CODE
               =0 (0:EIA
                           1:150)
INPUT UNIT
               = 0 (0: MM
                            1: INCH)
I/O CHANNEL
               = 4 (0-35: CHANNEL NO. )
SEQUENCE NO.
               = 0 (0: OFF
PROGRAM FORMAT = 0 (0:NO CNV 1:F15)
                        @ (PROGRAM NO. )
SEQUENCE STOP
SEQUENCE STOP
                        Ø (SEQUENCE NO. )
```

Fig.2.1.1 (a) Setting screen

4.Input the value "17" to I/O channel.

Oct 09, 2015 | Design

Date

```
INPUT UNIT = 0 (0:MM   1:INCH)

I/O CHANNEL = \frac{17}{0} (0-35:CHANNEL NO.)

SEQUENCE NO. = 0 (0:OFF   1:ON)
```

Fig.2.1.1 (b) Setting screen

Then, CNC data can be transferred from I/O to USB memory.

				Title	FANUC CNC Sim OPERATOR'S MA		
				Draw No.	A-45101E	Sheet	31/48
Ed.	Date	Design	Description	FA	NUC CORPOR	RAT	ION

2.1.2 Backing up CNC data

The data of CNC Simulator can be backed up by CNC data output function. The back up of SRAM data, user data (PMC ladder program etc.) and text data (parameters, program, etc.) can be executed in one operation.

- Procedure

- 1.Enter EDIT mode.
- 2.Press the function key system, and then the continuous menu key twice. The soft key [ALL I/O] appears.
- 3.Press the soft key [ALL I/O], and the continuous menu key three times. The soft key [ALL DATA] appears.
- 4. Then press the soft key [ALL DATA]. The following screen will appear.

 (In the case of selecting USB memory, DEVICE NAME will show "USB MEMORY".)

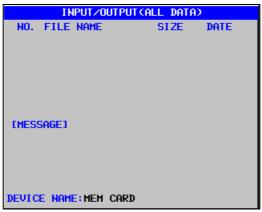


Fig.2.1.2 (a) Input/output (all data) screen

5. Press the soft key [(OPRT)], and then the soft key [FOUTPUT]. The following message will appear.

IMESSAGE1
THIS OPERATION NEEDS POWER OFF. AND SAME NAME FILE IS OVERWRITTEN. EXECUTE?

Fig.2.1.2 (b) Input/output (all data) screen

6.Press the soft key [EXEC] . The output of text data will start.

Oct 09, 2015 | Design

Date

7. When completing the output of all text data, the following message appears. Here, please turn OFF and ON.

IMESSAGEJ
POWER MUST BE OFF. TURN ON THE POWER
AGAIN TO SAVE SRAM AND USER FILE.

Fig.2.1.2 (c) Input/output (all data) screen

- 8.SRAM data and user data will be outputted automatically just after power-on.
- 9. When completing the output of all SRAM data and user data, CNC Simulator will start up. Please do not pull out Memory card until it.

				Title	FANUC CNC Sim OPERATOR'S MA		L
				No.	A-45101E	Sheet	32/48
Ed.	Date	Design	Description	FA	NUC CORPOR	RAT	ION

2.1.3 Restoring CNC data

This section describes the procedure to restore the data that was backed up by the NC data output function. In this section describes the procedure to restore the following 3 data as an example.

- **Program**
- Parameter
- Offset

2.1.3.1 Inputting a program

- Procedure

- 1. Enter the EDIT mode.
- 2. Press the function key system, and press the continuous menu key twice, the soft key [ALL I/O] appears.
- 3. Press the soft key [ALL I/O], the following screen appears.

```
INPUT/OUTPUT (PROGRAM)
NO. FILE NAME
                        SIZE
                                DATE
0001 TOOLOFST.TXT
                          2K 2015-09-01
0002 CNC-PARA. TXT
                        355K 2015-09-01
0003 PMC1_PRM. TXT
                        248K 2015-09-01
0004 ALL-FLDR. TXT
                        137B 2015-09-01
0005 MACRO. TXT
                         16K 2015-09-01
```

Fig.2.1.3.1 (a) INPUT/OUTPUT (PROGRAM) Screen

- 4. Press the soft key [(OPRT)], and press the continuous menu key once, the soft key [ALL INPUT] appears.
- 5. Press the soft key [ALL INPUT], the soft key [EXEC] appears. Press the soft key [EXEC], this starts inputting a program file "ALL-FLDR.TXT" automatically.

2.1.3.2 Inputting a parameter

- Procedure

- 1. Enter the MDI mode.
- 2. Press the function key
- 3. Press the return menu key , and press the soft key [SETTING], the following screen appears.

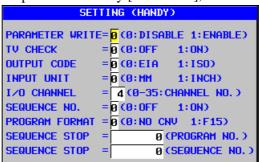


Fig.2.1.3.2 (a) SETTING Screen

						Title	FANUC CNC Simulator OPERATOR'S MANUAL
						Draw No.	A-45101E Sheet 33/48
Ed.	Date Date	Design Oct 09, 2015	Design	Description	on Apprv	FAI	NUC CORPORATION

4. Enter "1" to PARAMETER WRITE.

PARAMETER WRITE= 1 (0: DISABLE 1: ENABLE)

TV CHECK = 0 (0: OFF 1: ON)

Fig.2.1.3.2 (b) SETTING Screen

- 5. Alarm "SW0100 PARAMETER ENABLE SWITCH ON" occurs. To cancel this alarm, press the MDI key at the same time.
- 6. Enter the EDIT mode.
- 7. Press the function key system, and press the continuous menu key twice, the soft key [ALL I/O] appears.
- 8. Press the soft key [ALL I/O], the soft key [PARAMETER] appears. Press the soft key [PARAMETER], the following screen appears.

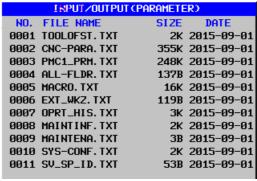


Fig.2.1.3.2 (c) INPUT/OUTPUT (PARAMETER) Screen

9. Press the soft key [(OPRT)], the soft key [F INPUT], the soft key [EXEC] appears. Press the soft key [EXEC], this starts inputting a parameter file "CNC-PARA.TXT" automatically.

2.1.3.3 Inputting a offset

Oct 09, 2015 | Design

Date

- Procedure

- 1. Enter the MDI mode.
- 2. Press the function key system, press the continuous menu key twice, the soft key [ALL I/O] appears.
- 3. Press the soft key [ALL I/O], the soft key [OFFSET] appears. Press the soft key [OFFSET], the following screen appears.

INPUT/OUTPUT	(OFFSET)
NO. FILE NAME	SIZE DATE
0001 TOOLOFST.TXT	2K 2015-09-01
0002 CNC-PARA. TXT	355K 2015-09-01
0003 PMC1_PRM. TXT	248K 2015-09-01
0004 ALL-FLDR. TXT	137B 2015-09-01
0005 MACRO. TXT	16K 2015-09-01
0006 EXT_WKZ.TXT	119B 2015-09-01
0007 OPRT_HIS.TXT	3K 2015-09-01
0008 MAINTINF.TXT	2K 2015-09-01
0009 MAINTENA.TXT	3B 2015-09-01
0010 SYS-CONF.TXT	2K 2015-09-01
0011 SV_SP_ID.TXT	53B 2015-09-01

Fig.2.1.3.3 (a) INPUT/OUTPUT (OFFSET) Screen

4. Press the soft key [(OPRT)], the soft key [F INPUT], the soft key [EXEC] appears. Press the soft key [EXEC], this starts inputting an offset file "TOOLOFST.TXT" automatically.

				Title	FANUC CNC Sim OPERATOR'S MA		
				Draw No.	A-45101E	Sheet	34/48
Ed.	Date	Design	Description	FAI	NUC CORPOR	RAT	ION

NOTE

There are more method for backing up and restoring CNC data. Please refer to the following manual.

OPERATOR'S MANUAL(Common to Lathe System / Machining Center System)(B-64604EN) III. OPERATION

8 DATA INPUT/OUTPUT

2.2 BACKUP CD

The backup CD (ordering code: A02B-0158-J010#ZZ11) which contains a sample program or a backup data is provided for CNC Simulator as an option. It is not necessary to purchase this backup CD for each CNC Simulator. But it is recommended that purchase this backup CD for a user group for an accident.

2.2.1 Contents of the backup CD

Contents of the backup CD are the followings;

• ¥PMC_sample

- SIML**.MEM : Sample PMC Sequence Program (*1)
- SIMI**.MEM : Sample I/O configuration (*2)

** means edition number. ** is 01 for the 1st edition.

• ¥T_sample

T_PROG.TXT
 T_TLDB.TXT
 Sample part program for Lathe System (*3)
 Sample tool data for Lathe System (*3)
 T TLOF.TXT
 Sample tool offset data for Lathe System (*3)

• ¥M_sample

M_PROG.TXT
 M_TLDB.TXT
 M_TLOF.TXT
 Sample part program for Machining Center System (*4)
 Sample tool data for Machining Center System (*4)
 Sample tool offset data for Machining Center System (*4)

• ¥manual

- CNC_Simulator-Text_e.ppt- CNC_Simulator-Text_j.ppt: CNC_Simulator Text (English): CNC_Simulator Text (Japanese)

CNC_Simulator-Operator's Manual_e.pdf
 CNC_Simulator Operator's Manual (English)
 CNC_Simulator Operator's Manual (Japanese)

• ¥(Root folder)

readme_e.txtreadme_j.txt: Explanation of backup CD (English): Explanation of backup CD (Japanese)

NOTE

*1,*2,*3 : This data has been entered in CNC Simulator at the factory.
 *4 : This data has not been entered in CNC Simulator at the factory.
 *1,*2 : This data will not be deleted by system changing operation.

4. *3,*4 : This data will be deleted by system changing operation.

						Title	FANUC CNC Simulator OPERATOR'S MANUAL
						Draw No.	A-45101E Sheet 35/48
Ed.	Date	Design		Description	on	FAI	NUC CORPORATION
	Date	Oct 09, 2015	Design		Apprv	l	

2.2.2 Details

2.2.2.1 PMC Sequence Program

To return the PMC sequence program to the factory default settings, copy the SIML**.MEM in the backup folder to memory card or USB memory, and input it to CNC.

- Input procedure

Date

Oct 09, 2015 | Design

- 1. Press the function key system, the continuous menu key , the soft key [PMC CONFIG] appears.
- 2. Press the soft key [PMC CONFIG], the soft key [SETING] appears. Press the soft key [SETING], the following screen appears.

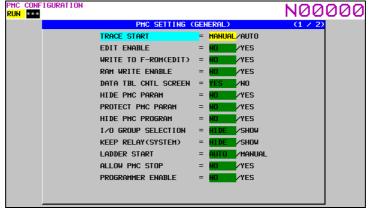


Fig.2.2.2.1 (a) PMC SETTING (GENERAL) screen

3. Select the "YES" for PROGRAMMER ENABLE.



Fig.2.2.2.1 (b) PMC SETTING (GENERAL) screen

- 4. Press the return menu key , the soft key [PMC MAINTE] appears.
- 5. Press the soft key [PMC MAINTE], press the soft key [I/O], the following screen appears.

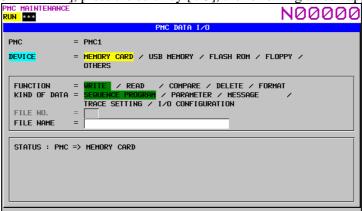


Fig.2.2.2.1 (c) PMC DATA I/O screen

				Title	FANUC CNC Simulator OPERATOR'S MANUAL
				Draw No.	A-45101E Sheet 36/48
Ed.	Date	Design	Description	FΛ	NUC CORPORATION

6. Select "MEMORY CARD" for DEVICE (select "USB MEMORY" for DEVICE when USB memory is used), select "READ" for FUNCTION, input "SIML**.MEM" for FILE NAME.

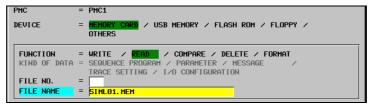


Fig.2.2.2.1 (d) PMC DATA I/O screen

- 7. Press the soft key [EXEC], the soft key [EXEC] appears again for confirmation. Press the soft key [EXEC], this starts reading a PMC sequence program "SIML**.MEM".
- 8. After reading, PMC alarm "WN09 SEQUENCE PROGRAM IS NOT WRITTEN TO FLASH ROM(PMC1)" occurs. Continue the subsequent operations.
- 9. Select "FLASH ROM" for DEVICE, select "WRITE" for FUNCTION, and select "SEQUENCE PROGRAM" for KIND OF DATA to the PMC DATA I/O screen. (Refer to the . Fig.2.2.2.1 (c))



Fig.2.2.2.1 (e) PMC DATA I/O screen

- 10. Press the soft key [EXEC], this completes writing the PMC sequence program in flash ROM.
- 11. PMC is stop at this point, so execute subsequent operations to start PMC.
- 12. After the writing to flash ROM is completed, press the return menu key twice, the soft key [PMC CONFIG] appears. Press the soft key [PMC CONFIG].
- 13. The Soft key [PMCSTATUS] appears. Press the soft key [PMCSTATUS], and press the soft key [(OPRT)].
- 14. Press the soft key [RUN], the soft key [YES] appears. Press the soft key [YES]. this starts PMC.

2.2.2.2 I/O configuration

Oct 09, 2015 | Design

Date

To return the I/O configuration to the factory default settings, copy the SIMI**.MEM in the backup folder to memory card or USB memory, and input it to CNC.

- Input Procedure

- 1. Until PMC DATA I/O screen (Refer to the Fig.2.2.2.1 (c)) is displayed, operate the screen according to the same procedure as the inputting PMC sequence program.
- 2. Select "MEMORY CARD" for DEVICE (select "USB MEMORY" for DEVICE when USB memory is used), select "READ" for FUNCTION, input "SIMI**.MEM" for FILE NAME.



Fig.2.2.2.2 (a) PMC DATA I/O screen

3. Press the soft key [EXEC], the soft key [EXEC] appears again for confirmation. Press the soft key [EXEC], this starts reading a PMC sequence program "SIMI**.MEM".

				Title	FANUC CNC Simulator OPERATOR'S MANUAL
				Draw No.	A-45101E Sheet 37/48
Ed.	Date	Design	Description	FΔ	NUC CORPORATION

- 4. After reading, PMC alarm "WN68 I/O CONFIGURATION DATA IS NOT WRITTEN TO FLASH ROM" occurs. Continue the subsequent operations.
- 5. Select "FLASH ROM" for DEVICE, select "WRITE" for FUNCTION, and select "I/O CONFIGURATION" for KIND OF DATA.



Fig.2.2.2.2 (b) PMC DATA I/O screen

6. Press the soft key [EXEC], this completes writing the I/O configuration in flash ROM.

2.2.2.3 Sample for Lathe

If CNC Simulator is used as lathe system and the sample programs for lathe will be executed, copy T_PROG.TXT, T_TLDB.TXT, and T_TLOF.TXT stored on the T_sample folder to a memory card and copy them to CNC from the memory card.

The sample programs have been stored in advance at FANUC, but the all sample data are erased if switching the system mode is operated. After the operation of switching the system mode, re-enter the sample data in the following procedure before the sample programs are executed.

In addition, the sample program of "CNC_Simulator-Text_e.ppt" is O1001 among the sample programs.

NOTE

Date

Oct 09, 2015 | Design

When enter the sample data on the MANUAL GUIDE i screen, use a memory card always. USB memories cannot be used even if the I/O channel is set to use USB memories (=17) on the setting screen.

(1) The procedure of entering the program file (T PROG.TXT)

- 1. Change the mode to EDIT.
- then the soft key [O LIST] is displayed. 2. Press the function key

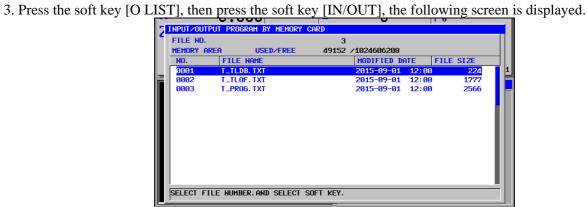


Fig.2.2.2.3 (a) Input/output program screen

				Title	FANUC CNC Sim OPERATOR'S MA		
				- Draw - No.	A-45101E	Sheet	38/48
Ed.	Date	Design	Description	FΔ	NUC CORPOR	 ΣΔΤ	ION

Fig.2.2.2.3 (b) Input/output program screen

- 5. Press the soft key [INPUT]. Then, the program file "T_PROG.TXT" is input.
- 6. After the finish of input, press the soft key [RETURN], then the following screen is displayed.

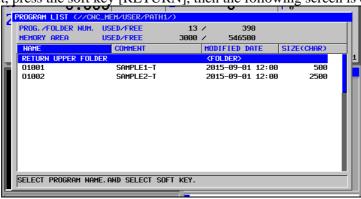


Fig.2.2.2.3 (c) Program list screen

7. Press the cursor keys 1 to move the cursor to O1001.

Date

Oct 09, 2015 | Design



Fig.2.2.2.3 (d) Program list screen

8. Press the soft key [OPEN], the following screen is displayed and the program O1001 is selected.

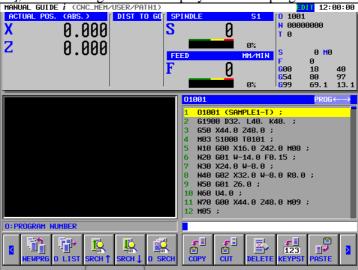


Fig.2.2.2.3 (e) Manual Guide i screen

					Title	FANUC CNC Simulator OPERATOR'S MANUAL
					Draw No.	A-45101E Sheet 39/48
Ed.	Date	Design	Descriptio	n	FAI	NUC CORPORATION

(2) The procedure of entering the tool information file (T_TLDB.TXT)

- 1. Change the mode to EDIT.
- 2. Press the function key [Fare], and press the continuous menu key [Fare] at 3 times, and then the soft key [T-OFS] is displayed.



Fig.2.2.2.3 (f) Tool information screen

- 4. Press the continuous menu key btwice, the soft key [INPUT] is displayed.
- 5. Press the soft key [INPUT], the following screen is displayed.

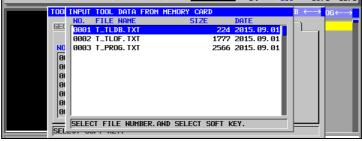


Fig.2.2.2.3 (g) Tool information input screen

6. Press the cursor keys 1 to move the cursor to

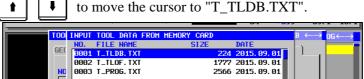


Fig.2.2.2.3 (h) Tool information input screen

- 7. Press the soft key [INPUT]. By this, the tool information file "T_TLDB.TXT" is input.
- 8. After the finish of input, press the soft key [CLOSE].
- 9. Press the soft key [CLOSE] to continue further. This completes the input of the tool information.

						Tit	tle	FANUC CNC Simu OPERATOR'S MAI		
						Drav No.		A-45101E	Sheet	40/48
Ed.	Date	Design		Description	on	⊟ F⁄	A 1	NUC CORPOR	RAT	ION
	Date	Oct 09, 2015	Design		Apprv					

(3) The procedure of entering the tool offset file (T_TLOF.TXT)

- 1. Change the mode to EDIT.
- 2. Press the function key [F], and press the continuous menu key at 3 times, and then the soft key [T-OFS] is displayed.
- 3. When pressing the soft key [T-OFS], the screen like the following is displayed.



Fig.2.2.2.3 (i) Tool geometry offset screen

- 4. When pressing the continuous key once, the soft key [INPUT] is displayed.
- 5. When pressing the soft key [INPUT], the screen like the following is displayed.

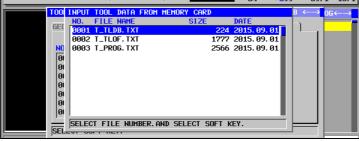


Fig.2.2.2.3 (j) Tool offset data input screen

6. Press the cursor keys to move the cursor to "T_TLOF.TXT".



Fig.2.2.2.3 (k) Tool offset data input screen

- 7. Press the soft key [INPUT]. By this, the tool offset data file "T_TLOF.TXT" is input.
- 8. After the completion of input, press the soft key [CLOSE].

Date

Oct 09, 2015 | Design

9. Press the soft key [CLOSE] to continue further. This completes the input of the tool offset data.

				Title	FANUC CNC Simula OPERATOR'S MANU	
				Draw No.	A-45101E She	eet 41/48
Ed.	Date	Design	Description	FΔ	NUC CORPORA	MOIT

Simulation procedure of sample programs

Procedure

- 1. Change the mode to EDIT.
- 2. When pressing the function key soft key [SIMLAT] is displayed.
- 3. When pressing the soft key [SIMLAT], the screen like the following is displayed.

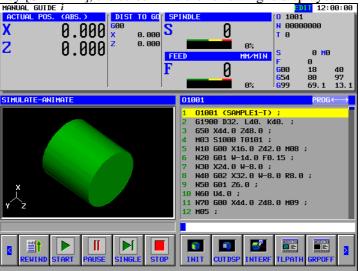


Fig.2.2.2.3 (I) Simulation screen

4. Press the soft key [START]. By this, the simulation starts.

If the sample program O1002 will be simulated, press the continuous key at three times, and press the soft key [O LIST]. Then, move the cursor to O1002, press the soft key [OPEN]. In addition, press the continuous key once, and press the soft key [START].

2.2.2.4 Sample for Machining Center

If CNC Simulator is used as machining center system and the sample programs for machining center will be executed, copy M_PROG.TXT, M_TLDB.TXT, and M_TLOF.TXT stored in the M_sample folder to a memory card and copy them to CNC from the memory card. The simulation can be executed by the same operation as lathe.

2.2.2.5 CNC_Simulator-Text_e.ppt

CNC_Simulator-Text_e.ppt stored in the manual folder is a text that the basic operation for CNC simulator is written. The sample program O1001 is also written.

2.2.2.6 CNC_Simulator-Operator's Manual_e.pdf

CNC_Simulator-Operator's Manual_e.ppt stored in the manual folder is this manual.

2.2.2.7 readme_e.txt

Date

Oct 09, 2015 Design

"readme_e.txt" is the file that a brief description of the various files stored on the backup CD is written.

Ed.	Date	Design	Description	FA	NUC CORPORATION
				Draw No.	A-45101E Sheet 42/48
				Title	FANUC CNC Simulator OPERATOR'S MANUAL

2.3 EDIT OF PMC SEQUENCE PROGRAM AND I/O CONFIGURATION DATA

PMC sequence program and I/O configuration data for CNC simulator are protected by the password. When editing them, enter the following password to enable edit.

PMC sequence program : CNCSIMULAD I/O configuration data : CNCSIMUIO

2.4 TROUBLESHOOTING

If you experience trouble with CNC Simulator, try to check following items before contacting FANUC customer service.

- 1.CNC Simulator does not start when you press the power-on button.
 - \rightarrow Please check the power cable and power supply.
- 2. If CNC simulator can not be executed also manual operation or automatic operation (Position display (relative, absolute, machine coordinate) does not change).
 - \rightarrow Please make sure the position of the override switch is not 0%. If it is 0%, the program does not start.
 - → Please check Emergency stop button.
- 3. Wen you turn on the power while holding down THE + T or THE + SP M of MDI key, it does not start up normally.
 - \rightarrow Please try turn the power while holding down \square or \square or \square or \square of key again.

If it still do not work properly, please contact our service along with following information. If it still do not work properly, please contact FANUC customer service along with following information



- 1) Does the lamp(a) on the power-on switch turn on?
- 2) Is there anything displayed on the LCD after the power is turned on?
- 3) Does the lamp(c) on the Machine Operator's Panel?
- 4) Details of trouble
- 5) Please make a note of it if there is some messages on the alarm display screen.

In addition, please visit our website (http://www.fanuc.co.jp/) for each FANUC customer service base.

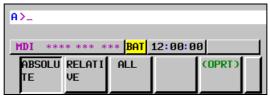
						Title	FANUC CNC Simulator OPERATOR'S MANUAL
						Draw No.	A-45101E Sheet 43/48
Ed.	Date Date	Design Oct 09, 2015	Design	Description	on Apprv	FAI	NUC CORPORATION

2.5 REPLACING A MEMORY BACKUP BATTERY AND FAN MOTORS

2.5.1 For Replacing a Lithium Battery

CNC unit has a lithium battery to back up data, such as programs, offset data and system parameters, without the power.

When the battery voltage falls, alarm message the BAT alarm message blinks on the position of status indication.



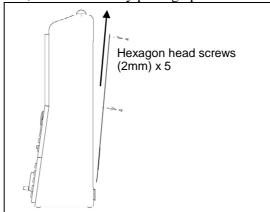
Once the alarm message starts blinking or the alarm signal is output, replace the battery as soon as possible. In general, the battery can be replaced within one week of the alarm first being issued. If the battery voltage subsequently drops further, backup of memory can no longer be provided. Turning on the power to CNC Simulator in this state causes system alarm to be issued because the contents of memory are lost. Replace the battery, clear the entire memory, then reenter the data.

2.5.2 Lithium Battery replacement procedure

Prepare a new lithium battery (ordering code: A02B-0323-K102).

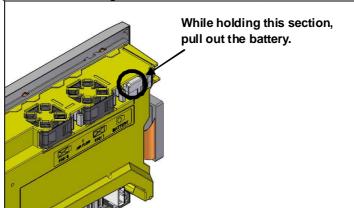
Also, please read the "SAFETY PRECAUTIONS FOR REPLACING THE MEMORY BACKUP BATTERY AND FAN MOTORS" before replacement.

- 1. Turn the power to CNC Simulator on. After about 30 seconds, turn the power off.
- 2. When replacing the battery, please be sure to disconnect the power cable from CNC Simulator.
- 3. Remove the back board of CNC Simulator. Back board is fixed by five Hexagon heads screws(2mm). Remove the Hexagon head screws, and remove it by pulling up on the back board obliquely upward.

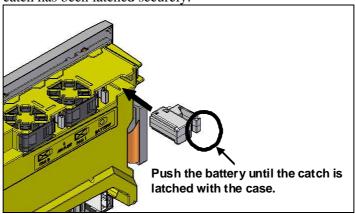


					Title	FANUC CNC Simula OPERATOR'S MANU	
					Draw No.	A-45101E She	et 44/48
Ed.	Date	Design Oct 09, 2015	Design	Description	 FA	NUC CORPORA	TION

4. Pull out the lithium battery on the back of the control unit. (Hold the latch of the lithium battery, and pull the lithium battery toward you while releasing the claw from the case.)



5. Mount a new lithium battery you get ready beforehand. (Push the battery until the catch is latched with the case.) Confirm that the catch has been latched securely.



⚠ WARNING

Using other than the recommended lithium battery may result in the battery exploding. Replace the battery only with the specified lithium battery (A02B-0323-K102).

Replacing of the battery must be undertaken only by a qualified technician.

⚠ CAUTION

Steps 2. to 5. should be completed within 30 minutes.

Do not leave the control unit without a battery for any longer than the specified period. Otherwise, the contents of the backup memory may be lost.

Before starting replacement work, save the contents of the backup memory.

Even if they are lost, they can be restored easily.

For the methods of saving all contents and restoring them, refer to "Backing up and restoring CNC data".

						Title	FANUC CNC Simulator OPERATOR'S MANUAL
						Draw No.	A-45101E Sheet 45/48
Ed.	Date Date	Design Oct 09, 2015	Design	Description	on Apprv	FAI	NUC CORPORATION

NOTE

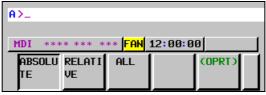
After replacement, dispose the used battery as "industrial waste" correctly according to the laws of the country where the machine is installed and the ordinances of the local government having jurisdiction over the site of the machine. When disposing the battery, insulate it, for example, by taping its electrodes in order to prevent a short circuit.

2.5.3 For Replacing Fan motors

When a reduction in the speed of the fan motor is detected, the FAN warning message blinks on the position of status indication.

When a failure such as stop of the fan motor is detected, an overheat alarm or system alarm is issued and the system stops operating. Therefore, as soon as the FAN warning appears, replace the fan motor.

The CNC body on the back of the display unit has two fan motors. Please replace all fan motors at the time of replacement.



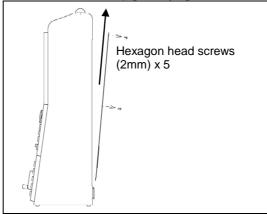
2.5.4 Fan motors replacement procedure

Oct 09, 2015 | Design

Date

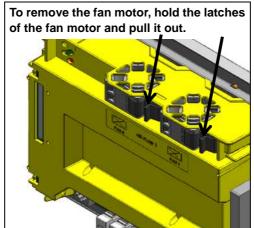
Prepare new fan motors (ordering code: A02B-0323-K120). It includes two pieces. Also, please read the "SAFETY PRECAUTIONS FOR REPLACING THE MEMORY BACKUP BATTERY AND FAN MOTORS" before replacement.

- 1. When replacing the fan motors, please be sure to disconnect the power cable from CNC Simulator.
- 2. Remove the back board of CNC Simulator. Back board is fixed by five by five hexagon head screws (2mm). Remove the hexagon head screws, and remove it by pulling up on the back board obliquely upward.

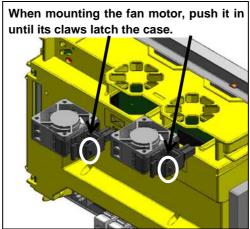


				Title	FANUC CNC Simulator OPERATOR'S MANUAL	
				Draw No.	A-45101E Sheet 46/4	:8
Ed	Date	Design	Description		NUC COPPODATIO	

3. Remove the fan motors from the case by holding its latch and pulling it out while releasing the claws from the case.



4. Mount the fan motor to the case. After that, make sure that the fan motor claws have latched the case securely.



↑ WARNING

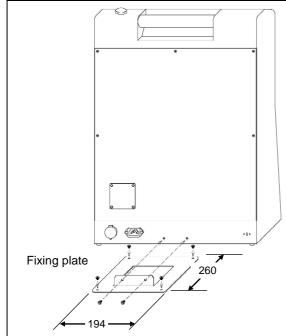
Replacing of fan motors must be undertaken only by a qualified technician.

						Title	FANUC CNC Simulator OPERATOR'S MANUAL
						Draw No.	A-45101E Sheet 47/48
Ed.	Date Date	Design Oct 09, 2015	Design	Description	on Apprv	FAI	NUC CORPORATION

2.6 **FIXING PALTE**

CNC Simulator includes a plate for fixing it on a desk.

Please use when there is a possibility of rollover or fall of CNC Simulator.



Dimensions of fixing plate :194mm x 260mm

Mounting holes : ø 5 x 2 (Two screws attached)

Fixing holes : Ø 5 x 4 (Screws are prepared by user)

2.7 **CONTACT INFORMATION**

Your local contacts, please visit our website.

FANUC CORPORATION

Oct 09, 2015 Design

Date

Headquarters Oshino-mura, Yamanashi 401-0597, Japan http://www.fanuc.co.jp

				Title	FANUC CNC Simulator OPERATOR'S MANUAL
				Draw No.	A-45101E Sheet 48/48
Ed.	Date	Design	Description	FA	NUC CORPORATION