

# **TS3000** series Robot Controller

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TS3000 SCARA / LINEAR system  
TS3100 SCARA / LINEAR / 6-AXIS system

## **INSTRUCTION MANUAL**

## **USER PARAMETER MANUAL**

### **Notice**

- Make sure that this instruction manual is delivered to the final user of Toshiba Machine's industrial robot.
- Before operating the industrial robot, read through and completely understand this manual.
- After reading through this manual, keep it nearby for future reference.

**TOSHIBA MACHINE CO., LTD.**

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## Preface

This manual describes the machine parameters for small-size SCARA robot controller "**TS3000 series**".

The machine parameters are registered in the controller under the text file named "**USER.PAR**". Like the SCOL program, they can be edited by the program editor. For use of the program editor, see the Operator's Manual.

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Specify 0.0 0.0 0.0 0.0 0.0 0.0 when you wish to match the BASE coordinate system and the WORLD coordinate system.

**[U02] NOWAIT mode for multi task**

**NOWAIT specified for multitasks**

[U02]NOWAIT MODE FOR MULTI TASK (0:COMMON, 1:INDIVIDUAL)  
= 0

Set values = 1 Independent control for each task (NOWAIT improved type)  
(Toshiba Machine's recommendation)

= 0 Common use by tasks (NOWAIT previous type)

Data type: Integer type

Data unit: None

Data range: 0 or 1

Number of data: 1

Description: Specify a multitasking operation mode. Specify whether system variable "NOWAIT" is controlled independently for each task or commonly used by tasks during multitasking operation. However, when the "NOWAIT" is commonly used by tasks, the SCOL programming becomes complicated. It is recommended to adopt a mode for setting independently for each task.

**[U03] Default MOVESYNC MODE**

**Default of MOVESYNC**

[U03] DEFAULT MOVESYNC MODE (0:ENABLE, 1:DISABLE)  
= 1

Set values = 0 Motion command synchronous mode (ENABLE MOVESYNC)

= 1 Motion command asynchronous mode (DISABLE MOVESYNC)

Data type: Integer type

Data unit: None

Data range: 0 or 1

Number of data: 1

Description: Specify the synchronous or asynchronous mode for a motion command.  
Specify selection of the motion command synchronous mode that the system executes just before the next motion command and waits until positioning is completed during programmed operation or selection of the motion command asynchronous mode that the system pre-read and executes up to four (4) motion commands. In the motion command asynchronous mode, pass motion cannot be performed even if "PASS" is set to ENABLE.

**[U04] TEACHING MODE OVERRIDE**

**Teaching mode override**

[U04] TEACHING MODE OVERRIDE  
= 20

Set value: Example 20 (which is a value limited to 20% of the maximum speed)  
Data type: Integer type  
Data unit: %  
Data range: 1 ~ 100  
Number of data: 1  
Description: Specify the maximum speed of motion in teaching mode.

**[U05] OVERRIDE ON SLOW SPEED SIGNAL**

**Override slow-speed command**

[U05] OVERRIDE ON SLOW SPEED SIGNAL (0 - 100)[%]  
= 25

Set value: Example 25 (which is a value limited to 25% of the maximum speed)  
Data type: Integer type  
Data unit: %  
Data range: 1 ~ 100  
Number of data: 1

Description: Specify the speed at the command of slow speed (system input signal). Specify robot operating speed at the input of a slow-speed command signal. When a slow-speed command signal is input during automatic operation, specify at how many percent of the maximum speed the robot operates.

**[U06] SERIAL PORT SETTING**

**Serial port**

Specify the communication port (i.e., COM port).

```
[U06] SERIAL PORT SETTING
{Speed }(38400, 19200, 9600, 4800, 2400, 1200)
{Character}(7, 8)
{Parity }(0:Without, 1:Odd, 2:Even)
{Stop bit }(1, 2)
{COM1}
= 9600 8 0 1
{HOST}
= 9600 8 0 1
```

Set value: {COM1}  
 = (Speed) (Character length) ← Setting of COM1 port  
 (Parity) (Stop bit length)  
 {HOST}  
 = (Speed) (Character length) ← Setting of HOST port  
 (Parity) (Stop bit length)

Data type:

Data unit:

Data range:

Number of data: 2\*4

Description: (Speed): Specify data communication speed. Select among six (6) speeds that follow.  
 38400 :38400 bps  
 19200 :19200 bps  
 9600 : 9600 bps  
 4800 : 4800 bps



- 2400 : 2400 bps
- 1200 : 1200 bps
- (Character length): Specify the character length to be transferred.
  - 8: 8 bits
  - 7: 7 bits
- (Parity): Specify the parity of characters to be transferred.
  - 0: Without parity
  - 1: Odd parity
  - 2: Even parity
- (Stop bit length): Specify the stop bit length of characters to be transferred.
  - 1: Stop bit 1
  - 2: Stop bit 2

**[U07] SPECIFY SIGNAL FOR EXTSELECT**

**Setting of file select signal line.**

[U07] SPECIFY SIGNAL FOR EXTSELECT  
 {Signal No }(1 - )  
 {Bit length }(1 - 8)  
 = 101 4

- Set value: Example 101 4 Four (4) extended input signals numbered 101 ~ 104.
- Data type: Integer type
- Data unit:
- Data range: At least four (4) successive signals from standard inputs 1 ~ 16, extended inputs 101 ~ 164, or field bus inputs 301 ~ 364.
- Number of data: 2
- Description: Set file selected signal line.  
 Specify the input signal from outside the controller to select an execution file, using the input signal.  
 Specify up to four (4) consecutive input signals from standard inputs 1 ~ 16, extended inputs 101 ~ 164 or field bus inputs 301 ~ 364. To be more specific, specify the leading number of input signals to be used and the number of signals to be used by discriminating them by space.

= Specify in order (Signal No.), (Bit length).

(Signal No.): Specify the leading number of input signals to be used.

Set value      1 ~ 64 (Standard input)

                 101 ~ 164 (Extended input)

                 301 ~364 (Field bus input)

                 Select the number from the above inputs.

(Bit length): Specify the number of signals to be used.

Set value      TS1000: 1 ~ 4

                 TS2000: 1 ~ 8

## [U08] RESERVE

### Reserve parameter

[U08] RESERVE
---------------

= 0
-----

Description:      Set the reserve parameter as "0" because it is not currently set.

**[U09] AUXILIARY SIGNAL**

**Set the auxiliary signal display (AUX)**

```

[U09] AUXILIARY SIGNAL
  {Type }(0:Single, 1:Double)
  {Signal No. }(1 - 24)
  {Signal Name}(Max 10character)
= 0  201  "Hand out 1"
= 0  202  "Hand out 2"
= 0  203  "Hand out 3"
= 0  204  "Hand out 4"
= 0   0  "Not Use  "
= 0   1  "Dout 1   "
= 0   2  "Dout 2   "
= 0   3  "Dout 3   "
= 0   4  "Dout 4   "
= 0   5  "Dout 5   "
= 0   6  "Dout 6   "
= 0   7  "Dout 7   "
= 0   8  "Dout 8   "
= 0   9  "Dout 9   "
= 0  10  "Dout 10  "
= 0  11  "Dout 11  "
= 0  12  "Dout 12  "
= 0  13  "Dout 13  "
= 0  14  "Dout 14  "
= 0  15  "Dout 15  "
    
```

Example 1: Set value = 0 201 "Hand out 1"  
 Output signal 201 is registered as the single solenoid and the display name is Hand out 1.

Example 2: Set value = 11 "out 1"  
 Output signals 1 and 2 are registered as the double solenoid and the display name is out 1.

Data type:

Data unit:

Data range:

Number of data: 3\*20

Description: Specify the data on the auxiliary signal display so that the robot I/O can be set ON and OFF from the teach pendant.

= Specify in order (Solenoid), (Signal No.), (Signal name).

Output signals for twenty (20) contacts can be specified.

(Solenoid): When the double solenoid is connected with output signals, the output signals should be controlled exclusively. When "Double" is specified, two (2) successive output signals are controlled exclusively.

0 : Single solenoid (normal output)

1 : Double solenoid (Two (2) consecutive output signals are output exclusively.)

Caution: This is the setting for auxiliary signal operation through the teach pendant. Even if the double solenoid is selected, signals are not output exclusively at automatic operation. Exclusive output of signals should be specified in the program.

Even if the double solenoid is specified, all output signals are OFF at power ON.

(Signal No.): Specify the number of output signal to be used.

When "Double" is specified, specify the smaller number of two (2) consecutive output signals. Output signals that can be specified are as follows:

0	Not registered.		
1	(DOUT1)	~ 16	(DOUT16) Standard output
101	(DOUT101)	~ 164	(DOUT164) Extended digital output
201	(HANDOUT1)	~ 214	(HANDOUT4) Hand output

(Signal name): Specify the signal name displayed. Up to ten (10) characters can be set.

**[U10] DEFAULT TEACHING MODE**

**Initial value of manual guide**

```
[U10] DEFAULT TEACHING MODE
{Coordinate = 0: Joint, 1: Tool, 2: Work, 3: World}
{Speed      = 0: Low, 1: Mid, 2: High}
{Jog mode   = 0: Jog, 1: Inching, 2: Free}
= 3 0 0
```

Example: Set value = 3 0 0 (World, Low, Jog)

Data type: Integer type

Data unit:

Data range:

Number of data: 3

Description: Specify the initial value of manual operation in the teaching mode.

(Coordinate): Specify the guidance coordinate system selected as default.

- 0 : Joint
- 1 : Tool
- 2 : Work
- 3 : World

(Rate): Specify the guide rate selected as default.

- 0 : Low
- 1 : Mid
- 2 : High

(Jog mode): Specify the guidance mode selected as default.

- 0 : Jog
- 1 : Inching
- 2 : Free

**[U11] I/O MODE**

**I/O mode**

[U11] I/OMODE  
 {Default/User}{0:Default, 1:User RAM, 2:User FLASH, 3:User backup RAM)  
 = 0

Set value: = (I/O operation mode)

Data type: Integer type

Data unit:

Data range: 0 ~ 3

Number of data: 1

Description: Specify the I/O operation mode.

I/Os specified in the program are calculated by sequence, which are then input or output. This parameter selects the storage area of such sequence program.

TS3000 allows to back up the RAM area also by battery.

Specify "1" for the parameter, which should be changed to "3" after the sequence debug. (Value 1 or 3 is saved in the same area.

When "1" is specified, the sequence is cleared by power OFF/ON.)

**[U12] EXTEND I/O SETTING**

**Extended I/Os**

```

[U12] EXTEND I/O SETTING
{Use/Not Use} (0:Not Use, 1:Use )
{Not Use}
{Not Use}
= 0 0 0
= 0 0 0
    
```

Set value: = (Use/Not Use) (Reserved) (Reserved)

← Setting of distribution I/O node 0.

= (Use/Not Use) (Reserved) (Reserved)

← Setting of distribution I/O node 1.

Data type: Integer type

Data unit:

Data range: 0 or 1

Number of data: 3\*2

Description: Set the extended I/Os.

For the extended I/Os, two (2) nodes (node 1 and node 2) can be connected.

Node 0 is set in the upper level, and node 1 in the lower level.

(Use/Not use): Specify the presence or absence of extended I/O.

0 : Absence of extended I/O

1 : Presence of extended I/O

(Reserved): Reserved for future system extension.  
Specify zero (0).

(Reserved): Reserved for future system extension.  
Specify zero (0).

**[U13] SEQUENCE PARAMETER**

**Sequence parameter**

[U13] SEQUENCE PARAMETER (User I/O mode only)  
 = 0 0 0 0 0 0 0 0

- Set value: = (R510) (R511) (R512) (R513) (R514) (R515) (R516) (R517)
- Data type: Integer type
- Data unit:
- Data range: 0 ~ 1
- Number of data: 8
- Description: Set the values of internal display that can be utilized as the contact inputs in the user's created sequence program.  
 This parameter is effective only when "User" (user create sequence) is selected by [U11] I/O MODE.



**[U14] SOFTWARE LIMIT**

**Software limit**

[U14] SOFTWARE LIMIT [deg][mm]
{+ Direction}
= 116.0 141.0 121.0 361.0 0.000 0.000 0.000 0.000
{- Direction}
= -116.0 -141.0 -1.0 -361.0 0.000 0.000 0.000 0.000

{+ Direction}

Set values: TS3000 = (1 axis + joint limit) (2 axis...) (3 axis...)  
 (4 axis...) (5 axis...) (Reserved) (Reserved)  
 (Reserved)

TS3000 (6-axis) = (1 axis + joint limit) (2 axis...) (3 axis...)  
 (4 axis...) (5 axis...) (6 axis...) (7 axis...)  
 (8 axis...)

Data type: Real number type

Data unit: deg or mm

Data range:

Number of data: 8

Description: Specify the software limit values (JLIMIT).  
 Setting of + (plus) joint limit (+ soft stroke limit). Values set in the  
 joint limit setting change mode (JLIMIT) are saved.

{- Direction}

Set values: TS3000 = (1 axis - joint limit) (2 axis...) (3 axis...)  
 (4 axis...) (5 axis...) (Reserved) (Reserved)  
 (Reserved)

TS3000 (6-axis) = (1 axis - joint limit) (2 axis...) (3 axis...)  
 (4 axis...) (5 axis...) (6 axis...) (7 axis...)  
 (8 axis...)

Data type: Real number type

Data unit: deg or mm

Data range:

Number of data: 8

Description: Specify the software limit values (JLIMIT).  
 Setting of - (minus) joint limit (- soft stroke limit). Values set in the  
 joint limit setting change mode (JLIMIT) are saved.

**[U15] PLC ALARM**

**PLC alarms**

[U15] PLC ALARM	
= "8-269 PLC alarm 01	"
= "8-270 PLC alarm 02	"
= "8-271 PLC alarm 03	"
= "8-272 PLC alarm 04	"
= "4-077 PLC alarm 05	"
= "4-078 PLC alarm 06	"
= "4-079 PLC alarm 07	"
= "4-080 PLC alarm 08	"
= "1-037 PLC alarm 09	"
= "1-038 PLC alarm 10	"
= "1-039 PLC alarm 11	"
= "1-040 PLC alarm 12	"
= "1-041 PLC alarm 13	"
= "1-042 PLC alarm 14	"
= "1-043 PLC alarm 15	"
= "1-044 PLC alarm 16	"

Example: Set value = "8-269 PLCALM01"

Data type:

Data unit:

Data range: Up to 32 alphanumeric characters

Number of data: 16

Description: Specify the PLC alarm message.

The PLC alarm is an alarm which can be generated by sequence when "User" is selected for "[U11] I/O mode". In this setting, message for each of such alarm can be specified.

Specify an alarm message to be displayed in the area flanked by the quotation marks ("). Though up to thirty-two (32) characters can be specified, the leading six (6) characters are used to identify the alarm number, and a total of twenty-six (26) characters can be used for the message. DO NOT change the leading six (6) characters (alarm code) which are used to identify the alarm number.

**[U16] FIELD BUS**

**Field bus**

[U16] FIELDBUS  
 {type / Node Addr / Speed / Byte Order}  
 = -1 -1 -1 -1

Example: Set value = 37 4 1 0, = (Type) (Node) (Transmission rate) (Type of master)

Data type: Integer type

Data unit:

Data range:

Number of data: 4

Description: Specify the field bus. The field bus is an optional function.

(Type): Specify the type of the field bus.

- 1 : Without field bus option (initial value)
- 1 : Profibus
- 37 : DeviceNet
- 144 : CCLINK

(Node): Specify the node address of the field bus.

This address should not be identical with another device in the same network. The setting range differs with the type of the field bus.

- 1 : Without field bus option (initial value)
- 0 ~ 127 : Profibus
- 0 ~ 63 : DeviceNet
- 1 ~ 64 : CCLINK

(Transmission rate): Specify the transmission rate. Setting of Profibus is unnecessary. Make it coincide with the master transmission rate.

Specify the transmission rate of DeviceNet.

- 0: 125 kbps
- 1: 250 kbps
- 2: 500 kbps

Specify the transmission rate of CCLINK.

- 0: 156 kbps
- 1: 625 kbps

2: 2.5 Mbps  
 3: 5 Mbps  
 4: 10 Mbps

(Type of master): Specify the type of the field bus master.  
 The bit string (endian) differs with the master.  
 Make the value identical with the master.  
 0 : 16-bit big endian (DeviceNet, CCLINK made by OMRON)  
 1 : 16-bit little endian  
 2 : 32-bit big endian  
 3 : 32-bit little endian

**[U17] PASSWORD**

**Password**

[U17] Password = " "
-------------------------

Set value: = (Password up to 8 characters)

Data type:

Data unit:

Data range:

Number of data: 1

Description: The password is a character string when using the password function. The password function is optional.

**[U18] ACCEL LIMIT FUNCTION****Function for limiting acceleration and deceleration according to Z -axis height**

[U18] ACCEL LIMIT FUNCTION = 0
-----------------------------------

Set value: = (Function effective/ineffective)

Data type: Integer type

Data unit:

Data range: 0 or 1

Number of data: 1

Description: When the parameter is made valid, acceleration/deceleration is limited according to Z-axis height. This function is effective only for the SCARA robot system.

0: Ineffective function

1: Effective function

**[U19] MASTER MODE****Master mode**

[U19] MASTER MODE = "EXT.SIGNAL"
-------------------------------------

Set value: = (Specify master mode after the power supply is turned on.)

Data type:

Data unit:

Data range:

Number of data: 1

Description: This function is ineffective for TS3000 series. The master mode is set using the key switch and user parameter [U00].

**[U20] PLC COMMUNICATION REGISTER ADDRESS**

**PLC communication register address**

[U20] PLC COMMUNICATION REGISTER ADDRESS						
{Current Position/ Alarm/ Master Mode/ Alarm Resetting/ spare/ spare}						
=	4	2560	2580	0	0	0

Set value: See the description below.

Data type: Integer type

Data unit:

Data range:

Number of data: 6

Description: This parameter is exclusively used for the die-cast unloading robot. Communication is done with the TC200 made by Toshiba Machine.

Current Position: Address where the current coordinate of the robot (in the work coordinate system) is to be sent.

Alarm: Address where alarm information is to be sent.

Master Mode: Address where master mode information is to be sent.

Alarm Resetting: Address where alarm reset from the PLC is to be monitored.

spare: Reserved

spare: Reserved

**[U21] SERIAL DATA ERROR CHECK**

**Serial data error check**

[U21] SERIAL DATA ERROR CHECK  
 { 0:checked, 1:passed }  
 = 0

- Set value: = (Specify whether there is presence or absence of error check for non-procedural communication and simple procedural communication.)
- Data type: Integer type
- Data unit:
- Data range: 0 or 1
- Number of data: 1
- Description: This parameter is used as the ON/OFF changeover flag of error check for non-procedural communication and simple procedural communication. Specify zero (0) normally.
- 0: Error checking is carried out for non-procedural communication and simple procedural communication.
  - 1: Error checking is not carried out for non-procedural communication and simple procedural communication.

**[U22] COMMON DATA & PROGRAM FILE FUNCTION SETUP**

**Common data and program function setup**

[U22] COMMON DATA & PROGRAM FILE FUNCTION SETUP  
 { 0:Disable, 1:DATA.TBL, 2:SCOL.PRG }  
 = 0

Set value: = (Specify the ON/OFF flag of the common program and common data functions in the SCOL language specifications.)

Data type: Integer type

Data unit:

Data range: 0 ~ 2

Number of data: 1

Description: This parameter serves as the ON/OFF flag of the common program and common data functions in the SCOL language specifications.

0: Disable

1: Common data (DATA. TBL)

2: Common program (SCOL. PRG)

**[U23] BYPASS FUNCTION PARAMETER**

**Bypass operation designation parameter**

[U23] BYPASS FUNCTION PARAMETER  
 { Function enable SW (0:Disable, 1:M-to & Bypass, 2:Bypass )  
 = 0  
 { Retract position }  
 = 0.0    0.0    0.0    0.0    0.0    0.0    0.0    0.0  
 { Z Axis offset parameter }  
 = 0.0    0.0

Set value: This function is used only for the SCARA robot system and LCDR robot system. The parameter should be set at zero (0) in other robot system. For details of setting, see the description below.

Data type: Real number type (Function enable sw is integer type.)

Data unit:



Data range:

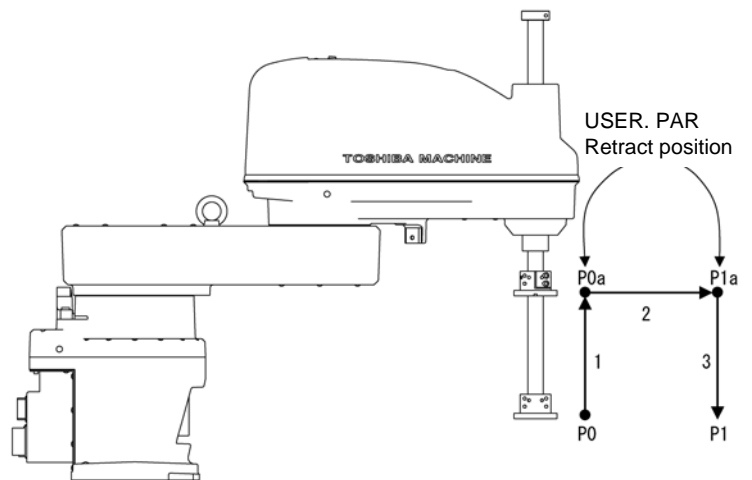
Number of data: 11

Description: In the M-TO (move to teach point) function, as the robot arm moves directly to the teach point, it may collide with a workpiece present midway.

When this bypass (move to teach point by bypassing) function is made effective, the robot once retracts its hand, moves to just before the target position, then to the target position.

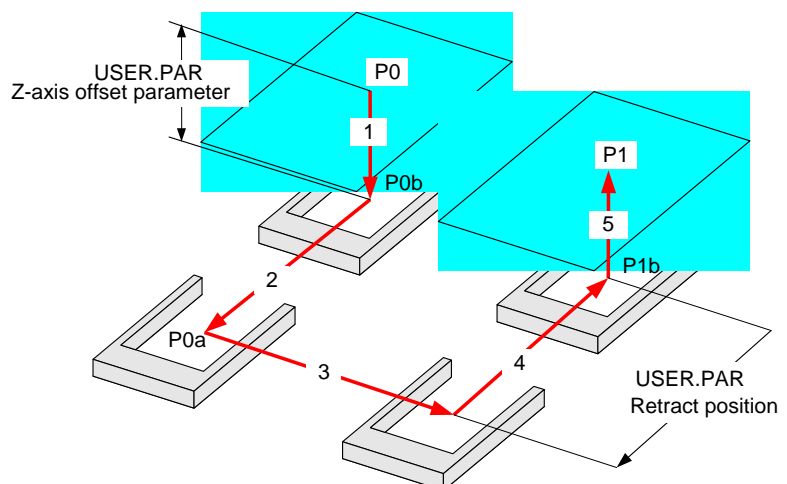
<SCARA robot>

1. Moves by retracting from current position P0 to P0a.
2. "Parallel move + rotation" from position P0a to P1a.
3. Moves by extending from position P1a to P1.



<LCDR robot>

1. Leaves a workpiece.
2. Moves by retracting from current position P0 to P0a.
3. "Parallel move + rotation" from position P0a to P1a.
4. Moves by extending from position P1a to P1.
5. Contacts the workpiece.



- (1) Bypass function ON/OFF setting  
= 2 (0: OFF, 1: M-TO & bypass ON, 2: Only bypass ON)
  
- (2) Retract position parameter (Specify the absolute position rather than the relative travel distance.)  
= 0.0 0.0 **200.0** 0.0 0.0 0.0 0.0 0.0 (For SCARA robot: Only Z axis is effective.)     ↑ Z-axis  
  
= **100.0** **100.0** 0.0 0.0 0.0 0.0  
      ↑ RR-axis   ↑ RL-axis  
(For LCDR robot: Only RR axis and RL axis are effective.)  
  
Z-axis offset parameter for LCDR  
= -10.0 -10.0

**[U24] SPEED LIMIT FUNCTION**

**Maximum operation speed limit**

[U24] SPEED LIMIT FUNCTION  
{ 0:Disable, 1:Enable }  
= 0

Set value:       = (Specify operating speed limit.)  
Data type:       Integer type  
Data unit:  
Data range:     0 or 1  
Number of data: 1  
Description:     When this function is made valid, operating speed of the robot is controlled in such a manner that it will not exceed the maximum speed.  
                  0: Disable  
                  1: Enable

**[U25] FUNCTION SELECT SWITCH**

**Selection of enabling or disabling controller functions**

[U25] FUNCTION SELECT SWITCH
= 0 0 0 0 0 0
= 0 0 0 0 0 0
= 0 0 0 0 0 0
= 0 0 0 0 0 0

Set value: = (Specify whether to enable or disable the functions.)

Data type: Integer type

Data unit:

Data range: 0 or 1

Number of data: 1

Description: This parameter selects ON or OFF of the controller functions. The functions which can be effective are assigned to each element.

1: Function ON

0: Function OFF

The effective functions of each element are described below.

First line (from left)

1st function: Input character string conversion function

If a character string other than the numerals has reached in the input processing, an error occurs. To avoid this, any character string reached other than the numerals can be input as zero (0).

2nd function: "Move to teach point" function (MOV-TO)

A motion command in the "move to teach point" mode can be changed over according to the current guide coordinates. The same is also applicable to the BYPASS function.

Guide coordinates	Motion command
JOINT	MOVE
TOOL WORK WORLD	MOVES

(1) Function ON/OFF

The 2nd function of software function select switch [U259] of the user parameter (USER. PAR) is used to select ON or OFF of this function.

Usr\_Par\_Srmini. Function\_sw [0][1] ----- 0: OFF, 1: ON

(2) Current position display during "move to teach point" mode

At the same time that the "move to teach point" mode has been selected, current position is displayed in the world coordinate system.

When the robot has reached the teach point, or when the ESC key has been pressed, the previous data editing mode takes effect again.

3rd function: Keeping of latch register

When the user parameter is specified as shown below, the latch register was not previously kept in the same way as in "3: USER BACKYP RAM" in the USER FLASH mode.

[U11] I/OMODE {DEFAULT/USER} (0: DEFAULT, 1: USER RAM, 2: USER FLASH, 3: USER BACKUP RAM)

= 2

To settle this problem, the mode including the register keeping function is added to select ON or OFF of the latch register keeping by means of parameter setting.

0 : Not kept (as in the past)

1 : Kept

\* When the other mode is selected for [U11] I/OMODE:

0: DEFAULT                      Not kept

1: USER RAM                      Not kept

3: USER BACKUP RAM      Kept

4th function: Prohibition of I/O change in EXT mode

I/O change on the screen called by "UTILITY → SIGNAL" or "UTILITY → AUX" is prohibited in a mode other than the MANUAL mode.

5th function: Extending the number of Fieldbus I/Os to 128

The numbers of the Fieldbus I/Os can be increased from 64/64 to 128/128.

This function is effective only for the Fieldbus.

Other functions: Reserved for the system.

**EXTRNSEL.SYS Setting Program File for File Select Signal Line**

Specify the program file corresponding to the file select signal line.

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External select file "EXTRNSEL.SYS"

\*\*\* [ 00 – 0F ] \*\*\*\*\*

= "PROG00"

= "PROG01"

= "PROG02"

= "PROG03"

= "PROG04"

= "PROG05"

= "PROG06"

= "PROG07"

= "PROG08"

= "PROG09"

= "PROG0A"

= "PROG0B"

= "PROG0C"

= "PROG0D"

= "PROG0E"

= "PROG0F"

\*\*\* [ 10 – 1F ] \*\*\*\*\*

= "PROG10"

= "PROG11"

= "PROG12"

= "PROG13"

The number of effective files differs with the bit length according to the setting of [U07], and the files are assigned to the file select signals in turn, starting with the top file.

Bit length 1:	0	~	1 (binary number)	Two (2) files
Bit length 2:	00	~	11 (binary number)	Four (4) files
Bit length 3:	000	~	111 (binary number)	Eight (8) files
	:		:	
	:		:	
Bit length 8:	00000000	~	11111111 (binary notation)	256 files

Specify the file name following the equal (=) code.

Unless the equal (=) code is specified at the top of the line, it is processed as a comment.

Set value (Example): = "PROG1"

PROG1 is assigned to the file select signal.

APPROVED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

PREPARED BY: \_\_\_\_\_