CNC specifications   TOSNUC PX100

Basic and pack specifications
Items with mark "☆" are pack specifications.

A. Controlled axes

☆Number of controlled axes

5 axes：(X, Y, Z, W, and C)

6 axes : when optional B axis is selected.

Number of simultaneously controlled axes

Positioning (G00) and linear interpolation (G01)

Simultaneously controlled 4 axes   X, Y, Z, C

Simultaneously controlled 5 axes   X, Y, Z, C, B
when B axis head is furnished.

Circular interpolation (G02 and G03)
X-Y, Y-Z (W), Z (W)-X Simultaneously contorolled 2 axes

☆Synchronous feed control

B. Input command

Programming resolution

Linear axis	0.001 mm
Rotating axis	0.0001 degree

Maximum programmable dimension

Linear axis	±99999.999 mm
Rotating axis	±9999.9999 degree
Data code	Automatic recognition of ISO/EIA code
	JIS B6311 ISO 6983/1
	EIA RS-358-B EIA RS-244-B
Data format	Variable block with decimal point,
	Word address format

Absolute/incremental programming   G90/G91

Decimal point input

C. Interpolation functions

Positioning   G00

Linear interpolation   G01

Circular interpolation   G02 (CW), G03 (CCW)

D. Feed functions

Rapid traverse   refer to machine specifications

Feedrate   F5 direct programming in mm/min

Dwell   G04 and program code of "F"or"P"
maximum dwell time is 999.99 seconds

Manual jog feed

Move the machine continuously in a feed or rapid selected

Rapid traverse override

in a range of 0 ~ 100 % in 10% increments

Feedrate override

in a range of 0 ~ 200 % in 10% increments

Automatic acceleration/deceleration

Linear type acc./dec. in feed, rapid and jog feed

S-shape acceleration/deceleration for rapid

☆Threading

G33, In-feed is synchronized with spindle rotation.

☆Feed per minute/ Feed per revolution   G94/G95

☆Dwell per revolution   G05

☆Hand wheel feed (portable type)

Linear axis	0.001 mm, 0.01 mm, 0.1 mm/div.
Rotating axis	0.0001 degree, 0.001 degree, 0.01 degree/div.

☆Random start angle threading
Start angle of thread can be specified for multi-start thread.

E. Program memory and editing

☆Part program storage
600 m equivalent length of punched tape or 258 kB 512 program can be registered.
100～200m will be occupied by the manufacturer.

Part program edit (in back ground)
Stored programs can be edited about various data.
Program deletion, program copy, Program number change, search, jump, operation cancel, a range designation and deletion, a range designation and copy, replace, program insert, etc.

Program name
8 digit character following $ or O.
Program comment in ( ) can be 38 characters.

Sequence number   N5

Sequence number search
Search a block bearing the specified sequence number in forward and backward and and stop at the block

Program nesting list
A list of program nesting status will be displayed on a screen

Program offset list
Following list will be displayed on a screen.
Fixture offset list
B code list

Program format check

F. Operation and display

☆Operation panel

Customized keys

Tool file

Display function

Screen clear function

Mode selection

S, F manual setting

S, F automatic setting

Spindle motor load indication

Working time indication

Counting lot number

Calendar timer

Machining record

Register user name

Memory operation

MDI operation

G. Input and output functions and devices

RS-232-C I/F port A
A part program, offset data, etc. can be loaded and dumped through this port.

☆User media
A part program, offset data, etc. stored on USB memory and/or compact flash card can be loaded and dumped through this

H. S, T, M function

Spindle (S) function	5 digits following word "S"
Spindle speed override	50～150% in 10 % increment
Tool (T) function	6 digits following word "T"
Miscellaneous (M) function	4 digits following word "M"

I. Tool offset

Tool length offset   G43, G44, G49

Tool offset   G45, G46, G47, G48

Cutter compensation C   G40, G41, G42

☆Expansion of number of tool offset

Tool length offset	899 sets including standard
Tool diameter compensation	899 sets including standard

J. Coordinate system

Coordinate system setting   G92

☆Fixture offset   G53, G57
99 sets of data are available.

Fixture offset 2   G54, G55, G56

Return to 2nd, 3rd, or 4th reference point   G21

K. Operation support function

Control IN/OUT

Single block

Optional stop

☆Optional block skip

Dry run

Machine lock

Auxiliary function lock

Z axis feed cancel

Manual absolute ON/OFF

Override cancel

All clear

Reset

Feed hold

Cycle stop

Re-start

Sequence number collation and stop

Data input through keyboard in manual mode

Single block control

Feed hold control

Override control

Hand wheel interruption control

Manual interruption

Hand wheel interruption

Tool length/diameter measurement in manual mode

L. Programming support function

Plane selection

Radius programming in circular interpolation

Circle cutting

Positioning on machine coordinate system

Sub program call

Random angle chamfering and corner R

Canned cycle

Automatic corner override

☆Programmable mirror image

☆Plane conversion

☆Macro programming

☆Pattern cycle

☆Coordinate conversion

☆Three dimensional coordinate conversion

☆Spindle angular control

M. Compensation function for mechanical accuracy

Backlash compensation

Pitch error compensation

Uni-directional positioning

☆Pitch error gradient compensation

☆Straightness compensation

N. Machine support function

Feed interlock

☆External deceleration

O. Turning function

Threading

Retract in threading

Continuous threading function

Variable lead threading

Feed per revolution/Feed per minute

Diameter programming

Direct dimension programming on drawing

Chamfering/corner R

Standard turning canned cycle

Compound turning canned cycle

Direct input of coordinate shift data

Constant surface speed control

Tool offset

Nose R compensation

Tool geometry/wear compensation

Counter input of offset data

Direct input of measured data for tool offset

Actual spindle speed indication in T code

Chamfering ON/OFF

Dynamic change of programming between radius and diameter

P. Safety and maintenance

Emergency stop

Overtravel check

Stored stroke check

Axis interference check Ⅱ

Self-diagnosis

☆Axis interference check Ⅰ

☆Door interlock

Q. Panel and room condition

Power specifications

Room conditions

R. Servo system

Servo motors

Feedback scale

Optional specifications

A. Controlled axes

1 Additional controlled axis	B axis for optional 4-axis head automatically selected with the head

B. Input command

2 Inch/metric selection	G70/G71

C. Interpolation functions

3 Helical interpolation	G02/G03

4 Hypothetical axis interpolation   G07 α 0/1
    α is an axis address. The axis specified for α will never move in this program.

5 Cylindrical interpolation	G67 for machining cylindrical cam

6 Involute interpolation	G105

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7 Archimedean interpolation	G102/G103

8 Spindle normal direction control	G140/G141/G142

D. Feed functions

9 Synchronous tapping   G843/G844/G845
    Available spindle speed is 20 ～ 750 min$^{-1.}$

10 Synchronous threading
    For threading on large diameter by boring tool

E. Program memory and editing

11 Storage capacity A   1 200 m,   538 kB, 1 024 programs
    Storage capacity B   3 000 m,   1.25 MB, 1 024 programs
    Storage capacity C   5 400 m,   2.2 MB, 1 024 programs
    Storage capacity D   7 800 m,   3.15 MB, 1 536 programs
    Storage capacity E   10 200 m,   3.95 MB, 1 536 programs
    600 m is required for "Pack specification when selected.

12 Compact flash memory (CF)	2 GB

F. Operation and display

13 Display on the screen	in English

G. Input and output functions and devices

14 Remote buffer operation	Protocol A (handshake type)
	Protocol B (DC control code type)

15 Binary operation	Binary data

16 High-speed LAN linkage
    Host   FTP server
    Protocol   FTP
    Connecting cable   10 base-T
    NOTE
    Following are customer's responsibility
    1, Installation and set-up of LAN network
    2, Connecting cable and connection to the LAN network
    Select one of the High-speed LAN linkage or Compact flash memory (CF) above.

H. S, T, M function

I. Tool compensation

17 Tool wear compensation memory

18 Three dimensional tool compensation	G30/G31

19 Tool length offset in tool axial direction	G143/G149 for 4-axis head

J. Coordinate

K. Operation support function

20 Hand wheel feed in tool axial direction	for 4-axis head

21 Foreground plotting
    Tool path of current program on vertical spindle or tool will be displayed on the screen.

22 Manual centering function
    Check a workpiece and set a coordinate for machining automatically with help of special macro program

L. Programming support function

23 Teaching
    A program is regenerated based on operation in MDI and manual mode automatically, while the button is being pressed.

24 Programmable data input	G58/G59

25 Fixture offset data input	G158

26 Scaling	G64/G65

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27 Figure copy	G721/G722

28 Circle cutting by compensation	Radius is adjusted in circle cutting.

29 Estimation of machining time and NC plotting function

30 Pattern cycle conversion to normal extended program
    A short program of pattern cycle is converted to popular program constructed with many blocks

31 Zone machining
    A portion in a wide machining area is specified to shift Z axis in small amount in order to modify shape of it without changing basic machiningbprogram

M. Compensation function for mechanical accuracy

32 Thermal expansion compensation on Z axis

N. Machine support function

O. Automation support function

33 Skip function	G61 for several measuring function

34 Tool breakage/wear detection

35 Counting tool working time.

36 Spare tool selection
    A spare tool will be selected automatically when a tool had such trouble as life, breakage, wear

37 Retract function	At the time of tool breakage

38 Program check and creation of slated tool
    Format in the program for next operation will be checked and prepare a tool list in it while a current program is working.

39 Interruptive macro
    A macro program is activated by a external signal o interrupt machine movement.

40 Output of additional M code	M192, M193

P. Safety and maintenance

Q. Servo system

41 Shape recognition preview positioning control (CNC shape Ⅱ)

42 NRBS interpolation

R. Others

43 Tool tip position control	for optional 4-axis head

44 Assembly error compensation on 5 axis head	
	for optional 4-axis head

45 Thermal expansion compensation on 5 axis head	
	for optional 4-axis head