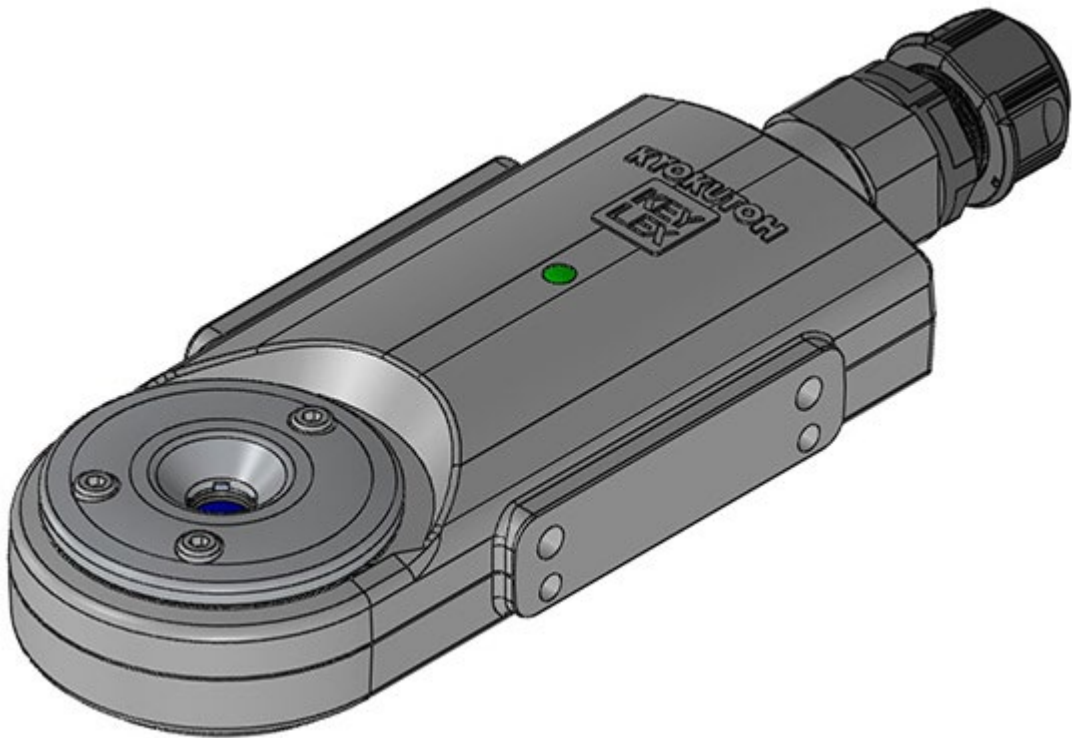




First Edition 2018.07.26
Revised Edition 2023.11.30
Ver.4.13.06

Tip Monitor (TMN-01) Instruction Manual

Please read this instruction manual carefully, before using the device.



ATTENTION TO SAFETY

※Please be sure to read ATTENTION TO SAFETY before using the tip monitor.

The purpose of the tip monitor is to judge whether the cap tip passes the criteria set in advance to enable automatic manufacturing environment.

The tip monitor must be used with the tip dresser of KYOKUTOH.

Please do not use the tip monitor other than that which is specified within. We will not be responsible for any trouble, repair, accidents caused when used in a way other than that which is specified within.

※After reading the manual, please keep it to the place where it can be checked easily.

- Please do not disassemble or reconfigure this machine or its parts.
- If the stickers on the back of the monitor has been removed, no warranty or repair service may be recieved.
- When working in the assembly line, please make sure the welding gun is OFF, and the safety from other machines.
- Please turn OFF the power, when replacing the parts or maintenancing.
- When the monitor is not set in a proper way, the monitor may not collect enough information to maintain good condition in the welding process.
- When using the monitor, please be sure to turn OFF the welding current.



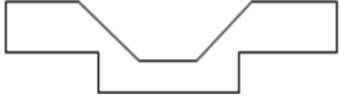
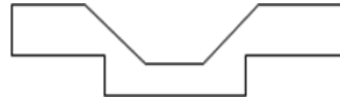
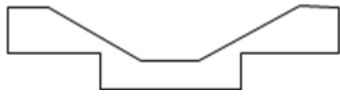
This product is not to be used in any manner other than that which is specified within. We will not be held responsible for damage or injury caused as a result of this product.

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【About Pressure Plate of the Monitor】

■ Pressure Plate

No.		Type	Shape
A	Standard (ϕ 13-8R· ϕ 16-8R ϕ 19-9.5R/F)	TM01-KP-00A	
B	Standard (ϕ 13-6.5R)	TM01-KP-00B	
C	For CF (CF120°)	TM01-KP-00C	

■ Plate Correspondence to the Tip

Tip Dia.	Top Dia.	Shape	Correspondence
ϕ 13	ϕ 5~ ϕ 8	8R	A
ϕ 16			
ϕ 19		9.5R	
ϕ 13	ϕ 5~ ϕ 6	6.5R	B
ϕ 13	ϕ 5~ ϕ 8	CF120°	C
ϕ 16			
ϕ 19			
ϕ 13	—	R20	A
ϕ 16			
ϕ 13	—	F	A
ϕ 16			

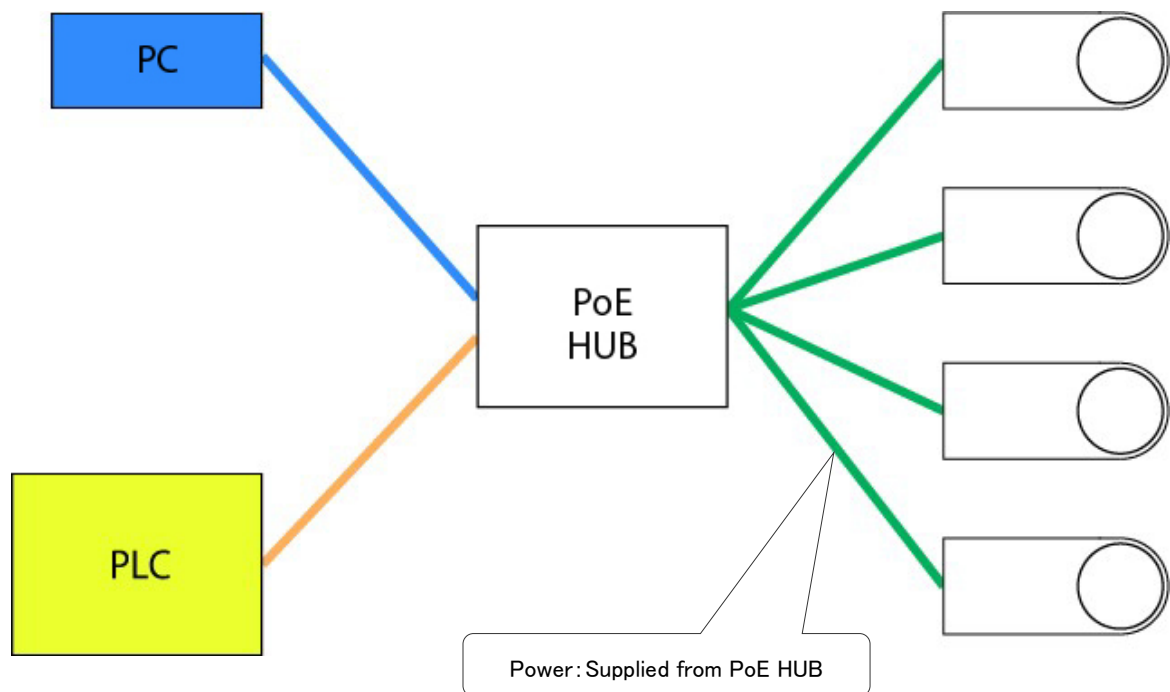
※If there is a usage of cap tips other than the listed above (A, B, C), please contact our sales department.

※The above table is a correspondence table for polishing with our KTW cutter.

If you are using a cutter other than KTW and you are using a tip with a tip radius of 20R or less, please contact our sales department.

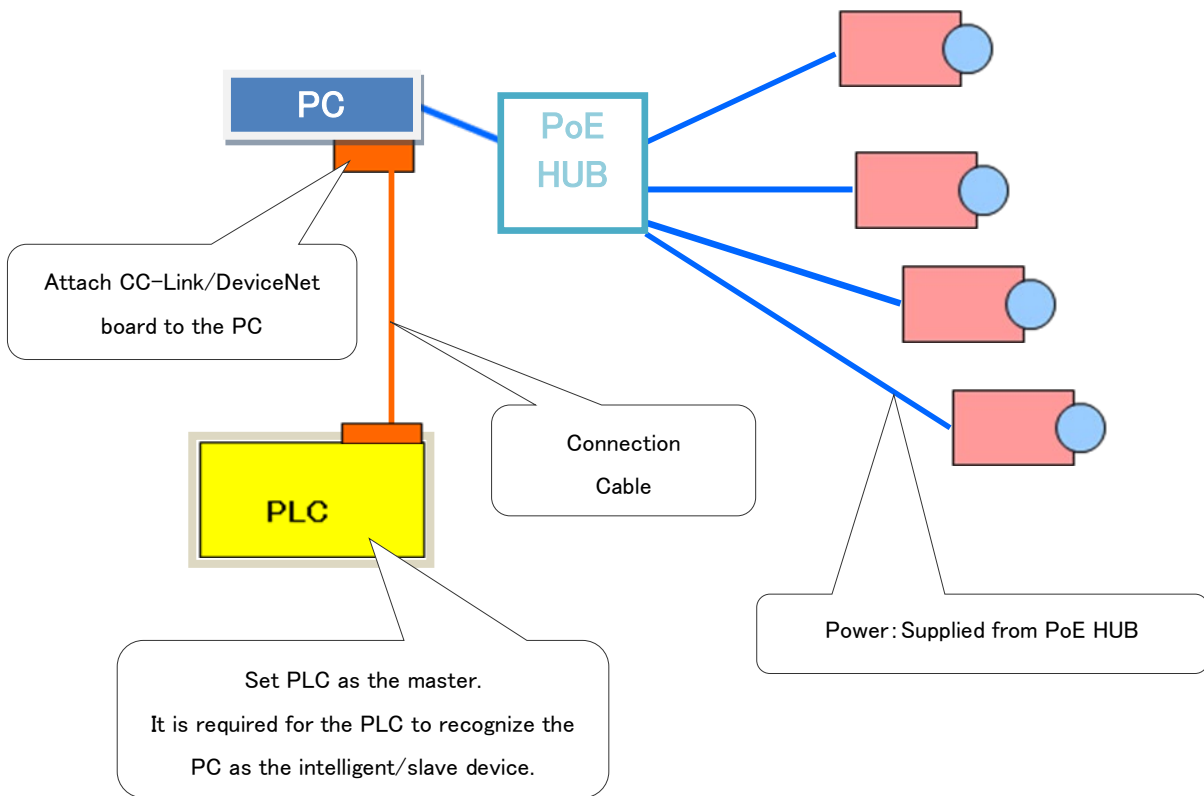
1. 4. System Outline

■ When using Ethernet



- System Configuration is as shown above.
- Up to 50 cameras can be connected to each computer.
- There must be a power supply from the PoE HUB to the tip monitor.

■ When using CC-Link / DeviceNet



- System Configuration is as shown above.
- Up to 15 cameras can be connected to each computer.
- There must be a power supply from the PoE HUB to the tip monitor.

1. 5. Things to be Prepared by the Customer

【When using Ethernet】

Items	QTY	Model ・ Spec	Note
PC to control the device	1	<p>【Recommend】</p> <ul style="list-style-type: none"> ●RAM: More than 8GB ●Storage: More than 256GB ●LAN port installed ●OS <ul style="list-style-type: none"> Windows 11 Professional Windows 10 Professional 32bit・64bit Windows 7 Professional 32bit・64bit Windows XP Professional (SP3) 32bit ●Framework V4.61 (Microsoft .NET Framework) <ul style="list-style-type: none"> Above must be installed ●Screen Resolution <ul style="list-style-type: none"> More than1024*768 <p>※Required reference specifications when connecting 50 units.</p> <ul style="list-style-type: none"> ●CPU: More than 4 Cores, 4 threads, Freq 2.30GHz ●RAM: More than 16GB 	<p>※ Currently, we have not confirmed the operation of Windows 11 on anything other than Pro Ver.</p>
PoE HUB	-	<p>Compatible with Type A、Type B</p> <p>【Operation Confirmed Model】</p> <ul style="list-style-type: none"> ●EHB-UG2B16F-PL (ELECOM) ●BS-GS2016P/HP (BUFFALO) ●AT-x230-28GP-Z1 (Allied Telesis) 	<p>Prepare the amount of PoE to supply power for the entire tip monitor.</p>
LAN Cable	-	<ul style="list-style-type: none"> ●Twisted pair cable, Straight Through LAN Cable、Gauge EIA/TIA-568A,568B ●At least Category 5 (100BASE-TX) ●No shield (UTP) ●The connector width must be under 12mm. <ul style="list-style-type: none"> On 14mm cables, the connector cover (rubber cover attached) will not be able to fit. 	<p>※Please do not use the handmade cables.</p>
PLC(Ethernet/IP)	1	<p>【Operation Confirmed Model】</p> <ul style="list-style-type: none"> ●MITSUBISHI <ul style="list-style-type: none"> Q series iQ-R series ●OMRON <ul style="list-style-type: none"> CJ2M series ●Allen-Bradley <ul style="list-style-type: none"> CompacLogix series ●SHARP <ul style="list-style-type: none"> JW300 series ●JTEKT <ul style="list-style-type: none"> TOYOPUC PC10G series ●KEYENCE <ul style="list-style-type: none"> KV-7500, KV-8000 series 	
Power	-	For PC/For Display/For PoE HUB	

【When using CC-Link】

Items	QTY	Model ▪ Spec	Note
PC to control the device	1	<p>【Recommend】</p> <ul style="list-style-type: none"> ●RAM: More than 8GB ●Storage: More than 256GB ●OS Windows 10 Professional 64bit Windows 7 Professional 32bit・64bit Windows XP Professional (SP3) 32bit ●Framework V2 (Microsoft .NET Framework) Above must be installed ●With Full Height PCI Slot or Full Height PCI Express Slot (Able to attach the PC interface board) ●Screen Resolution More than 1024*768 	
CC-Link Board (Attached to PC)	1	<p>Mitsubishi Electric Q80BD-J61BT11N (PCI) Mitsubishi Electric Q81BD-J61BT11 (PCI Express)</p>	
PoE HUB	—	<p>Compatible with Type A、Type B</p> <p>【Operation Confirmed Model】</p> <ul style="list-style-type: none"> ●EHB-UG2B16F-PL (ELECOM) ●BS-GS2016P/HP (BUFFALO) ●AT-x230-28GP-Z1 (Allied Telesis) 	<p>※Prepare the amount of PoE to supply power for the entire tip monitor. ※Using a slow speed of PoE hub, may not be able to communicate properly. Recommended speed 1,000Mbps. Please choose the PoE hub with the recommended speed.</p>
LAN Cable	—	<ul style="list-style-type: none"> ●Twisted pair cable, Straight Through LAN Cable、Gauge EIA/TIA-568A,568B ●At least Category 5 (100BASE-TX) ●No shield (UTP) ●The connector width must be under 12mm. On 14mm cables, the connector cover (rubber cover attached) will not be able to fit. 	<p>※ Please do not use the handmade cables.</p>
PLC(CC-Link)	1	<ul style="list-style-type: none"> ●Set the PLC as the master ●Able to recognize the PC as the Intelligent Device <p>【Recommend】Mitsubishi Electric Q Series</p>	
CC-Link Cable	—		
Power	—	For PC/For Display/For PoE HUB	

【When using DeviceNet】

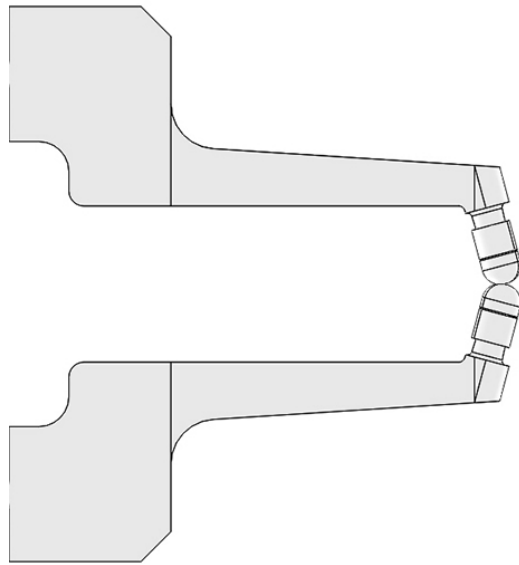
Items	QTY	Model - Spec	Note
PC to control the device	1	<p>【Recommend】</p> <ul style="list-style-type: none"> ●RAM: More than 8GB ●Storage: More than 256GB ●OS Windows 7 Professional 32bit Windows XP Professional(SP3) 32bit ●Framework V2 (Microsoft .NET Framework) Above must be installed ●With Full Height PCI Slot or Full Height PCI Express Slot (Able to attach the PC interface board) ●Screen Resolution More than1024*768 	
DeviceNet Board (Attached to PC)	1	Omron 3G8F7-DRM21	
PoE HUB	—	<p>Compatible with Type A、Type B</p> <p>【Recommend】EHB-UG2B08-PL2 (ELECOM) 【Recommend】LAN-SW08ES4/MA (Logitec)</p>	<p>※Prepare the amount of PoE to supply power for the entire tip monitor.</p> <p>※Using a slow speed of PoE hub, may not be able to communicate properly. Recommended speed 1,000Mbps.</p> <p>Please choose the PoE hub with the recommended speed.</p>
LAN Cable	—	<ul style="list-style-type: none"> ●Twisted pair cable, Straight Through LAN Cable、Gauge EIA/TIA-568A,568B ●At least Category 5(100BASE-TX) ●No shield(UTP) ●The connector width must be under 12mm. On 14mm cables, the connector cover (rubber cover attached) will not be able to fit. 	<p>※Do not use custom-made cables..</p>
PLC(DeviceNet)	1	<ul style="list-style-type: none"> ●Set PLC as the master ●Able to recognize PC as the slave 	
DeviceNet Cable	—		
Power	—	For PC/For Display/For PoE HUB	

1. 6. Available Gun

Guns with special geometry (such as X-Gun, inclined-gun, offset-gun) may not be available to check both upper / lower side at the same time.

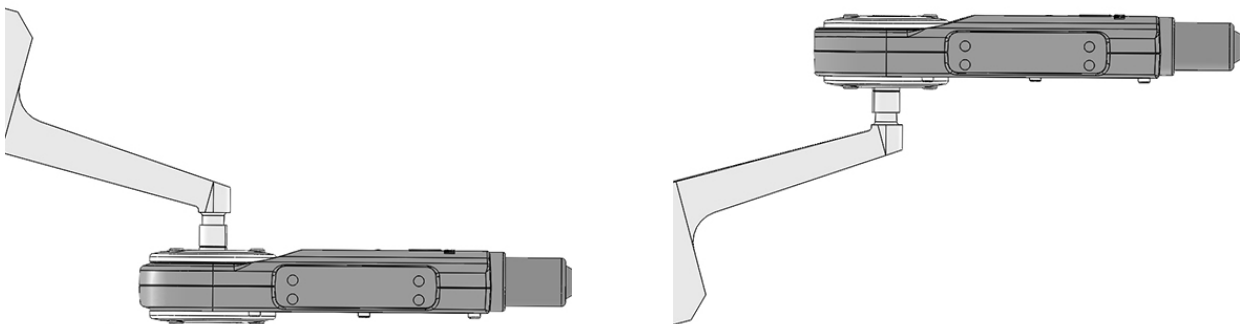
For gun teaching, checking upper / lower tips separately will be required.

【Ex.】Small Inclined X-Gun



Upper

Lower



- Image is exaggerated to make the description easy to understand.

2. How to Install

The tip monitor must not be use with a Tip Dresser made by companies other than KYOKUTOH.

A cap tip dressed by dressers from another company may not be discriminated properly by the monitor.

Please check the manual of the dresser before installing.

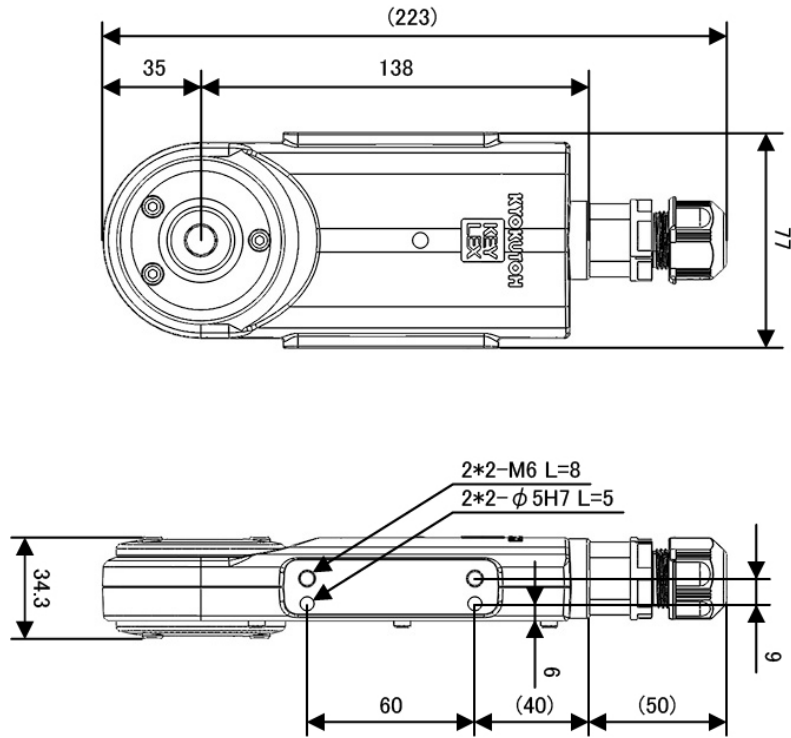
- When installing the tip monitor to the dresser, please be sure it is being done in a proper way.
Also, to protect the tip monitor from the shock caused during gun pressure, we recommend the usage of EQUALIZINGS.
- Please do not place the monitor in which it can be interfered by cables, hoses, welding robots, etc.
- Please make sure the welding gun does not interfere with the monitor's LAN cable.
It can be a cause of cable damage.

【Place to install the monitor】

- Please set the monitor to places where there is no contact with water.
- Please set the monitor to places where there is no contact with the cooling water during the replacement of the tip.
- If possible, please set the monitor to place far from the spatter.
- Please protect the LAN cable by things such as flexible conduit tubes, etc.



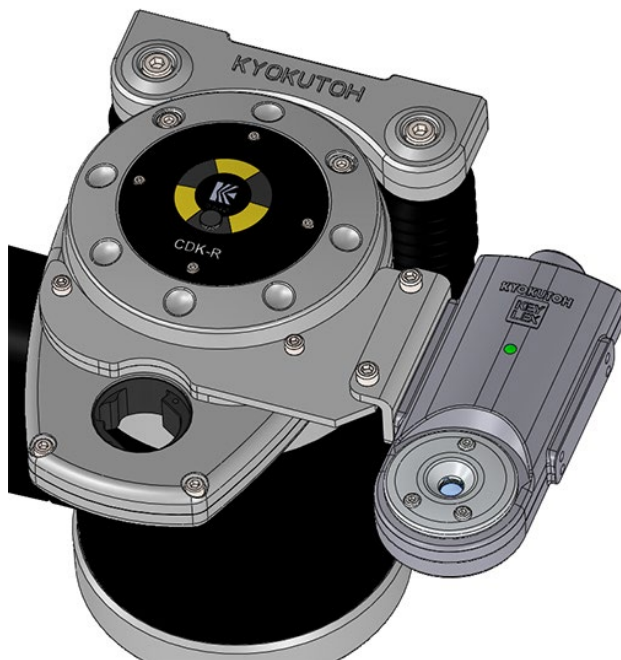
【Main body of the monitor Drawing】



Refer to the picture above and fix it using 2-M6 (2-φ5h7 Pin).

To protect the sensor from a shock, the usage of an equalizer is recommended.

【Example of assembling TMN to CDK-R dresser】



Bracket Part No.···BR-K-EZ-P-001

3. System Setting

3.1. Prior Confirmations

When setting up the system, the data entry of the following items is required.

Please be sure to check the following items listed below.

- The number of cameras
- Name of the robot
- Shape of the cap tip, Diameter of the cap tip
- Way to connect with the PLC, Setting Parameters
- Serial numbers

It is recommended to write the information to the “TIP MONITOR SYSTEM INFORMATION CHART” on the next page.

【TIP MONITOR SYSTEM INFORMATION CHART】

Label 1					
Label 2					
No.	Robot Name	Upper Tip Shape	Lower Tip Shape	IP Address	SN
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
:					

<SUMMARY>

Label 1 : Shown on the software screen (Label 1)

Label 2 : Shown on the software screen (Label 2)

No. : Number used to connect with the PLC

Robot Name : Name used in the software

※Number of letters must be more than 4, less than 8.

※Special Characters may not be used. (Hyphen is OK)

Shape of Tip : Set the parameter according to the shape

IP Address : Setting of camera and the connection with PC

※Duplicate IP Address is usable.

SN : Write down the Serial No written on the back of the monitor.

The screenshot shows the 'Judge Record Ver.4.05' software interface. At the top, 'Page1' is selected, and the monitor is labeled 'TMN-01' (Label 1) and 'TEST' (Label 2). Below this, system information is displayed: 'mm/dd HHMMSS shot start', '08/28 11:18:58image shot at start-up.', '08/28 11:18:58??', and 'C:\Free space271,717MB'. The main area shows two robot units, 'RM11' and 'RM21', both with 'report' buttons and 'NG 0/0 dress' status. Each unit has 'up shot' controls and a camera feed. Callouts from the left identify 'Label 1' as 'TMN-01', 'Label 2' as 'TEST', and 'Robot Name' as 'RM11'.

3. 2. Computer Setting

The system conducts Ethernet communication between the camera and the PC.

Therefore, PC network adapter setup is required.

Please set as written below.

※If the PC has multiple Ethernet adapters, determine one adapter to use with TMN.

Refer to “4.2. Installation of the Software”

① IP address setting for PC.

IP Address : 192.168.0.1 (Initial setting)

Subnet Mask : 255.255.255.0

※The IP address can be set arbitrarily.

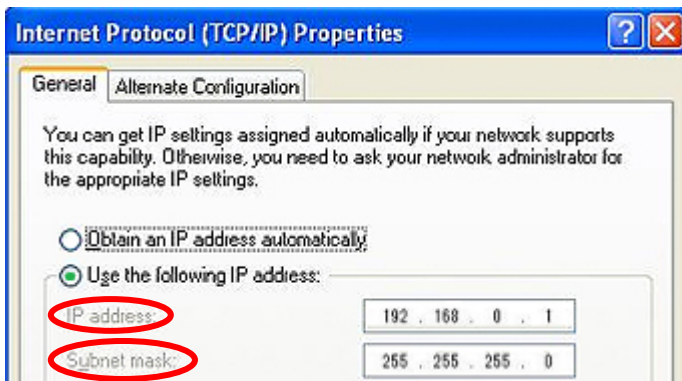
The subnet mask cannot be changed.

【For Windows XP】

Control Panel (View by Small icons) → Network and Sharing Center →

Change adapter setting → Right Click Local Area Connections → Select Properties →

Internet Protocol Version 4 (TCP/IPv4) Properties

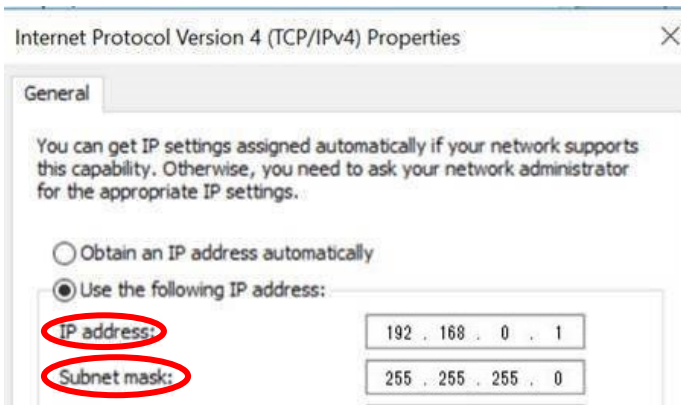


【For Windows 7/Windows 10/Windows 11】

Control Panel (View by Small icons) → Network and Sharing Center →

Change adapter setting → Right Click Local Area Connections → Select Properties →

Internet Protocol Version 4 (TCP/IPv4) Properties



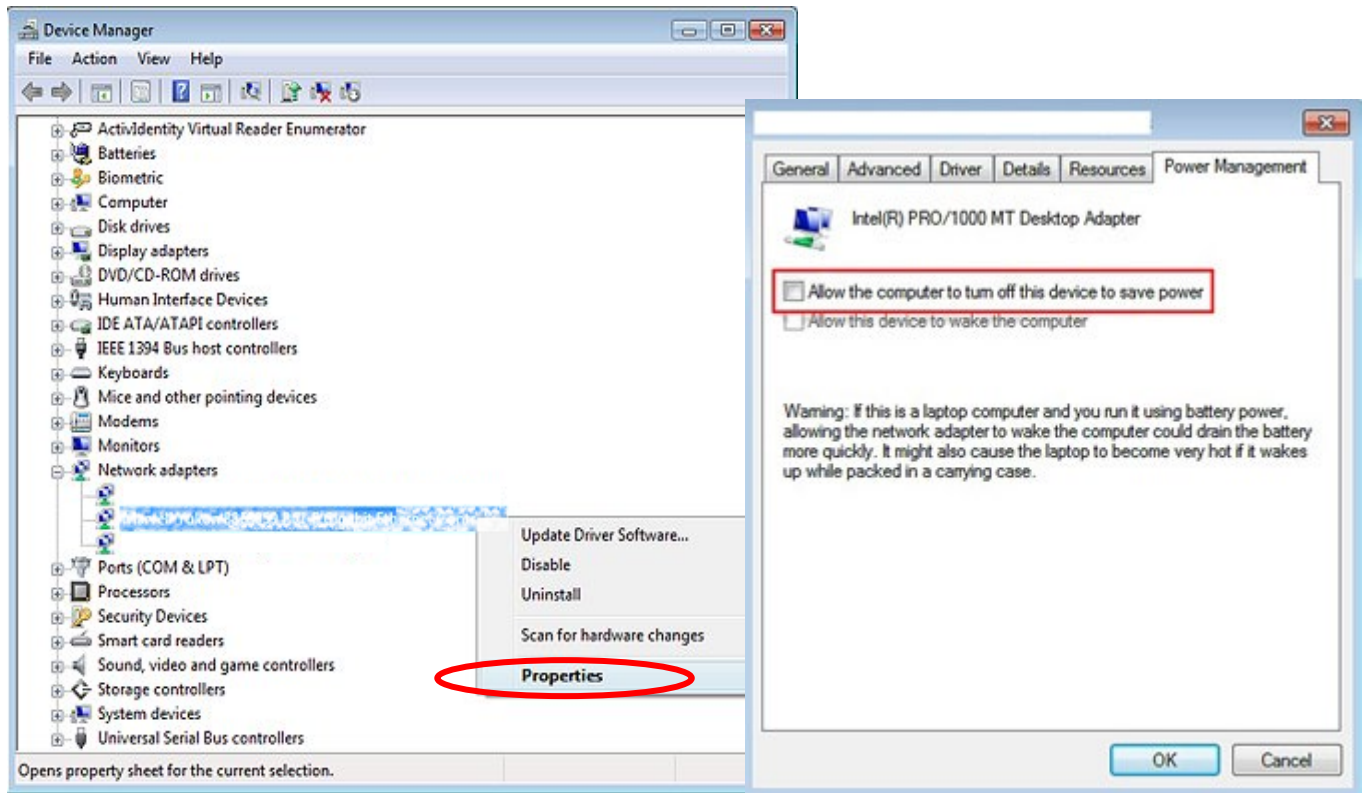
- ② Turn off the power saving setting.

When using Windows 7 or 10, you will need to turn off the power saving setting.

※This is to avoid the device to turn OFF automatically with PC.

【How to set power saving setting】

My Computer → Right Click → Property → Device Manager → Network adapters → Click
→ Click the name → Unselect “Allow the computer to turn off this device to save power”



- ③ Background software setting.

Do not set the PC to activate background software.

※If things such as security software and Windows Update activate, the system may not work properly.

Please try not to install other software to the using PC.

There are cases when the system did not work properly from interference by other software.

(EX: AutoCAD activated in the background and the system did not work properly)

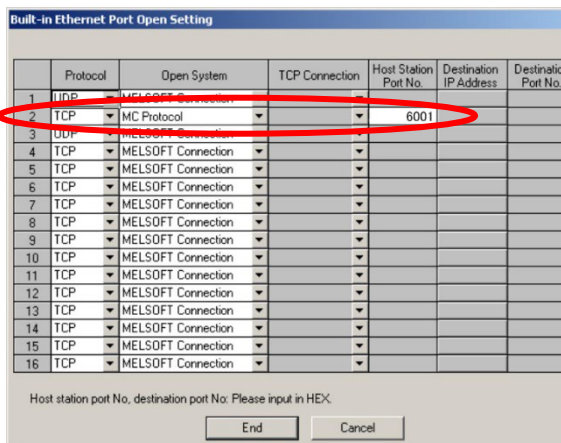
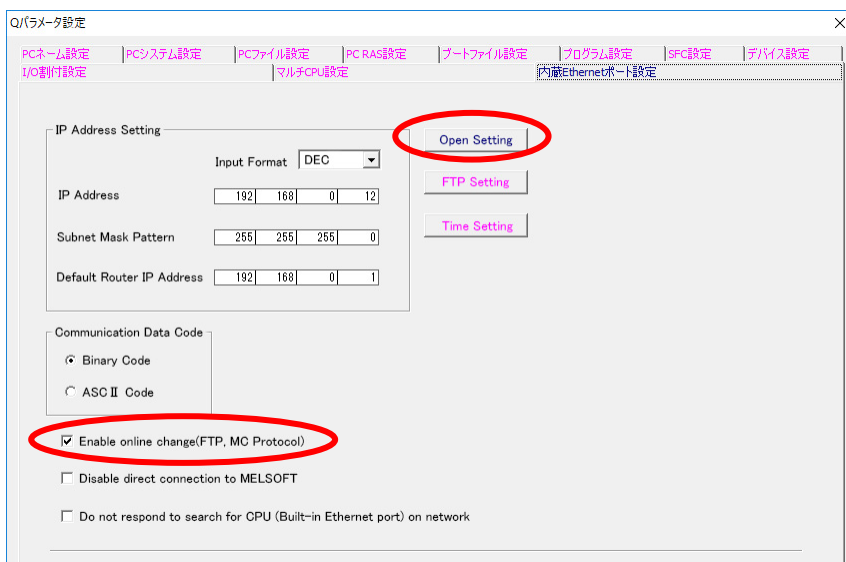
3.3. PLC Control Interface Setting

【In the case of Ethernet】

■ When using MITSUBISHI PLC (Q Series / R Series)

Set communication parameter with PC by MELSOFT “GxWorks2” or “GxWorks3”.

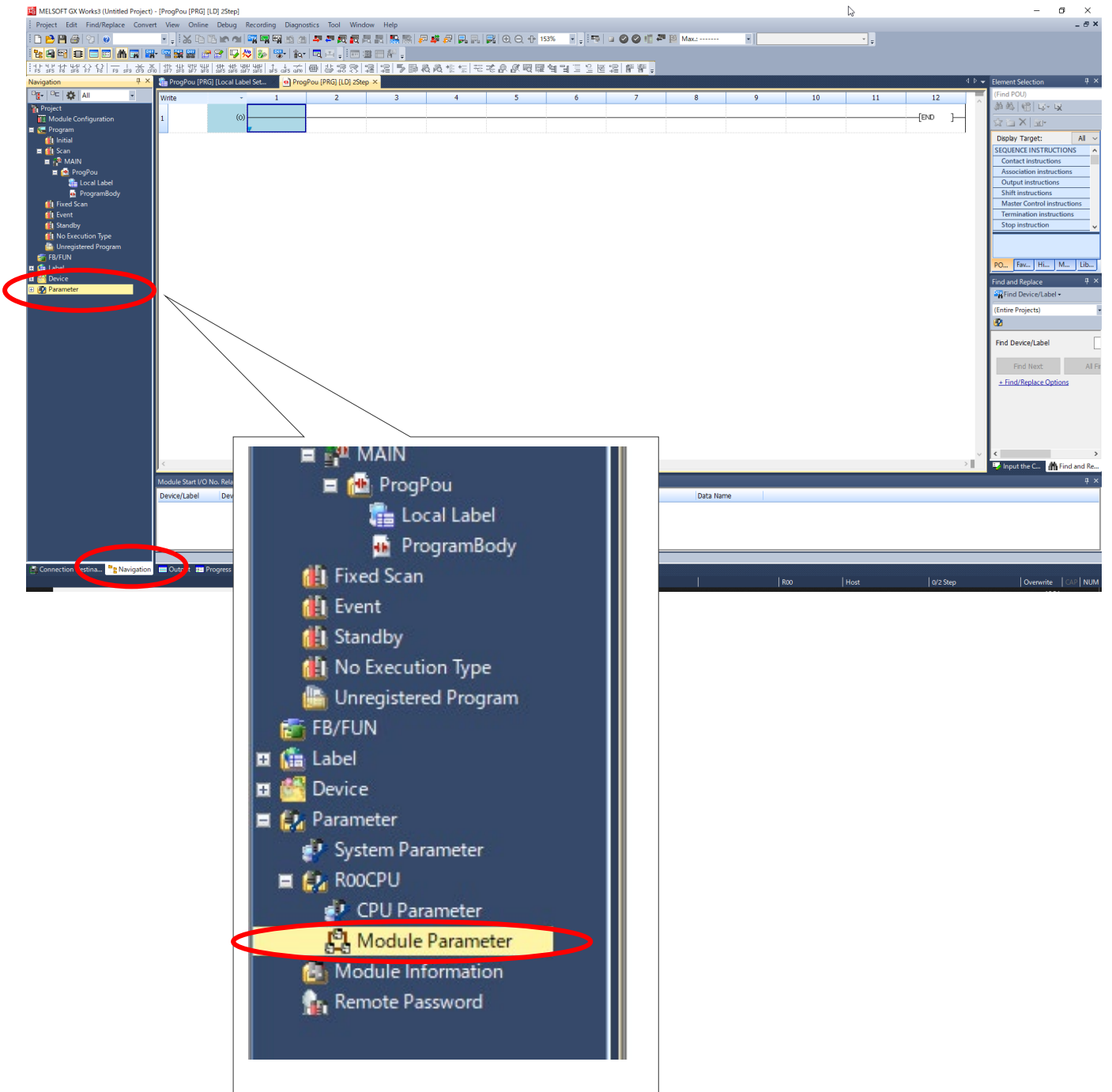
- ① Put check mark on “Enable online change (FTP, MC protocol)”.
- ② Select “Open Setting” and add items in the Opening window.
 - Protocol ... TCP
 - Open System ... MC Protocol
 - Host Station Port No. ... Customer’s port number



**■ When using MITSUBISHI PLC (Q Series / R Series)
When using MELSOFT “GxWorks3”**

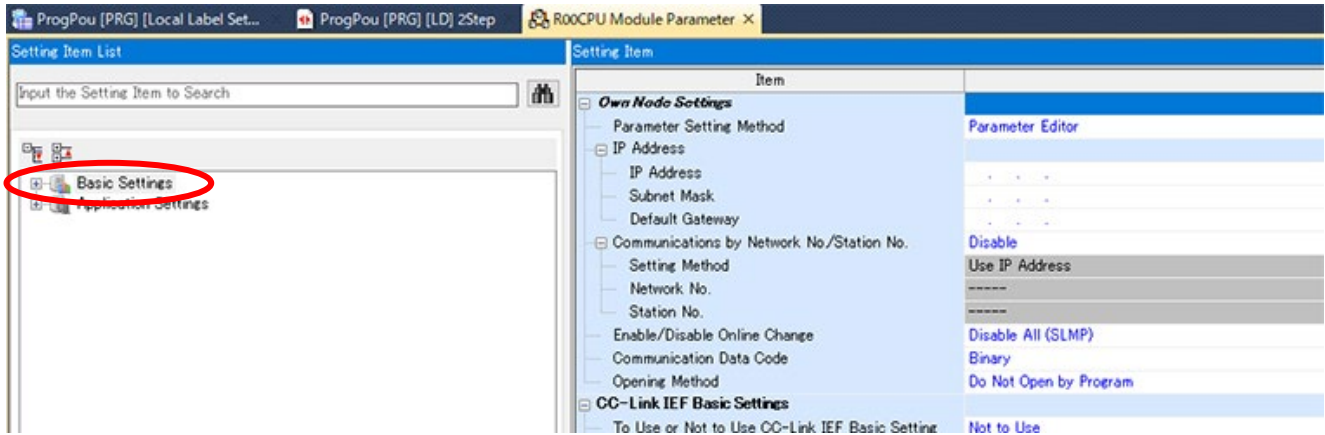
Set up the communication parameter by following process.

- ① Select “Module Parameter” on the Navigation Tab which is on located on the left side of the screen.



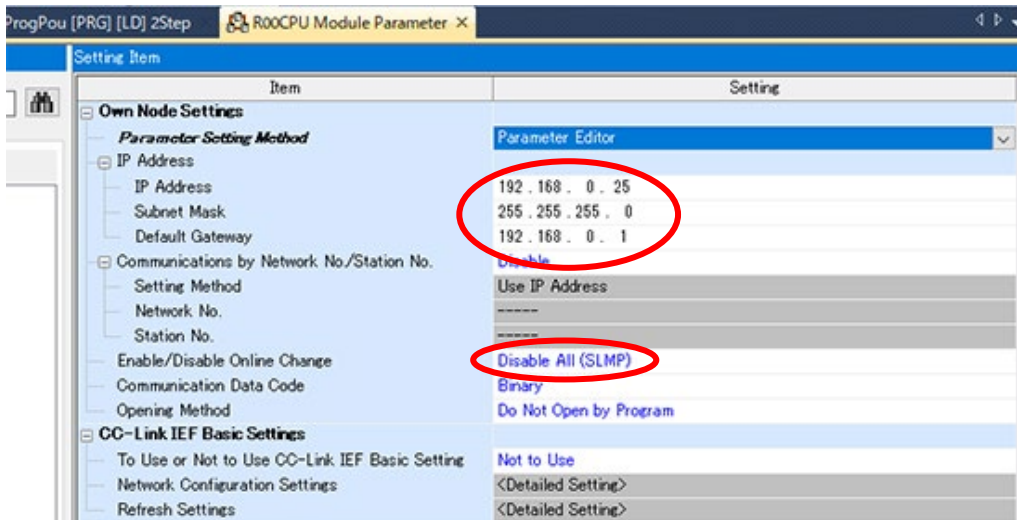
The center part of your screen will change.

② Select “Basic Setting” located on the left side of your screen, then open the column of IP Address Setting.

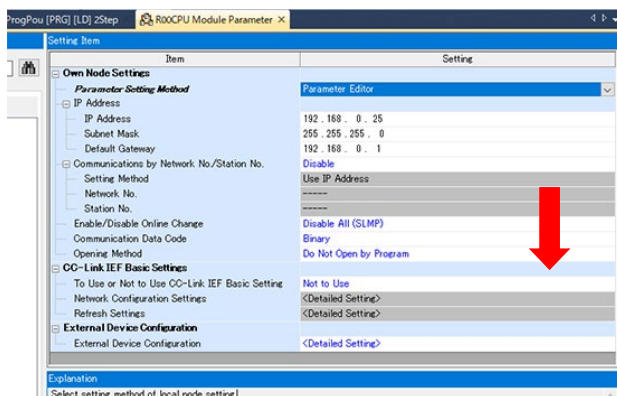


③ Set up the following items.

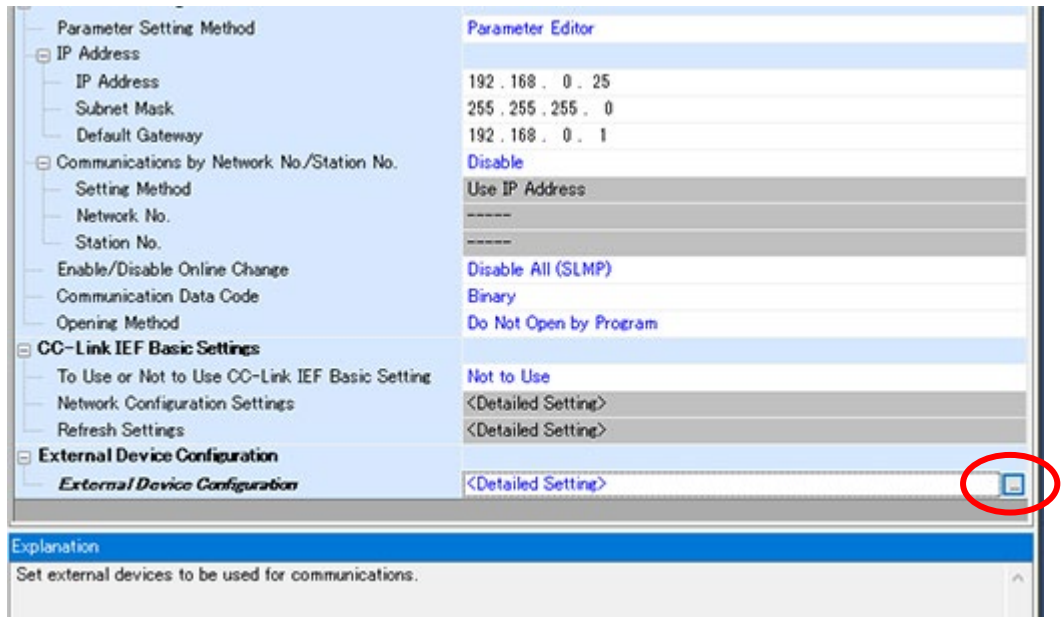
- IP Address
- Subnet Mask
- Default Gateway (if necessary)
- Enable/Disable Online Change → Enable ALL (SLMP)



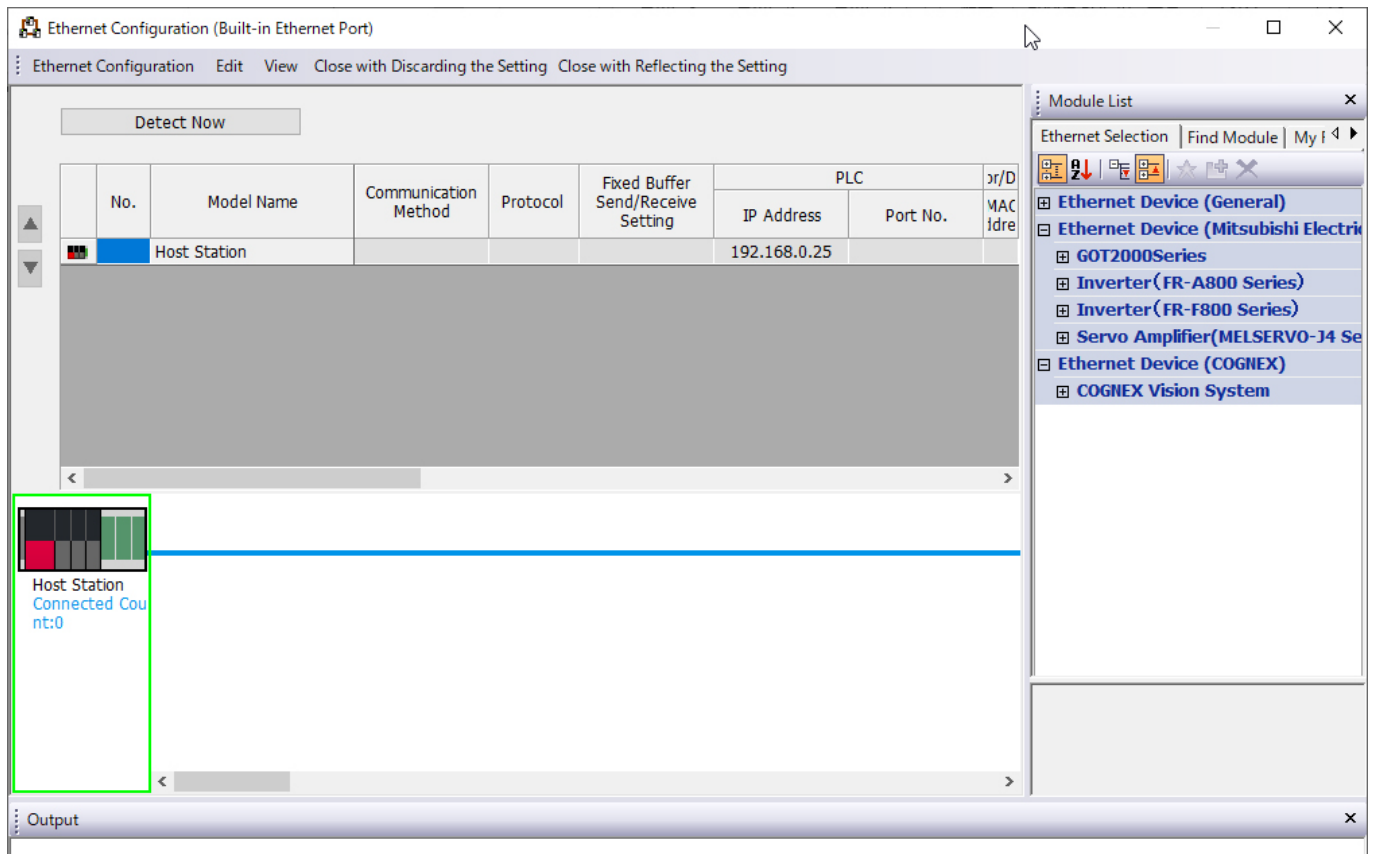
④ Scroll down.



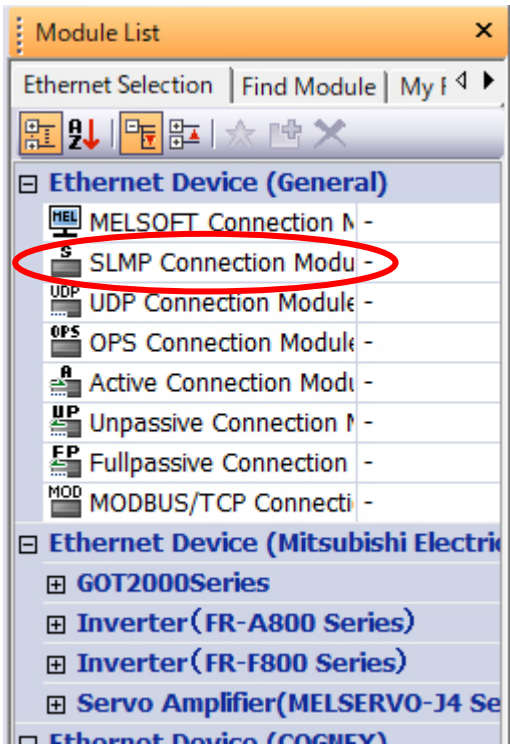
⑤ Select “External Device Configuration” on the bottom of window, click “…” icon on the right side.



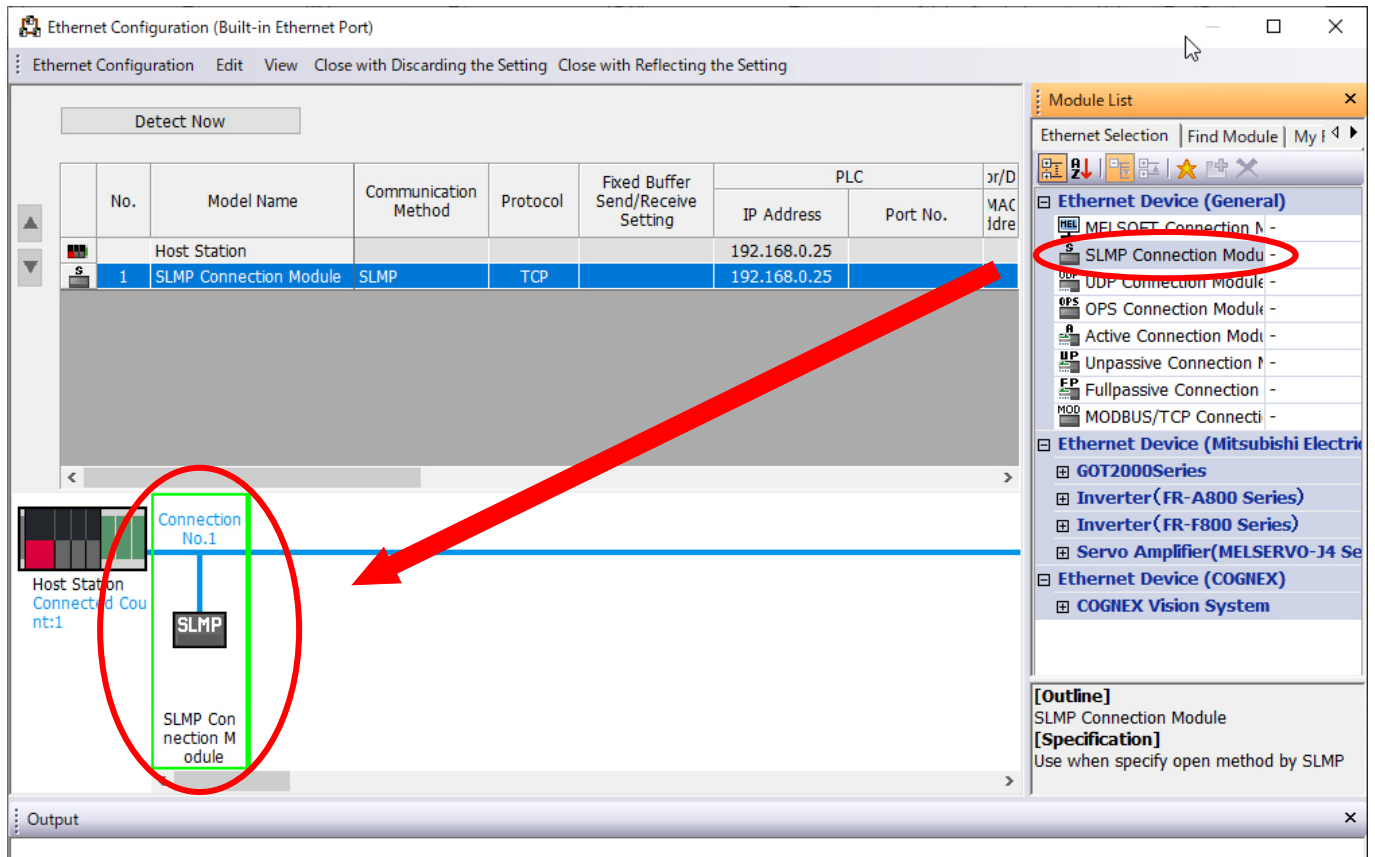
⑥ “Ethernet Configuration (Built-in Ethernet Port)” window will open by clicking “…”.



⑦ Click “Ethernet Device (General)”. Make sure that “SLMP Connection Module” is displayed.



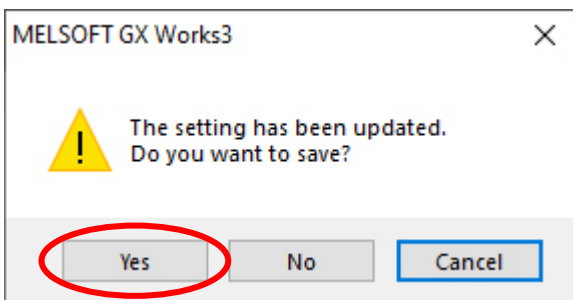
⑧ Drag-and-drop “SLMP Connection Module” next to “Host Station” icon. A new icon and a configuration menu will be added on the screen.



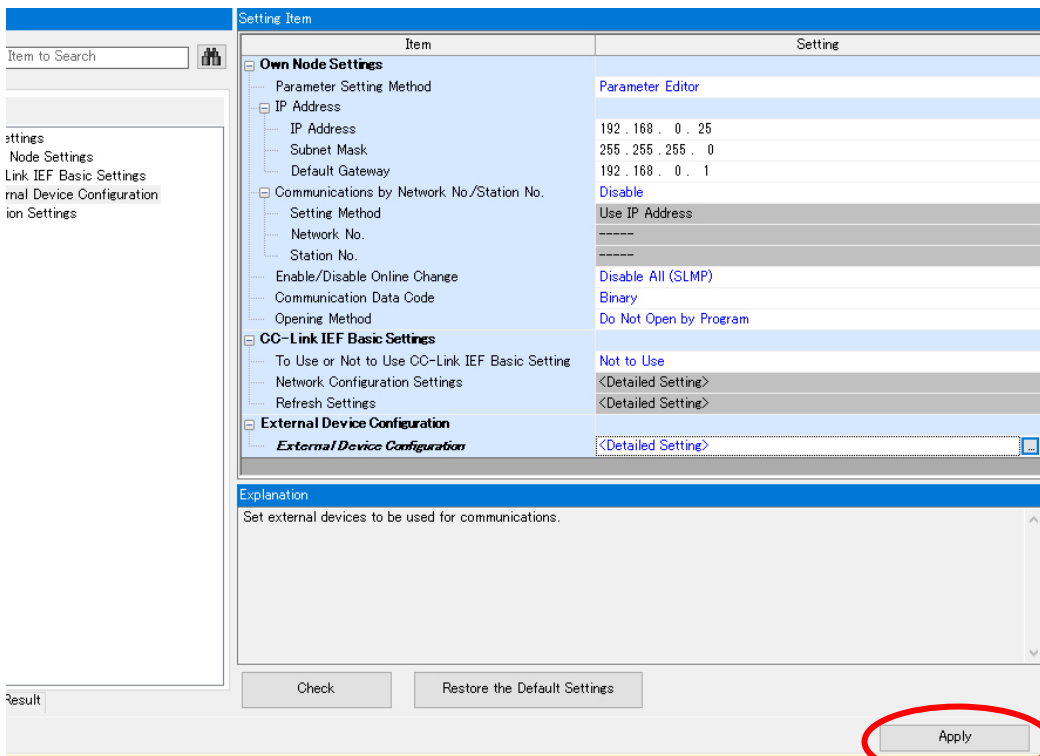
⑨ Enter “Customer’s port number” on the “PLC –Port No.” column.

No.	Model Name	Communication Method	Protocol	Fixed Buffer Send/Receive Setting	PLC		Sensor/Device
					IP Address	Port No.	MAC Address
	Host Station				192.168.0.25		
1	SLMP Connection Module	SLMP	TCP		192.168.0.25	6001	

⑩ If the setting is completed, close the window by clicking “×” icon. Save the setting by clicking “YES” when the save confirmation window appears.



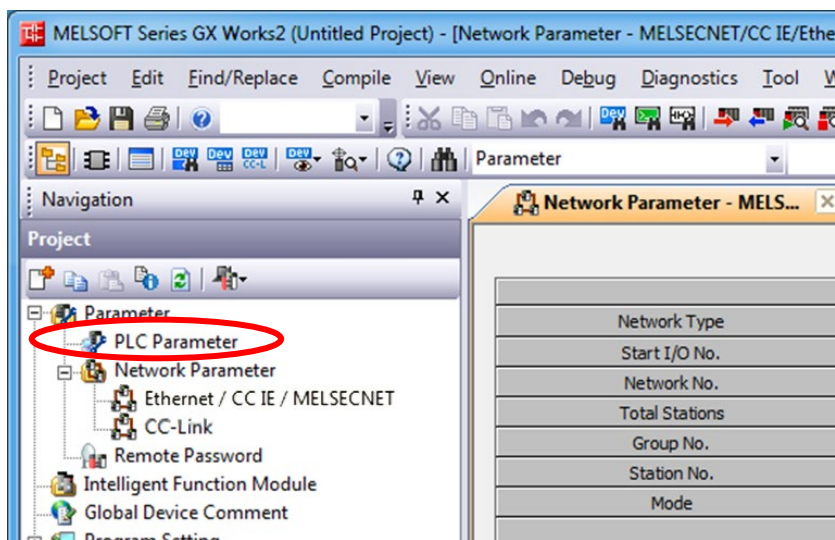
⑪ Click “Apply” icon on the bottom of the window. The setting will be applied.



⑫ Finally, run “Write to PLC” and the process will be completed.

■ When using MITSUBISHI PLC (Q Series) External Ethernet Unit
When using MELSOFT “GxWorks2”

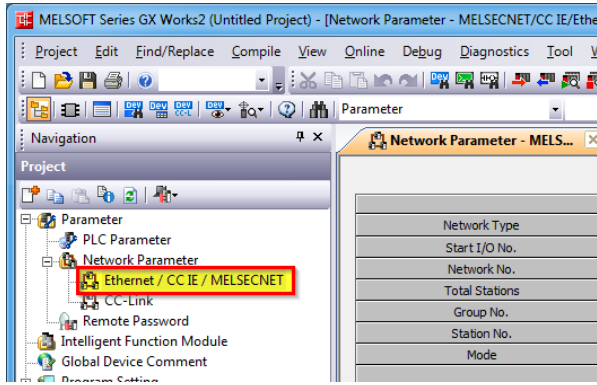
① Open the settings window in “Parameter” → “PLC Parameter”.



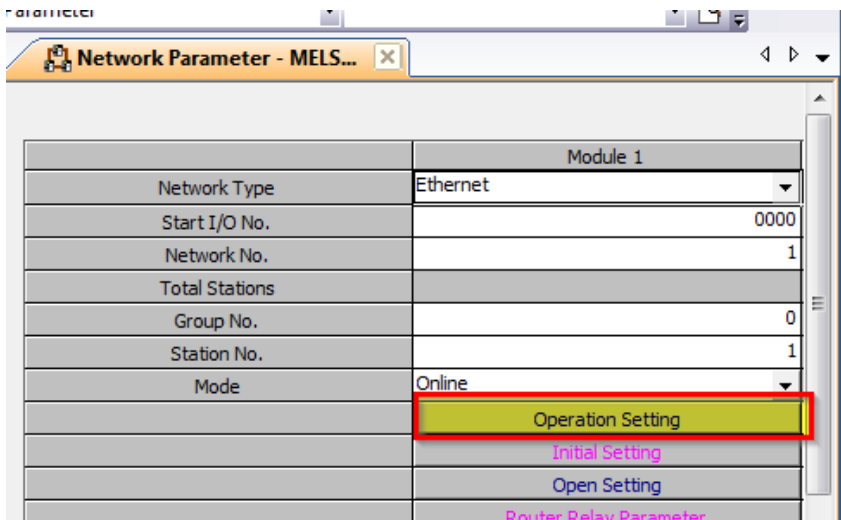
② Register the device on the “I/O allocation settings” tab.



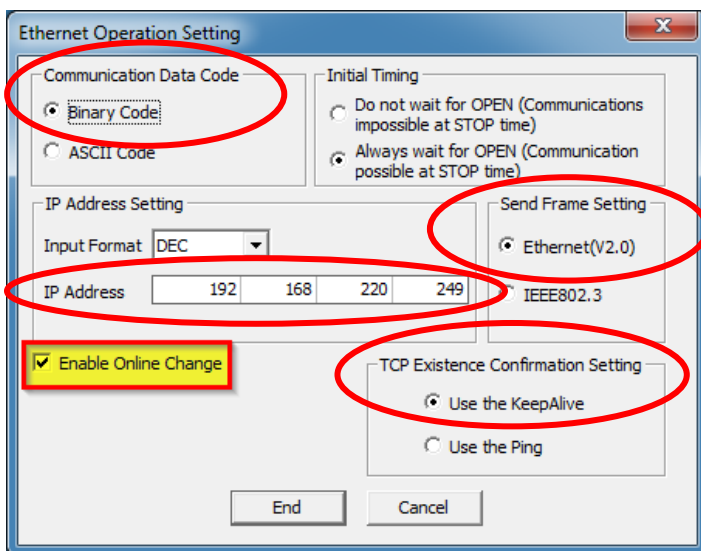
③ Select Ethernet below “Network Parameter” on the Navigation Tab.



④ Select the unit and click “Operation Setting”.



⑤ IP Address of PLC must be same as “Ethernet/IP Setting Tool”.
Put a check mark on “Enable Write at RUN time”.



※If the PLC is always running, “Always wait for OPEN” is not necessary.
※Specify the IP address set here in the TMN software.

⑥ Set like the image below.

The Local Port Number must be same as “Ethernet/IP Setting Tool”.



※Specify the Port address set here in the TMN software.

⑦ Finally, start “Write to Sequencer” process.

Finished if the setting is reflected to the PLC.

■ When using OMRON PLC (CJ2M Series)

Set communication parameter with PC by Omron “CX-Programmer”.

- Communication is available by default.

CJ2M-EIP21 [パラメータの編集]

TCP/IP | Ethernet | FINS/UDP | FINS/TCP | FTP | 時計自動調整 | ステータスエリア | SNMP | SNMPトラップ

IPアドレス

次のIPアドレスを使用する

IPアドレス 192 . 168 . 0 . 2

サブネットマスク 255 . 255 . 255 . 0

デフォルトゲートウェイ 0 . 0 . 0 . 0

IPアドレスをBOOTPサーバから取得する

BOOTP設定は次のエントリリスタート(電源再投入)で1回のみ有効です。
その後、BOOTP設定は解消されます。
取得できたIPアドレスは、システム設定としてエントリ内に自動保存します。

DNS

DNSを使用しない

DNSを使用する

優先DNSサーバ 0 . 0 . 0 . 0

代替DNSサーバ 0 . 0 . 0 . 0

ドメイン名

IPルータテーブル

IPアドレス	ゲートウェイアドレス	
		挿入
		削除

一括同報

すべて1 (4.3BSD)

すべて0 (4.2BSD)

転送[エーサernetバ / ソコ](F) 転送[バ / ソコネ / コット](T) 照会(C) リスタート(R)

デフォルト設定に戻す(E) OK キャンセル

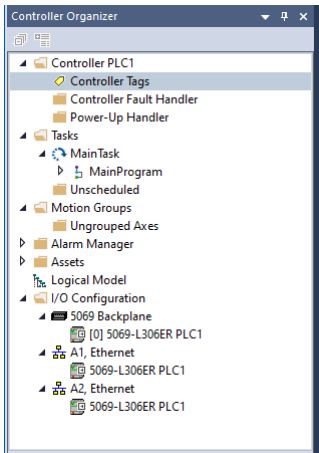
※Use PLC which is available to FINS/TCP.

This software is unavailable to FINS/UDP.

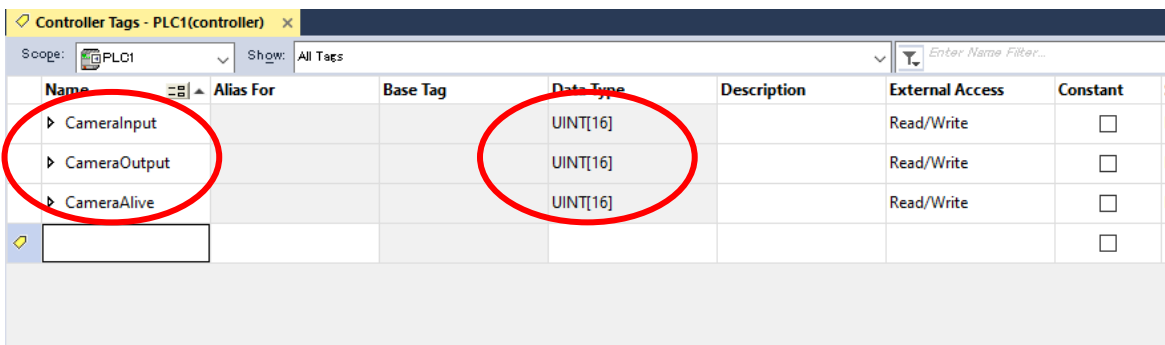
■ When using Allen-Bradley PLC

Create a tag with Rockwell “Studio5000”

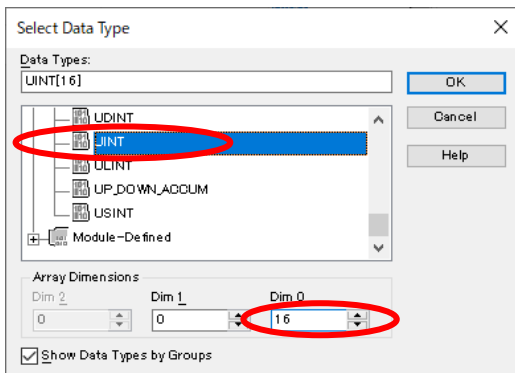
- ① Double-click “Controller Tag” in the window “Controller Organizer” on the left side.



- ② Create 3 kinds of tags “Camera Input”, “Camera Output” and “Camera Alive”.



Name	Alias For	Base Tag	Data Type	Description	External Access	Constant
▶ CameraInput			UINT[16]		Read/Write	<input type="checkbox"/>
▶ CameraOutput			UINT[16]		Read/Write	<input type="checkbox"/>
▶ CameraAlive			UINT[16]		Read/Write	<input type="checkbox"/>



- DataType ... Select from UNIT / DINT / LINT
- Dim0 ... Select a number at least the number of cameras being connected.

■When using SHARP PLC (JW-300 Series)

Set communication for SHARP “JW-300SP”.

JW25TCM/255CM パラメータ設定

コンピュータリンク指定バッファ | コンピュータリンクバッファ | ルーティング | リスタート機能
基本 | SEND/RECEIVE共通 | SEND/RECEIVE個別 | コンピュータリンク共通

IPアドレス設定

IPアドレス: 192 . 168 . 0 . 2
サブネットマスク: 255 . 255 . 255 . 0

接続設定

番号	オープン方法	自局ポート番号	ポート設定
0	TCP_Passive	9600	● DCML ○ HEX
1	TCP_Passive	0	
2	TCP_Passive	0	
3	TCP_Passive	0	
4	TCP_Passive	0	
5	UDP	0	
6	TCP_Passive	0	
7	TCP_Passive	0	

接続状態監視フラグ設定

フラグ出力

ファイルNo: 0 アドレス: 100000 1バイト占有

再送タイムアウト時間設定

最小値: 0 ms
最大値: 240000 ms
初期値: 3000 ms

特別な理由がない限り、初期値でご使用ください。
特別な理由により、初期値から変更する場合は、IAB規定のRFC793の内容を十分に理解した上で設定してください。

キーアライフ設定

キーアライフタイムアウト時間設定: 7200000 ms

設定値が0の時、7200000msです。
初期値は
FFFFFFFF(H)=4294967295(10)で、この時未使用になります。

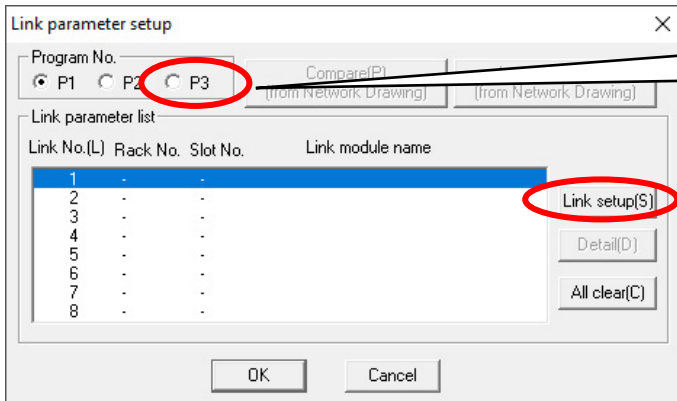
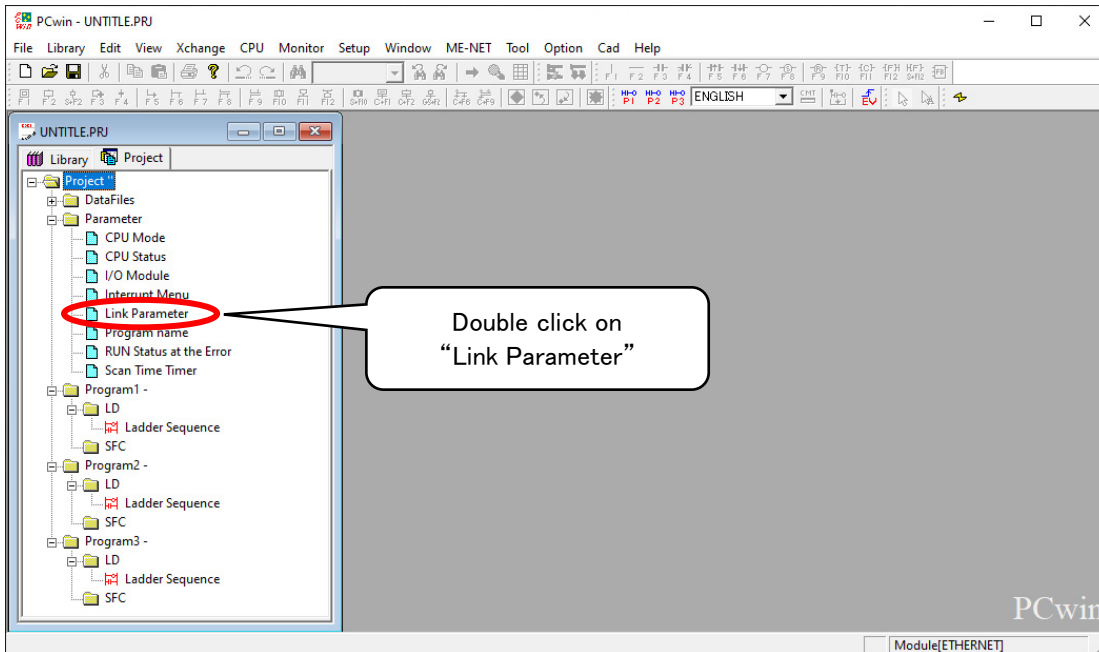
OK | キャンセル | ヘルプ

Set the items of the Connection Setting to following below.

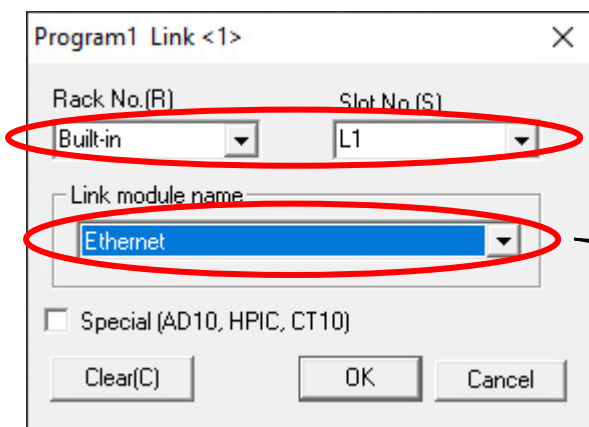
- Opening Method ... TCP_Passive
- Port Number ... Customer's port number

■ When using JTEKT PLC(TOYOPUC PC10G series)

Configuration :CPU parameter link in JTEKT「PCwin」

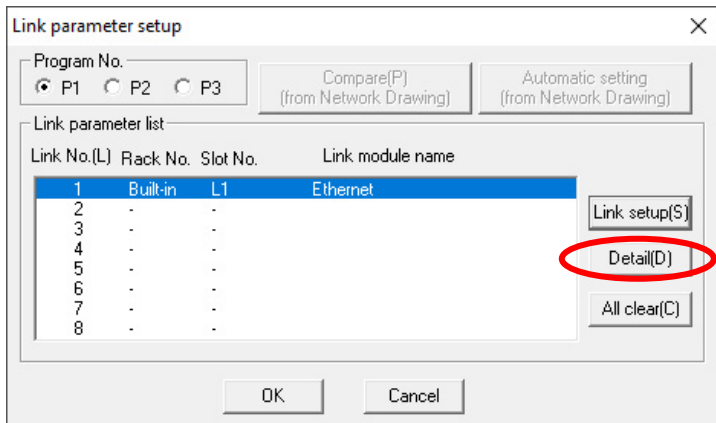


↓ Link setup configuration



Select Rack number and Slot number according to PLC structure
In case,
•Base board THR-2814
•Power supply unit THV6374
•CPU unit PC10G
⇒ **Rack No: Built-in /SlotNo:L1**

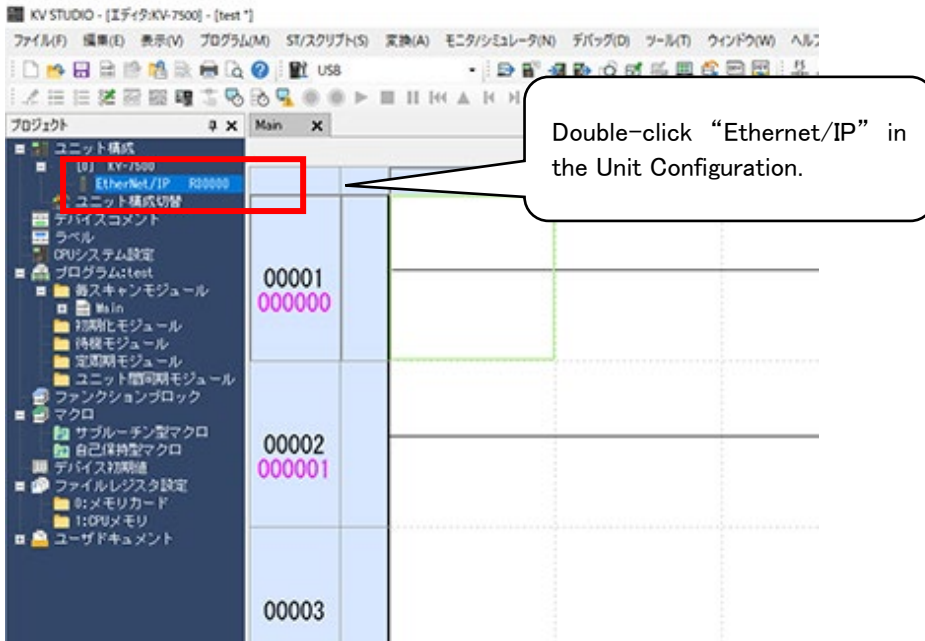
↓ Click on "OK"



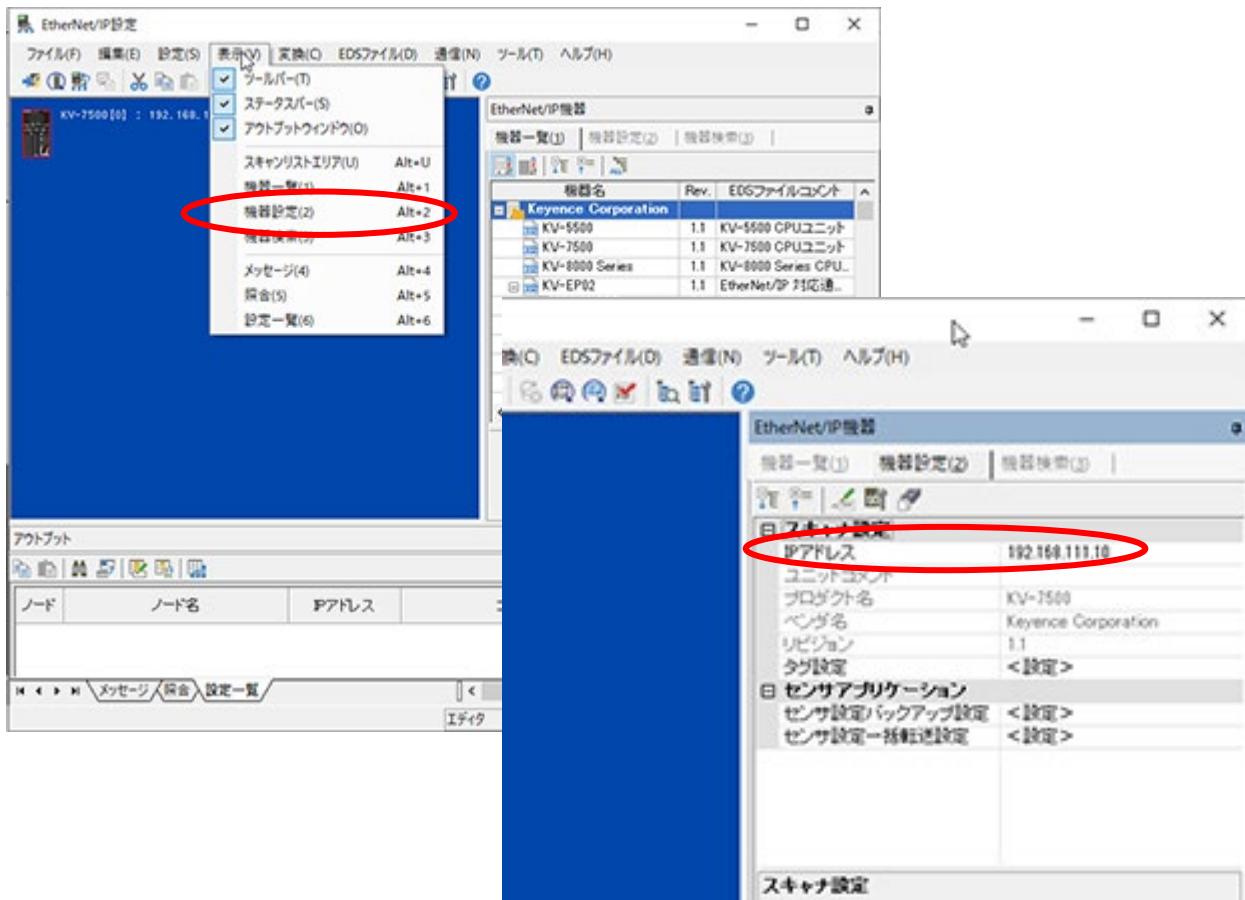
Detail configuration

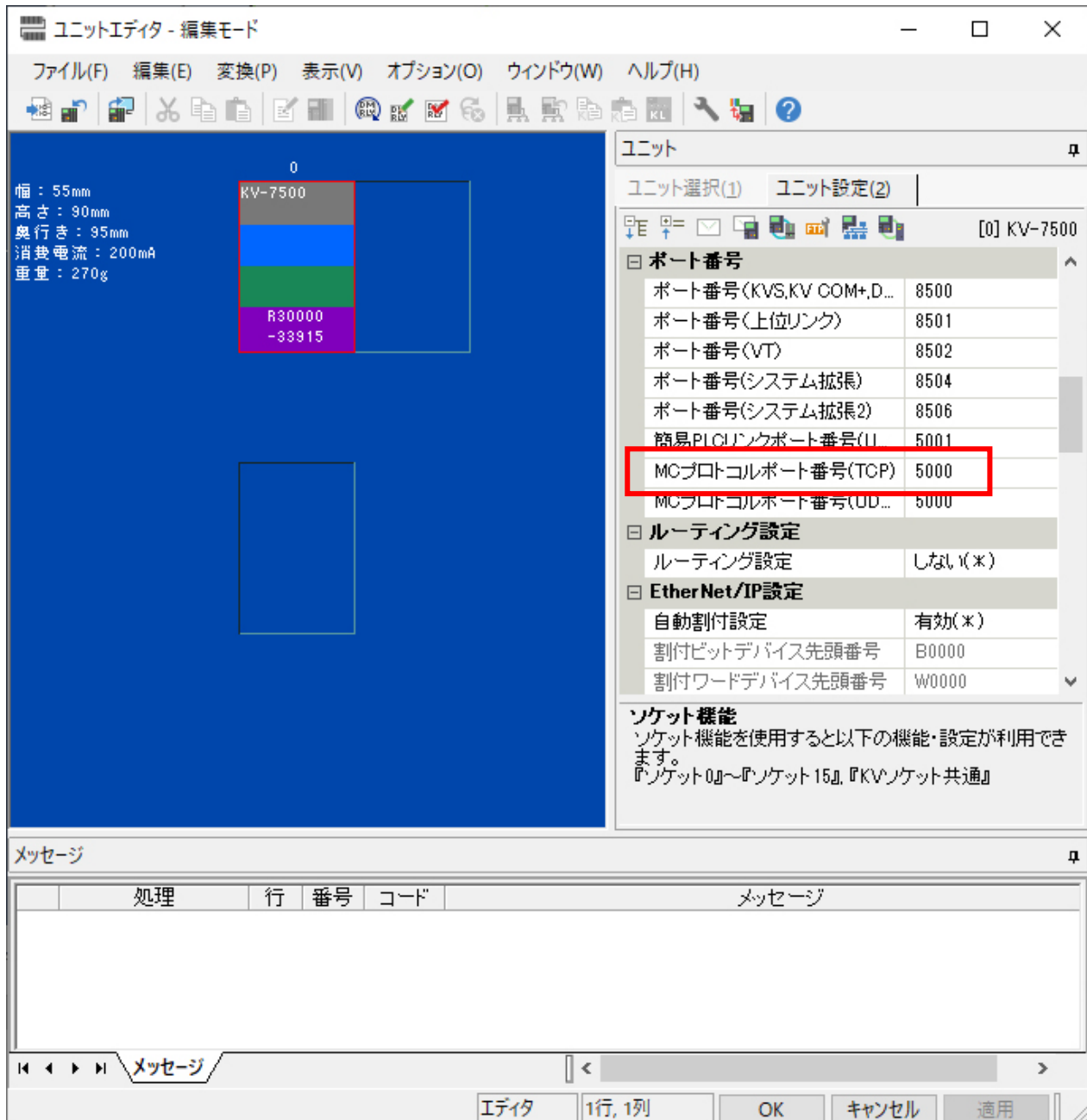
■ For KEYENCE PLC(KV-7500, KV-8000 Series)

Set communication unit parameters in the Unit Configuration on JTEKT “KV STUDIO”.



The following screen will appear. Set the IP address.





Use “MC Protocol Port No. (TCP)” for the port.

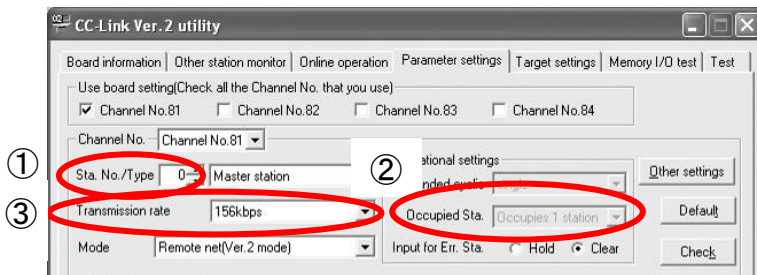
【In the case of CC-Link】

The system requires control interfaces such as CC-Link.

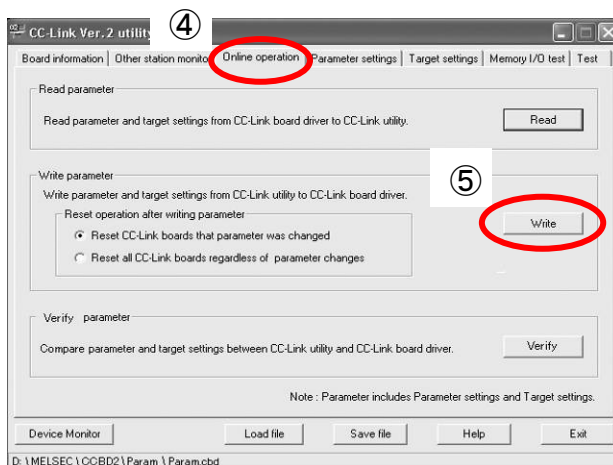
Please follow the manual to set up as shown below.

- Installation of attached software.
- Attaching interface board, installation of drive.
- Connection setting of the attached software and the PLC. (Confirm the setting which will be used for the PLC)

【CC-Link Set Up】(Mitsubishi Electric Q80BD-J61BT11N)



- ① Set the allotment of Station No. /Type.
- ② Set the Occupied Sta. as “Occupied 4 stations”.
- ③ Set the Transmission Rate the same as the PLC.



- ④ Click the “Online Operation” tab.
- ⑤ Click “Write”.

※When setting up the PLC, please set the I/F Board as the intelligent device.
For more information, please refer to the manual of Mitsubishi Electric.

【In the case of DeviceNet】

The system requires control interfaces such as DeviceNet.

Please follow the manual to set up as shown below.

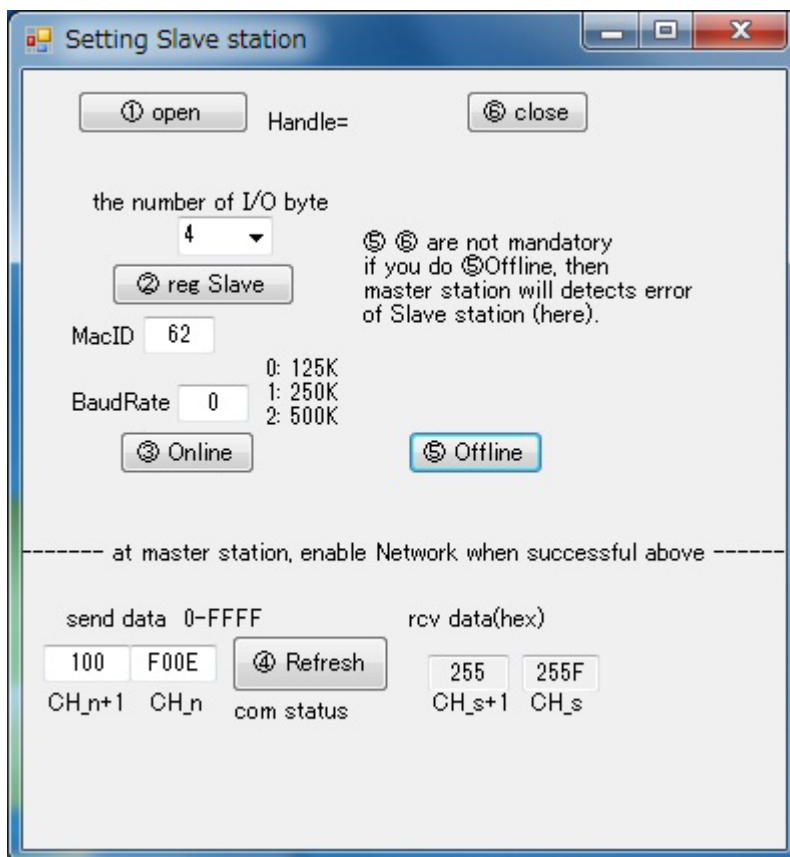
- Installation of attached software.
- Attaching interface board, installation of drive.
- Connection setting of the attached software and the PLC. (Confirm the setting which will be used for the PLC)

DeviceNet Set Up (Omron 3G8F7-DRM21)

The system requires control interfaces such as DeviceNet. Please follow the manual to set up as shown below.

By using devNetSetting_slave.exe, set up the DeviceNet slaves.

To connect the PCI and I/F board, the setting of ①~③ is required.



The Byte rate of I/O depends on the amount of using monitors.

※The software acts ①~③ when starting up the system.

3. 4. Timing Chart

- ① Pressurize right after dressing the tip. (Recommended Pressure: 1500N Maximum: 3000N)
- ② When the PC is ON and the data strobe is OFF, turn ON the shoot command.
(Keep the shoot command)
- ③ By receiving the command, the software takes a photo, process the photo, and send back the judgement result back to the PLC.
- ④ The PLC processes the result and turn OFF the shoot command.
- ⑤ The judge software receives the signal of the command turning OFF and turns OFF the result.
- ⑥ Release the pressure.

※For “Camera Connect” TMN connection setting will be updated regardless of the command “photograph every 10 sec”.

【CAUTIONS】

The camera signal will turn ON/OFF at the same time as data strobe signal if the system is properly working.

Amount of time it takes from receiving the command to turning OFF the result output is approx. 1 sec.

(But, it may depends on the spec of PC and LAN)

When the shooting is done in plural cameras, the total time to process will be cumulative.

(EX: When using 3 cameras, total time will be about 3 sec.)

Release the gun after the data strobe turns ON (after shooting is done).

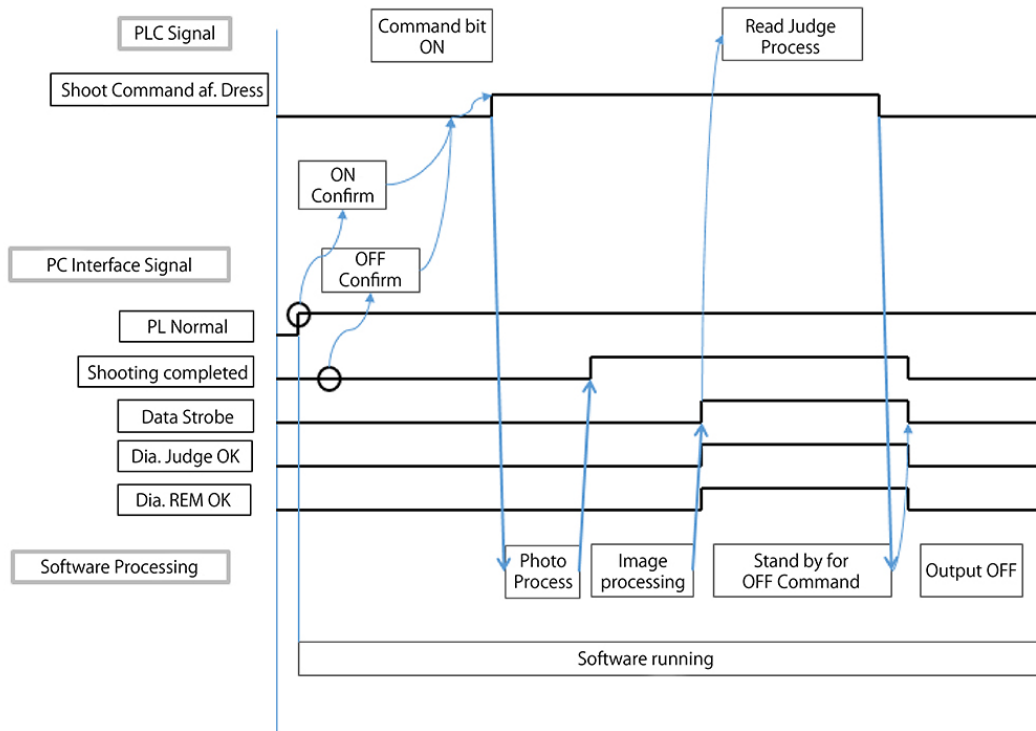
The interval between shooting instructions is 2 seconds.

Please be sure to leave an interval of 2 seconds between the first shooting instruction and the second shooting instruction.

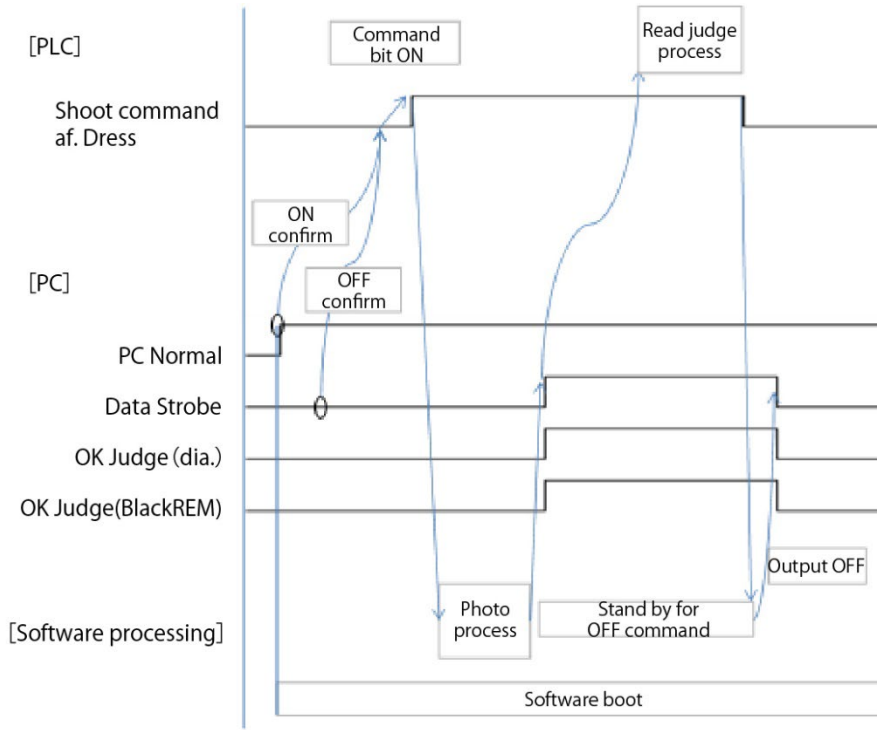
The interval for test shooting, shooting instructions, and event signals is all 2 seconds.

■ When OK judge was made

【Ethernet】



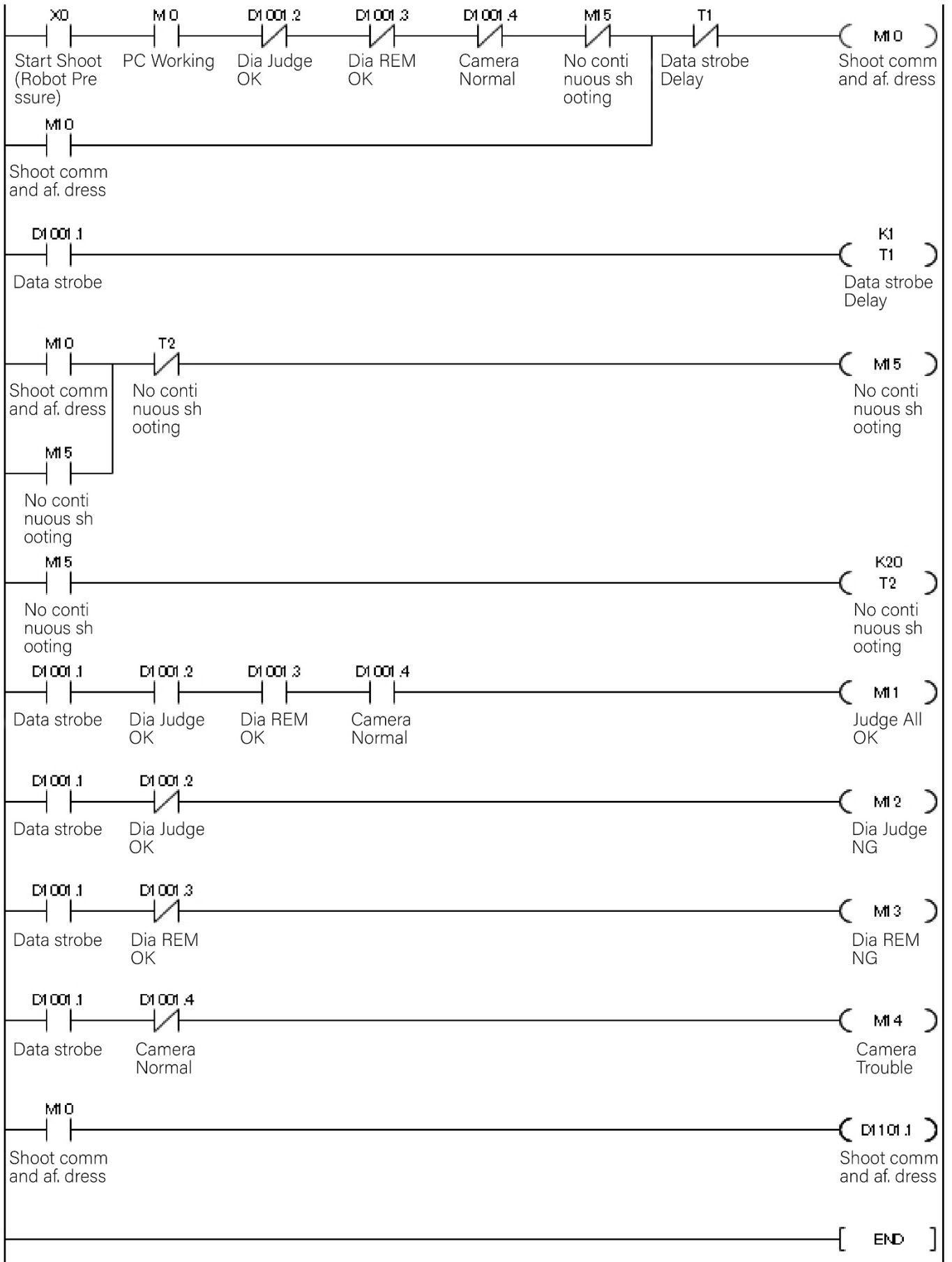
【CC-Link / DeviceNet】



■ When NG judge was made

- Dia. Judge NG → Signal Dia. Judge is OFF
- REM. Judge NG → Signal REM. Judge is OFF

【Examples】



【How to confirm the active state of the “Judge-Record Software”.】

It is possible to confirm the operating condition of Judge-Record Software by checking the numeric data of address which set on [PC_ALIVE].

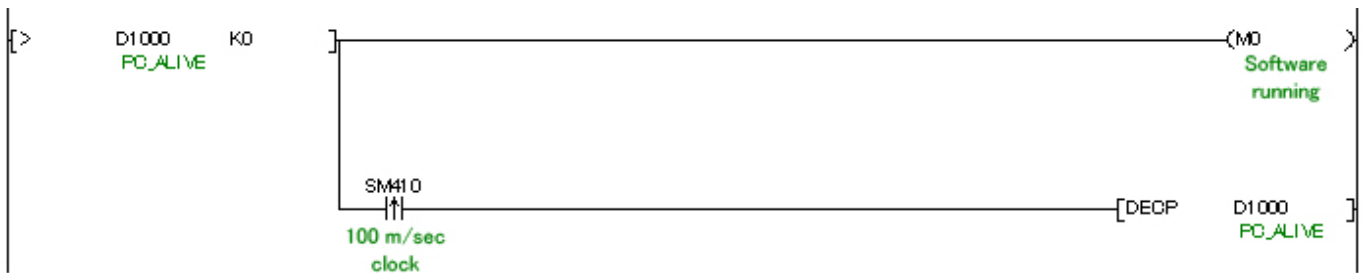
While the Judge-Record Software is running, set 10 as [PC_ALIVE] data value every 500m/sec.

After the setting, the PLC will reduce I every 100m/sec.

If the data value is over 0, the Judge-Record Software is operating accurately.

※Please refer to “4.4 IP Address Setting Tool” for the PC_ALIVE address.

【Examples】



4. Software Setting

4.1. System Software Structure

The software is structured with four software listed below.

- ① IP Address Setting Tool
A set up tool for the IP address of the tip monitor.
- ② System Setting Tool
A set up tool for the system of the tip monitor.
- ③ Camera Parameter Setting Tool
A set up tool for each tip monitor.
- ④ Judge-Record Software
The software to judge / memorize the photo taken by the tip monitor.

4. 2. Installation of the Software

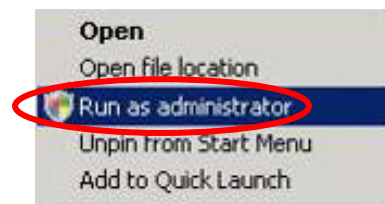
※“3.2. Computer Setting” must be completed before starting this process.

※If the PC has multiple Ethernet adapters, connect LAN cable into one certain adapter to use before starting this installation. Reinstallation will be necessary if connected to other adapters.

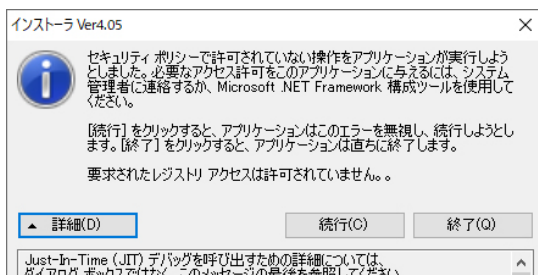
- ① Insert the installing disk or other media into the PC.
- ② Start the “SETUP.exe”.

※Right Click “SETUP.exe” → “Run as administrator”.

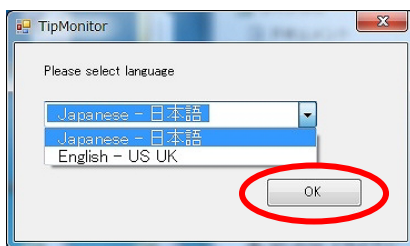
Do not double-click, or an error message will appear.



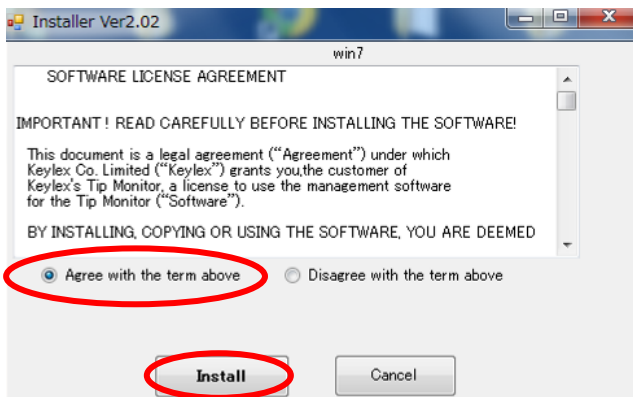
<Image of error message>



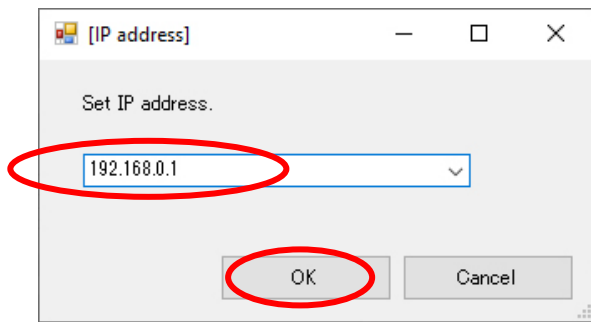
- ③ Select language and click “OK”.



- ④ Read SOFTWARE LICENCE AGREEMENT carefully and when agreed, choose “Agree with the term above” and click “Install”.



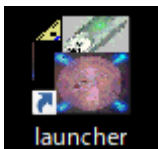
- ⑤ The IP address used for communication will be asked. Select the IP address set in "3.2 Computer Setting" and click "OK".



- ⑥ When it finishes installing, a message below will pop up. Click "OK".



- ⑦ Short-cut icons of "launcher" and "IP_setting" will be generated on desktop when the installation is completed.



4. 3. Setting the IP Address of Tip Monitor

【Setting Method】

Here, the IP address of the tip monitor will be set.

To set up, the PC and the tip monitor must be connected through PoE HUB.

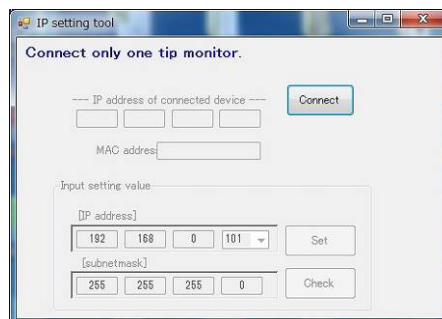
※Caution

- When starting, only connect one monitor.
- 5 minutes after the connection, the setting will be invalid. Please reconnect.
- No duplicate IP address is usable.

(When connecting more than one monitor to a specific PC, different IP address must be set to each tip monitor)

- ① Activate the “IP_setting”.

(Will be listed on the desktop)

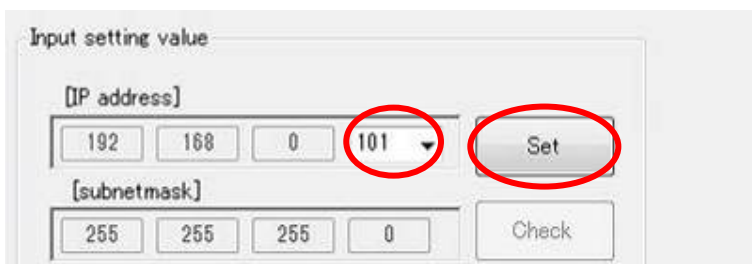


※Warning message may pop up. Please permit the access.

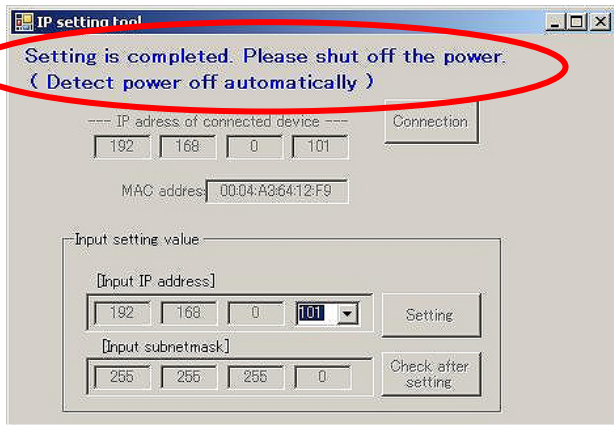
- ② Once you click the “Connect”, the default setting will be shown. (Default setting: 192.168.0.253)



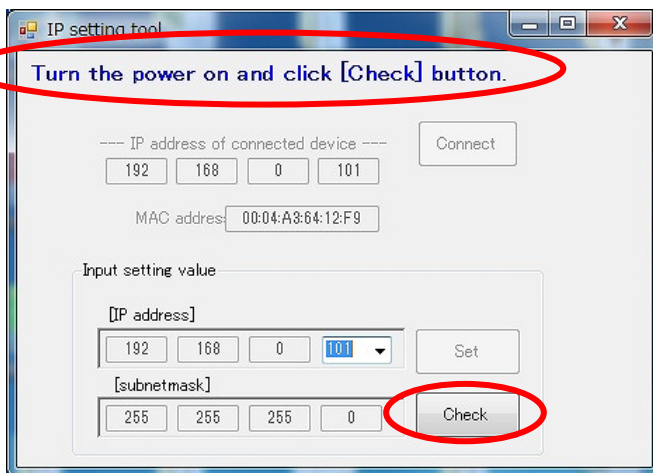
- ③ Set the number and click the “Set”. (Set from 2 ~ 254)



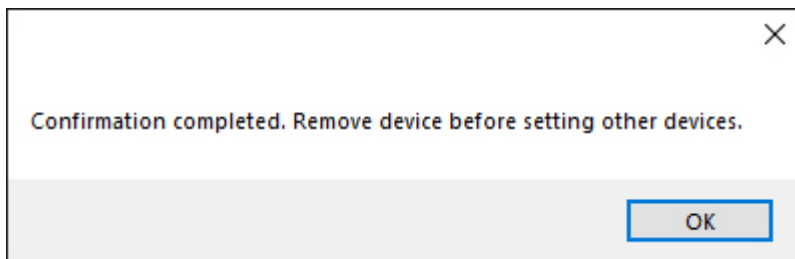
- ④ When the dialog below pops up, unplug the LAN cable from the tip monitor.



- ⑤ Reconnect the LAN cable and confirm the setting.



- ⑥ Do the same to the other tip monitors and the IP setting is finished.
(You may leave the LAN cable connected if you are moving on to the system setting.)



- ⑦ Repeat the operation ②~⑥ the same number of times as the number of units to finish the IP setting.

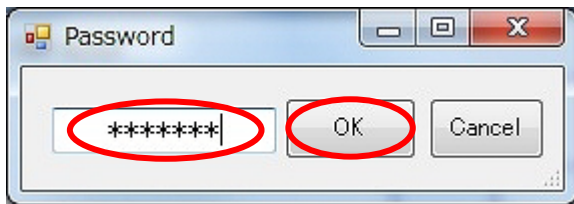
4. 4. Setting the System Setting Tool

【Setting Method】

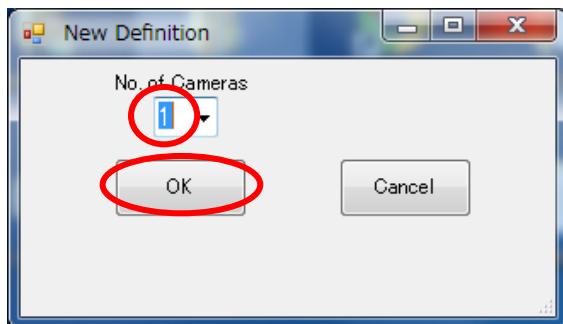
- ① Activate the “System Setting Tool”.
(The icon will be in the TMN launcher)



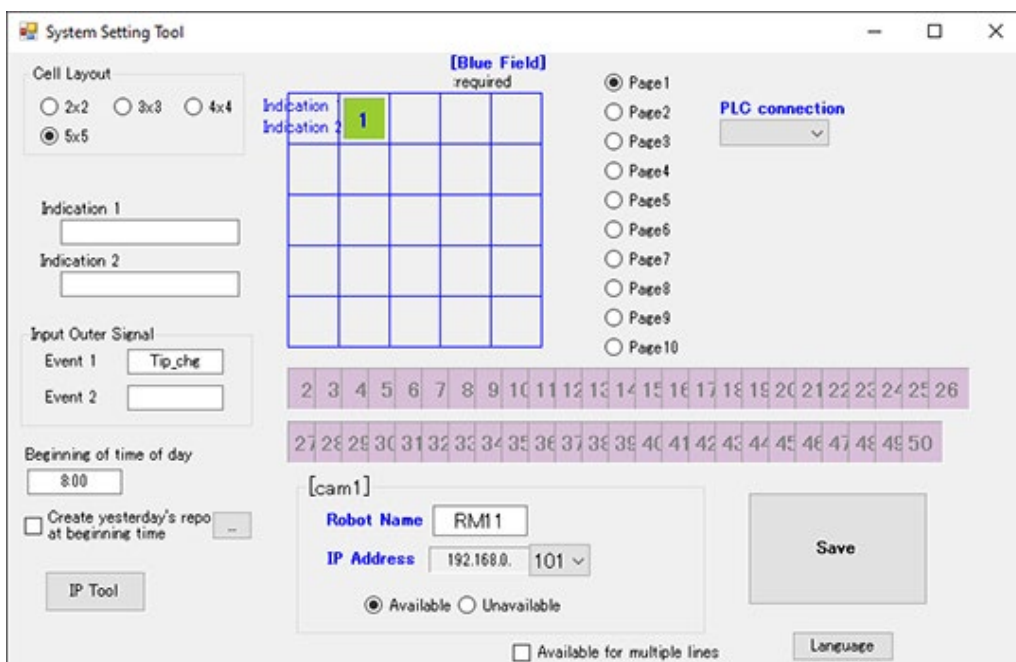
- ② Type in the master password “000000” then click “OK”.



- ③ Select the No. of cameras, then click “OK”.



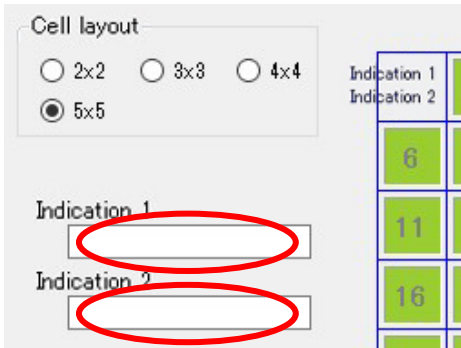
- ④ The system setting tool will show up.



※From here, please refer to the “TIP MONITOR SYSTEM INFORMATION CHART”.

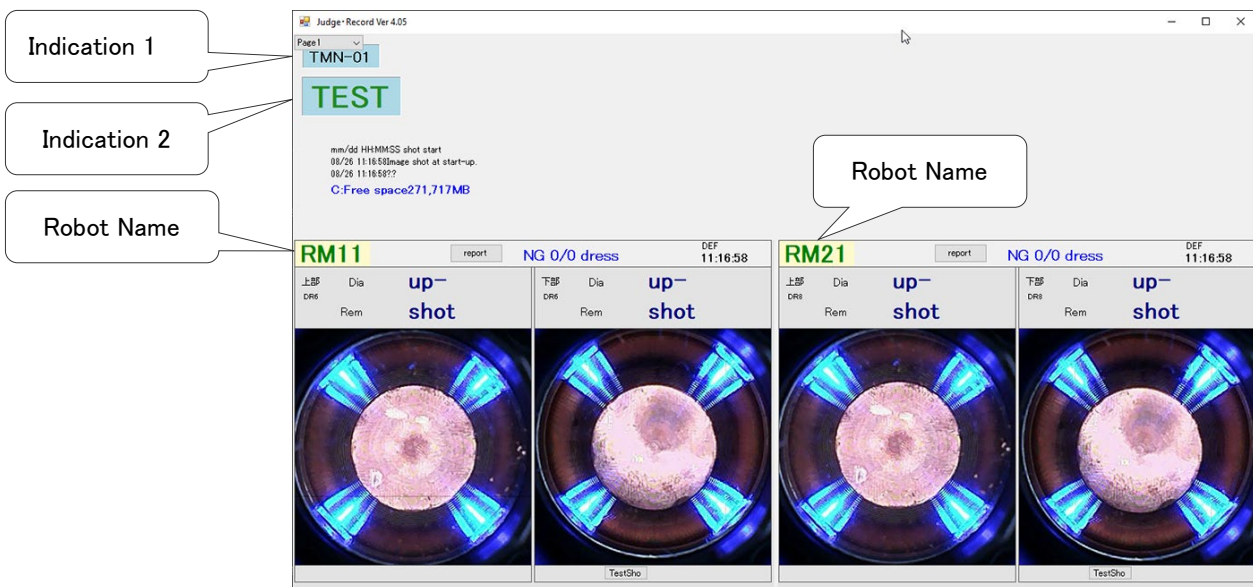
⑤ Here you will need to decide how Indication 1, 2 is going to be shown and the places where the photograph data is going to appear in the software.

(The green square is the place where photograph data will be shown)



※Setting of Indication 1, 2 is optional. It can be left blank.

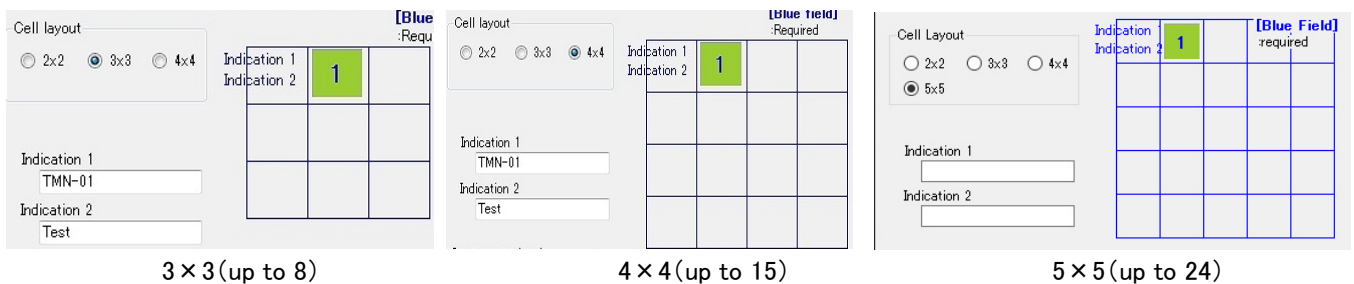
Indication 1, 2 will be shown as the picture below.



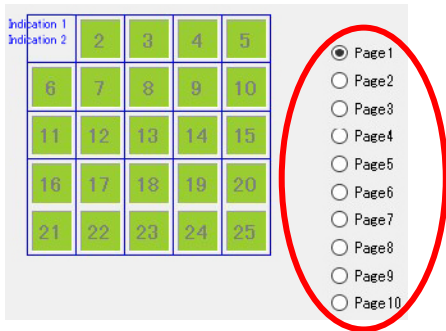
⑤-1. Cell Layout

To show the picture, segmentation of the cell is needed.

※When first set, the cell allocation will be set automatically according to the number of cameras.



⑤-2. Page allocation



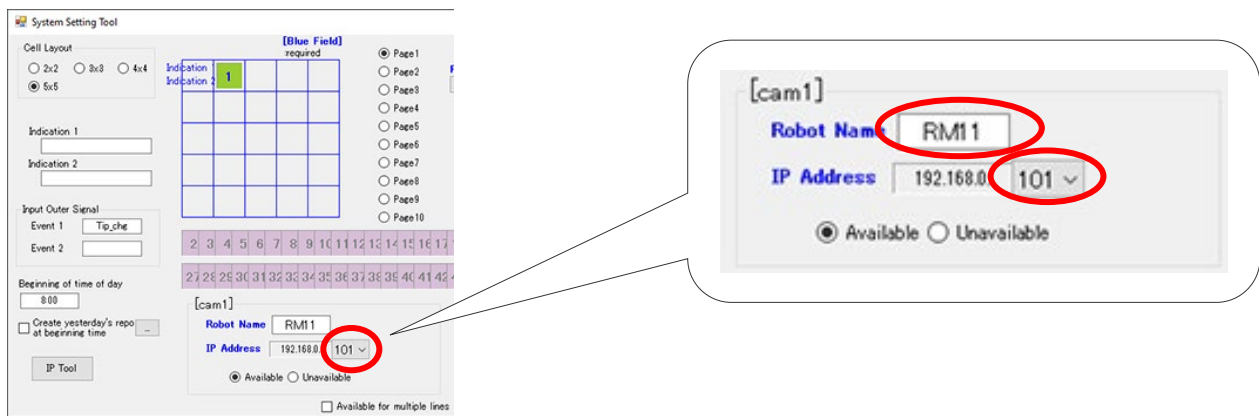
If the camera image does not fit on one screen, you can divide the display into up to 10 pages.

⑤-3. Photograph Arrangement

By moving the green squares in the cell, which was set in ⑤-1, the photograph of the cap tip can be arranged freely. Drag the green box to where you want it to appear.

⑥ Set robot name and IP address for each camera.

Left-click the green box and the camera information will be displayed.



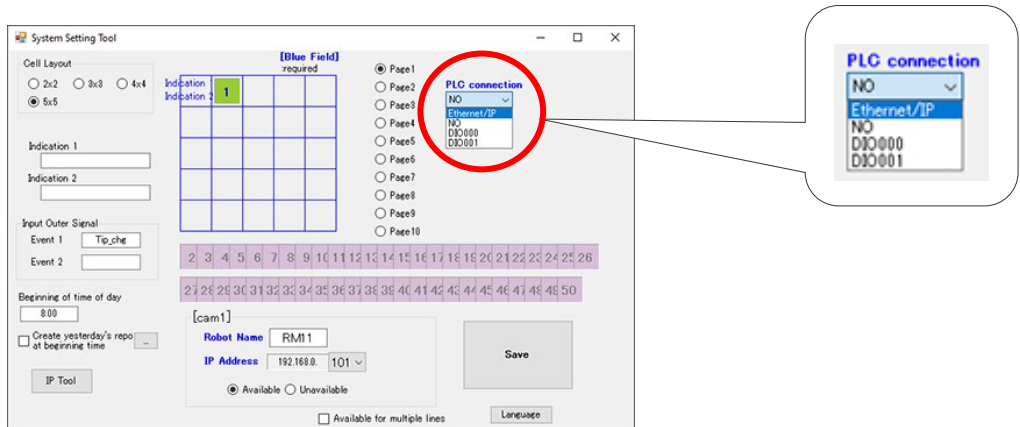
※At the initial setting, it is allocated automatically.

※The robot name is used to identify on the system and it is recommended not to change after setting.

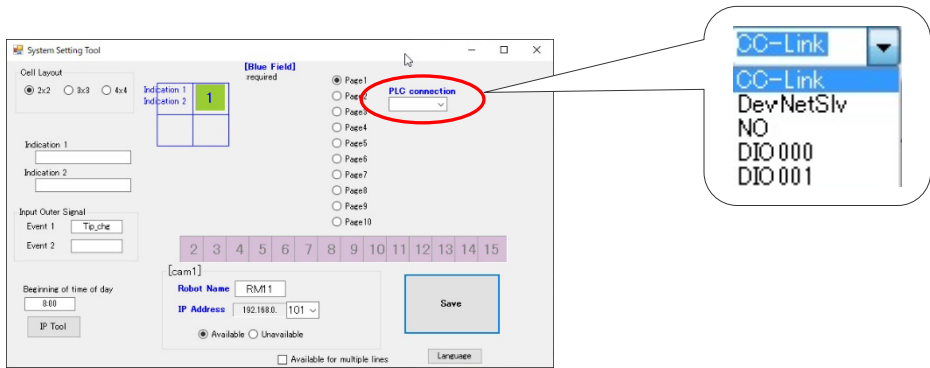
※PLC Auto Reconnection Software will have connection error if all cameras are invalid. (Refer to “4.9 PLC Auto Reconnection Software”)

⑦ Set up the connection with the PLC.

⑦-1. Select the interface to communicate with the PC.(for Ethernet)

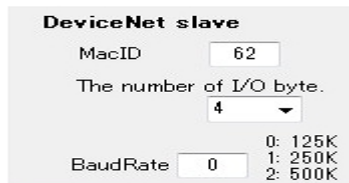
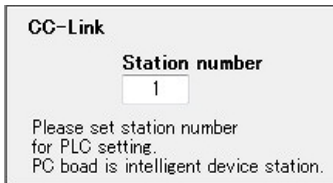


⑦-2. Select the interface to communicate with the PC (for CC-Link or DeviceNet).



(a)with CC-Link Board

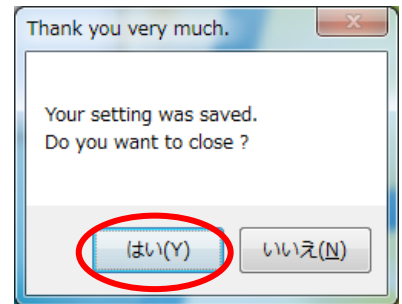
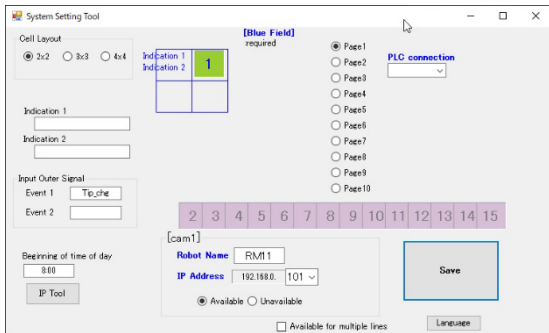
(b)with DeviceNet Board



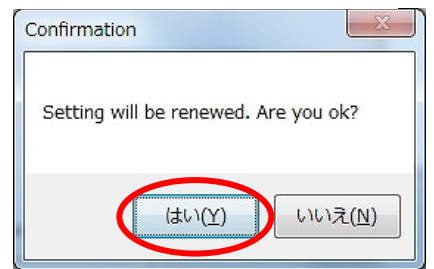
※ Please set up the items above.

※First time setting

Click “Close it after saving setting”, and the system setting is done.

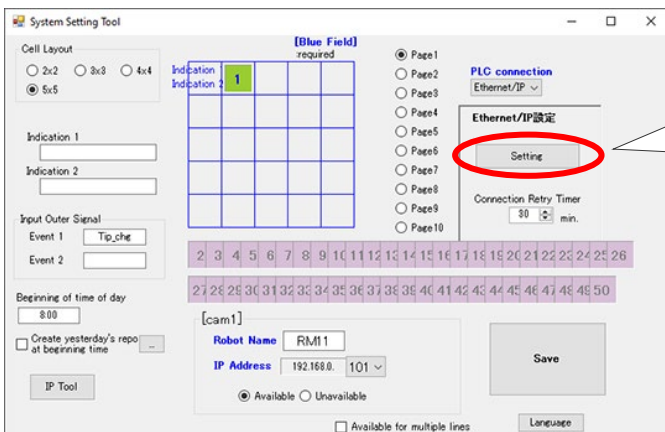


※Second time or more

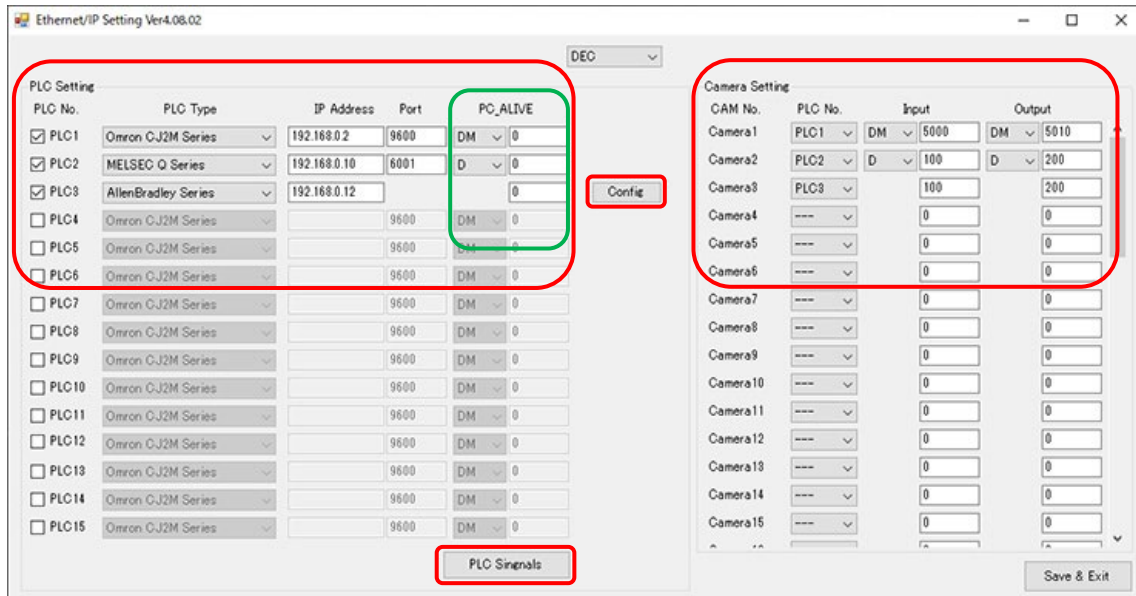


⑧ Connection setting for PLC and camera.

Click “Setting”



⑧-1. Set the IP address and port number of PLC and memory to determine the soft activating condition.

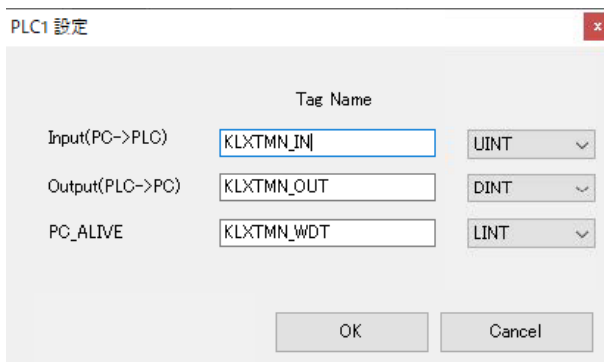


⑧-2. Please make sure to set the input and output memory of using PLC for each camera.

⑧-3. PC_Alive memory surrounded with green line on the image above will be used at 【How to confirm the active state of the “Judge-Record Software”】 .

⑧-4. When using Allen Bradley PLC, TAG Name for input-output must be specified.

Click “Config” and input the TAG Name and the Data Type as same as you have specified in “3.3 PLC Control Interface Setting”.

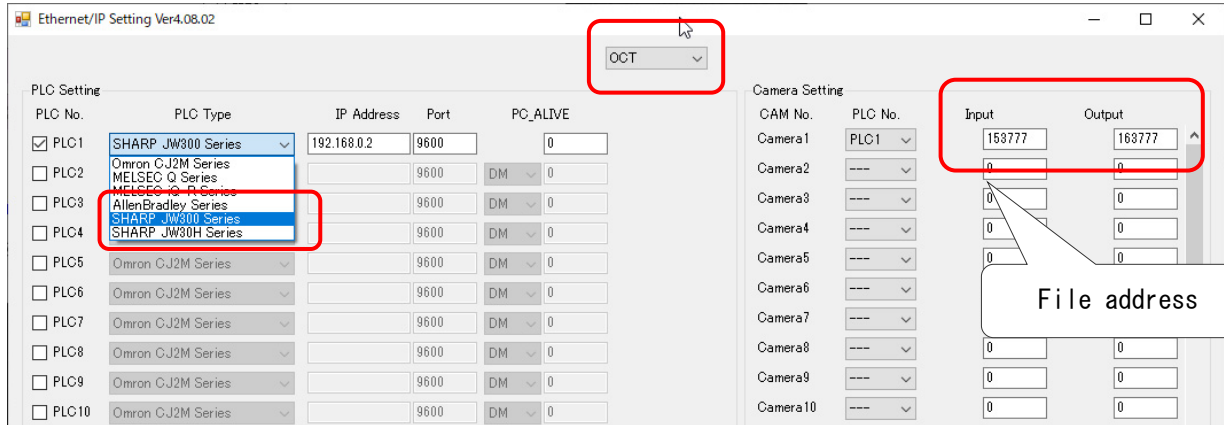


⑧-5. For SHARP PLC, select from two models, "JW300 series" and "JW30H series".

※Enter the address in "File Address".

By changing "DEC" to "OCT" on top of the screen, display and write will be available in octal.

File address allocation differs by model. Read "Programing Manual – Ladder Instruction Version" which can be downloaded from SHARP Corp.'s website.



⑧-6. For TOYOPUC PC10G, the Ethernet computer link method is used for communication between TMN and PC10G.

Commands are sent and received in word units to the address specified in the word area.

Note the PC10G specific addressing method which differs from usual.

The following is an excerpt from the address list in the PC10G instruction manual.

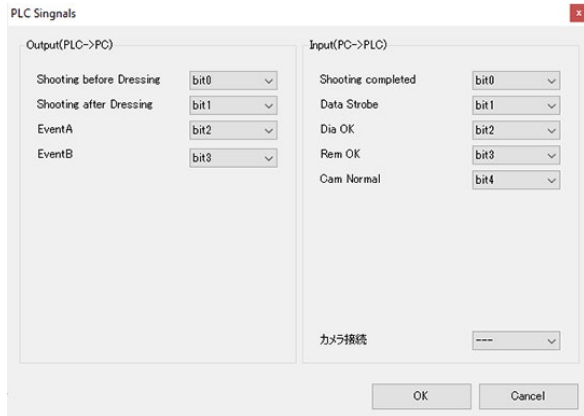
When accessing the D0100 register with the "I/O Register Word" read or write command,

Specify the address to "[1000H(D0000 Register word address) + 100H] = 1100H"

(lower digit: 00H, upper digit: 11H)



⑧-7. Click “PLC Signals” button, and allocate bits of input and output memory.



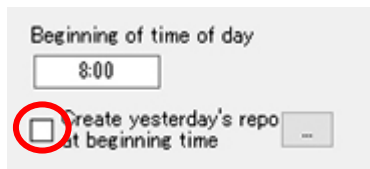
⑧-8. After all set up is completed, click the “Save and Exit” button to save.

※If using SHARP Corp.’s PLC, only bit0~bit7 are available.

Do NOT use bit8~bit16.

⑨ Set up for Periodical Reports generation.

⑨-1. To generate report automatically



To generate reports automatically, put a check mark on “Create yesterday’s repo at beginning time”.

Inspection report file for all robots can be saved once a day.

Tick “At the activating time, create a report to see result by the day before”.

All data for 24 hours in the past will be output as a report file with the data of one day before.

⑨-2. To generate report manually

To generate reports manually, do NOT put a check mark on “Create yesterday’s repo at beginning time”.

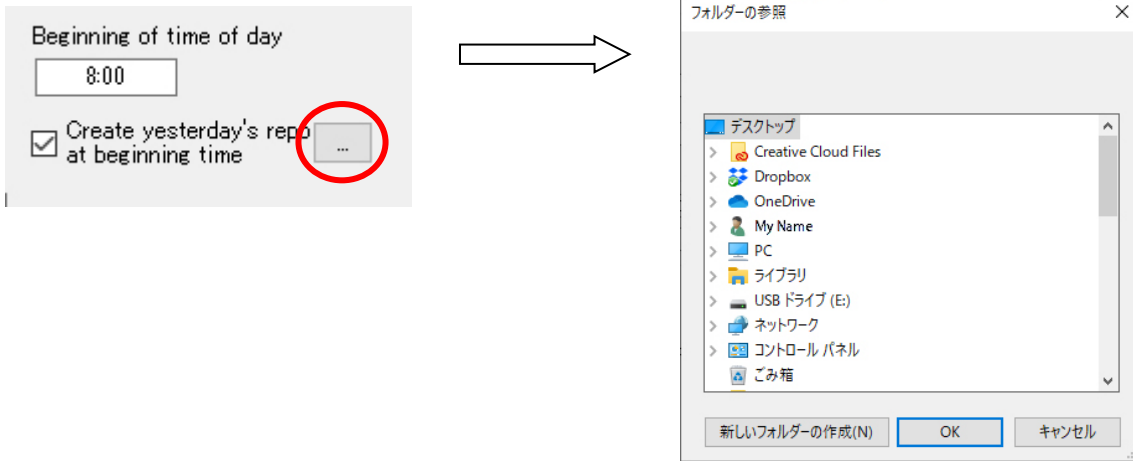
⑨-3. Assign download location

※Assigning download location is necessary for both auto / manual settings.

Download locations can be selected to anywhere for both auto / manual settings.

By clicking "...", a window "Browse For Folder" will pop up.

Select your favorable file for to dwnload report datas and click "OK".

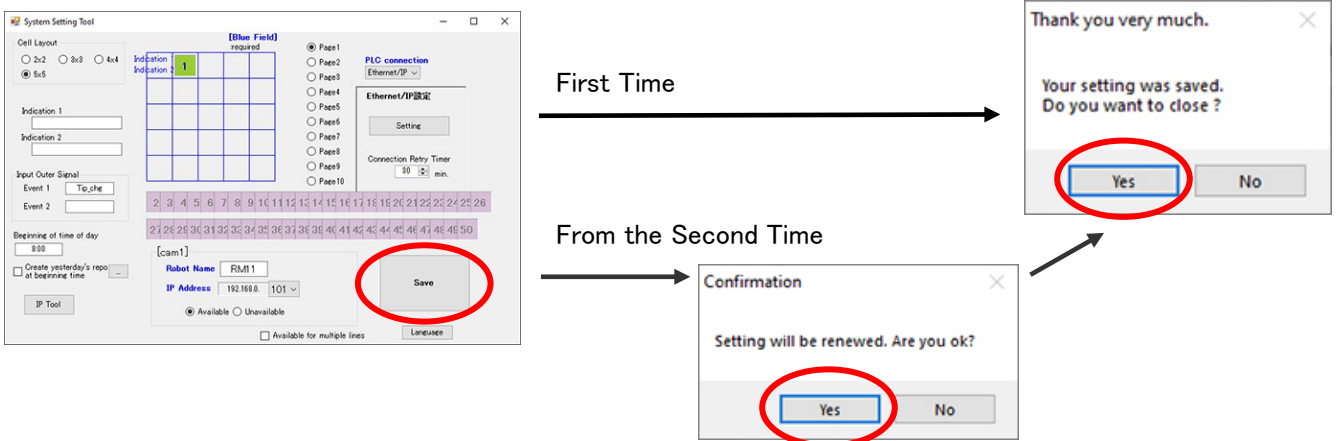


⑩ Set the "Connection Retry Timer".

※For details, see Setting the "4.9 PLC Auto Reconnection Software".



⑪ Click "Save" and finish set up system.



【Signal Allotment (Example)】

■ Ethernet

[#]	Input				Output			
	[address]	[bit]	[cam no.]	[comment]	[address]	[bit]	[cam no.]	[comment]
0	1000	-	-	PC ALIVE	-	-	-	-
1	1001	0	Cam1	Shooting completed	1101	0	Cam1	Shoot Command bf. Dress
2		1		Data Strobe		1		Shoot Command af. Dress
3		2		Dia. Judge OK		2		Event A
4		3		Dia. REM OK		3		Event B
5		4		Camera NORMAL		4		-
6		5		Camera Connect		5		-
7	1002	0	Cam2	Shooting completed	1102	0	Cam2	Shoot Command bf. Dress
8		1		Data Strobe		1		Shoot Command af. Dress
9		2		Dia. Judge OK		2		Event A
10		3		Dia. REM OK		3		Event B
11		4		Camera NORMAL		4		-
12		5		Camera Connect		5		-
13	1003	0	Cam3	Shooting completed	1103	0	Cam3	Shoot Command bf. Dress
14		1		Data Strobe		1		Shoot Command af. Dress
15		2		Dia. Judge OK		2		Event A
16		3		Dia. REM OK		3		Event B
17		4		Camera NORMAL		4		-
18		5		Camera Connect		5		-
19	1004	0	Cam4	Shooting completed	1104	0	Cam4	Shoot Command bf. Dress
20		1		Data Strobe		1		Shoot Command af. Dress
21		2		Dia. Judge OK		2		Event A
22		3		Dia. REM OK		3		Event B
23		4		Camera NORMAL		4		-
24		5		Camera Connect		5		-
25	1005	0	Cam5	Shooting completed	1105	0	Cam5	Shoot Command bf. Dress
26		1		Data Strobe		1		Shoot Command af. Dress
27		2		Dia. Judge OK		2		Event A
28		3		Dia. REM OK		3		Event B
29		4		Camera NORMAL		4		-
30		5		Camera Connect		5		-
31	1006	0	Cam6	Shooting completed	1106	0	Cam6	Shoot Command bf. Dress
32		1		Data Strobe		1		Shoot Command af. Dress
33		2		Dia. Judge OK		2		Event A
34		3		Dia. REM OK		3		Event B
35		4		Camera NORMAL		4		-
36		5		Camera Connect		5		-
37	1007	0	Cam7	Shooting completed	1107	0	Cam7	Shoot Command bf. Dress
38		1		Data Strobe		1		Shoot Command af. Dress
39		2		Dia. Judge OK		2		Event A
40		3		Dia. REM OK		3		Event B
41		4		Camera NORMAL		4		-
42		5		Camera Connect		5		-
43	1008	0	Cam8	Shooting completed	1108	0	Cam8	Shoot Command bf. Dress
44		1		Data Strobe		1		Shoot Command af. Dress
45		2		Dia. Judge OK		2		Event A
46		3		Dia. REM OK		3		Event B
47		4		Camera NORMAL		4		-
48		5		Camera Connect		5		-
49	1009	0	Cam9	Shooting completed	1109	0	Cam9	Shoot Command bf. Dress
50		1		Data Strobe		1		Shoot Command af. Dress
51		2		Dia. Judge OK		2		Event A
52		3		Dia. REM OK		3		Event B
53		4		Camera NORMAL		4		-
54		5		Camera Connect		5		-
55	1010	0	Cam10	Shooting completed	1110	0	Cam10	Shoot Command bf. Dress
56		1		Data Strobe		1		Shoot Command af. Dress
57		2		Dia. Judge OK		2		Event A
58		3		Dia. REM OK		3		Event B
59		4		Camera NORMAL		4		-
60		5		Camera Connect		5		-
61	1011	0	Cam11	Shooting completed	1111	0	Cam11	Shoot Command bf. Dress
62		1		Data Strobe		1		Shoot Command af. Dress
63		2		Dia. Judge OK		2		Event A
64		3		Dia. REM OK		3		Event B
65		4		Camera NORMAL		4		-
66		5		Camera Connect		5		-
67	1012	0	Cam12	Shooting completed	1112	0	Cam12	Shoot Command bf. Dress
68		1		Data Strobe		1		Shoot Command af. Dress
69		2		Dia. Judge OK		2		Event A
70		3		Dia. REM OK		3		Event B
71		4		Camera NORMAL		4		-
72		5		Camera Connect		5		-
73	1013	0	Cam13	Shooting completed	1113	0	Cam13	Shoot Command bf. Dress
74		1		Data Strobe		1		Shoot Command af. Dress

■ CC-Link / DeviceNet

[PLC input]				[PLC output]					
[st#]	[#]	[device]	[buff]	[hex#]	[comment]	[device]	[buff]	[hex#]	[comment]
1	0	X0E0	0E0	00	PC Working	Y0E0	160	00	
	1	X0E1		01	cam1 Data Strobe	Y0E1		01	
	2	X0E2		02	cam2 Data Strobe	Y0E2		02	
	3	X0E3		03	cam3 Data Strobe	Y0E3		03	
	4	X0E4		04	cam4 Data Strobe	Y0E4		04	
	5	X0E5		05	cam5 Data Strobe	Y0E5		05	
	6	X0E6		06	cam6 Data Strobe	Y0E6		06	
	7	X0E7		07	cam7 Data Strobe	Y0E7		07	
	8	X0E8		08	cam8 Data Strobe	Y0E8		08	
	9	X0E9		09	cam9 Data Strobe	Y0E9		09	
	10	X0EA		0A	cam10 Data Strobe	Y0EA		0A	
	11	X0EB		0B	cam11 Data Strobe	Y0EB		0B	
	12	X0EC		0C	cam12 Data Strobe	Y0EC		0C	
	13	X0ED		0D	cam13 Data Strobe	Y0ED		0D	
	14	X0EE		0E	cam14 Data Strobe	Y0EE		0E	
	15	X0EF		0F	cam15 Data Strobe	Y0EF		0F	
	16	X0F0	0E1	10	cam1 Dia. Judge OK	Y0F0	161	10	cam1 Shoot Command bf. Dress
	17	X0F1		11	Dia. REM OK	Y0F1		11	Shoot Command af. Dress
	18	X0F2		12	(Reserve)	Y0F2		12	Event A
	19	X0F3		13	Camera NORMAL	Y0F3		13	Event B
	20	X0F4		14	cam2 Dia. Judge OK	Y0F4		14	cam2 Shoot Command bf. Dress
	21	X0F5		15	Dia. REM OK	Y0F5		15	Shoot Command af. Dress
	22	X0F6		16	(Reserve)	Y0F6		16	Event A
	23	X0F7		17	Camera NORMAL	Y0F7		17	Event B
	24	X0F8		18	cam3 Dia. Judge OK	Y0F8		18	cam3 Shoot Command bf. Dress
	25	X0F9		19	Dia. REM OK	Y0F9		19	Shoot Command af. Dress
	26	X0FA		1A	(Reserve)	Y0FA		1A	Event A
	27	X0FB		1B	Camera NORMAL	Y0FB		1B	Event B
	28	X0FC		1C	cam4 Dia. Judge OK	Y0FC		1C	cam4 Shoot Command bf. Dress
	29	X0FD		1D	Dia. REM OK	Y0FD		1D	Shoot Command af. Dress
	30	X0FE		1E	(Reserve)	Y0FE		1E	Event A
	31	X0FF		1F	Camera NORMAL	Y0FF		1F	Event B
2	32	X100	0E2	20	cam5 Dia. Judge OK	Y100	162	20	cam5 Shoot Command bf. Dress
	33	X101		21	Dia. REM OK	Y101		21	Shoot Command af. Dress
	34	X102		22	(Reserve)	Y102		22	Event A
	35	X103		23	Camera NORMAL	Y103		23	Event B
	36	X104		24	cam6 Dia. Judge OK	Y104		24	cam6 Shoot Command bf. Dress
	37	X105		25	Dia. REM OK	Y105		25	Shoot Command af. Dress
	38	X106		26	(Reserve)	Y106		26	Event A
	39	X107		27	Camera NORMAL	Y107		27	Event B
	40	X108		28	cam7 Dia. Judge OK	Y108		28	cam7 Shoot Command bf. Dress
	41	X109		29	Dia. REM OK	Y109		29	Shoot Command af. Dress
	42	X10A		2A	(Reserve)	Y10A		2A	Event A
	43	X10B		2B	Camera NORMAL	Y10B		2B	Event B
	44	X10C		2C	cam8 Dia. Judge OK	Y10C		2C	cam8 Shoot Command bf. Dress
	45	X10D		2D	Dia. REM OK	Y10D		2D	Shoot Command af. Dress
	46	X10E		2E	(Reserve)	Y10E		2E	Event A
	47	X10F		2F	Camera NORMAL	Y10F		2F	Event B
	48	X110	0E3	30	cam9 Dia. Judge OK	Y110	163	30	cam9 Shoot Command bf. Dress
	49	X111		31	Dia. REM OK	Y111		31	Shoot Command af. Dress
	50	X112		32	(Reserve)	Y112		32	Event A
	51	X113		33	Camera NORMAL	Y113		33	Event B
	52	X114		34	cam10 Dia. Judge OK	Y114		34	cam10 Shoot Command bf. Dress
	53	X115		35	Dia. REM OK	Y115		35	Shoot Command af. Dress
	54	X116		36	(Reserve)	Y116		36	Event A
	55	X117		37	Camera NORMAL	Y117		37	Event B
	56	X118		38	cam11 Dia. Judge OK	Y118		38	cam11 Shoot Command bf. Dress
	57	X119		39	Dia. REM OK	Y119		39	Shoot Command af. Dress
	58	X11A		3A	(Reserve)	Y11A		3A	Event A
	59	X11B		3B	Camera NORMAL	Y11B		3B	Event B
	60	X11C		3C	cam12 Dia. Judge OK	Y11C		3C	cam12 Shoot Command bf. Dress
	61	X11D		3D	Dia. REM OK	Y11D		3D	Shoot Command af. Dress
	62	X11E		3E	(Reserve)	Y11E		3E	Event A
	63	X11F		3F	Camera NORMAL	Y11F		3F	Event B
3	64	X120	0E4	40	cam13 Dia. Judge OK	Y120	164	40	cam13 Shoot Command bf. Dress
	65	X121		41	Dia. REM OK	Y121		41	Shoot Command af. Dress
	66	X122		42	(Reserve)	Y122		42	Event A
	67	X123		43	Camera NORMAL	Y123		43	Event B
	68	X124		44	cam14 Dia. Judge OK	Y124		44	cam14 Shoot Command bf. Dress
	69	X125		45	Dia. REM OK	Y125		45	Shoot Command af. Dress
	70	X126		46	(Reserve)	Y126		46	Event A
	71	X127		47	Camera NORMAL	Y127		47	Event B
	72	X128		48	cam15 Dia. Judge OK	Y128		48	cam15 Shoot Command bf. Dress
	73	X129		49	Dia. REM OK	Y129		49	Shoot Command af. Dress
	74	X12A		4A	(Reserve)	Y12A		4A	Event A
	75	X12B		4B	Camera NORMAL	Y12B		4B	Event B
	76	X12C		4C		Y12C		4C	

■ Ethernet/IP

T->O (PLC->PC)

address		comment
+0	0	(unused)
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
+1	0	Shoot command bf. dress
	1	Shoot command af. dress
	2	Event A
	3	Event B
	4	(unused)
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
+2	0	Shoot command bf. dress
	1	Shoot command af. dress
	2	Event A
	3	Event B
	4	(unused)
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
...		
+50	0	Shoot command bf. dress
	1	Shoot command af. dress
	2	Event A
	3	Event B
	4	(unused)
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	

O->T (PC->PLC)

address		comment
+0	0	(unused)
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
+1	0	Shooting completed
	1	Data strobe
	2	Dia. Judge OK
	3	Black REM OK
	4	Camera normal
	5	Camera connect
	6	(unused)
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
+2	0	Shooting completed
	1	Data strobe
	2	Dia. Judge OK
	3	Black REM OK
	4	Camera normal
	5	Camera connect
	6	(unused)
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
...		
+50	0	Shooting completed
	1	Data strobe
	2	Dia. Judge OK
	3	Black REM OK
	4	Camera normal
	5	Camera connect
	6	(unused)
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	

【Other functions】

■ Language Switching Tool

Language setting is available by clicking the “Language” button on the button right corner.

The screenshot shows the TipMonitor configuration window. On the right side, there is a 'Language' button circled in red. Other visible elements include: 'Indication 1' (TMN-01), 'Indication 2' (TEST), 'Input Outer Signal' (Event 1: TMN-01, Event 2: Test), 'Beginning of time of day' (8:00), 'Create yesterday's report at beginning time' (checkbox), 'IP Tool' button, 'Page 6-10' radio buttons, 'Connection Retry Timer' (30 min), a calendar grid, 'Robot Name' (RM11), 'IP Address' (192.168.0.101), 'Available' radio button, and a 'Save' button.



The screenshot shows the 'TipMonitor' dialog box with the title 'Please select language'. A dropdown menu is open, showing three options: 'Japanese - 日本語', 'Japanese - 日本語', and 'English - US UK'. The first two options are circled in red. Below the dropdown, there is a warning: 'This tool will be stopped when you push [OK] button. please restart software if you want.' followed by Japanese text: 'OKボタンを押すと本ツールは終了します。必要なら、再起動してください。'

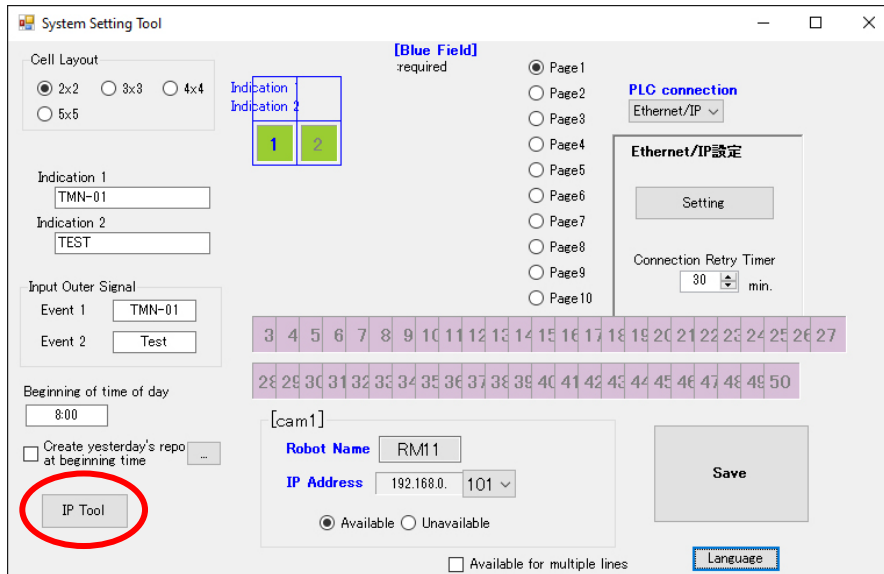


The screenshot shows the same 'TipMonitor' dialog box. The dropdown menu is now closed, and the 'Japanese - 日本語' option is selected. The 'OK' button is circled in red. The warning text remains the same.

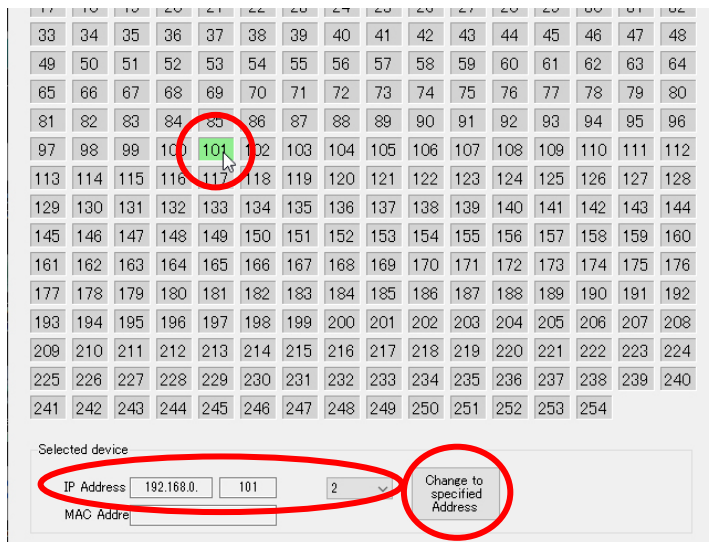
■ IP Setting Tool

For the Tip Monitors which completed “4.3 Setting the IP Address of Tip Monitor”, changing IP address can be done easily by this screen.

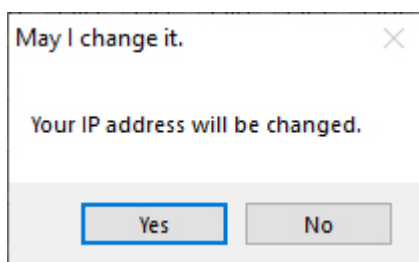
- ① Click “IP Confirmation Tool”.



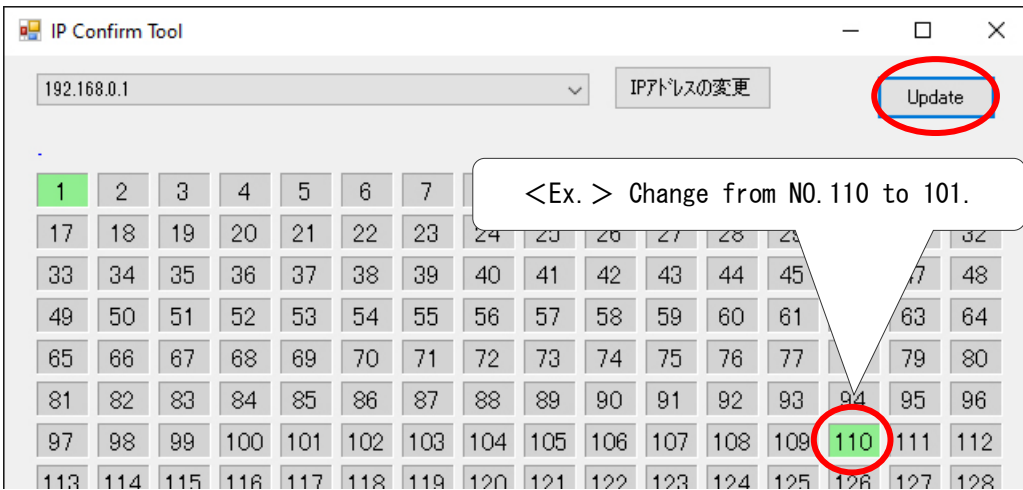
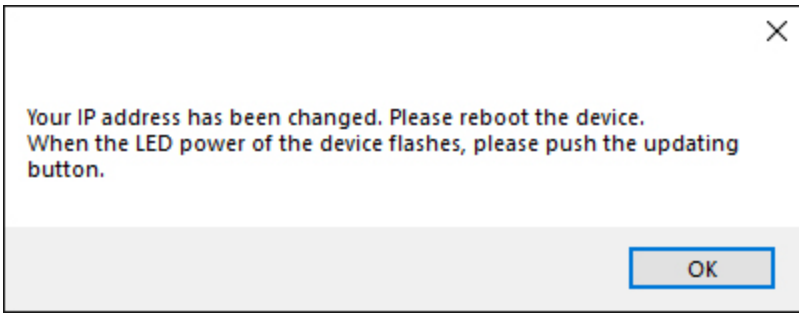
- ② Select the IP number to change by moving the cursor, then click. The command below will be enabled. Click “Change IP Address”.



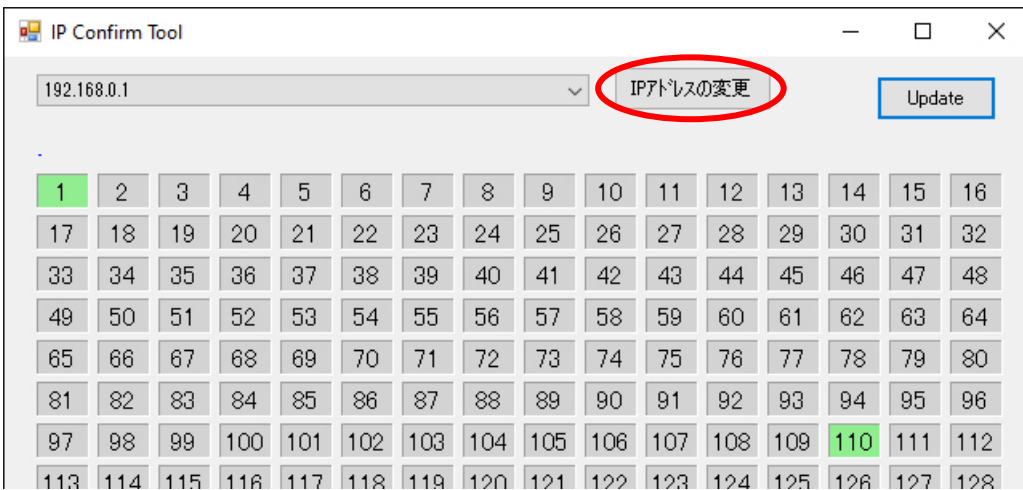
- ③ A confirmation dialog box will appear. Click “YES”.



- ④ If a message below appears, restart the TMN (remove and reinsert the LAN cable).
Click "Update". The green box must be relocated.



- ⑤ Check the number is correct and click "Change IP Address". The setting is completed.



※For the details of IP Address setting on PC side, see "4.10 How to change the IP Address of PC".

■ For Multiple Production Lines

This function is available for connecting multiple tip monitors to multiple PLCs.

※The line name cannot be changed after setting the camera. Also, the function cannot be switched ON / OFF.

If you change the function, it will cause problems such as the camera settings being initialized.

① Put a check mark on “Available for multiple lines”. A list below will appear.

IP Tool

Available Unavailable 1

※Please fill in the setting line amount from above.

Available for multiple lines

Line	Name	Annotation	Line	Name	Annotation	Line	Name	Annotation	Line	Name	Annotation
<input checked="" type="checkbox"/> 1	DEF	DEF(default)	<input checked="" type="checkbox"/> 11								
<input checked="" type="checkbox"/> 2			<input checked="" type="checkbox"/> 12								
<input checked="" type="checkbox"/> 3			<input checked="" type="checkbox"/> 13								
<input checked="" type="checkbox"/> 4			<input checked="" type="checkbox"/> 14								
<input checked="" type="checkbox"/> 5			<input checked="" type="checkbox"/> 15								
<input checked="" type="checkbox"/> 6											
<input checked="" type="checkbox"/> 7											
<input checked="" type="checkbox"/> 8											
<input checked="" type="checkbox"/> 9											
<input checked="" type="checkbox"/> 10											

② Put check marks on lines which you are going to use. Create your “Name”, “Annotation”.

※Do NOT use the characters such as (%^*()’□◇” etc.).

③ Input “Line Number”, “Name”, and “Note”.

Beginning of time of day 8:00

Robot Name RM11

IP Address 192.168.0.101

Line Number 1

Available Unavailable

Available for multiple lines

Line	Name	Annotation	Line	Name	Annotation	Line	Name	Annotation	Line	Name	Annotation
<input checked="" type="checkbox"/> 1	DEF	DEF(default)	<input checked="" type="checkbox"/> 11								
<input checked="" type="checkbox"/> 2			<input checked="" type="checkbox"/> 12								
<input checked="" type="checkbox"/> 3			<input checked="" type="checkbox"/> 13								
<input checked="" type="checkbox"/> 4			<input checked="" type="checkbox"/> 14								
<input checked="" type="checkbox"/> 5			<input checked="" type="checkbox"/> 15								
<input checked="" type="checkbox"/> 6											
<input checked="" type="checkbox"/> 7											
<input checked="" type="checkbox"/> 8											

④ On the “Result Report” of the Judge-Record software, lines (PLCs) will be selectable. The report can be managed by each line.

Report

8 month 26 day will report today-1 today-2

2020 year

Robot RM21

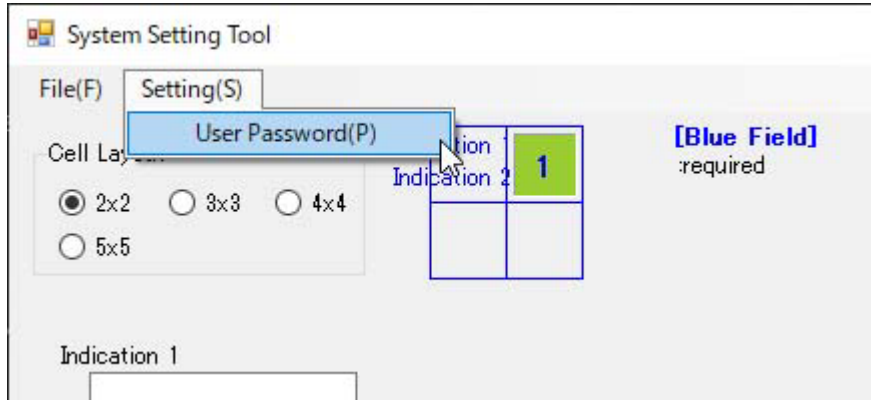
The number of NG: 0 /dressing: 0 /events: 0

	month	hr	min	sec	[detail]	dia	rem	dia1	dia2	rem(%)	ctr(%)	dia	rem	dia1	dia2	rem(%)	ctr(%)
▶ 1	08/26	11:26	29		test_ING	OK	6.82	6.65	24	0	test_OK	OK	6.89	7.06	28	0	
2	08/26	11:26	24		test_ING	OK	6.74	6.67	24	0	test_OK	OK	6.91	7.03	28	0	
3	08/26	11:16	58		start up	--	--	--	--	--	--	--	--	--	--	--	--
4	08/26	11:14	07		test_ING	OK	6.79	6.67	24	0	test_OK	OK	6.89	7.03	28	0	
5	08/26	11:13	54		start up	--	--	--	--	--	--	--	--	--	--	--	--

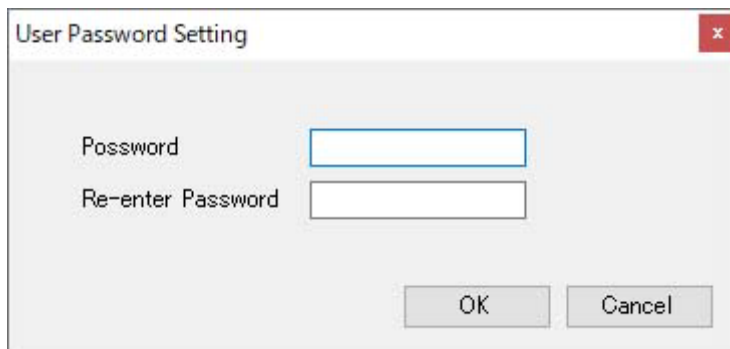
■ User Password Setting

To avoid closing the Judge Software accidentally, user password setting is available.

- ① Select [Settings]→[User Password Setting], from the menu on the top of the screen.

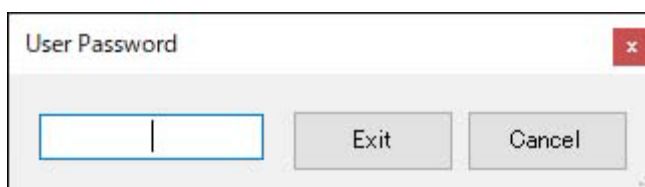


- ② Create your password (with 4 characters). Then click “OK”.



※Click “OK” without filling the blanks if you do not need a password.

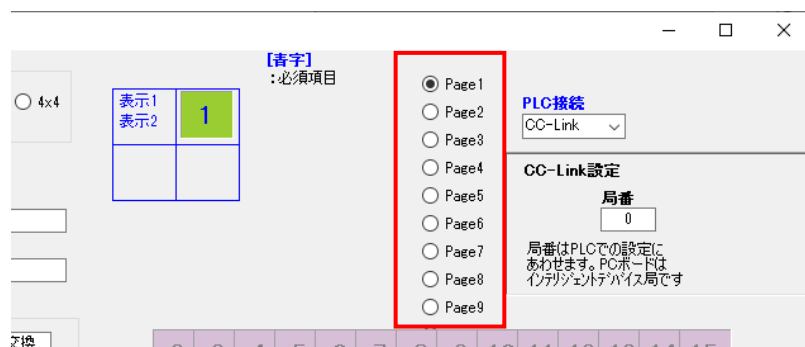
- ③ Image below will appear when finishing the Judge Software.



※“Administrator Password (000000)” and “User Password” are different.
Administrator Password could not be changed.

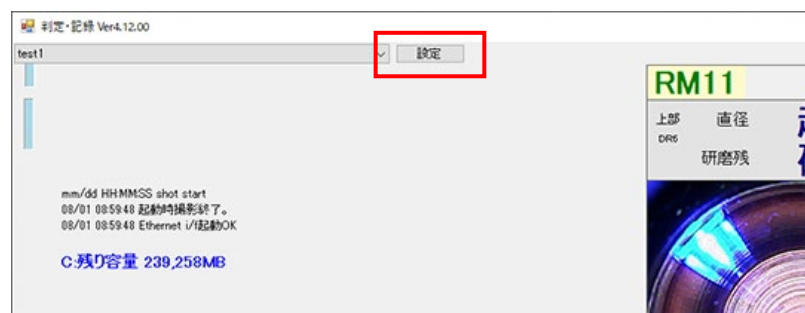
■ Page Name Setting

The number of pages set in the previous section can be changed to any character.

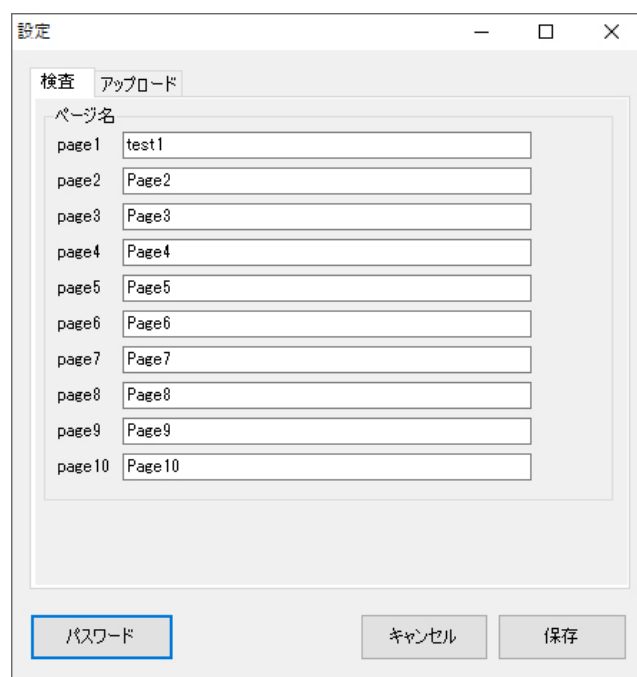


※Even if you change the settings using the steps below, Page 1, Page 2, etc. will remain on this screen.

- ① After all setup is complete, open the settings menu from the button shown below on the inspection screen.



- ② When the image below appears, please enter any text.



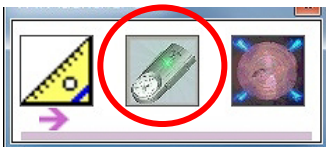
4.5. Setting the Camera Setting Tool

When setting up, please check the following list.

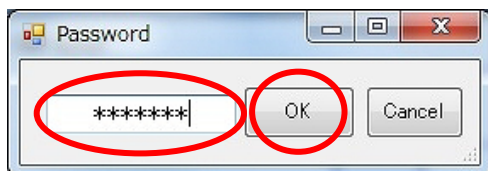
⚠ Caution

- ※The PC, HUB, and the monitor are properly connected by LAN cable and communicated.
- ※Attachment of the monitor in the assembly line and the setting of the gun position is done.
- ※Usage of a cap tip that has been dressed just before setting up.

- ① Activate the “Camera Setting Tool”.
(The icon will be in the TMN launcher)



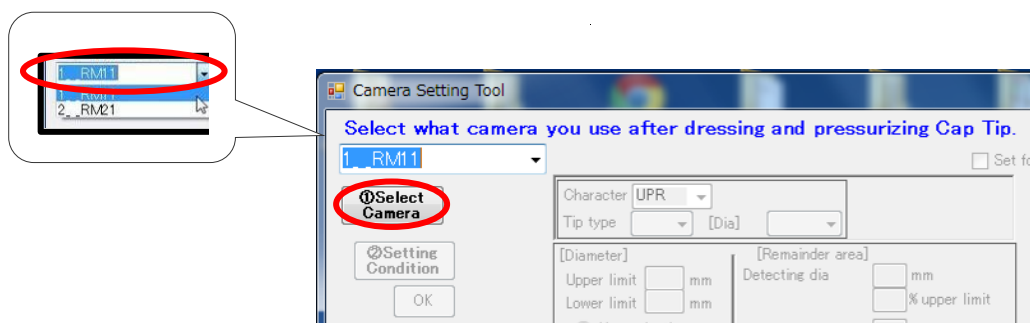
- ② Type in the master password “0000000” then click “OK”.



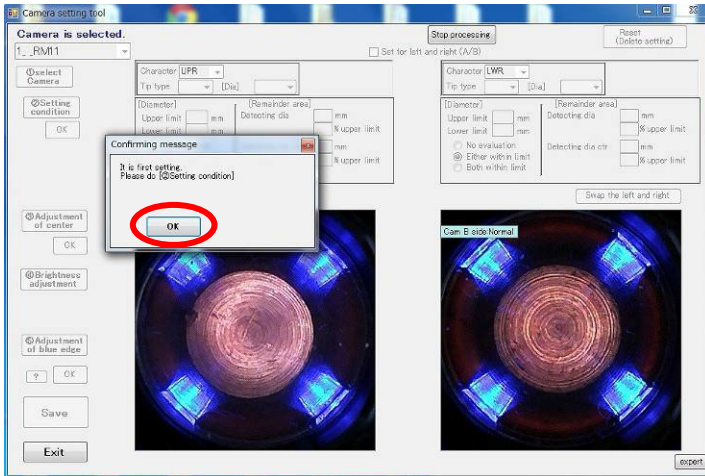
- ③ Before setting up, the cap tip needs to be dressed and kept pressured.
(Recommended Pressure 1500N , Maximum 3000N)

※The setting must be done after the cap tip is dressed. If not, the system will not work properly.

- ④ The picture below will appear on the PC.
Follow the order on the left from “①Select Camera ~ ⑤Adjustment of blue edge” to set up.
Choose the camera from the pull-down menu and click “①Select Camera”.

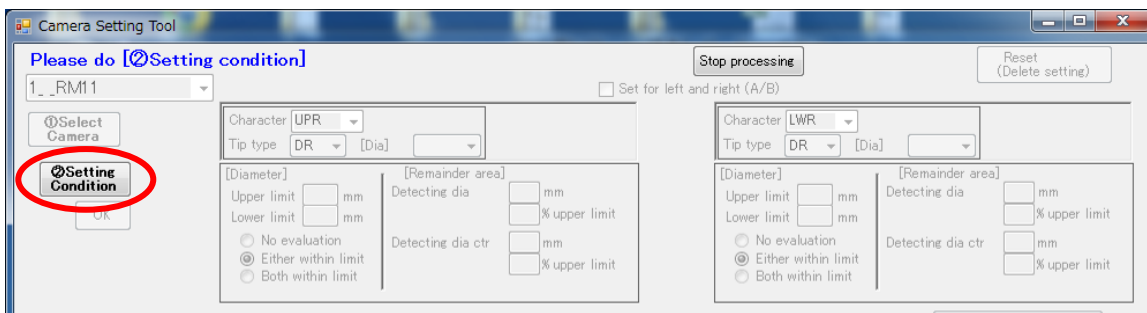


⑤ It will correspond with the tip monitor (camera) and the screen will look like the picture below. Click “OK”.

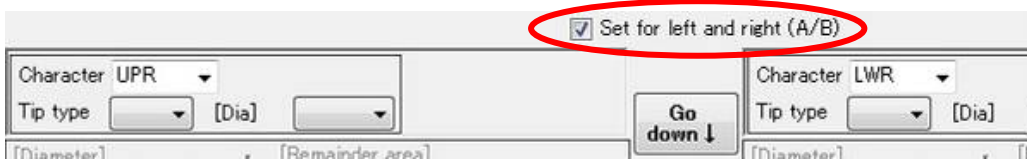


※If the photograph does not show nor has any errors, please recheck the network.
Also, please check if any contaminations or shadows are not on the cap tip as well.

⑥ Click “② Setting Condition”.



※If you prefer to set up Side A and Side B separately, the checkbox must be checked.

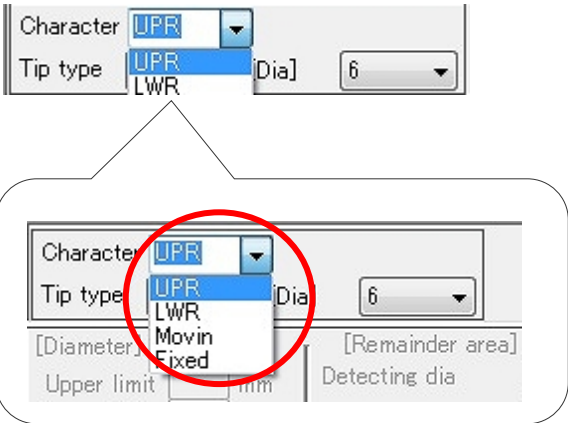


Side A

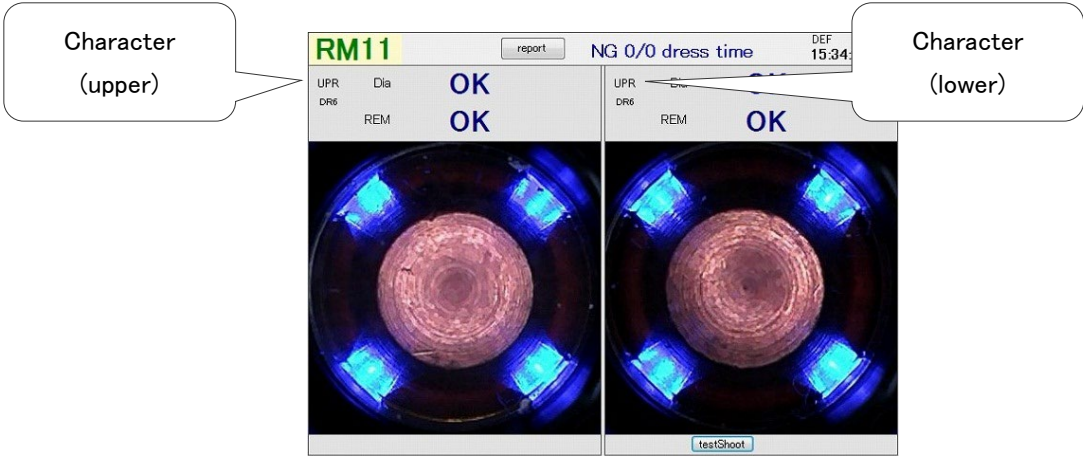


Side B

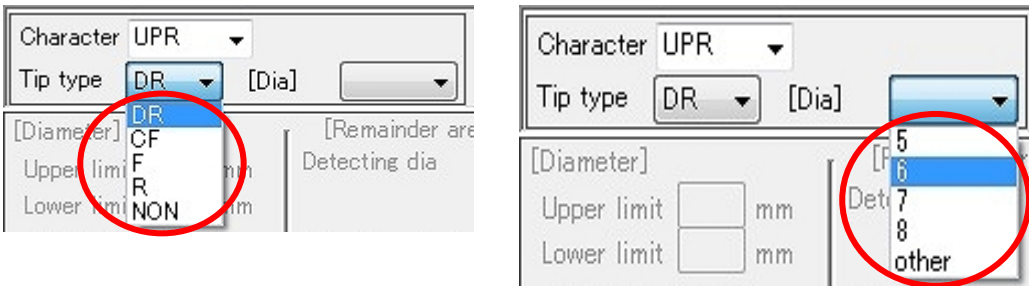
⑦ Choose the character.



※Character (UPR, LWR, Movin and Fixed) will be shown like it is in the picture.



⑧ Choose the type of cap tip/the diameter of the cap tip.



⑨ Click "Go down".



- ⑩ Set each item of the judging parameter.

Character UPR	
Tip type DR	[Dia] 6
[Diameter]	
Upper limit 7 mm	[Remainder area]
Lower limit 5 mm	Detecting dia 5.5 mm
<input type="radio"/> No evaluation	30 % upper limit
<input checked="" type="radio"/> Either within limit	Detecting dia ctr 1 mm
<input type="radio"/> Both within limit	50 % upper limit

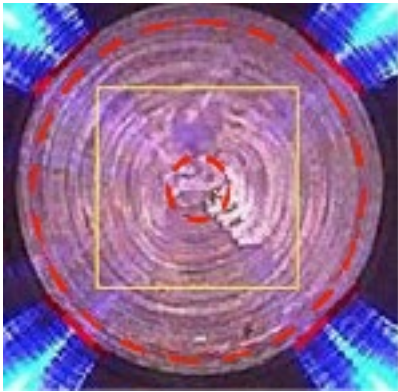
※When fixing the cap tip setting, change by clicking “up”.

When changing, the judging parameter will be formatted.

【Diameter Setting】

- Maximum, Minimum setting: If in between the set value, OK judge
- From the 2 measured length, select the judgment pattern.
 - No Evaluation : Diameter judge will be always OK
 - Either within limit : OK judge when either of the tips passes the limit (Default)
 - Both within limit : OK judge when both tips passes the limit

【Area of BlackREM】



Outer dotted line (Judgment objected to total area of the tip top)

- Black REM. Diameter: Select the area for judging the blackREM the tip top.
- Black REM. Threshold Value: Maximum BlackREM permissible in a selected area.

Inner dotted line (Judgement objected to the center of tip top)

- Center BlackREM. Diameter: Select the area for judging the blackREM of the center of the tip top.
- Center BlackREM. Threshold Value: Maximum BlackREM permissible in a selected area.

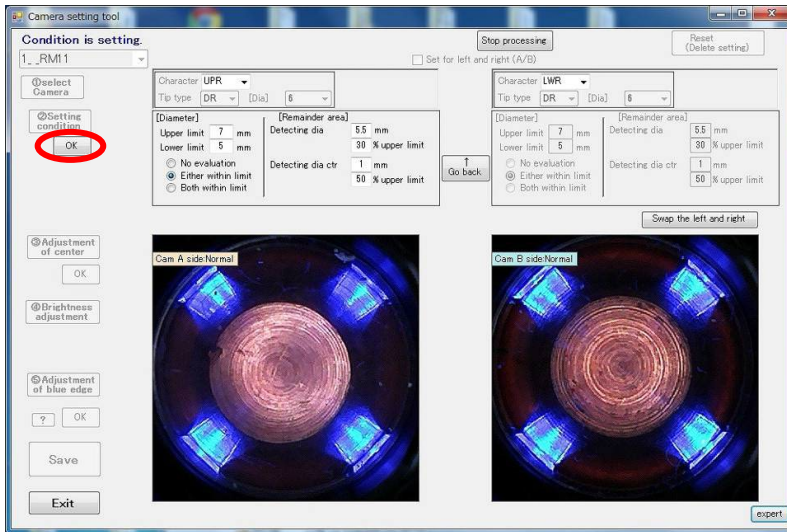
⑪ Swap the left and right images as needed.

✖The left and right cannot be swapped after setup.

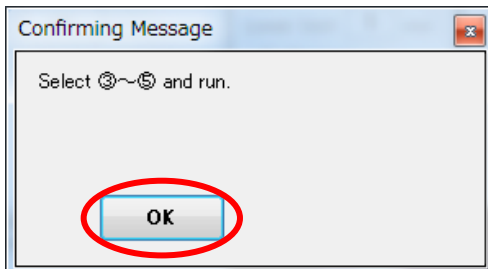
If you need to switch the left and right after the setup is completed, please initialize the settings.



⑫ When the set up is finished, click "OK".



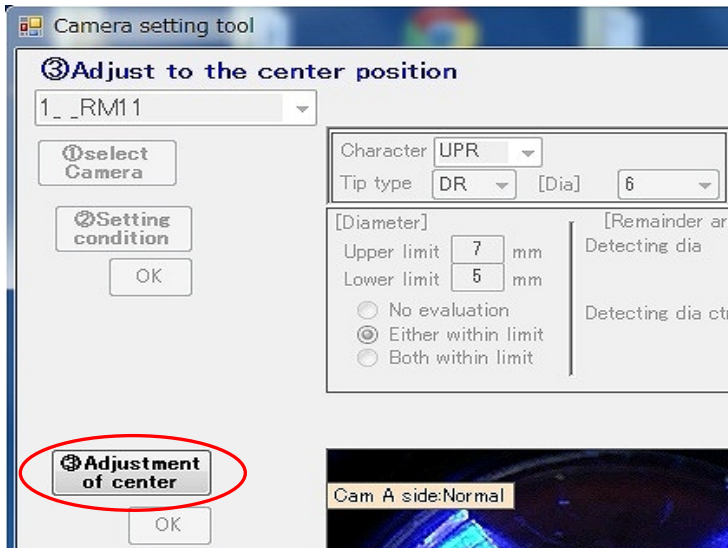
A confirmation message will pop up. Click "OK" and go on.



※Now on, please be careful of these listed below.

- Cap tip that has been dressed and pressurizing the monitor.
- Any dust or contaminations are not in the photo.
- No shadows are showing on the cap tip .

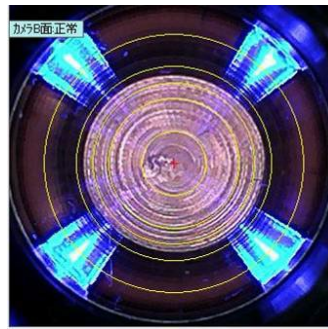
⑬ Click “③ Adjustment of center”.



⑭ Adjust the center of the cap tip to show in the center of the photo, which is shown by a red cross, by using the ways (a) and (b).



Before Adjusting



After Adjusting

A. Set the cursor on the center of the cap tip and double click.

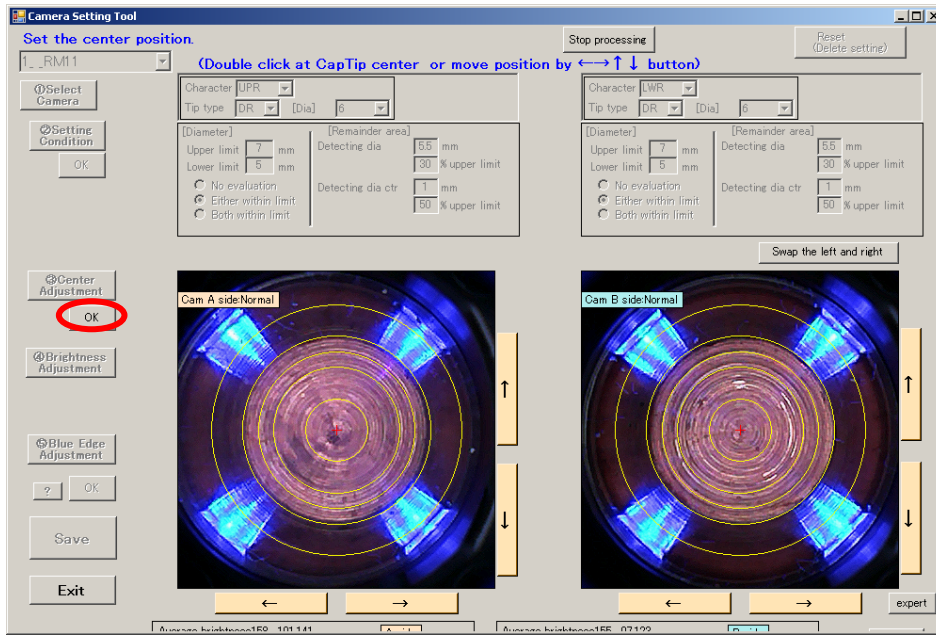


※Cursor will show up when setting the mouse on the photograph.

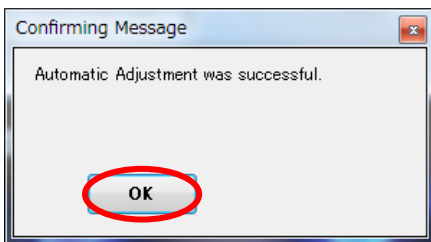
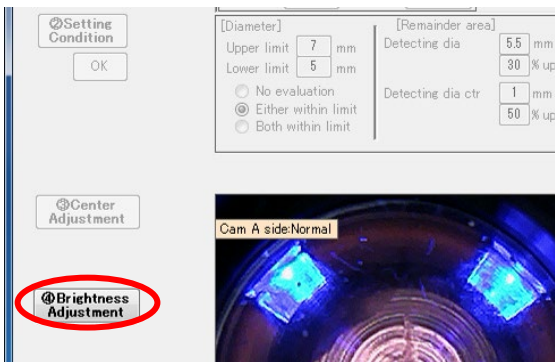
B. Move by using the arrows set on the bottom and right side of the picture.



15 After adjusting, click “OK”.

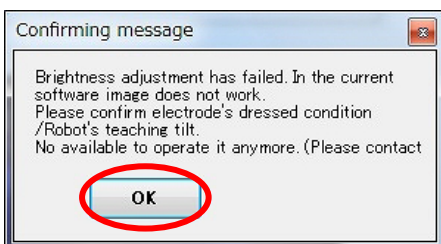


16 Click “④ Brightness Adjustment”.
The brightness will be adjusted automatically.

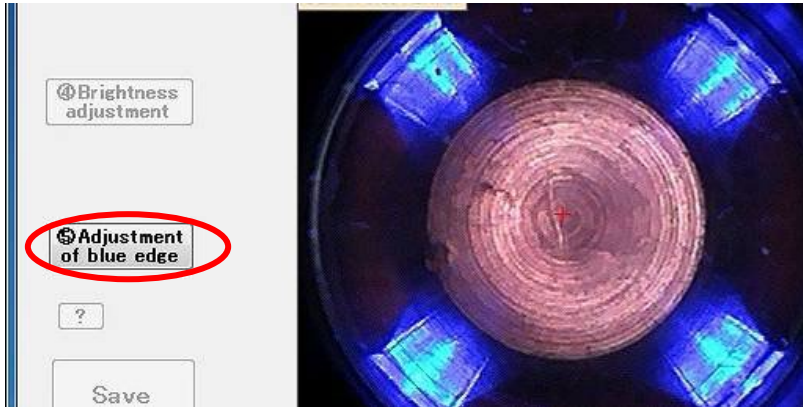


When the message pops up, click “OK”.

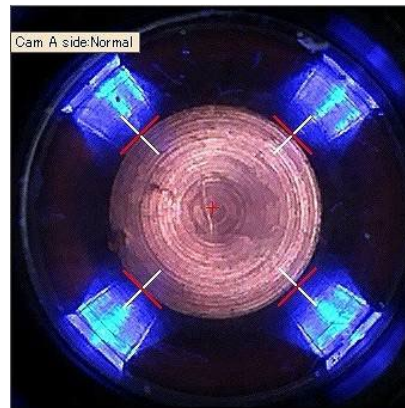
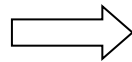
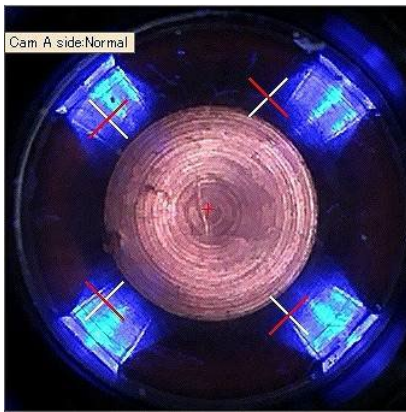
✖If the auto adjustment fails, an error message will appear. Please check whether the cap tip is dressed properly and set again.



⑰ Click “⑤ Adjustment of blue edge”.



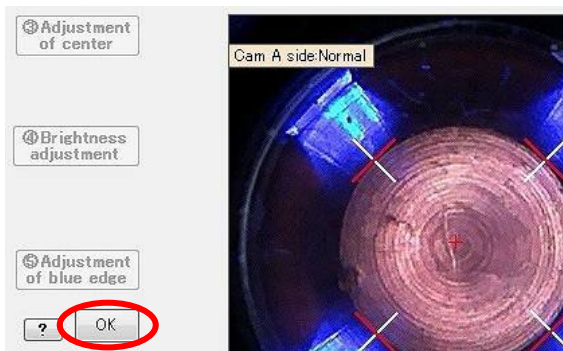
Drag the 4 markers on the borderline of the blue light and the tip of a cap tip.



Before Adjusting

After Adjusting

⑱ When finished, click “OK”.



⑱ Select the position of the blackREM judgment circle.



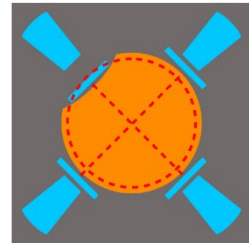
[Select Center Position]

- If DiaNG, center of the image

<example>

As shown in the figure on the right, if either diameter judgment is larger or smaller than the threshold, the judgment circle is set at the center of the image.

※This is the default setting of TMN-01.

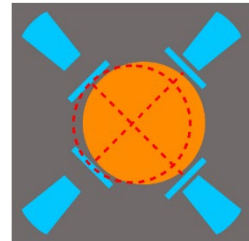


- Diameter intersection of ① and ②

<example>

As shown in the figure on the right, even if the diameter judgment value exceeds the threshold, the judgment circle will always be the intersection point of the diameter judgment.

※It may be effective for guns such as X-guns where the tip is tilted.

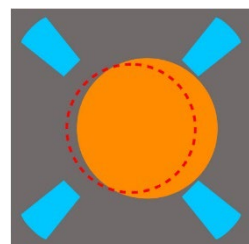


- Center of the image

<example>

Even if the chip is not at the center position as shown in the figure on the right, the judgment circle will always be at the center of the image set in "Center adjustment" in the previous section.

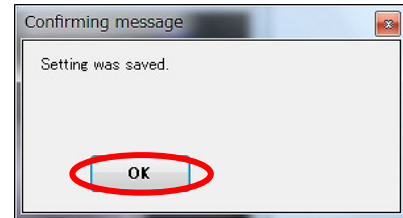
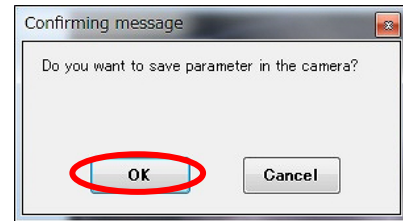
※In this case, the black part on the left side is determined to be black residue.



※In either mode, you need to find the optimal solution while actually shooting.

Basically, we recommend using the default settings.

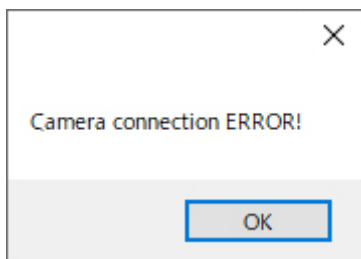
20 Click "Save".



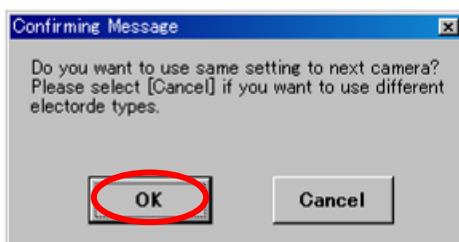
※If you click "Cancel Process" before saving, an error message below may appear.

If this happens, restart the Tip Monitor and do the same process from the first step once again.

Click "Reset (delete setting)" before you operate the process from the first step.



21 If there are multiple cameras, a message will pop up.

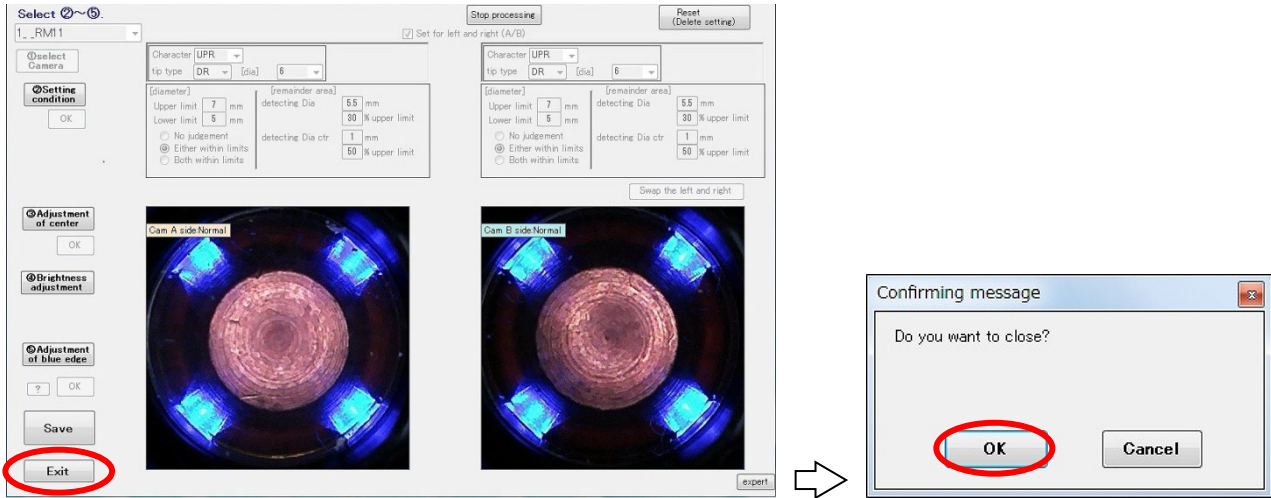


※Please confirm the message if same setting (shape, value) is preferred.

22 Release the gun.

Conduct process 3 ~ 20 to all of the tip monitors.

After finishing all of the settings, click "Exit".



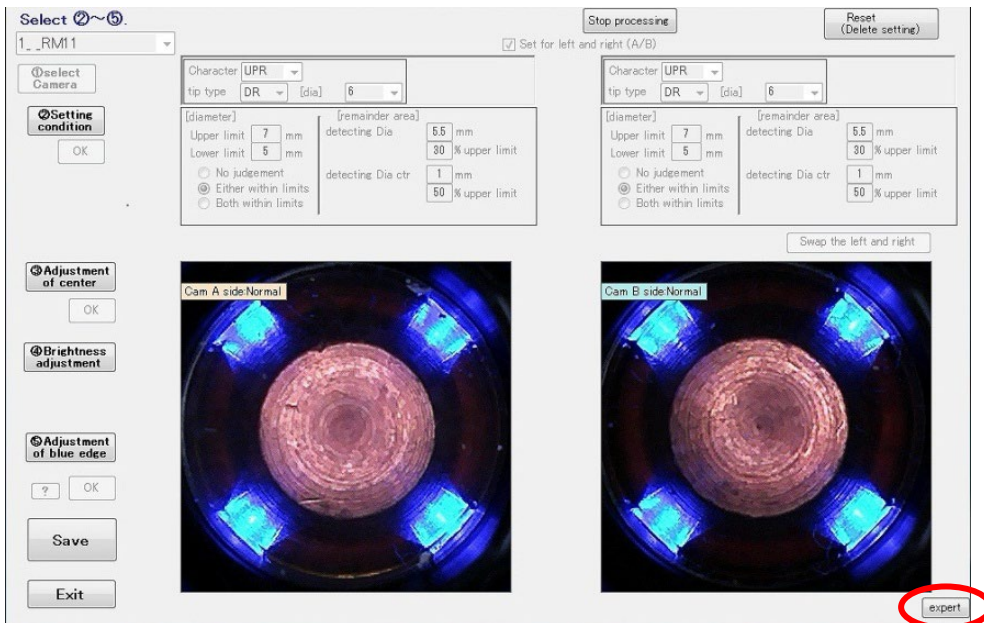
【Other functions】

■ Expert Mode

⚠ Caution

※ "Expert" is a function available under customer support.

This is only for developers and must not be used in general.



4. 6. Judge-Record Software Validation

“Judge-Record Software” is the system’s main software.

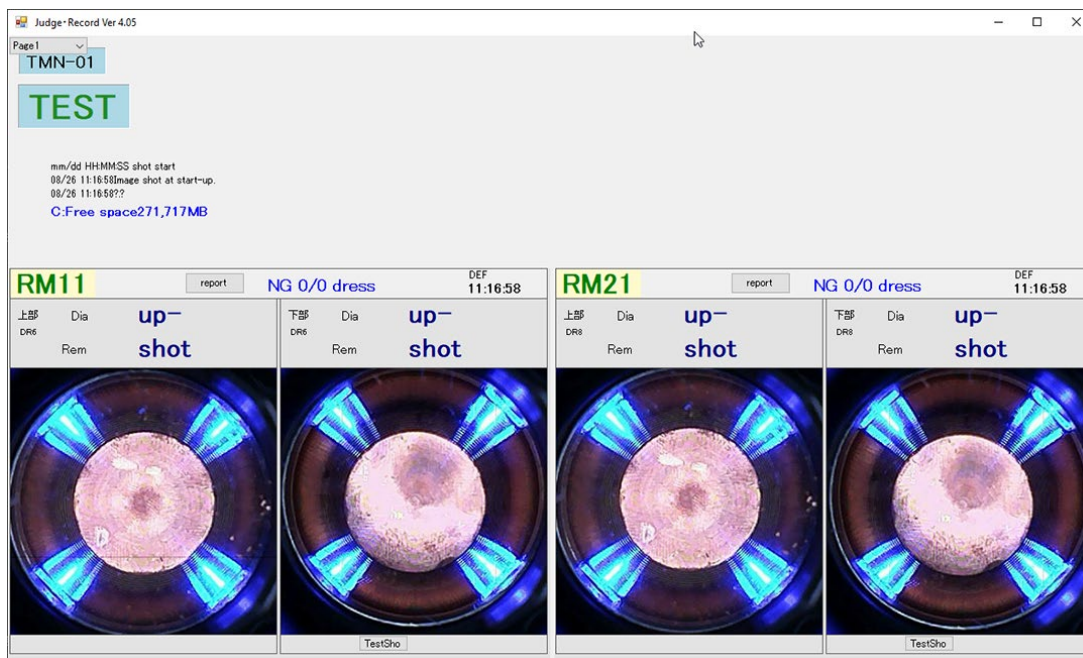
It will be able to activate after finishing the system setting and the camera parameter setting correctly.

① Activate the “Judge-Record Software”.

(The icon will be in the TMN launcher)



When the “Judge-Record Software” is activated, the camera will take a test shot to make sure the camera is connected properly. (The test shot is set to take brighter photos than the usual photos)



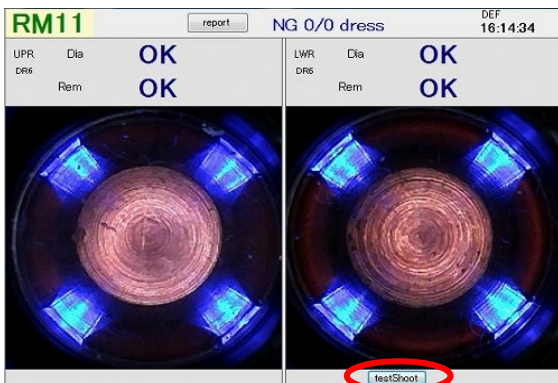
※When the setting is incorrect or the camera is disconnected, a message “Camera Error” will appear. If this happens, check to see if the camera connection and settings are done properly.

※When the setting is incorrect or the control device is disconnected, a message “Error” will appear. If this happens, check to see if the cable connection and settings are done properly.

※When the camera error remains even if the connection is done properly, restart the Tip Monitor.

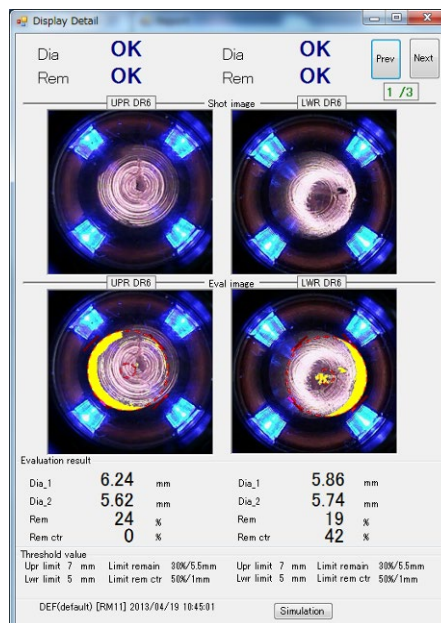
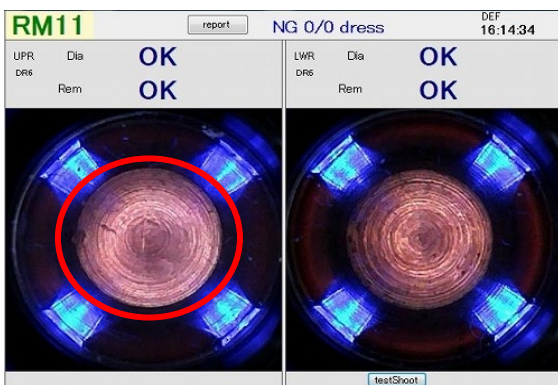
Please follow the order below and confirm the camera setting parameter.

- ② Keep the cap tip pressurizing. (Recommend 1500N, Maximum 3000N)
- ③ Click “Testshoot”.



※In test shots, no judgment signal will be sent to the PLC.

- ④ When photo of the cap tip is taken, click the photo. A detail of the photo will appear.



- ⑤ Confirm the value of diameter · REM.

- **NG case with the diameter**
 → Things concerned: The threshold value set too severe, not enough pressure, not adjusted properly to the center, blue light not adjusted properly. Please recheck the teaching pressure and follow the order written in ch.4.5 and reset.

- **NG case with the BlackREM**
 → Things concerned: The threshold value set too severe, tilt of a cap tip, dust adhesion of dust, lack of tip dressing. Please recheck the teaching dressing condition and follow the order written in “4.5 Setting the Camera Setting Tool” and reset.

- ⑥ Confirm if the shots are taken correctly by checking the signal from the PLC.

4. 7. Explanation of “Judge-Record Software”

Setting The function of transferring monitor results to other storage

mm/dd HH:MM:SS shot start
04/03 13:45:40 Shooting a image is finished at start-up.
04/03 13:45:40 CC-Link i/f boot is Ok.

Shows the name which was Set in the system setting tool

C:Free space132,500MB
Shows the remaining of HDD

Shortage of memory causes the system not to work properly.
Shown with red letters: under 15GB
Under 3GB, the system stops operating.

Robot Name
(Set by using System Setting Tool)

Click to see the test history

Daily Overall Result

Shows Judgment Result

- OK
- NG
- TooBri

The above 3 types are displayed.
✳Refer to page 60 for too bright

Shows the most recently taken photo

Click to take a test shot.
✳With the test shot, no judgment signal will be sent to the PLC

UPR Dia		LWR Dia	
DR6	Rem	DR6	Rem
OK	OK	OK	OK

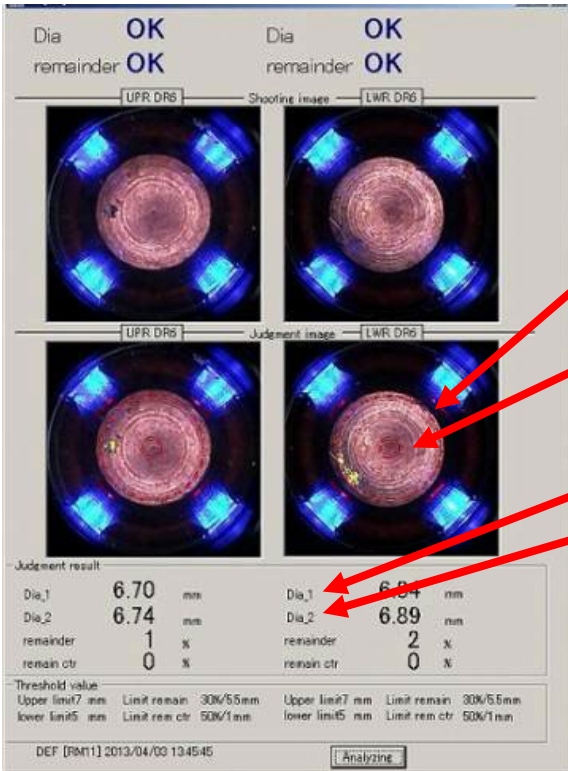
UPR Dia		LWR Dia	
DR6	remainder	DR6	remainder
OK	OK	OK	OK

Judgment result			
Dia.1	6.70 mm	Dia.1	6.84 mm
Dia.2	6.74 mm	Dia.2	6.89 mm
remainder	1 N	remainder	2 N
remain ctr	0 N	remain ctr	0 N

Threshold value			
Upper limit7 mm	Limit remain	999/95mm	Upper limit7 mm
Lower limit6 mm	Limit remain ctr	999/7 mm	Lower limit6 mm

DEF [RM1] 2013/04/03 13:45:45

Click the photo for detailed information



Judgement Photo

Red Line (Near Blue Light) : Indicates Tip Dia. Detection Spot
 (Blue Edges - 4)

※When not detected, it will not appear.

Red dotted line (outer) : Inside of the red-dotted line indicates the remaining part which was not dressed properly.

Red dotted line (inner) : Inside of the red-dotted line indicates the remaining part which of the center was not dressed properly.

Judge Result

Diameter ① : Shows the length of the upper-left and lower-right blue edges.

Diameter ② : Shows the length of the upper-right and lower-left blue edges.

Remainder : Shows the % of which was recognized black in the cap tip.

Remain ctr. : Shows the % of which was recognized black in the center of the cap tip.

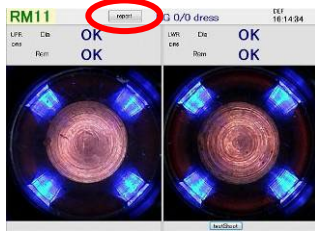
Judge Threshold Value

Value set to judge.

Value set in "4.5Setting of Camera Setting Tool" will be shown.

Analyzing

"Analyzing" is available under a supervision of the manufacturer.



By clicking the "Result Report", you will be able to see the history of the test results.

If any changes are preferred in the contents displayed, change referring to the picture below and click "Show".

4 month 3 day will report
 2013 year today-1 today-2

Choose a date.

Line: DEF(default)
 robot: RM11

Choose a camera

Option
 start up event before dressing
 after dressing average brightness original record

Choose an option.

4 month 19 day will report
 2013 year today-1 today-2

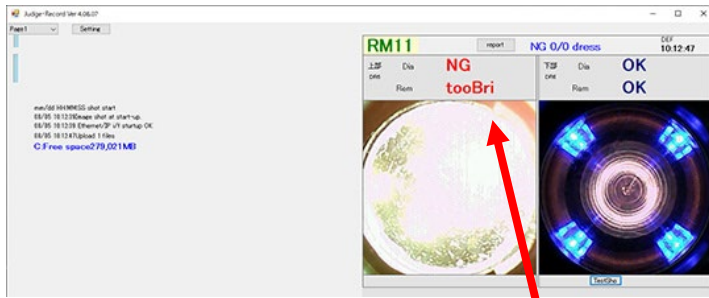
Line: DEF(default) robot: RM11

Report

The number of NG: 0 /dressing: 0 /events: 0

	month	day	hr	min	sec	[detail]	dia	rem	dia1	dia2	rem(%)	ctr(%)
▶ 1	04/19		10	45	01		est_OK	OK	5.86	5.74	19	42
2	04/19		10	41	52		---	---	---	---	---	---
3	04/19		10	39	11		---	---	---	---	---	---

Click the photo for detailed information



tooBri (too Bright)

Appears when the captured image is too bright.

※In the case of a chip that becomes too bright when photographed
(Example: When did camera setting with a blackened cap tips)

※When the type of cutter is changed in the middle and the surface roughness is improved too much
(Example: If you set the KTW cutter, but then changed the cutter type and did not camera setting again)

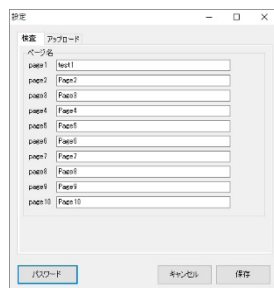
※If the timing of pressure release is too early and the camera shoots the lighting equipment on the ceiling, etc.

Displayed under the above or other conditions.

4. 8. Functions in Setting Menu

■ Page Name Setting

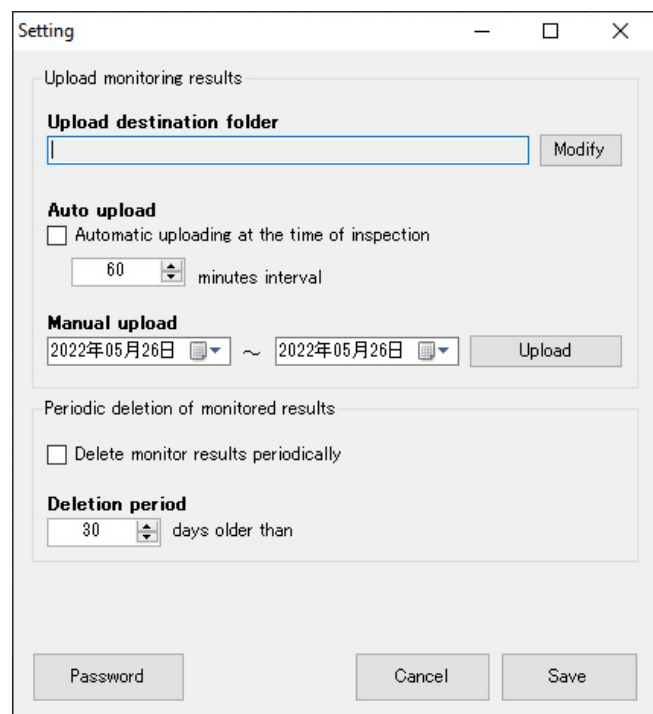
Refer to P.58



■ Transfer to external storage / automatically delete old data

The function of transferring monitor results to storage and automatic deletion of old monitor results can be configured.

※Can use it as a backup by saving it in an external storage on the network.



If you want to transfer the monitoring results automatically, please turn on the “Auto Upload” checkbox.

If the transfer does not complete successfully due to network problems, etc., the results monitored up to the previous day will be attempted to be transferred again at the set time interval.

For unsent data older than 2 days, please upload manually by specifying the date.

If you want to delete old monitor results, check ON the “Delete monitor results periodically” checkbox.

Data prior to the specified number of days is automatically deleted when the software is started or when the date changes.

If a user password has been set in “4.4. User Password Setting”, operations other than “Manual Upload” are prohibited when the menu is displayed.

Press the “Password” button and enter the user password to use all functions.

4.9. PLC Auto Reconnection Software

Auto Reconnection Function is equipped in “Verify/Record Software”.

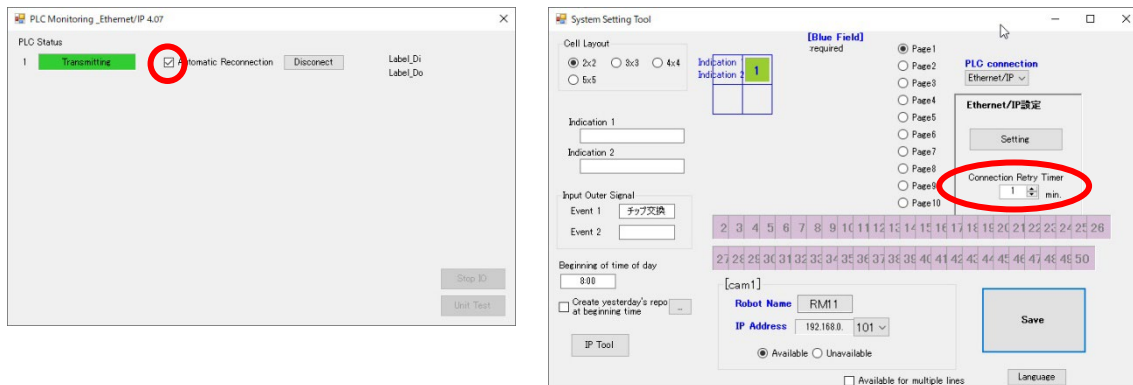
It is selectable to use the auto reconnection function.

It reconnects every time as set in “Connection Retry Timer”.

Please remove check mark in “Automatic Reconnection” Box when it is not necessary.

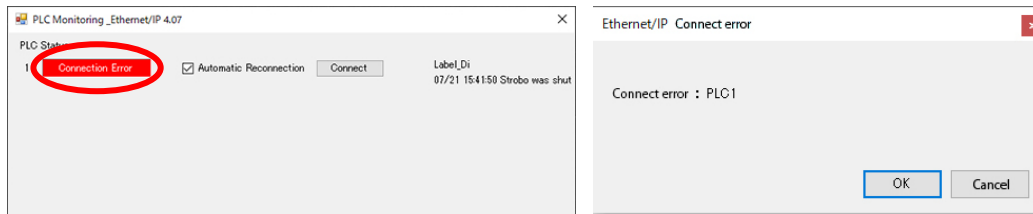
※PLC Auto Reconnection Software will appear with a minimized window above the start icon when starting up for the first time.

※If connected cameras are invalid or disconnected, PLC Auto Reconnection Software will have connection error (PLC disconnection).



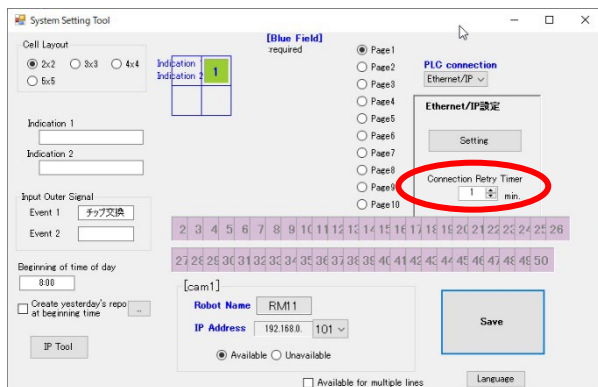
[Under PLC Disconnection]

A window “Connection Error” pop up when it disconnects to PLC.



Press “OK” and the pop-up window is closed.

Press “Cancel” and reconnect as set up in ”Reconnection Retry Timer”.

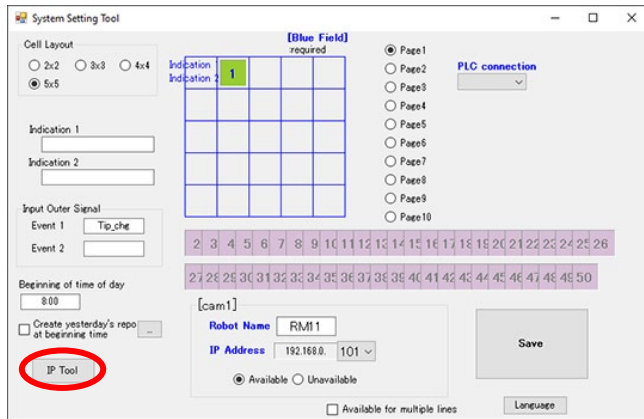


※Please keep in mind that frequent reconnection may become load on PC.

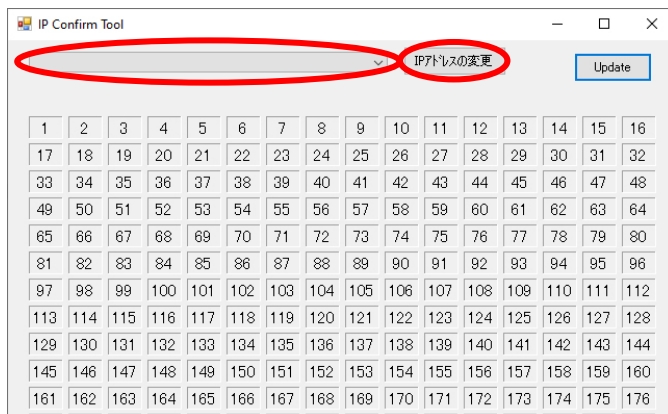
4. 10. How to change the IP address of PC

After installation, if the IP address of the PC changes due to changes in the network configuration, etc., change the software settings according to the following procedure.

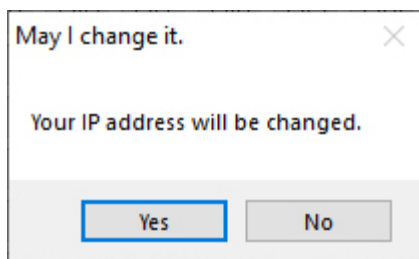
- ① Start System Setting Tool from TMN Launcher and click “IP Tool”.



- ② Select the IP address to use and click “Change IP Address”.



- ③ A confirmation dialog will be displayed. Click “Yes”.



※For the details of changing the Tip Monitor's IP address, see “4.4 Setting the System Setting Tool”.

5. Instruction of Report

■ Screen image

The screenshot shows the 'Report' window with the following data table:

	month day	hr min sec	[detail]	dia	rem	dia1	dia2	rem(%)	ctr(%)	dia	rem	dia1	dia2	rem(%)	ctr(%)
▶ 1	08/09	08:42:37		test_NG!	!BRI	.	.	0	0	test_OK	OK	5.65	6.39	6	5
2	08/09	08:42:35		test_NG!	!NG!	.	.	39	44	test_OK	OK	5.65	6.01	5	7
3	08/09	08:42:00		test_OK	OK	5.31	5.19	13	2	test_OK	OK	5.67	6.41	7	8
4	08/09	08:41:59		test_OK	OK	5.29	5.24	14	1	test_OK	OK	5.67	6.15	6	8
5	08/09	08:41:57		test_OK	OK	5.31	5.17	13	1	test_OK	OK	5.81	6.41	8	8
6	08/09	08:41:56		start up	--	--	--	--	--	--	--	--	--	--	--

※Click “Report” after when updating the date, TMN channel, or other indications. The screen will NOT automatically switch to latest information.

■ Summary Sheet

A function to display the number of errors that occurred per day in the past week.

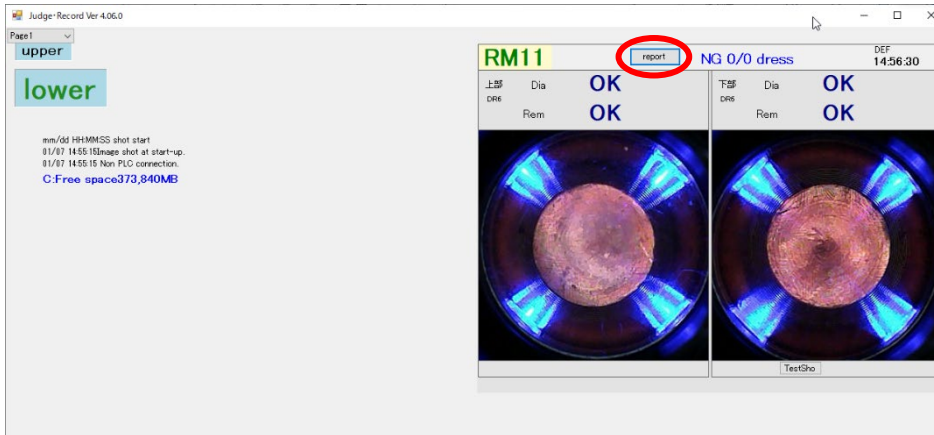
The screenshot shows the 'the number of items' window with the following summary table:

	1/1 Fri	1/2 Sat	1/3 Sun	1/4 Mon	1/5 Tue	1/6 Wed	1/7 Thu
RM11	/	/	/	/	/	/	/
total NG							

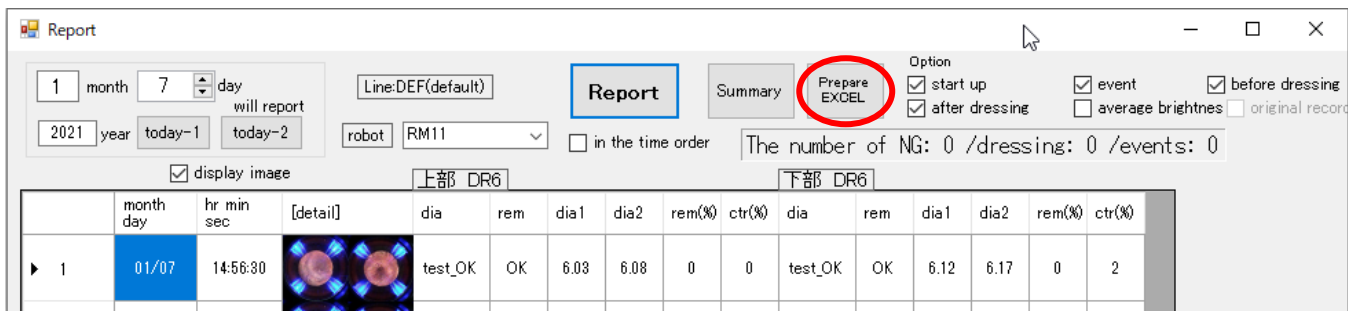
■ Export to EXCEL Format

A function to export Result Report to Excel format.

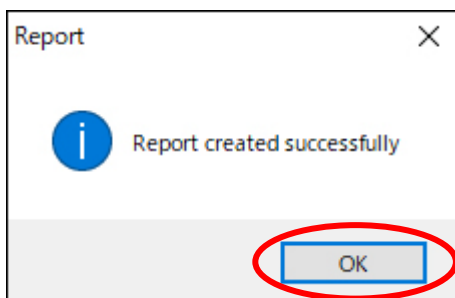
- ① Click “Report” of Judge-Record Software.



- ② When the screen below opens, click “Prepare EXCEL”.



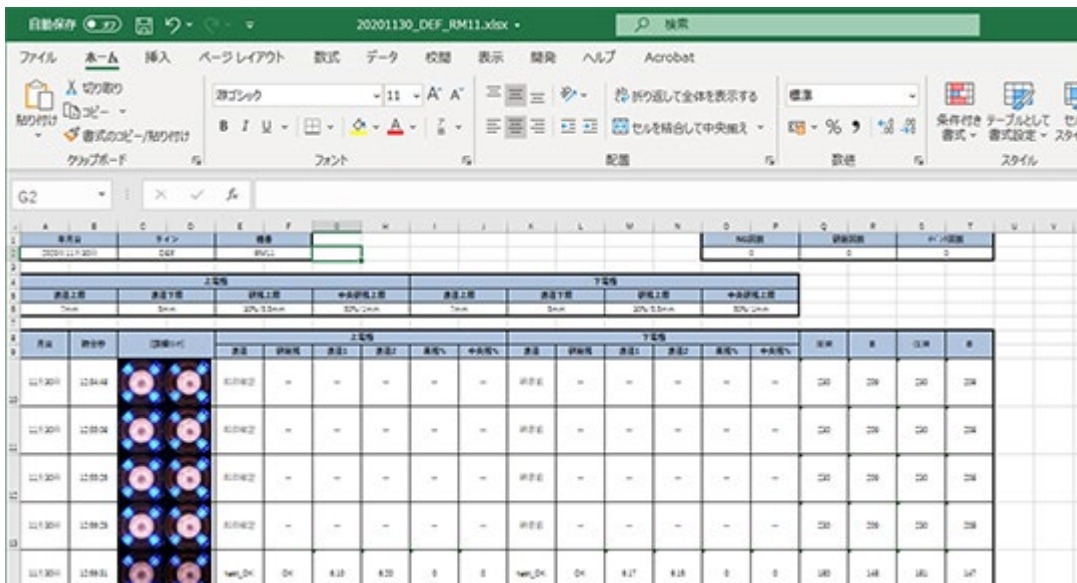
- ③ The report will be downloaded in the folder which was selected at “P.34 ⑨-3. Assign download location”. The window below will appear if succeeded. Click “OK”.



④ Downloaded EXCEL file will be like the image below.

※The Excel of the report is saved in the “temp” folder in the C drive.

※Since the file path of the software cannot be changed, this folder cannot be moved or renamed.

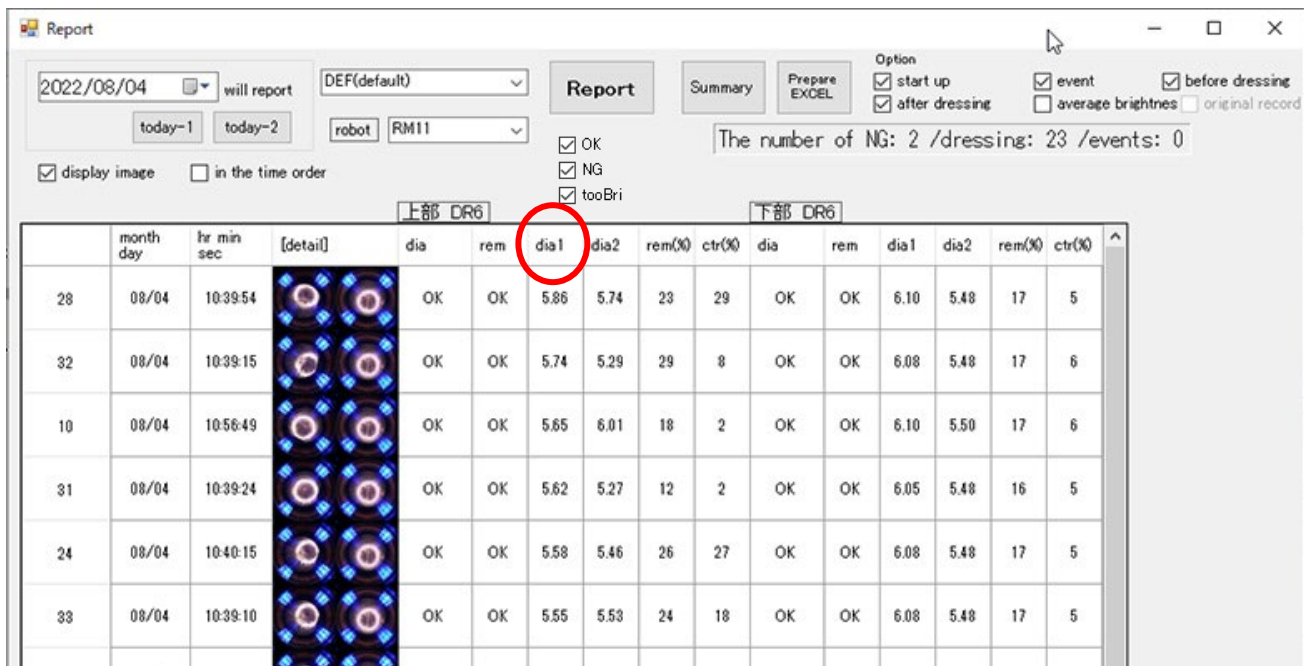


■ Sort Function 1

It is a function to sort by clicking the title.

Click again to toggle between ascending and descending order.

※The default sort order is “hours, minutes, seconds”, so if you want to return to the default, click “hr, min, sec”.



Sort Function 2

The data to be displayed can be only the content of the checkbox.

Check OK, NG, and too bright (BR), and click Display.

The screenshot shows the 'Report' window with the following data table:

	month day	hr min sec	[detail]	dia	rem	dia1	dia2	rem(%)	ctr(%)	dia	rem	dia1	dia2	rem(%)	ctr(%)
1	08/04	15:41:02		test_OK	OK	5.00	5.46	11	6	test_OK	OK	6.39	5.43	13	2
2	08/04	15:40:57		test_OK	OK	5.03	5.43	11	7	test_OK	OK	6.43	5.29	12	2
3	08/04	15:40:51		start up	--	--	--	--	--	--	--	--	--	--	--
4	08/04	13:24:37		test_NG	!BRI	.	.	0	0	test_OK	OK	6.15	5.70	15	6
5	08/04	13:24:05		test_NG	!BRI	.	.	0	0	test_NG	!NG!	.	.	100	100
6	08/04	13:23:59		test_NG	!NG!	.	.	68	91	test_NG	!NG!	.	.	100	100

For Multiple Production Lines

You can now select the set line name from the pull-down menu.

You can browse line by line.

※Please refer to Support for “Multiple Production lines”.

The screenshot shows the 'Report' window with the following data table:

	month day	hr min sec	[detail]	dia	rem	dia1	dia2	rem(%)	ctr(%)	dia	rem	dia1	dia2	rem(%)	ctr(%)
1	08/26	11:26:29		test_NG	OK	6.82	6.65	24	0	test_OK	OK	_6.89_	7.06	28	0
2	08/26	11:26:24		test_NG	OK	6.74	6.67	24	0	test_OK	OK	_6.91_	7.03	28	0
3	08/26	11:16:58		start up	--	--	--	--	--	--	--	--	--	--	--
4	08/26	11:14:07		test_NG	OK	6.79	6.67	24	0	test_OK	OK	_6.89_	7.03	28	0
5	08/26	11:13:54		start up	--	--	--	--	--	--	--	--	--	--	--

6. Maintenance

✘This product needs maintenance.

■Parts

- Pressure Plate•••Needs to be changed when deformed by gun pressure.
- Protection Lens•••Needs to be changed when it has a damage which may cause misjudgments.

■Way to Replace

1. Remove the 3 screws.

✘Screws attached on Pressure Plate are special screws that have a function of anti-loosening.

These screws will be reused. Be careful not to lose it. Do not replace with ordinary screws.

Contact us if you lost the screws.



2. Remove the Pressure Plate.

✘Pressure Plate and Protection Lens are tightened together.

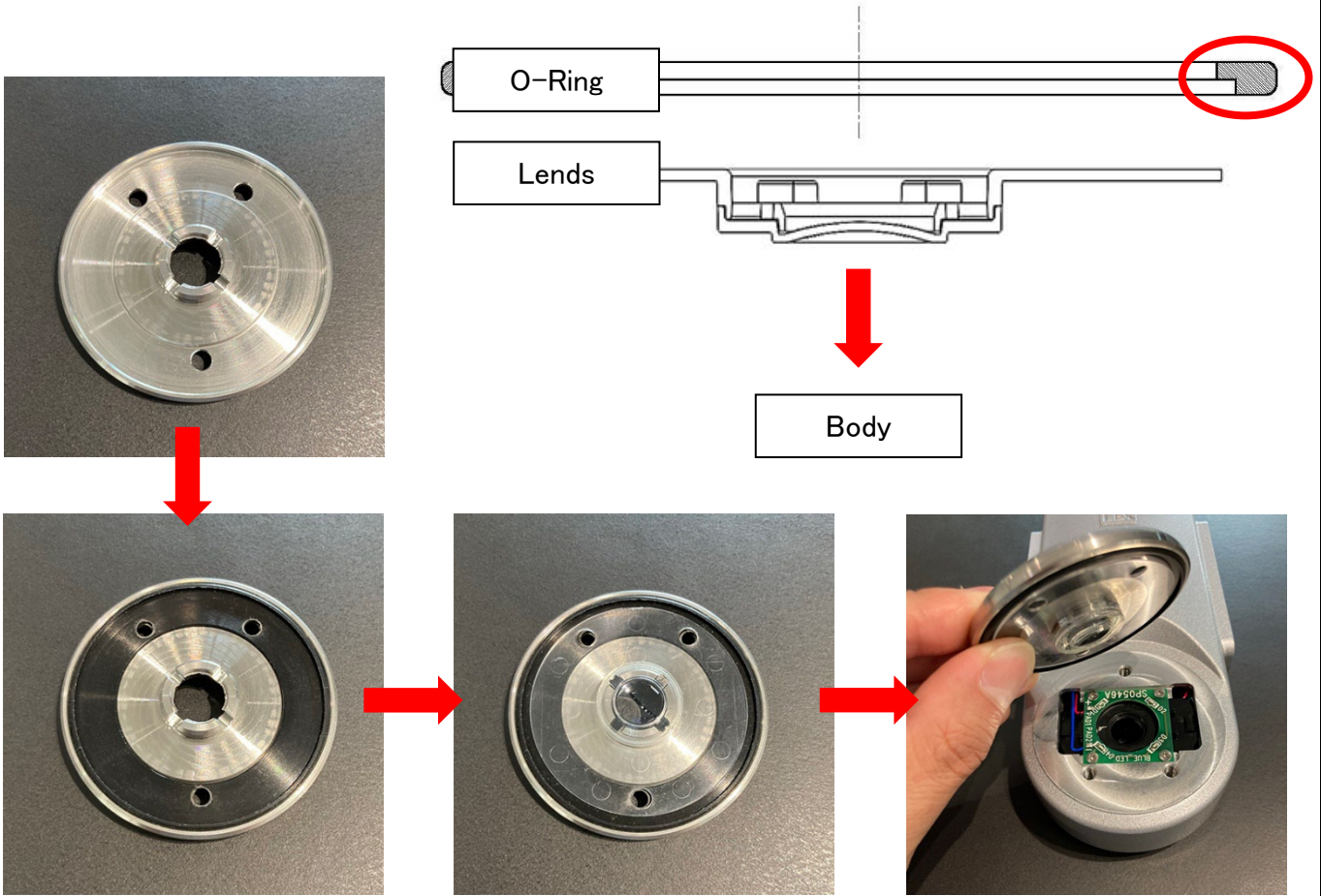
✘When disassembling the monitor, make sure any contaminations or water drops DO NOT enter inside of the monitor.



3. Change the Protection Lens and O-ring

※The part should be assembled this way. From the bottom; Tip Monitor, Protection Lens, O Ring, Pressure Plate.

※There is a bump on one side of the O-ring. Careful with the facing way and attach to the monitor.



⚠ Caution

※Protection Lens are combined with three parts that are glued together.

It may be dismantled like the image below by aging degradation or strong pushing.

If the lens is dismantled, we recommend replacing with new Protection Lens to maintain the quality.



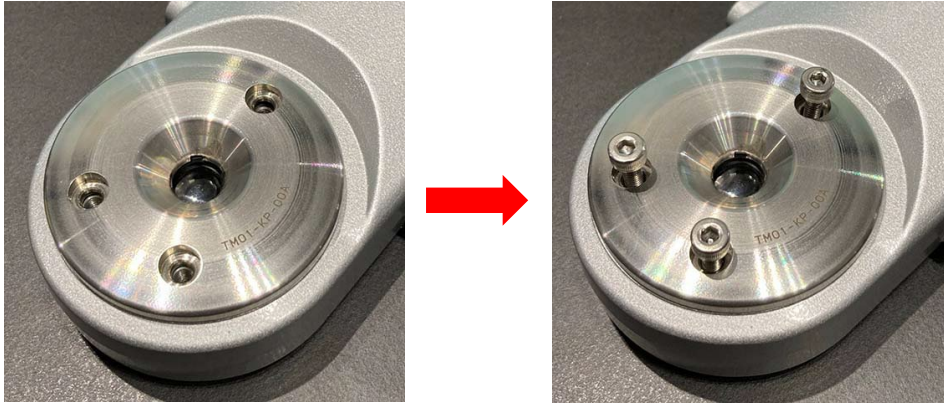
4. Assembled the Pressure Plate with the recycle bolt.

※Tightening torque is 3.0 N/m.

※Screws attached on the Pressure Plate are special screws that have a function of anti-loosening.

Do not replace with ordinary screws.

Contact us if you lost the screws.



5. Complete.



■ Daily Maintenance

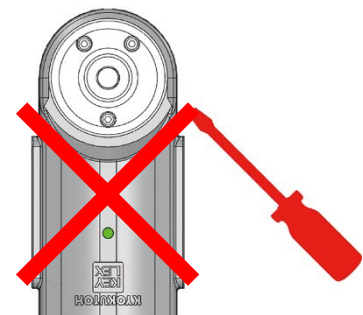
Dusts and water drops can be a cause of miss judgments. To prevent this, remove them softly from the lens without damaging the lens.

※Please DO NOT rub the lens hard. It is recommended to use soft cloth or cotton swab when removing.

※Please DO NOT use Oil Removal Spray on the lens.


■ Attention at Working

- ① When removing the pressure plate, absolutely do not work method to remove the pressure plate by inserting the driver etc. from the gap as shown on the right. There is a risk of damaging the inside base and the waterproof seal.
- ② Please DO NOT disassemble any parts except the parts above.




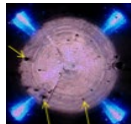
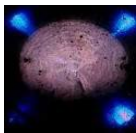

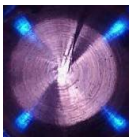
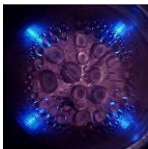
※If the stickers on the back of the monitor has been removed, any warranties or repair services are no longer available.

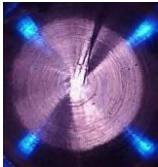
7. List of Consumption Parts

 A circular metal lens with a central hole and four smaller holes around the perimeter.	<p>Protection Lens (2 pcs.) TYPE: TM01-SU-00A Replacement QTY: 1 set</p>
 A circular metal plate with a central hole and four smaller holes around the perimeter. The text "TM01-KP-100-WP" is visible on the surface.	<p>Pressure Plate TYPE: TM01-KP-***-WP Replacement QTY: 2 pcs.</p>
 A black O-ring with a circular cross-section and four small holes around the perimeter.	<p>O-ring TYPE: TM01-LE-201-WP Replacement QTY: 2 pcs.</p>

8. Troubleshooting

- Please read the safety manual before using the tip monitor.
- To simplify the repairing progress, please record any problems that have been caused to the monitor.
(Type, Date, Place)
- If the same problem occurs repeatedly, it is considered there is a big problem. (ex. consumption of parts)

	Abnormal Condition	Cause	Countermeasure
(1)	The cap tip is in good condition, but the tip monitor judges not dressed (NG).	<ul style="list-style-type: none"> • Damaged Lens  (Some parts in the window are shown white) • Spatter on the lens.  • Dust on the lens.  • Chip on the lens.  • The tip is tilted.  • Water drops on the lens.  • The timing of releasing the welding gun is too fast. • The pressure is not enough 	<ul style="list-style-type: none"> • Please replace the old lens with a new lens. • Please replace the old lens with a new lens. • Clean the lens softly without damaging the lens. If the lens is damaged, Please replace the old lens with a new lens. • Remove the chip. • Please revise the teaching. • Please remove the water drops. • Please refer to the “timing chart” in P.16. • Please reset the pressure setting. (Recommended: 1500N)

	Abnormal Condition	Cause	Countermeasure
(2)	The condition of the cap tip is fine, but the tip monitor judges Diameter NG.	<ul style="list-style-type: none"> • Cap tip which has not been dressed is used. • Measuring of a flat tip • The value of the tip diameter which was set using “Camera Setting Tool” and the actual tip diameter are different. • Using a different type of tip from the tip which was set in “Camera Setting Tool”. • The tip is tilted.  <ul style="list-style-type: none"> • The timing of releasing the welding gun is too fast. • The pressure is not enough 	<ul style="list-style-type: none"> • The monitor can only detect tips which has been dressed. Please dress the tip before using. • The monitor cannot measure the diameter of the flat tips. Use the “Camera Setting Tool”, please reset the tip setting to “F”. • If there is a big difference with the set values and the actual value, the calculation error will be larger. Use the “Camera Setting Tool” and reset the tips diameter. • In “Camera Setting Tool” please reset the type of the tip as the same type as the using tip. • More the tip tilts, more the error gets larger. Please teach to set the tip as vertical as possible to the monitor. • Please refer to the “timing chart” in P.16. • Please reset the pressure setting. (Recommended: 1500N)

	Abnormal Condition	Cause	Countermeasure
(3)	Judged "OK" on the PC, but the PLC does not receive the "OK signal".	<ul style="list-style-type: none"> ▪ "Test Shoot" is in action. ▪ The connection with the controlling device such as the ethernet is not right. ▪ The allotment of the I/O is wrong. 	<ul style="list-style-type: none"> ▪ There will be no signal going to the PLC on test shots. ▪ Please recheck the connection with the controlling device. Please refer to the "Controlling Interface Setting" in 3.3. Please check the "Setting of System Setting Tool" in 4.4. ▪ Please refer to the "Controlling Interface Setting" in 3.3.
(4)	There is a connection error shown when the software is activated.	<ul style="list-style-type: none"> ▪ The PoE HUB is turned OFF. ▪ The tip monitor is connected to the port of the PoE HUB without power supply. ▪ The LAN cable is not connected in a right way. ▪ Usage of a burned out LAN cable. ▪ The tip monitor is broken down. ▪ The PC is not correctly set. ▪ The IP address of the tip monitor and the IP set in the "Camera Parameter Setting Tool" differ. 	<ul style="list-style-type: none"> ▪ Please turn ON the PoE HUB. ▪ Please connect the monitor to the port with power supply. ▪ Please connect the LAN cable properly. ▪ Please replace the LAN cable with a new LAN cable. ▪ Repair is needed. (Please do not disassemble. Contact the dealer for repair information) ▪ Please recheck the "PC Setting" on 3.2. ▪ Please recheck 4.3.

	Abnormal Condition	Cause	Countermeasure
(5)	There is connection error shown when the software is activated.	<ul style="list-style-type: none"> There is a connection problem with the controlling device. 	<ul style="list-style-type: none"> Recheck the connection with the controlling device. Please refer 3.3. "Controlling Interface Setting" Please refer 4.4 "Setting of System Setting Tool" Please check the connection cable connected to the controlling device.

【CAUTIONS】

The monitor is strictly factory-inspected. However, in the event of a failure, please contact the dealer for details of the failure.

If the stickers on the back of the monitor has been removed, any warranties or repair services will no longer be available.

9. Warranty

① Target product

The warranty does not cover the consumption parts listed in the “Consumption Parts List”. (Ch.6)

② Warranty Period

The warranty period shall be for one year from the date that the product has been delivered to the location specified by the purchaser.

③ Warranty Coverage

If a failure attributable to us occurs within the abovementioned warranty period, we will repair the product without charge. After the replacement or repair, the starting day of the warranty period will still be the day the product was first delivered. However, the following cases shall be excluded from the warranty coverage.

- Any failure resulting from improper conditions, improper environments, improper handling, or improper usage other than described in the instruction manual.
- When the stickers on the back of the monitor has been removed.
- Any failure resulting from factors other than a defect of our product, such as the purchaser’s equipment or the design of the purchaser’s software.
- Any failure that can be certainly be prevented when the consumption part(s) is maintained or replaced correctly as described in the instruction manual.
- Any failure caused by factors which could not be foreseen at a technological/scientific level at the time when the product has been shipped from us.
- Any failure caused by natural disasters such as fire, earthquake, and flood or any other external factor, such as abnormal voltage, for which we are not liable.
- KYOKUTOH assumes no liability for any purchaser’s secondary damage (damage of equipment, loss of opportunities, loss of profits, etc.) or any other damage resulting from a failure of our product.

MEMO

Contact us

Please contact us if there is any damage to or mechanical malfunction with our products.



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