# Robots and Design CO., Ltd

## WTR Controller Ethernet Driver

Supported version TOP Design Studio

dio V4.9 or higher



### **CONTENTS**

We want to thank our customers who use the Touch Operation Panel.

### 1. System configuration

#### Page 2

Describes the devices required for connection, the setting of each device, cables, and configurable systems.

### 2. External device selection Page 3

Select a TOP model and an external device.

### **3.** TOP communication setting Page 4

Describes how to set the TOP communication.

### Page 9

Describes how to set up communication for external devices.

### 5. Supported addresses

4. External device setting

## Page 10

Refer to this section to check the addresses which can communicate with an external device.



### 1. System configuration

The system configurations of TOP and "Robots and Design – WTR Controller Series Ethernet" are as follows:

Series	CPU	Communication method	System setting	Cable
Robots and Design	WTR Controller	Ethernet (TCP / UDP)	<u>3. TOP communication</u> <u>setting</u> 4. External device	Twisted pair cable *Note 1)

\*Note 1) Twisted pair cable

- Refer to STP (Shielded Twisted Pair Cable) or UTP (Unshielded Twisted Pair Cable) Category 3, 4, 5.

- Depending on the network configuration, you can connect to components such as the hub and transceiver, and in this case, use a direct cable.

■ Connectable configuration

• 1:1 connection (one TOP and one external device) connection



• 1:N connection (one TOP and multiple external devices) connection





### 2. External device selection

■ Select a TOP model and a port, and then select an external device.

Select Device					x
PLC select [Et	thernet]				
Filter : [All]		×		Search ·	
				Model	Vendor
Vendor		Model			
BECKHOFF Automation	^	🔗 Robots	s and Design : Robo	tController	
FASTECH Co., Ltd.		-			
ODVA					
HYOSUNG					
HB TECH					
DNP					
FANUC Co., Ltd.					
BOOSTER					
Robots and Design					
CoDeSys Automation A	liance				
Cognex Corporation					
S&F					
Peripheral Device					
r enpiteral bettee	*				
		1	<u></u>	<b>.</b>	
			Back	Next 🔷	X Cancel
Select Device					x
Select Device	ots and Desig	ın : RobotCon	troller 1		×
Select Device PLC Setting[ Robo Alias Name	ots and Desig	jn : RobotCon	troller] Bind IP : Auto	~	×
Select Device PLC Setting[ Robo Alias Name Interface	ots and Desig : PLC1 : Ethernet	jn : RobotCon	troller] Bind IP : Auto	~	×
Select Device PLC Setting[ Robo Alias Name Interface Protocol	ots and Desig : PLC1 : Ethernet : RoboTocol ETH	jn : RobotCon	troller ] Bind IP : Auto	✓ Cor	x mm Manual
Select Device PLC Setting[ Robo Alias Name Interface Protocol String Save Mode	ots and Desig : PLC1 : Ethernet : RoboTocol ETH : First LH HL	in : RobotCon	troller ] Bind IP : Auto	V Cor	x nm Manual
Select Device PLC Setting[ Robc Alias Name Interface Protocol String Save Mode USe Redundana	ts and Desig PLC1 Ethernet RoboTocol ETH First LH HL	in : RobotCon	troller ] Bind IP : Auto	Cor	x mm Manual
Select Device PLC Setting[ Robc Alias Name Interface Protocol String Save Mode Operate Condition : A	i PLC1 Ethernet RoboTocol ETH First LH HL	in : RobotCon	troller ] Bind IP : Auto	✓ Cor	× nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Operate Condition : Change Condition :	i PLC1 Ethernet RoboTocol ETH First LH HL CY TimeOut Condition	In : RobotCon	troller ] Bind IP : Auto	Cor	× nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode Use Redundan Operate Condition : Change Condition :	Stand Design     PLC1     Ethernet     RoboTocol ETH     First LH HL      V      TimeOut     Condition	In : RobotCon	troller ] Bind IP : Auto	Cor	× nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Use Redundan Operate Condition :  Primary Option	bts and Design       :	In : RobotCon	troller ] Bind IP : Auto	✓ Cor	nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Use Redundan Operate Condition : Primary Option IP	bts and Design       : PLC1       : Ethernet       : RoboTocol ETh       : First LH HL       Cy       ND       ' TimeOut       ' Condition       192       11	In : RobotCon	troller ] Bind IP : Auto	Cor	mm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Use Redundan Operate Condition : Change Condition : Primary Option IP Ethernet Protocol	Image: Stand Design       : PLC1       : Ethermet       : RoboTocol ETH       : First LH HL       CY       ND       ' TimeOut       1 Condition       192       17CP	In : RobotCon	troller] Bind IP : Auto	Cor	nm Manuai
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Use Redundane Operate Condition :  Primary Option IP Ethernet Protocol Port	ts and Desig : PLC1 : Ethernet : RoboTocol ETH : First LH HL CY NND ↓ 1 TimeOut 1 Condition 192 〕 1 TCP ↓ 6000 〕	gn : RobotCon 1 ~ Change 5 \$ \$ (Secc 68 \$ 200 \$ ]	troller] Bind IP : Auto	V Cor	nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Operate Condition :  Primary Option IP Ethernet Protocol Port Timeout	ts and Desig : PLC1 : Ethernet : RoboTocol ETH : First LH HL CY ND ✓ 1 TimeOut 1 Ocndition 192   1 1000   100	gn : RobotCon 1 ~ ~ 1 ~ ~ ~ ~ 1 ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~~~~~~~~	troller] Bind IP : Auto	V Cor	nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Use Redundant Operate Condition :  Primary Option IP Ethernet Protocol Port Timeout Send Wait	ts and Desig : PLC1 : Ethernet : RoboTocol ETH : First LH HL CY ND ↓ TimeOut 1000 ↓ 1000 ↓ 0 ↓	In : RobotCon	troller] Bind IP : Auto	V Cor	nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Operate Condition :  Primary Option IP Ethernet Protocol Port Timeout Send Wait Stage	bts and Desig : PLC1 : Ethernet : RoboTocol ETH : First LH HL CV WD ↓ TimeOut ↓ Condition ↓ 192 ↓ 1 TCP ↓ 6000 ↓ 100 ↓ 0 ↓ 9997 ↓	In : RobotCon	troller ] Bind IP : Auto	✓ Cor	nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Change Condition :  Primary Option IP Ethernet Protocol Port Timeout Send Wait Stage Slot	bts and Desig : PLC1 : Ethernet : RoboTocol ETH : First LH HL CV VMD ↓ TimeOut Condition 192 ↓ 1 TCP ↓ 6000 ↓ 1000 ↓ 9997 ↓ 9998 ↓	In : RobotCon	troller ] Bind IP : Auto	Cor	nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Operate Condition :  Primary Option IP Ethernet Protocol Port Timeout Stage Slot Arm	bts and Desig       :       PLC1       :       Ethernet       :       RoboTocol ETh       :       First LH HL       CV       TimeOut       Tocondition       192       100       0       9997       9998       9999	In : RobotCon	troller ] Bind IP : Auto	Cor	nm Manual
Select Device  PLC Setting[ Robc Alias Name Interface Protocol String Save Mode  Use Redundan Operate Conditon : Primary Option IP Ethernet Protocol Port Timeout Stage Slot Arm Finger	bts and Desig         :       PLC1         :       Ethernet         :       RoboTocol ETh         :       First LH HL         CV       VID         'ImeOut       Condition         192       1         TCP       6000         1000       9         9997       9         9998       9         9999       9         9996       1	In : RobotCon	troller ] Bind IP : Auto	✓ Cor	nm Manual

Settings			Contents		
ТОР	Model	Check the display and process	Check the display and process of TOP to select the touch model.		
External device	Vendor	Select the vendor of the extern	al device to be connected to TOF	).	
		Please select "Robots and Desi	gn".		
	PLC	Select the external device to be	e connected to the TOP.		
		Model	Interface	Protocol	
		WTR Controller	Ethernet	RoboTocol ETH	
		Please check the system configuration in Chapter 1 to see if the external device you want to			
		connect is a model whose syste	em can be configured.		



### 3. TOP communication setting

The communication can be set in TOP Design Studio or the TOP main menu. The communication should be set in the same way as that of the external device.

### 3.1 Communication setting in TOP Design Studio

#### (1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Ethernet]

- Set the TOP communication interface in TOP Design Studio.



Items	ТОР	External device	Remarks
IP Address *Note 1) Note 2)	192.168.200.100	192.168.200.4	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

\*Note 1) The network addresses of the TOP and the external device (the first three digits of the IP, 192.168.200.0) should match.

\*Note 2) Do not use duplicate IP addresses over the same network.

\* The above settings are examples recommended by the company.

Items	Description
IP Address	Set the IP address of the TOP.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.



#### (2) Communication option setting

- [Project > Project Property > Device Setting > ETHERNET > "PLC1 : Robots and Design"]
  - Set the options of the WTR Controller Series Ethernet communication driver in TOP Design Studio.

Project Option			×
Change HMI[ <u>H</u> ] Add Pl	C [A] TITI Change PLC[C]  Delete PLC[D]		
<ul> <li>TOP Setting</li> <li>SYS : RD1520X</li> <li>Option Module Setting</li> <li>Fieldbus (0)</li> <li>RFID (0)</li> <li>COM1 (0)</li> <li>COM2 (0)</li> <li>COM3 (0)</li> <li>Ethernset (1)</li> <li>PLC1 : Robots and Design</li> <li>WireLess (0)</li> <li>USBDevice (0)</li> </ul>	PLC Setting[ Robots and Design : RobotController ] Alias Name : PLC1 Bind IP : Auto ▼ Protocol : RoboTocol ETH ▼ String Save Mode : First LH HL Change Use Redundancy Operate Condition : ITmeOut 5 \$ (Second) Change Condition : ITmeOut 5 \$ (Second) Condition Edit Primary Option IP 192 \$ 168 \$ 200 \$ 4 \$ Ethermet Protocol TCP ▼ Port 6000 \$ msec Send Wait 0 \$ msec Stage 9997 \$ Slot 9998 \$ Arm 9999 \$ Finger 9996 \$	Co	mm Manual
< >>		Apply	Close
		Apply	Close

Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External
Protocol	Select "RoboTocol ETH".	device selection".
IP	Enter the IP address of an external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet port number of an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and	
	sending the next command request.	
Stage	Enter the address of the internal System Buffer in which the Stage value is saved.	
Slot	Enter the address of the internal System Buffer in which the Slot value is saved.	
Arm	Enter the address of the internal System Buffer in which the Arm value is saved.	
Finger	Enter the address of the internal System Buffer in which the Finger value is saved.	



#### 3.2. Communication setting in TOP

\* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



#### (1) Communication interface setting

■ [Main Screen > Control Panel > Ethernet]

	õ	💼 Ethernet 🗙
Bun	🔯 System	Port Det ion
		Link Speed : Auto
VNC	PLC Se	MAC Address : 00:15:1D:05:38:C5 IP Address : 192.168.0.100
VNC Viewer		Subnet Mask : 255.255.255.0 Gateway : 192.168.0.1
	Ethernet	DNS (1) : Wi-Fi DNS (2) :
Screen shot	heff	Ethernet Primary IP : 192.168.0.100 -
	Diagnostic M	Cable Status : ETH1 Connected Bridge Mode : Use Bridge
	[System]	Check duplicate Apply Cancel Close

ltems	ТОР	External device	Remarks
IP Address *Note 1) Note 2)	192.168.200.100	192.168.200.4	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

\*Note 1) The network addresses of the TOP and the external device (the first three digits of the IP, 192.168.200.0) should match.

\*Note 2) Do not use duplicate IP addresses over the same network.

\* The above settings are examples recommended by the company.

Items	Description
IP Address	Set the IP address of the TOP.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.



### (2) Communication option setting

■ [Main Screen > Control Panel > PLC]

	ō	1001	PLC ×
	🔯 Syste	Driver(ETH)	PLC1(Robots and Design : RobotControlle -
Hun		Interface	Ethernet -
		Protocol	RoboTocol ETH -
<b>WNC</b>	PLC	Bind IP	Auto
VNC		IP	192 🗘 168 🜩 200 🜩 4 🜩
Viewer	∣ (	Ethernet	TCP -
	Ethernet	Port	6000
◯.		Timeout	1000 🖨 msec
Screen	1 mm	Send Wait	0 🚔 msec
shot	mil	Stage	9997 🗘
	Diagnostic	Slot	9998 🗘
		Arm	9999 🗘
	[System	Diagnostic	Ping Test Apply Cancel

Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External
Protocol	Select "RoboTocol ETH".	device selection".
IP	Enter the IP address of an external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet port number of an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device	
	and sending the next command request.	
Stage	Enter the address of the internal System Buffer in which the Stage value is saved.	
Slot	Enter the address of the internal System Buffer in which the Slot value is saved.	
Arm	Enter the address of the internal System Buffer in which the Arm value is saved.	
Finger	Enter the address of the internal System Buffer in which the Finger value is saved.	



#### **3.3 Communication diagnostics**

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- Check if the ETH port settings you want to use in [Control Panel > Ethernet] are the same as those of the external device.
- Diagnosis of whether the port communication is normal or not
- Touch "Communication diagnostics" in [Control Panel > PLC].
- The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

ОК	Communication setting normal
Time Out Error	Communication setting abnormal
	- Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet)

Communication diagnostics sheet

- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Conte	Ch	eck	Remarks	
System	How to connect the system		OK	NG	1 Custom configuration
configuration	Connection cable name	Connection cable name		NG	1. System configuration
ТОР	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	Relative prefix	Project setting	OK	NG	2. External device selection
		Communication diagnostics	ОК	NG	3. Communication setting
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
External device	CPU name	OK	NG		
Communication port name (module r		ame (module name)	OK	NG	
	Protocol (mode)	ОК	NG		
	Setup Prefix	OK	NG	4 Eutomal device setting	
	Other detailed settings	OK	NG	4. External device setting	
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
	Check address range		ОК	NG	<u>5. Supported addresses</u> (For details, please refer to the PLC vendor's manual.)



### 4. External device setting

For more detailed setting method than that described in this example, refer to the PLC user manual.



Do not use duplicate IP addresses over the unit network.



### 5. Supported addresses

### The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and take caution to not deviate from the address range supported by the device you want to use.

Device	Bit Address	Word Address	Comment	Remark	
VED	0.00 40.15	0 40	Read controller version		
VER	0.00 - 40.15	0 – 40	Read controller version (using string)	R	
			Servo power		
			Read : Reads the current servo status value.		
			Write :		
SERVO	0.00 - 0.15	0 - 0	1 >>		
			Supply the power to the servo.		
			0 >>		
			Disconnect the power to the servo.		
FDD	0.00 0.15	0 0	Read error code		
EKK	0.00 - 0.15	0 – 0	Read current error code.	R	
	0.00 0.15	0 0	Error reset		
EKKKESEI	0.00 - 0.15	0 – 0	Clear the error status, which occurs now.	W	
			(Motor coordinate system) Read current		
NMPS	1.00 - 6.15	1 – 6	position	R	
			Requires the robot's current motor coordinate position.	32BIT	
	1 000:1 5 00	1 000.1 5	Read saved teaching data		
NPOR	1-999:1-5.00 -	1-999:1-5 -	Read the saved teaching data (POINTDATA).	R	
	1 333.1 3.31	1 333.1 3		32BIT	
			Register saved teaching data		
_NPOR	1–999:1–6.00 –	1–999:1–6 –	Does not communicate and has only a value.	32BIT	
	1–999:1–6.31	1 1–999:1–6	Communicates with this value and writes teaching data	52011	
			(POINT DATA) when using POA.		
DOA	1.00 –999.31	1 00 000 21 1 000	1 000	Enter POINT DATA	147
POA		1 -999	Enters POINT data.	VV 32BIT	
			Teaching interlock	52511	
TI	1.00 –999.15	1 –999	Teaching interlock		
			Read OUTPUT signal status		
	1 00-999 15	1_999	Reads the current OLITPLIT signal status starting from	R	
NIBO	1.00 555.15	1 555	the specified channel number	32BIT	
			Read INPLIT signal status		
	1 00-999 15	1_000	Deads the surrent INDUT signal status	R	
ושואו	1.00-333.13	כצברו	specified channel number	32BIT	
			Signal status of INPLIT whose address has been		
		1–999	translated	32BIT	
IDO	1.00–999.15		Current OUTDUT signal status where address here have		
			translated starting from the specified shared survey		
			translated starting from the specified channel number		



Device	Bit Address	Word Address	Comment	Remark
IDI			Read signal status of INPUT whose address has	
			been translated	R
	1.00–999.15	1–999	Reads signal status of INPUT whose address has been	32BIT
			currently translated starting from the specified channel	
			number.	
			Read external I/O OUTPUT signal status	
RIDO	1.00–999.15	1–999	Reads the status of the OUTPUT signal of the	R
			expansion I/O board.	SZDII
			Read external I/O INPUT signal status	5
RIDI	1.00–999.15	1–999	Reads the status of the INPUT signal of the expansion	K 32BIT
			I/O board.	JZDIT
			Robot initialization and homing	
			- Performs homing operation along with robot	
			initialization operation.	W
ORG	0.00 - 0.15	0 – 0	- Originates from the coordinates saved in teaching	
			data No. 498.	
			- After supplying the power to the controller, the	
			robot initialization operation shall be performed	
			once.	
			Homing	
HOME	0.00 – 0.15	0 - 0	- Performs homing operation.	W
			- Originates from the coordinates saved in teaching	
			data No. 498.	
			JOG operation	
			- Performs JOG move for the designated axis.	W
JOG	1.00 – 6.15	1 – 6	- Immediately from the moment the command is	
			received, the device continues to move until the	
			device reaches the soft limit of the	
			corresponding axis or the limit sensor.	
FMD	1 00 - 6 15	1 – 6	Set axis's free mode	
	1.00 0.13		Activates the free mode of the designated axis.	W
			Robot's relative movement	
NMMI	0.00 - 0.15	0 - 0	Performs relative movement for each axis of the robot	W
			by a specified value.	
			Register Robot's relative movement	
_NMMI			The device does not communicate, only has values.	32BIT
	0.00 - 6.31	0 – 6	When using NMMI, the device communicates with this	JEDIT
			value and performs relative movement as much as the	
			value.	
			Robot's absolute movement	\٨/
NMMA	0.00 – 0.15	0 - 0	Performs absolute movement for each axis of the robot	vv
			by a specified value.	



Device	Bit Address	Word Address	Comment	Remark
_NMMA			Register Robot's absolute movement	
			The device does not communicate, only has values.	32BIT
	0.00 - 6.31	0 - 6	When using NMMI, the device communicates with this	
			value and performs relative movement as much as the	
			value.	
			Robot's hand folding motion	
RETA	0.00 - 0.15	0 - 0	The robot performs the motion of folding the	W
			designated hand at the current position.	Refer to
			Debetic band automation motion	Arm- DAIA.
			The relief performs the metion of extending the	W
EVTA	0.00 0.15	0 0	- The robot performs the motion of extending the	Refer to
LATA	0.00 - 0.15	0 - 0	After the DEADY metion (CDDY or DDDY or TDDY)	Stage, arm
			- After the READY motion (GRDY of PRDY of TRDY),	DATA.
			the robot must perform the arm stretching motion.	Pofor to W
			GET motion READY operation	Stage.
GRDY	0.00 - 0.15	0 - 0	During the GET motion, even the motion just before	slot arm
			extending the arm is performed.	DATA.
			PUT motion READY operation	Refer to W
			During the PLIT motion, even the motion just before	Stage,
PRDY	0.00 – 0.15	0 - 0	extending the arm is performed	slot,arm
			extending the ann is performed.	DATA.
	0.00 – 0.15	0 – 0	READY operation in teaching position	Refer to W
			This is a motion to check the teaching position, and	Stage,
IRDY			perform the motion just before extending the arm to	slot,arm
			the teaching position.	DATA.
			GET operation	
	0.00 – 0.15	0 – 0	Performs the action to bring the wafer.	Refer to W
GET				Stage,
				slot,arm
				DATA.
			PUT operation	
DUT	0.00 – 0.15	0 - 0.15 0 - 0	Performs an action to put the wafer down.	Refer to W
PUT				stage,
				SIOL,arm
			Check only specific blade sensor of HAND	Refer to
		0.00 - 0.15 0 - 0	upon GFT operation	Stage slot
SGET	0.00 – 0.15		Checks only wafer sensor of some blade and performs	Finger
			5 Hand GET operation.	DATA.
			Check only specific blade sensor of HAND	Refer to
			upon PUT operation	Stage, slot.
SPUT	0.00 – 0.15	0 - 0	Checks only wafer sensor of some blade and performs	Finger
			5 Hand GET operation	DATA.
			Safe movement to a specific teaching position	<u> </u>
POM	0.00 - 0.15	0 - 0	Moves the robot to the position of specific point data	
				W



Device	Bit Address	Word Address	Comment	Remark
			Stop motion	
ASS	0.00 - 0.15	0 - 0	Decelerates and stop all axes immediately during	W
			movement.	
AEC	0.00 0.15	0 0	Stop motion and servo down	
AES	0.00 - 0.13	0 - 0	Stops all axes immediately during movement.	W
			Pause motion	
PAUSE	0.00 - 0.15	0 – 0	Pause the robot during movement.	W
THOSE	0.00 0.15		0 Resume motion	
			1 Pause	
			Read demo mode status	
DEM	0.00 – 0.15	0 - 0	Reads the current demo mode settings.	R
			Reads 1 for demo mode,	i c
			Reads 0 for sensor mode.	
			Read interlock check set value	P
LDM	0.00 - 0.15	0 - 0	Reads the current interlock status.	n
			Reads 1 for interlock mode,	
			and otherwise reads 0.	
SSL	0.00 - 0.15	0 - 0	Set the number of stage slots	Refer to
			Maximum number of slots in the corresponding stage	
SPI	0.00 – 0.15	0 - 0	Set Stage slot pitch	Stage
			Slot pitch of the corresponding stage	DAIA.
VDP	0.00 - 0.15	0 - 0	V-axis position	
HMS	1.00 – 6.15	1 – 6	Homing speed	
			Robot's origin motion speed	
	100 015	1 – 6	WAFER ON speed	
HIS	1.00 - 6.15		If there is a water, the robot's speed % value upon GET	
105	1.00 6.15	1 6	WAFER OFF speed	
103	1.00 - 0.15	1 - 0	If there is no water, the robot's speed % value upon	
			Z axis OP/DOWN speed	
ZSP	0.00 – 1.15	0 – 1	he speed at which the robot's 2-axis moves when	
			hand during GET/PLIT motion	
			Register 7 axis LIP/DOW/N speed	
ZSP	0.00 – 1.15	0 – 1	The device does not communicate only has a value the	
-			device has UP,DOWN values.	
			System speed	
SPD	0.00 – 1.15	0 – 1	Controls the speed of the entire robot.	
	100 015		Jog speed	
125	1.00 – 6.15	1 – 6	Robot's jog speed	
			Motor acceleration/deceleration time	
			Set the time it takes for the motor for each axis to	
MST	1.00 - 6.15	1 – 6	accelerate from a stopping status to the maximum	
			speed or to decelerate from maximum speed to	
			stopping.	

대한민국대표 터치패널 Touch Operation Panel					
Device	Bit Address	Word Address	Comment	Remark	
			Register motor acceleration/deceleration time		
_MST	1.00 - 6.15	1 – 6	The device does not communicate, only has values. This		
			is used to write a MST command.		
RMSP	1.00 – 6.15	1 – 6	Read motor speed for each axis	P	
			Calls up the currently set motor speed for each axis.	R	
RMAC	1.00 – 6.15	1 – 6	Read motor acceleration for each axis	P	
			Calls up the currently set axis motor acceleration.	R	
VDP	0.00 - 0.15	0–0	V-axis position		
ADR	0.00–3.15	0–3	Controller IP		
_ADR	0.00-3.15	0–3	Register controller IP		
TIP	0.00 - 0.15	0–0	Controller PORT number		
			Set the origin of each axis	W	
FZS	0.00 - 0.15	0–0	Sets the current robot's position as the origin for the specified		
			axis.		
			Set each axis's soft limit		
			1–6: axis	22.DIT	
	1 6 9 9 45	1.6.0.0	0–3:	32BH	
LIMII	1–6,0–3.15	1–6,0–3	Hard limit max		
			Hard limit min		
			Soft limit max		
			Soft limit min	20017	
			Register each axis's soft limit	32BH	
LIMIT	1-6.0-3.15	1-6.0-3	The device does not communicate, only has values.		
	,		When using LIMIT, the device communicates with this		
			value and changes as much as the value.		
			Mapping command list	Refer to	
MAP	0.00 - 0.15	0–0	Maps the status of wafers contained the cassettes of the	Stage	
			corresponding stage.	DATA.	
			Detect protruded wafer	Stage	
MPT	0.00 – 0.15	0–0	Detects the protruded wafers contained the cassettes of the	DAIA.	
			corresponding stage.		
	0.00 0.15		Mapping calibration	14/	
MLD	0.00 – 0.15	0–0	This is a command to process the result data of mapping after	vv	
			the MAP command.		
			Mapping speed		
MDC	0.00 0.15	0.0	Read: reads the speed of the part which corresponds to the Z		
IVIP5	0.00 - 0.15	0–0	UP motion upon the currently set mapping operation.		
			Write: specifies the speed of the part which corresponds to		
			the Z OP motion upon mapping operation.	Defer to	
	0.00 0.15	0.0	Wafer thickness	Stage	
VVVVIH	0.00 - 0.15	0 – 0	Sets the thickness value for the reference of the wafer	DATA.	
			Choose discrimination with the	Refer to	
WSCT	0.00 - 0.15	0 – 0	Cross discrimination criteria	Stage	
	0.00 0.15		sets the criteria range of water cross discrimination.	DATA.	
			Double discrimination criteria	Refer to	
WSDT	0.00 - 0.15	0 - 0	Sets the wafer double discrimination criteria.	Stage	
				DATA.	



Device	Bit Address	Word Address	Comment	Remark
DM	0.00 - 0.15	0 – 0	Use double mapping	
	0.00 - 0.13	0 - 0	Set Double Mapping Mode.	
			Step length for protrusion detection	
DMD	0.00 – 4.15	0 - 4	Set protrusion detection step length of the corresponding stage	
			Mapping Ready operation	Refer to
MRDY	0.00 - 0.15	0 - 0	Protocol for testing the operation of mapping on the	Stage
			corresponding station	DAIA. W
			Extend mapping arm	Refer to
ΝΛΕΥΤΛ	0.00 0.15	0 0	Protocol for testing the operation of mapping on the	Stage
MEXIA	0.00 - 0.13	0 - 0	corresponding station	DATA.
				W
			Raise mapping z-axis	Stage
MZDOWN	0.00 - 0.15	0 - 0	Protocol for testing the operation of mapping on the	DATA.
			corresponding station	W
			Fold mapping arm	
MRETA	0.00 - 0.15	0–0	Protocol for testing the operation of mapping on the	
			corresponding station	
DMRD	0.00 - 0.15	0–0	Ready operation for protrusion detection	W
DMAD	0.00 - 0.15	0–0	Arm Extend for protrusion detection	W
DMZU	0.00 - 0.15	0–0	Z-axis motion for protrusion detection	W
			XY SELECT	
WXUS	0.00 – 0.15	0–0	0 : W	
	0.00 0.15			
TPIDI	0.00 - 0.15	0–0		
WZPC	0.00 – 0.15	0–0	Position Calibration	
MAO	0.00 - 0.15	0-4	Motor Speed	R
			Register Motor Speed	
_MAO	0.00 - 0.15	0–4	The device does not communicate, only has values. This	
			is used to write a MAO.	
			X1,X2,T,Z,V	
SNM	0.00 - 0.15	0–0	Number of Retry	
			when GET PUT 5Hand operation fails	
VBU	0.00 - 0.15	0–0	Vibration sensor's Enable Flag	
ZEM	0.00 - 0.15	0–0	On Off Flag to check the position	
ZES	0.00 - 0.15	0–0	Allowable value for the position error	
			PARAMETER SAVE	W
			Saves flash memory.	
SAVEFLASH	0.00 - 0.15	0 - 0		
			You should not turn off the controller power	
	1	1	until memory save is completed	