SHARP®

Version 3.0
Produced in Sep. 2002

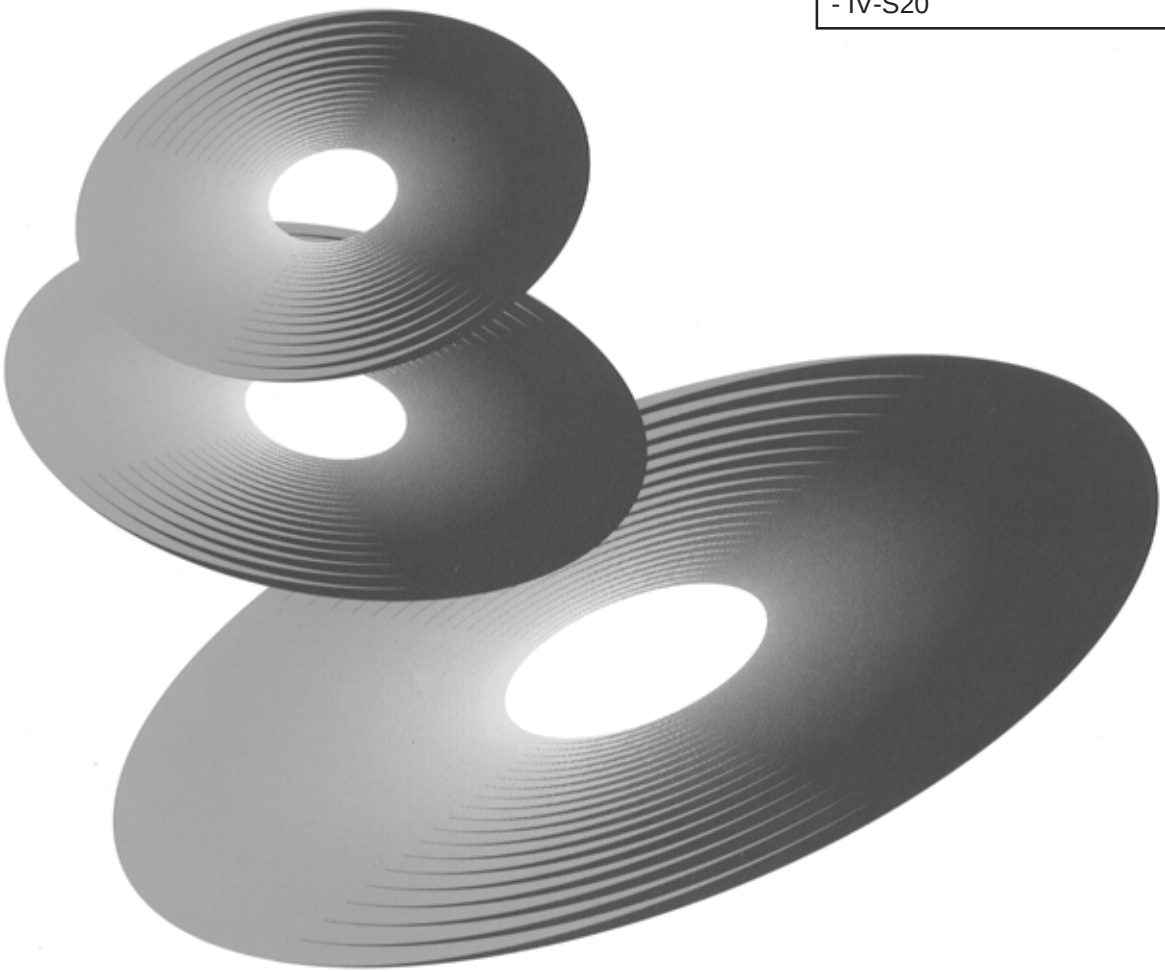
Parameter setting support software for the IV series

Model name

IV-S30SP

Instruction Manual

<Applied models>
- IV-S30
  - IV-S31M/S32M/S33M
  - IV-S31MX/S32MX/S33MX
  - IV-S30J
- IV-C35M
- IV-S20



Thank you for purchasing the IV-S30SP, which is parameter setting support software for the IV series.
Read this manual thoroughly to understand the features and operation of this software completely.
Keep this manual for future reference. We are confident that this manual will be helpful whenever you encounter a problem.
Store this user's manual in a safe place. We are confident that the manual will be helpful whenever you encounter a problem.
In addition to this manual, there are other IV-S30/C35M/S20 manuals as follows. Read them in conjunction with this manual.

- IV-S30 (IV-S31M/S32M/S33M)
  - User's Manual (Introduction and hardware)
  - User's Manual (Function and operation)
- IV-S30 (IV-S31MX/S32MX/S33MX)
  - User's Manual (Introduction and hardware)
  - User's Manual (Function and operation)
- IV-S30 (IV-S30J)
  - User's Manual (Introduction and hardware)
  - User's Manual (Function and operation)
- IV-C35M
  - User's Manual (Introduction and hardware)
  - User's Manual (Function and operation)
- IV-S20
  - Introduction Manual
  - User's Manual

Software version

This manual describes version 3.06 of the IV-S30SP system software. The details of the upgrade from version 2.20 are as follows.

■ Added functions in version 3.06 (compared with version 2.20)

Item	Additional function	Reference page
Applicable controller	Also applicable to IV-S31MX/S32MX/S33MX, IV-S30J, and IV-C35M.	Page 5-2 and others
Memory card	If IV-C35M is used, this application software can read, save, and delete data from a flash memory card.	Page 11-4

Note

- This manual is written with the utmost care. If you note something wrong or unclear, please contact the sales shop or service company.
- No part of this manual may be reproduced in any form without written permission from SHARP corporation.
- The contents of this manual are subject to change without prior notice.
- We are not liable for any damage, lost profits or charges made by third parties which may be caused by using this software.

Operating environment

This software runs on any computer, which is equipped with the following operating environment.

Item	Specification
Model	IBM PC/AT or compatible machines
CPU	Pentium 90 MHz minimum (recommend Pentium 133 MHz or better)
Operating system	Microsoft Windows Me, Microsoft Windows 2000 Microsoft Windows NT4.0, Microsoft Windows 95/98
Memory	32 M-bytes minimum (recommend 48 M-bytes or more)
Hard disk	30 M-bytes or more free space
Display	SVGA or more (Resolution: 800 x 600 pixels, 256 color or more) Recommended color monitor display: High color (16 bits) or better
CD-ROM drive	Needed to install this software
RS-232C port	One port or more
Mouse	A mouse or pointing device compatible with the Windows95/98/NT4.0 environment.
Printer	A printer compatible with the Me/2000/NT/98/95 environment.
USB port	One port recommended (only Windows Me/2000/98 supports the USB interface)

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· Pentium is a registered trade mark of Intel Corporation, USA.

Table of contents

[Version for the IV-S20]

Preface

This software (IV-S30SP) is a parameter setting support software used to specify the parameters for the compact image sensor camera IV-S30/C35M/S20. It runs on Windows Me/2000/NT4.0/98/95 platforms, and allows users to specify data, and manage and analyze inspection results, using a personal computer.

[1] Features

- Its offline setting function allows you to specify and change object type conditions without halting a production line.
- Its automatic document creation function allows you to manage and save the parameter settings.
- Its measurement data collection function can transmit measurement results from the IV-S30/C35M/S20 to a personal computer.
- Its parameter data upload/download function enables you to send samples via e-mail for evaluation of sample measurements, and to copy data easily to other IV-S30/C35M/S20 controllers.
- Its image data output function can print a captured image using a personal computer.
- The IV-S30/C35M/S20 system software upgrade function allows you to upgrade the system functions and resolve problems easily.
- The menu customization function allows you to customize the operation screens (user menu editor).
- Use of the USB interface increases the data transfer speed dramatically (Windows Me/2000/98 only on the IV-S30/C35M).
- There are two versions of the IV-S30SP program: one for the IV-S30/C35M and the other for the IV-S20. The table below describes the differences.

● [Function comparison between the IV-S30/C35M and IV-S20 program versions]

Function	IV-S30/C35M	IV-S20
Parameter setting function	O	O
- Object type condition	O	O
- Global condition	O	X
- Reference image	O	O
Load/save parameters	O	O
Load/save display image and message	O	O
Document creation function	O	O
Data collection function	O	O
User menu editor function	*1	X
Command test function	O	O
Upgrade function	O	O
Print	O	O
Message color change	O	O
Zoom	O	X
Change image brightness	O	O
Link to SMS Web page	O	X
Memory card	*2	X

* 1: The user menu editing function can be used when any IV-S31M/S32M/S33M is used as the controller.
* 2: The memory card can only be used when the IV-C35M is used as the controller.

Note

In this manual, the term "IV-S30/C35M" refers to the following controller models.

Model name		Controller
IV-S30/C35M	IV-S30	IV-S31M/S32M/S33M
		IV-S31MX/S32MX/S33MX
		IV-S30J
	IV-C35M	IV-C35M

[2] Operating environment

This software runs on any computer, which is equipped with the following operating environment.

Item	Specification
Model	IBM PC/AT or compatible machines
CPU	Pentium 90 MHz minimum (recommend Pentium 133 MHz or better)
Operating system	Microsoft Windows Me, Microsoft Windows 2000 Microsoft Windows NT4.0, Microsoft Windows 95/98
Memory	32 M-bytes minimum (recommend 48 M-bytes or more)
Hard disk	30 M-bytes or more free space
Display	SVGA or more (Resolution: 800 x 600 pixels, 256 color or more) Recommended color monitor display: High color (16 bits) or better
CD-ROM drive	Needed to install this software
RS-232C port	One port or more
Mouse	A mouse or pointing device compatible with the Windows95/98/NT4.0 environment.
Printer	A printer compatible with the Me/2000/NT/98/95 environment.
USB port	One port recommended (only Windows Me/2000/98 supports the USB interface)

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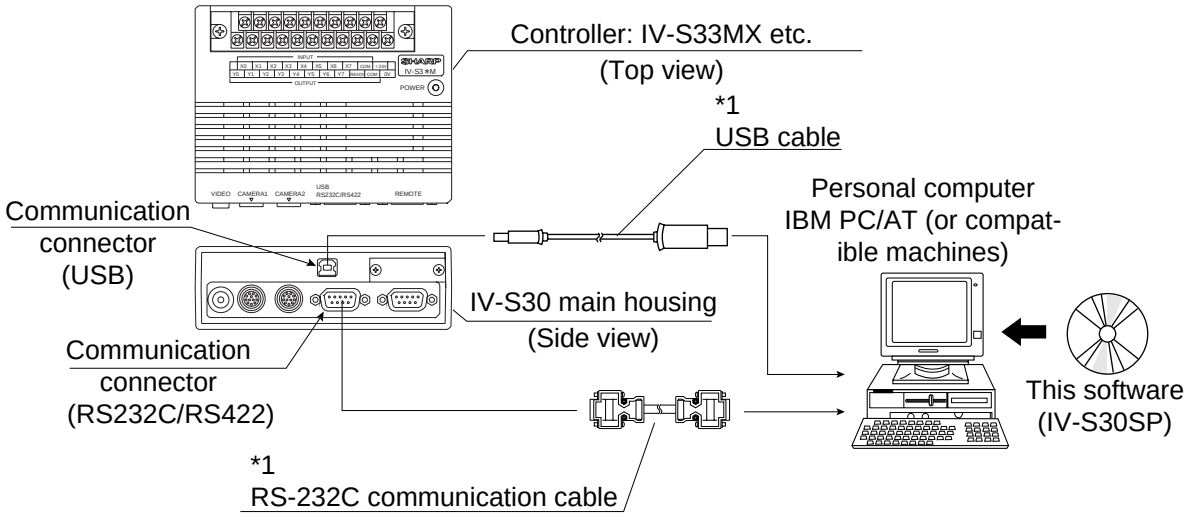
[3] System configuration

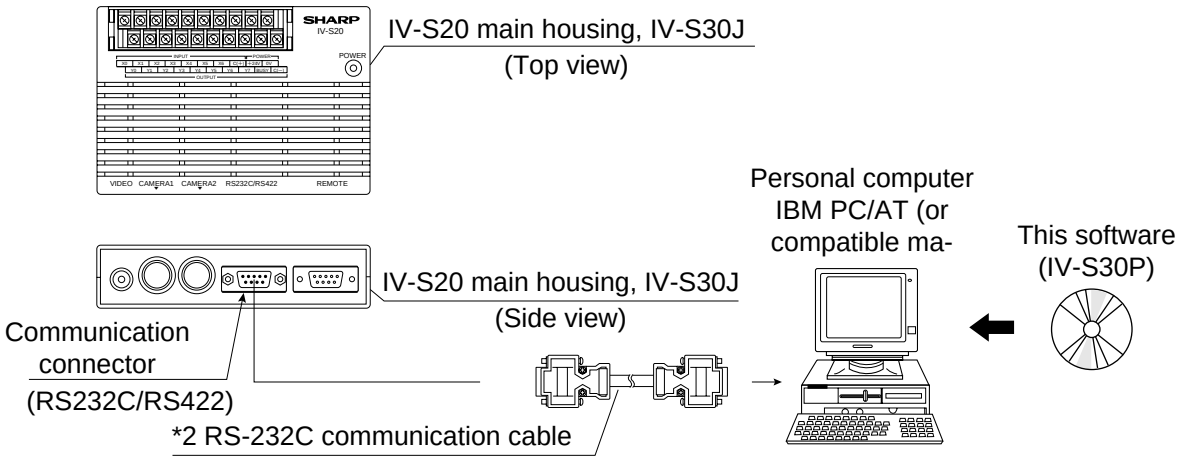
● System connections on the IV-S30(except IV-S30J)/C35M



*1: A USB cable and an RS-232C communication cable are accessories that come with this software package.

For details about the wiring, see section "Connection with personal computer" in the user's manual of each controller (Introduction and Hardware).

- System connections on the IV-S20, IV-S30J



*2 An RS-232C communication cable is an accessory that comes with this software.
For details about the wiring, see section "Connection with personal computer" in the IV-S20 user's manual.

[4] Product components

One CD-ROM
One Instruction manual
One RS-232C communication cable (1.5 m)
[Connector --- 9-pin D-sub male (IV-S30/S20 side) + 9pin D-sub female (PC side)]
One USB cable (3 m)

[5] User file

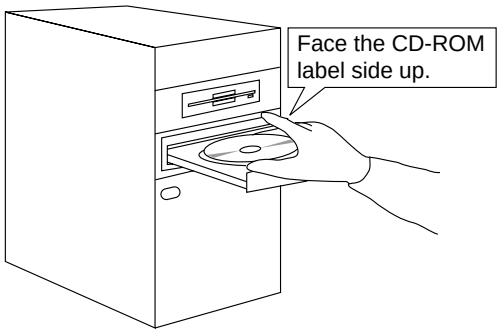
Shown below are the user file types, which can be read and written using this software.

Classification	Extension
Project file (IV-S30/C35M parameters)	apm
Display image	bmp
Command test	tst
IV-S30/C35M/S20 system sofware	mot
Document/data correction	csv
Object type setting condition	msr
Global condition	prm
Reference image	bmp

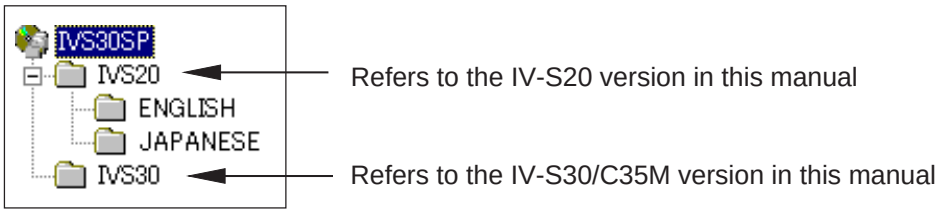
Setup

The installation process that places a program on a computer and makes it ready for use is referred to as the "Setup." This chapter describes the setup procedure.
This software runs on the Windows Me/2000/NT/98/95. The descriptions in this chapter use a Windows98 installation for the example.
Note: Before starting the installation, disable any virus check programs in your computer.

[1] Installation of the IV-S30SP



1. Start up the Windows98, and place the IV-S30SP CD-ROM on the CD-ROM drive.
   Note: Do not put any labels on the CD-ROM.
2. Double-clicks the CD-ROM drive icon on the Windows desktop.
   You will find folders for both the IV-S20 and IV-S30/C35M on the CD-ROM (see below).



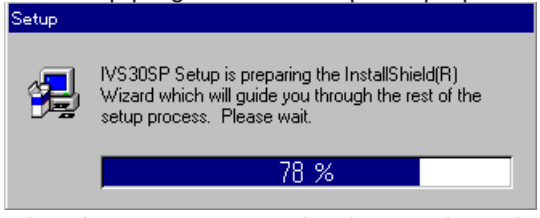
- When using the IV-S30/C35M
Open the [IV-S30] from [IVS30SP] folder on the CD-ROM. Then double-click on "setup.exe." ⇨ Go to step 3.

- When using the IV-S20 (English)
Open the [IV-S20]-[English] from [IVS30SP] folder on the CD-ROM. Then open the [ENGLISH] folder. Double-click on "setup.exe." ⇨ Go to step 4

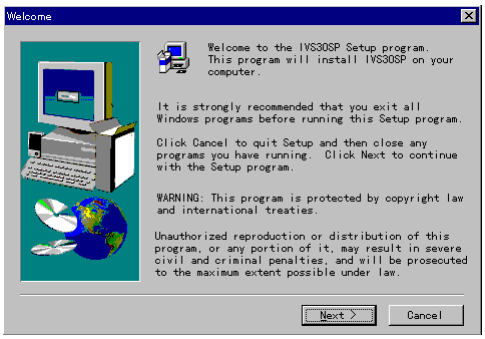
3. Select the OS type that you have and specify Japanese or English.

The descriptions below explain the use of the software on the IV-S30/C35M.
(When the upgrade software for the IV-S20 is installed, the term "IV-S30SP" in the messages will change to "IV-S20SP.")

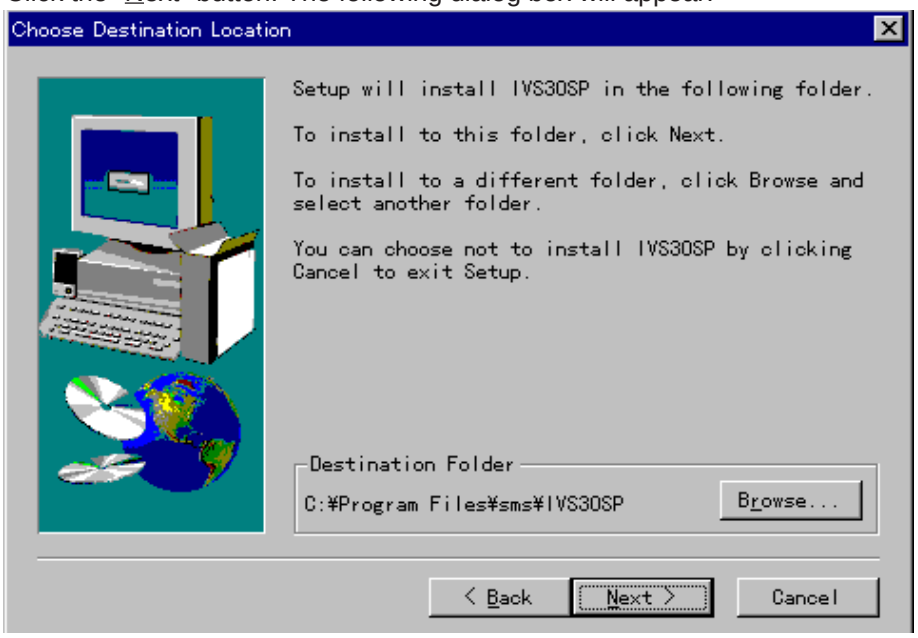
4. The setup program will startup and prepare the setup wizard.



After the setup preparation is complete, the dialog box shown on the right will appear.

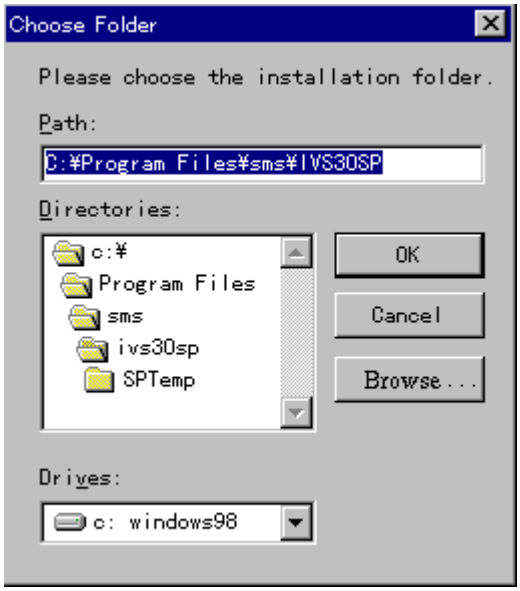


5. Click the "Next" button. The following dialog box will appear.

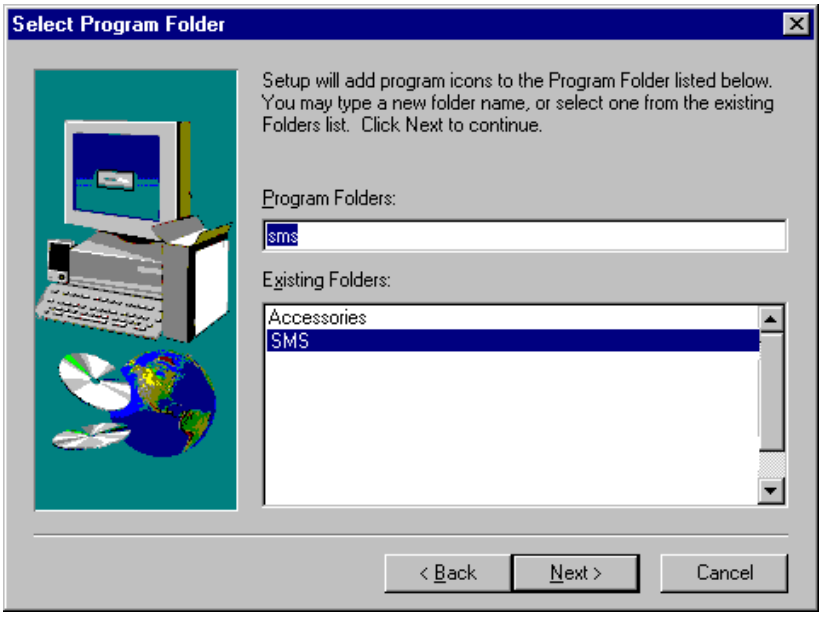


6. When you do not need to change the folder (directory) where you want to install the program, simply click the "Next" button to continue the installation.

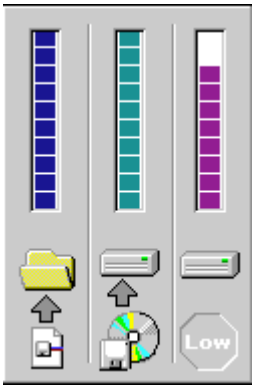
   To change directory, click on the "Browse..." button. The "Choose Folder" dialog box will appear. Select the drive and directory, and click on the "OK" button. Then click on the "Next" button to continue.

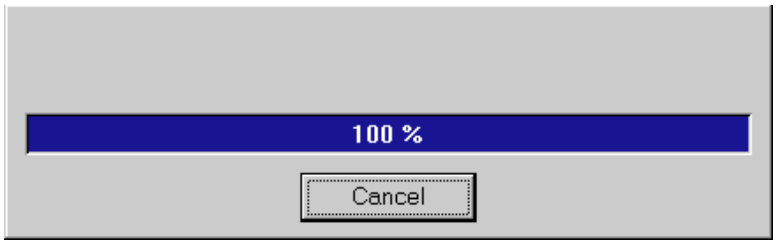


7. By clicking on the "Next" button, the "Select Program Folder" dialog box will appear.

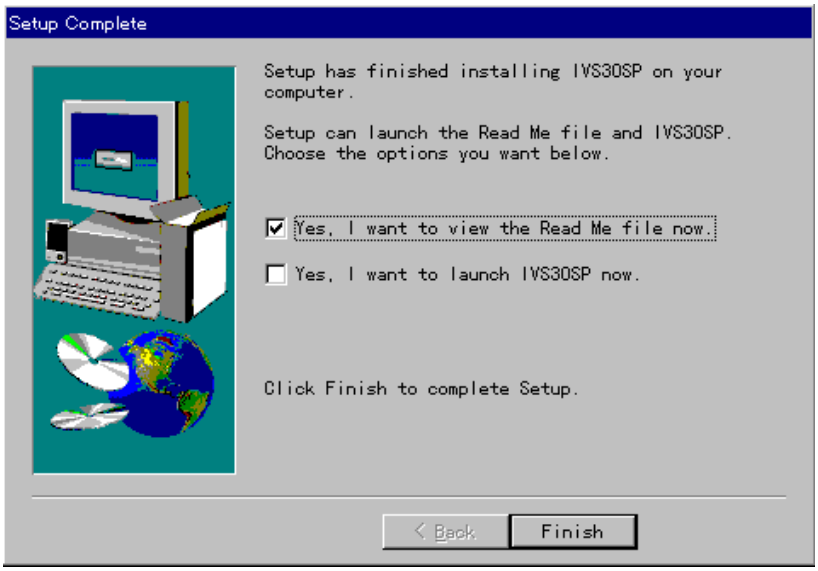


8. When you do not want to change the program folder, simply click on the "Next" button to continue the installation.
   To change the folder, enter a new folder name, or select a folder from the existing folder list. Then click on the "Next" button to continue installing the program.



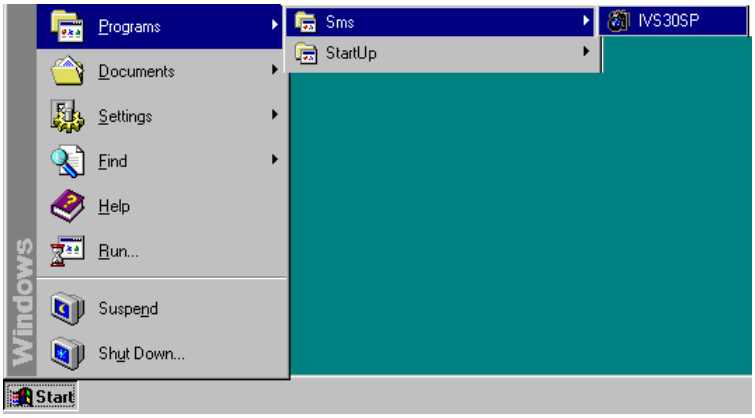


   After the setup is complete, the following dialog box will appear.

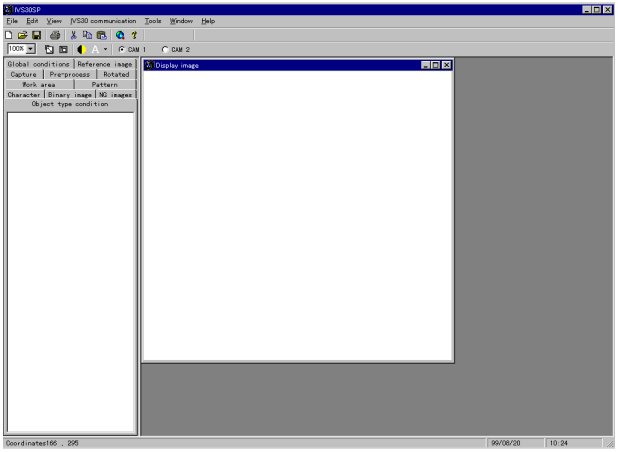


9. Click on the "Finish" button to return to the initial setup screen.

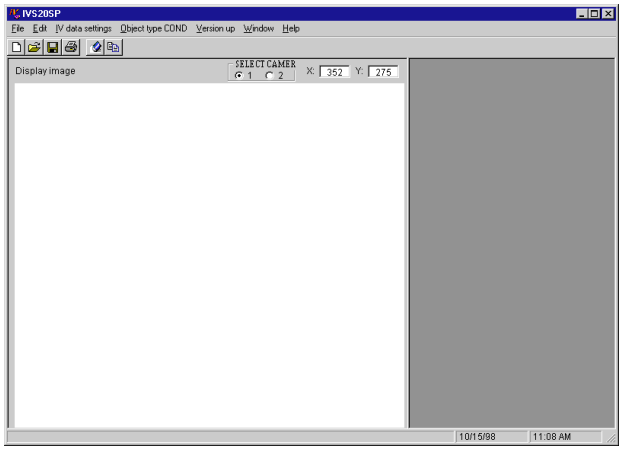
10. To start this program, bring up the start menu in Windows98, and then select "Programs" - "Sms" - and "IVS30SP" in that order.



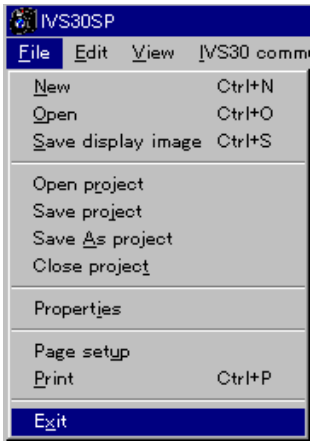
The program will start and the following screen will appear.



- Screen for the IV-S20 (See page Setup-1.)

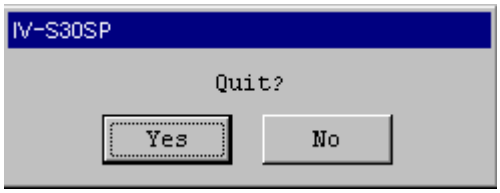


11. To quit this program, select the "File" - "Exit" item from the menu bar.



- Screen for the IV-S20 (See page Setup-1.)

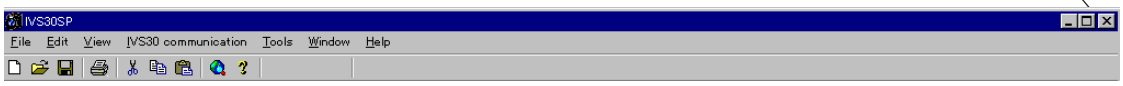
⇨ The confirmation dialog box will appear.



· Click on the "Yes" button to stop this program.

· You can also stop the program by clicking on the "[×]" button in the upper right corner of the window.

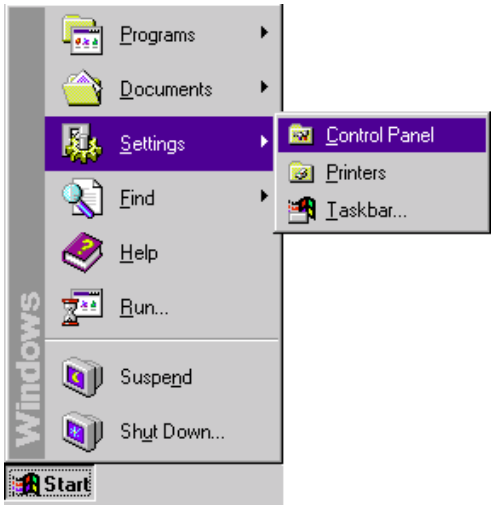
Click here



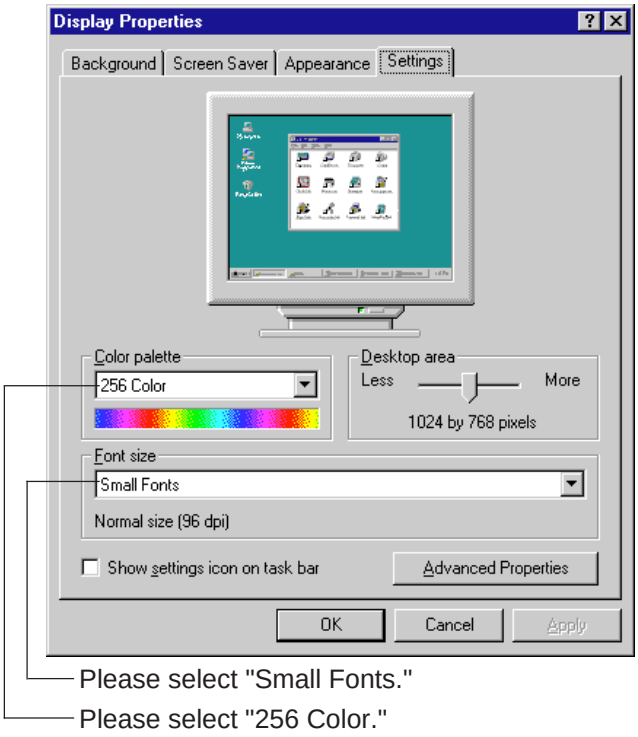
⇨ The confirmation dialog box will appear. Click on the "Yes" button.

[2] Setting the Windows environment

1. From the scroll bar menu, select "Settings" and then "Control Panel ."



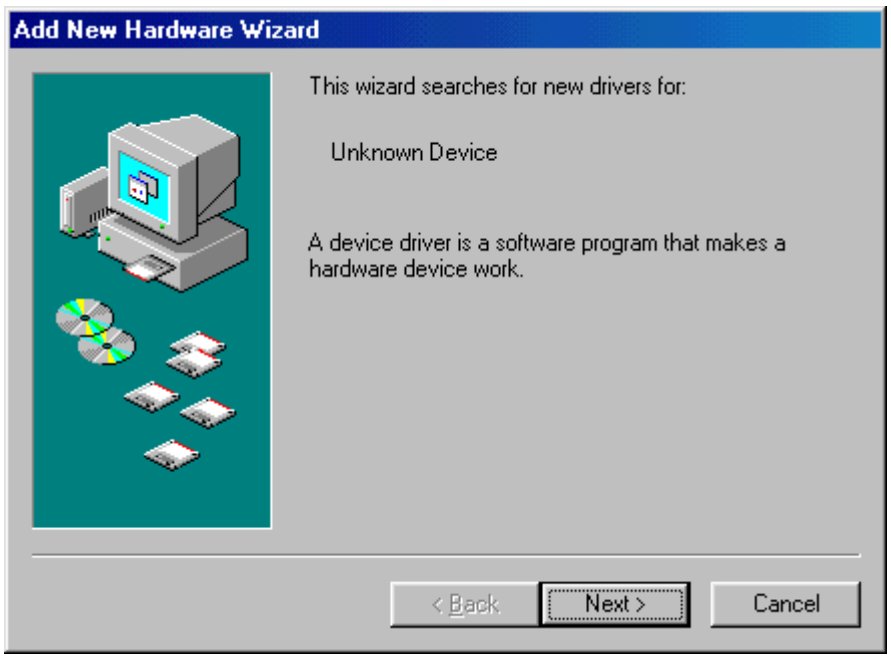
2. Open the "Display Properties" menu and click on the "Settings" Tab. Then, set the number of colors in the "Color palette" and the font size in "Font size."



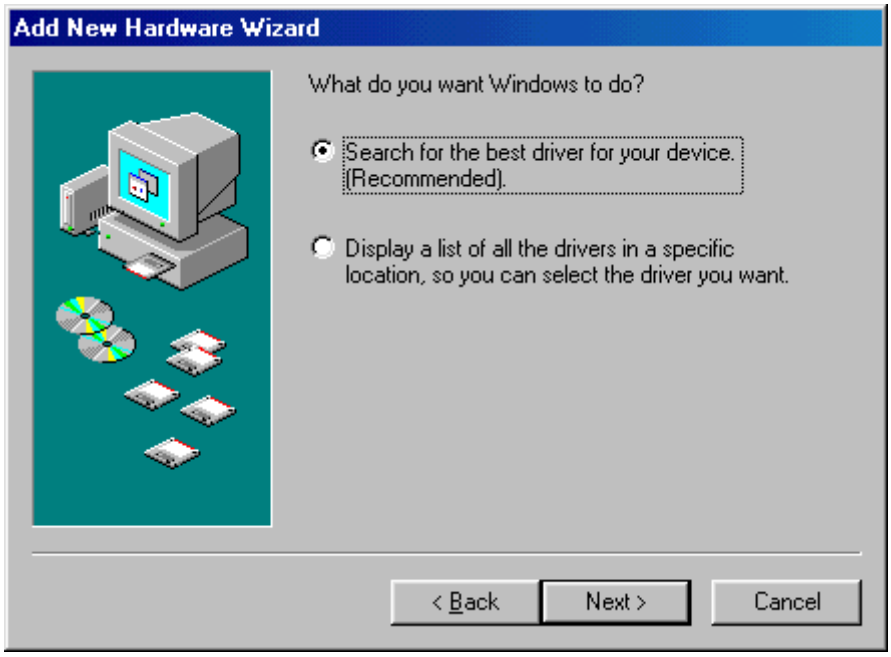
[3] Installation of a USB driver (version for the IV-S30/C35M)

1. Turn ON the power to the controller (IV-S33MX etc., except IV-S30J).

2. After turning ON the power, connect the personal computer to the controller using the USB cable. The [Add New Hardware Wizard] dialog box will appear, and it will display an "Unknown Device" message.



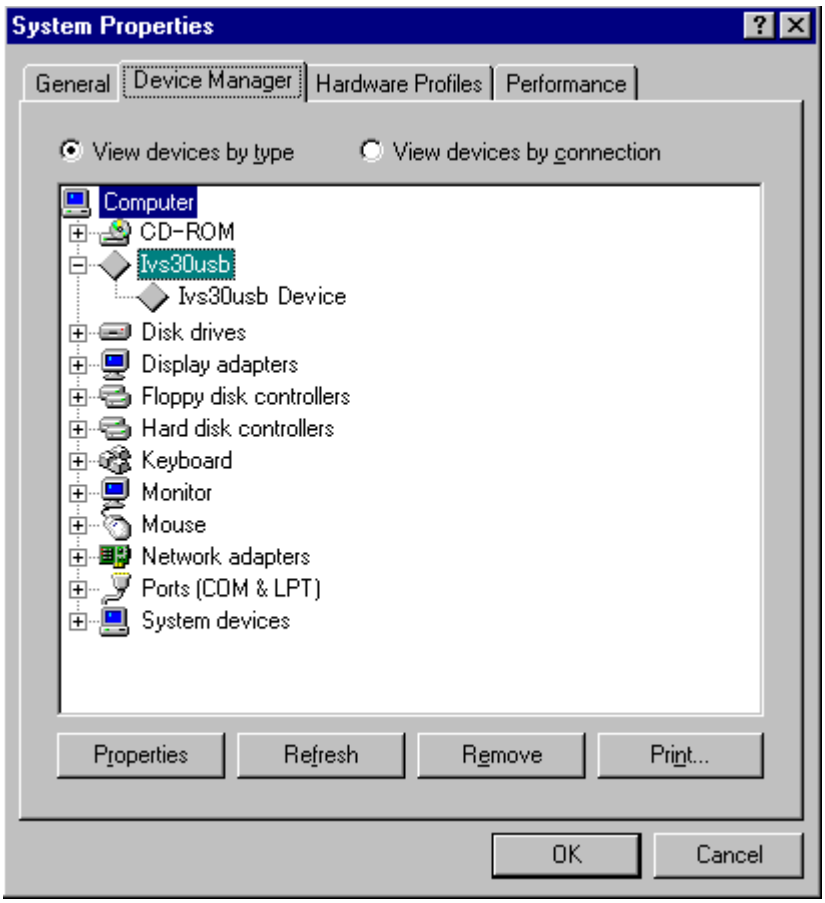
3. Click on the [Next] button. The display will change to the screen for selecting a search method. Select "Search for the best driver for the device. [Recommended]," and click on the [Next] button.



4. A USB device driver is stored on the IV-S30SP CD-ROM. If the CD-ROM drive in your personal computer is labeled E, enter "E:\driver" for the search location. Then click on the [Next] button.

5. "ivs30usb Device" will appear. Click on the [Complete] button to finish the setting.

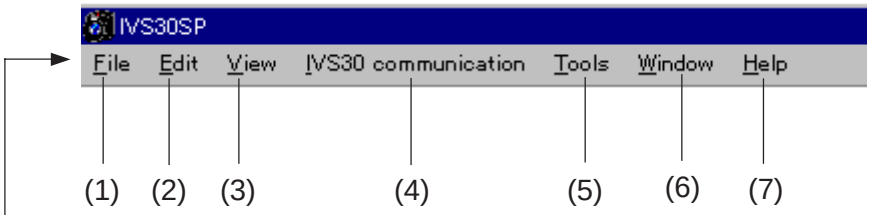
6. To make sure that the setting is completed correctly, select [System] from [Control Panel] and examine the device tree in the Device Manager. If the "Ivs30usb Device" icon is displayed as shown in the figure below, installation of the device driver is complete.



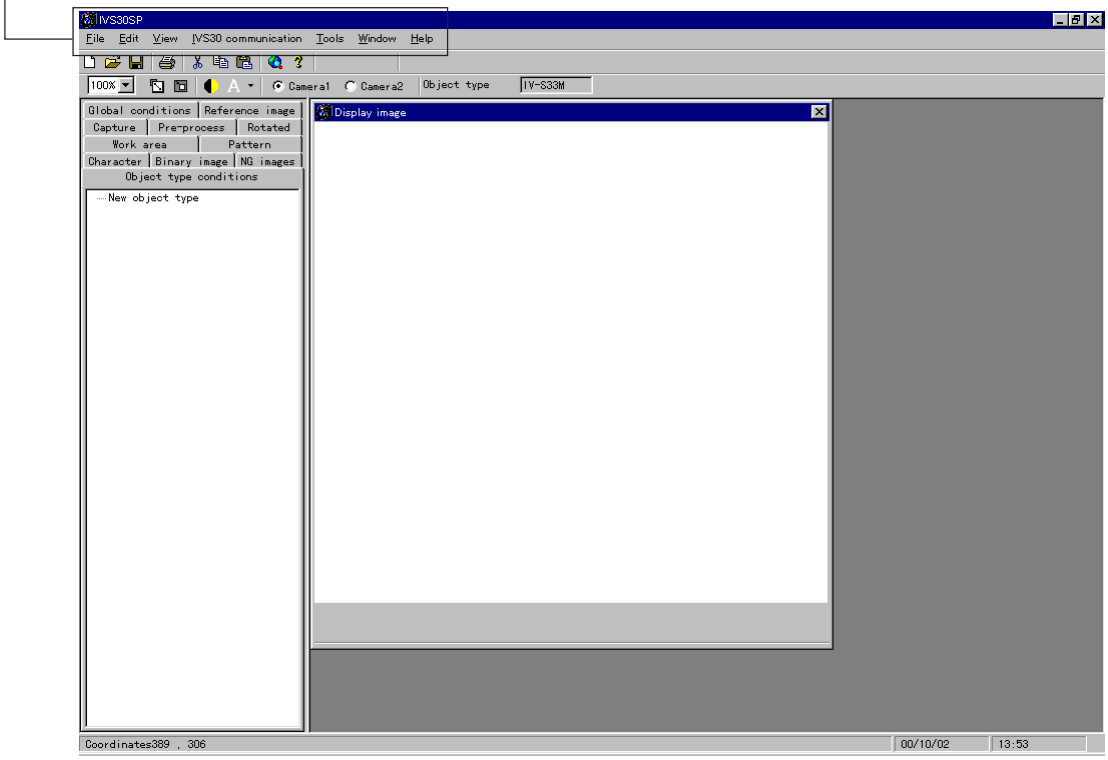
Version for the IV-S30/C35M

Chapter 1: Menu Organization

After starting this software (for the IV-S30/C35M), the screen shown below will appear. The menu organization on the menu bar is also shown below.
The following menus (1) to (7) correspond to the items on the next page.



- This screen will be displayed when this software (for IV-S30/C35M) is started.



(1) File

		(Description)
New	Ctrl + N	Create a new file.
Open	Ctrl+O	Open an existing image file. (*.bmp/*.msr/*.prm)
Save display image	Ctrl+S	Save only the currently displayed image.
Open project (W)		Open a project file, such as the controller parameters.
Save project (V)		Save a project file, such as the controller parameters.
Save As project (E)		Save a project file, such as the controller parameters using a new file name.
Close project (K)		Close a project file, such as the controller parameters.
Properties (I)		Display the current project and model names (IV-S33MX etc.).
Page setup		Specify the pages to print.
Print	Ctrl+P	Print
Exit		Quit the IV-S30SP.

(2) Edit

		(Description)
Cut	Ctrl + X	Copy the image displayed on the IV-S30SP to the clipboard and delete it after it is pasted elsewhere.
Copy	Ctrl + C	Copy the image displayed on the IV-S30SP to the clipboard.
Paste	Ctrl + V	Paste the IV-S30SP image currently being held on the clipboard.
Add		Add an object type to the object type conditions.
Delete		Delete the image currently displayed on the IV-S30SP.

(3) View (display)

- Toolbars — (Description)
  - Standard ---------- Select whether or not to display the standard tool bar.
  - Display image ---------- Select whether or not to display the tool bar used for displaying an image.
- Status Bar (S) ---------- Select whether or not to display the status bar.
- Display image monitor ---------- Select whether or not to display the image window for monitoring.
- Parameter List ---------- Select whether or not to display the parameter list box.
- Zoom In ---------- Zoom in closer to an image.
- Zoom Out ---------- Zoom back away from an image.
- Zoom Magnification Rate ---------- Select an image size: 25, 50, 75, or 100% of normal.
  - 100%, 75%, 50%, 25%
- Display image Brightness Level ---------- Change the image brightness between standard and one-half of normal.
  - Standard, 1/2
- Message Color (C) ---------- Change the message display color to the specified color.
  - Black, Blue, Green, Cyan, Red, Magenta, Yellow, White

(4) IVS30 communication

- IVS30 data transfer — (Description)
  - Write ---------- Send a set of parameters or an image from the PC to the controller.
  - Read ---------- Read a set of parameters or an image from the controller.
  - Verify ---------- Verify that the parameters or image in the PC is the same as that in the controller .
  - Initialize ---------- Initialize the parameters or images in the controller.
  - Self Test ---------- Have the controller check its own parameters and image conditions.
- Version grade ---------- Upgrade the system software in the controller.
- Option ---------- Specify the communication, IV data transfer, and upgrade conditions.

(5) Tools

	(Description)
Command Test	Test the communication between the controller and a personal computer.
Data collection	Send the measurement execution data from the controller to a personal computer and total the data.
Create document	Create a document using the current IV parameter details.
User menu editor (IV-S31M/S32M/S33M)	Create or modify IV menus and messages.
Memory card (IV-C35M)	Reads, saves, and deletes data from a flash memory card.

(6) Window

	(Description)
Cascade display	Overlap the open windows.
Tile Vertically	Display the open windows in a vertical layout.
Tile Horizontally	Display the open windows in a horizontal layout.

(7) Help

	(Description)
Contents	Display the table of contents for the Help files.
Contents and Index	Display the help menu search topic screen.
SMS Web page	Look at the SMS web site.
About IV-S30SP	Display the version information for the IV-S30SP program.

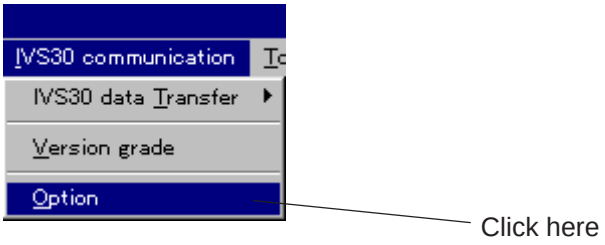
Chapter 2: Optional Settings

When you communicate between the personal computer and the IV-S30/C35M, you must specify the communication conditions for IV-S30/C35M data transfers, and software upgrades.

- For details about setting the specific controller model, see page 5-2.

2-1 Specify the communication conditions

Click on the "Option" in the "IVS30 communication" menu.

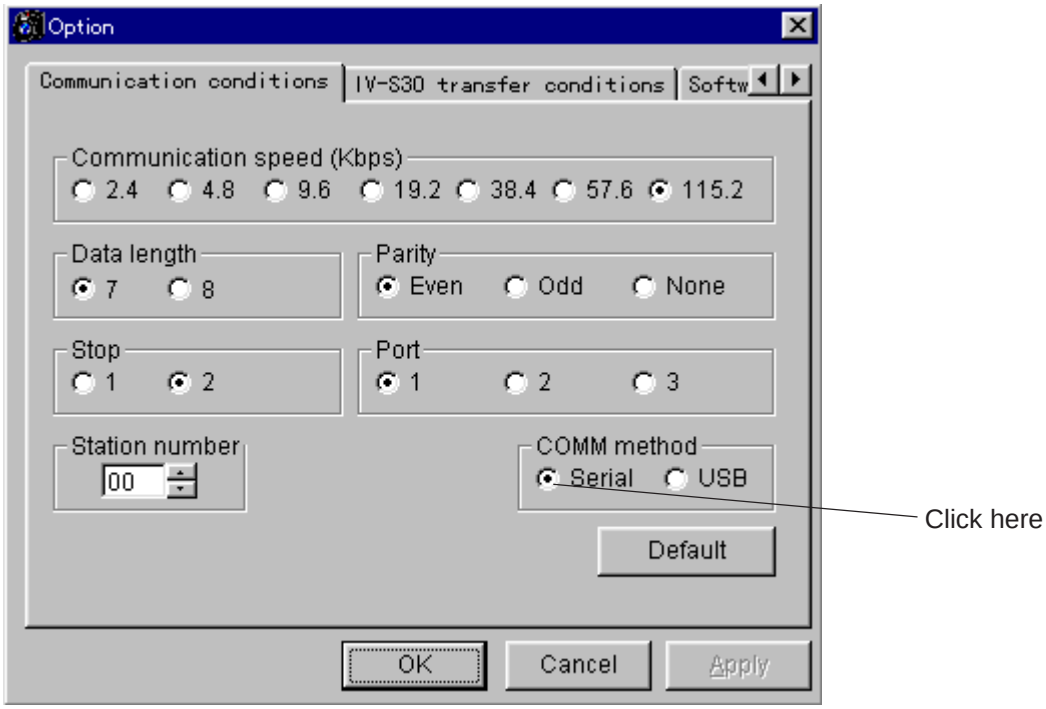


⇨ The "Option" dialog box will appear.

■ Serial communication

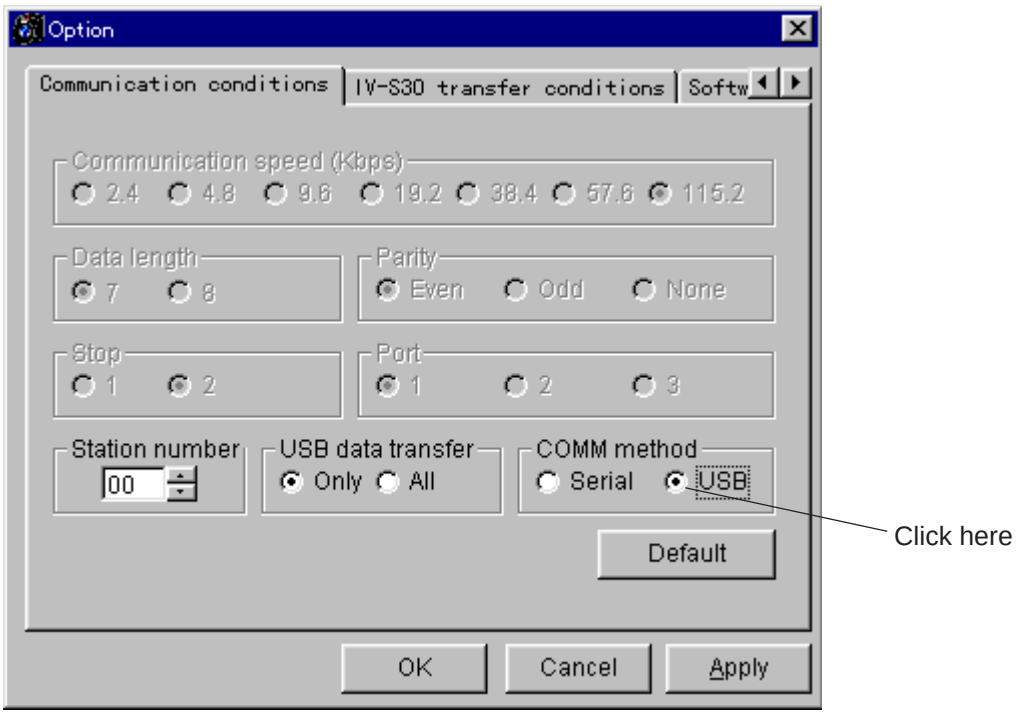
Select "Serial" for the "COMM method" and specify the other communication conditions.

Note: Make sure to specify the same communication conditions as previously specified in the [COMM. SET] item on the IV-S30/C35M's [SYSTEM COND] menu.



■ USB communication

Select "USB" for the "COMM method" and specify the other communication conditions.

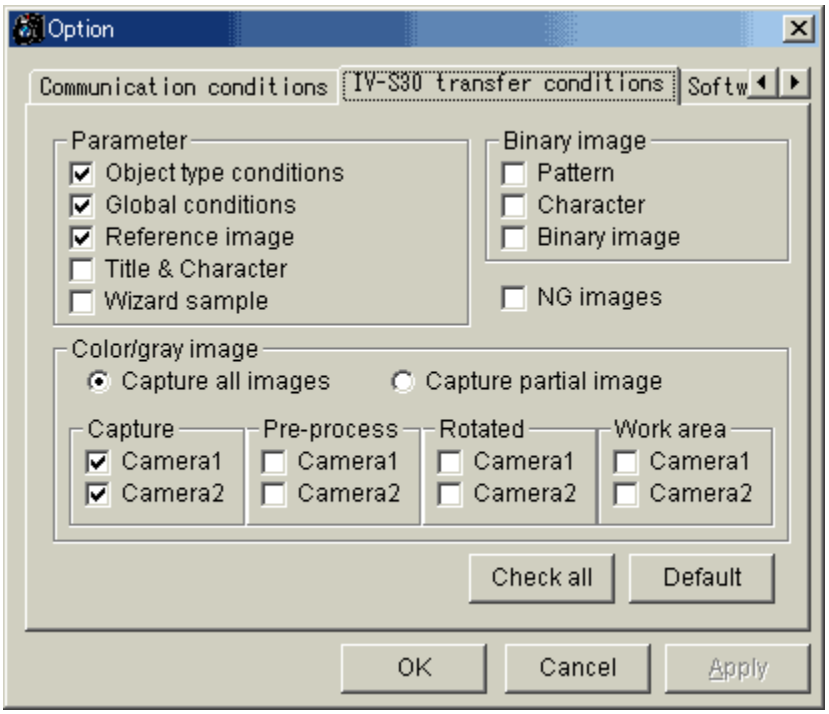


USB data transfer

- Only: Only transfer data to the IV-S30/C35M that have been specified in the "Station" assignments.
- All: Transfer data to all of the IV-S30/C35M controllers that are connected to the USB cables.

2-2 Transfer conditions

Select "IV-S30/C35M transfer conditions" from the "Option" dialog box and specify the other transfer conditions in the window.



(When the IV-C35M is specified as the controller model to use)

[Parameter] = All parameters specified in the IV-S30/C35M

Object type conditions: The conditions specified for each object type (measurement conditions, etc.)

Global conditions: The shared conditions which are set and applied to all object types (system conditions, etc.)

Reference image: Any reference image registered in the IV-S30/C35M

Title & Character: Transfers all the titles and character strings used with the IV-S30/C35M (Since it takes a long time to transfer the data, we recommend that you should not read it out if you did not changes the titles or character strings.)

Wizard sample (except for the IV-S31M/S32M/S33M)
: Samples that were registered using the set wizard function.

[Gray scale image] = 256 intensity levels (When the IV-C35M is used, this item will read: [Color/gray image].)

Capture: Store the image displayed on the MAIN OPS MENU.

Pre-process: An image processed by making shading corrections and binary image masking.

Rotated: Change the base angle on a captured image.

Work area: The portion of an image used for making measurements.

* Select either "Capture all images" or "Capture partial image."

[Binary image]

Pattern: Displays a frame around the search area of the image to be measured on the MAIN OPS MENU.

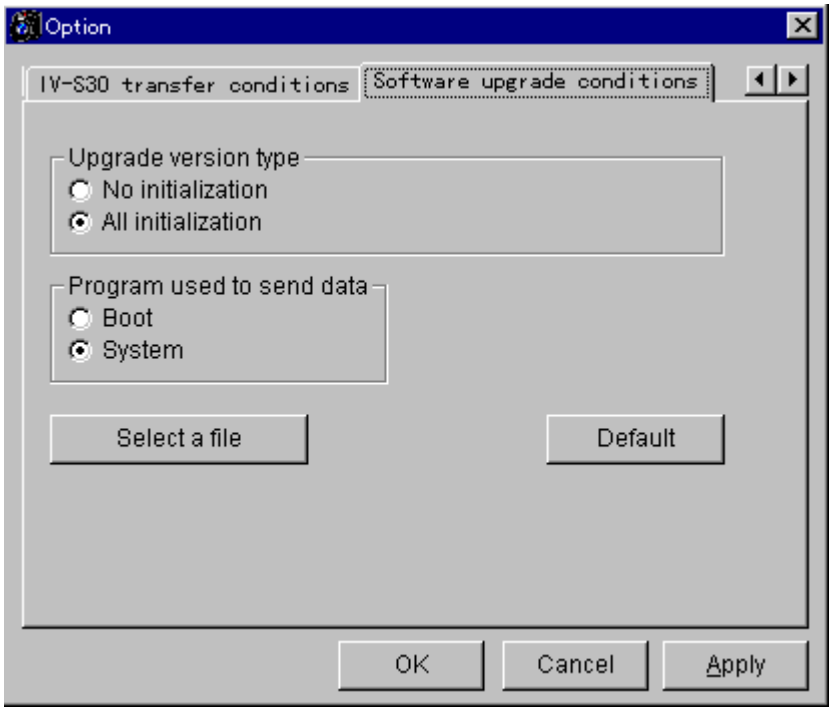
Character: Characters displayed on the IV-S30/C35M screen.

Binary image: An image that has been captured and processed by binary conversion.

[NG images] = Images captured by the IV-S30/C35M that fail some measurement criteria.

2-3 Upgrade conditions

Select "Software upgrade conditions" in the "Option" dialog box and specify the other upgrade conditions in the window.



[Upgrade version type]
No initialization: Do not initialize the IV-S30/C35M.
All initialization: Initialize the IV-S30/C35M.

[Program used to send data]
Boot: IV-S30/C35M boot program
System: IV-S30/C35M system program

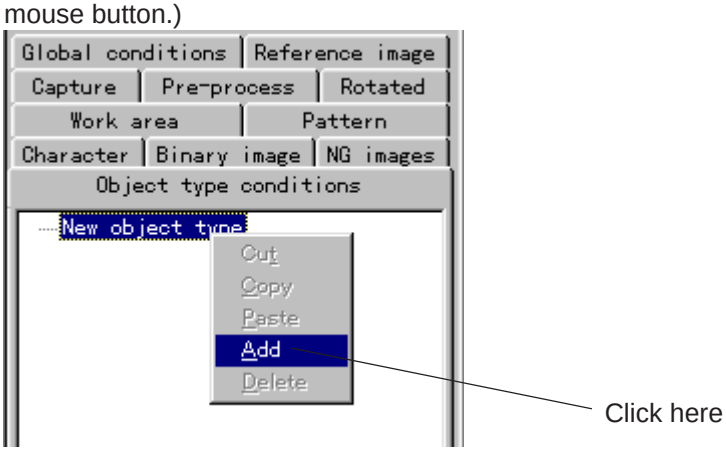
Chapter 3: Parameter settings

Set object type conditions (Measurement conditions, Evaluation conditions, Numerical conditions, and output conditions).

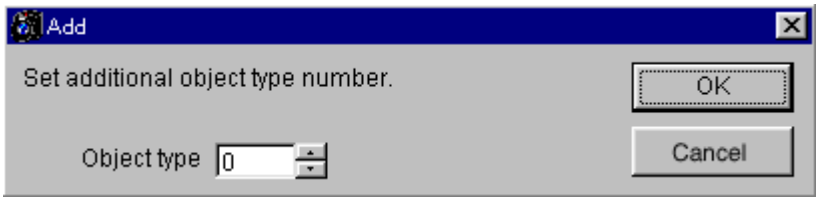
- You can set and change the conditions offline. (You can set and change conditions without stopping the production line while it is operating.)
- For details about setting the specific controller model, see page 5-2.

■ Adding a new object type

1. Click the [Object type conditions] tag on the parameter list. Then click the right mouse button on the [New object type]. Next, click on [Add]. (You may double click the left mouse button instead of clicking the right mouse button.)

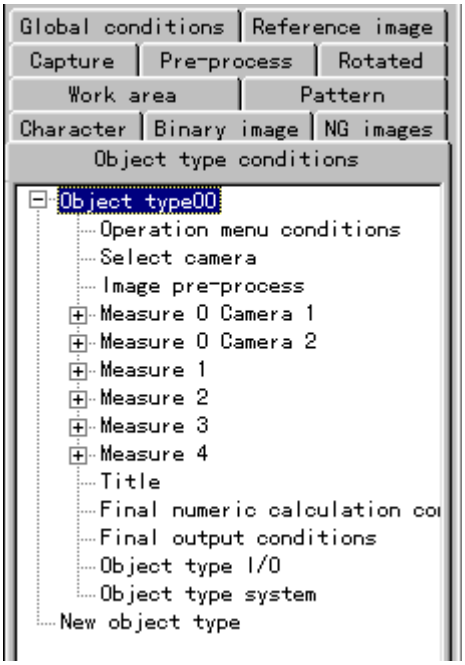


⇨ The [Add] dialog box will appear.



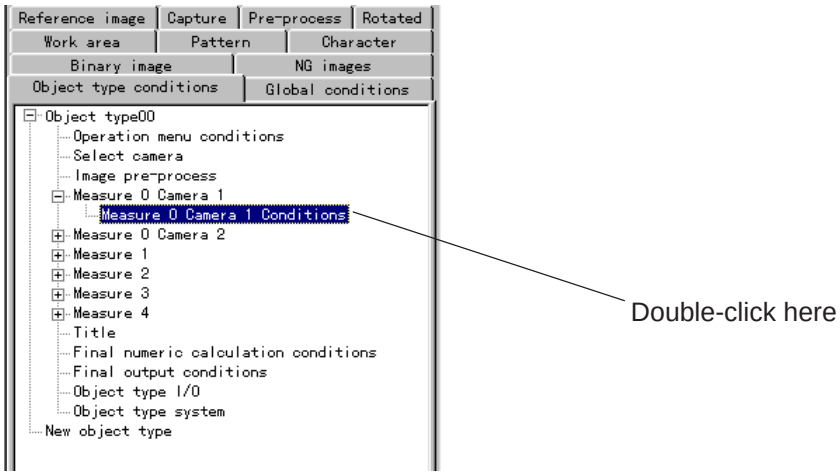
2. Select an object type number to add and click on the [OK] button.

⇨ Then new object number will be added.

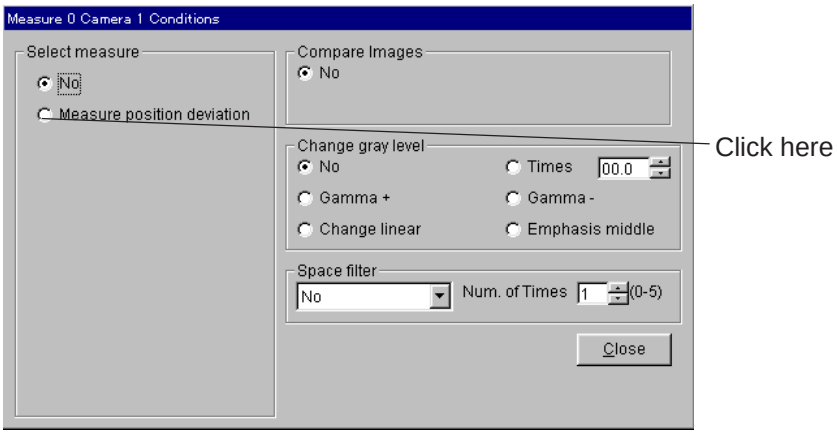


■ Setting the measurement conditions: When measurement 0 and camera 1 (position deviation measurement) is selected.

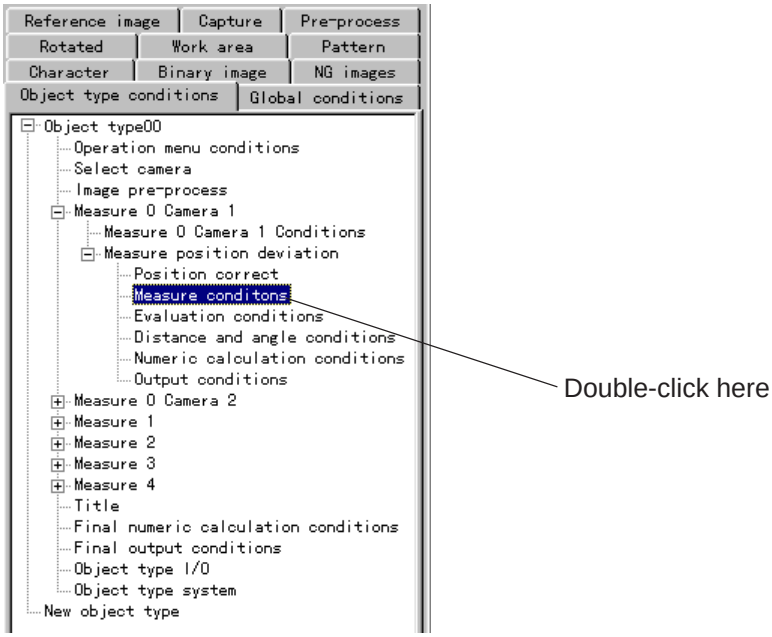
1. Double click on [Measure 0 Camera 1 Conditions].



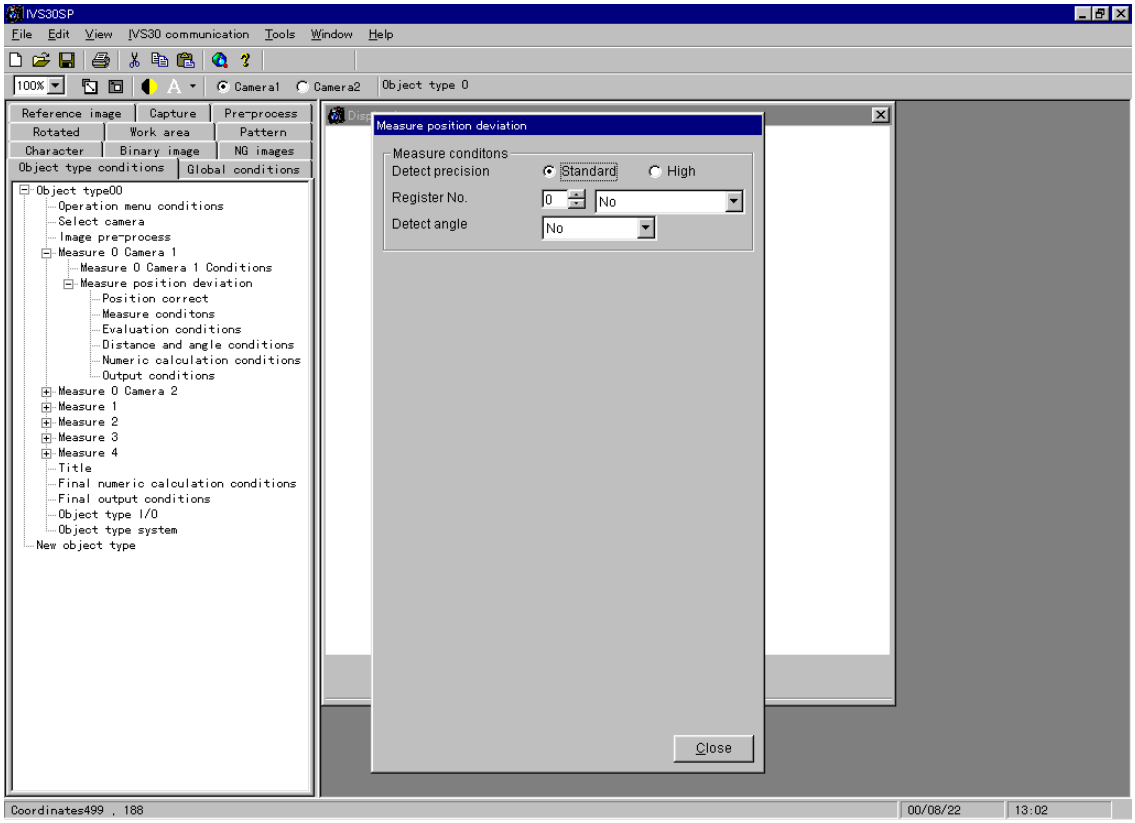
⇨ The "Measure 0 Camera 1 Conditions" dialog box will open. Click on the "Measure position deviation" item.



2. Click on "Measure position deviation" and then click on the [Close] button.
   ⇨ "Measure position deviation" will be added to the [Measure 0 Camera 1 Conditions] menu.
3. Double click on the "Measure conditions" item on the "Measure position deviation" menu. ⇨ See the next page.



⇨ The "Measure position deviation" setting screen will appear.

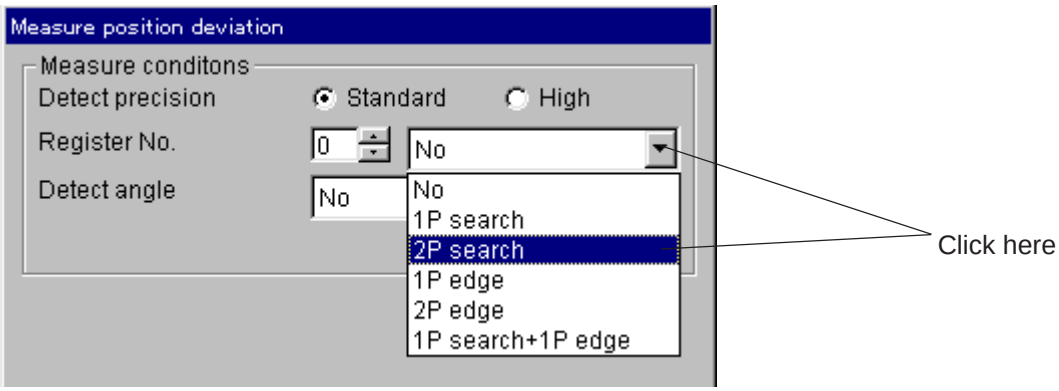


3-1 Setting the measurement conditions

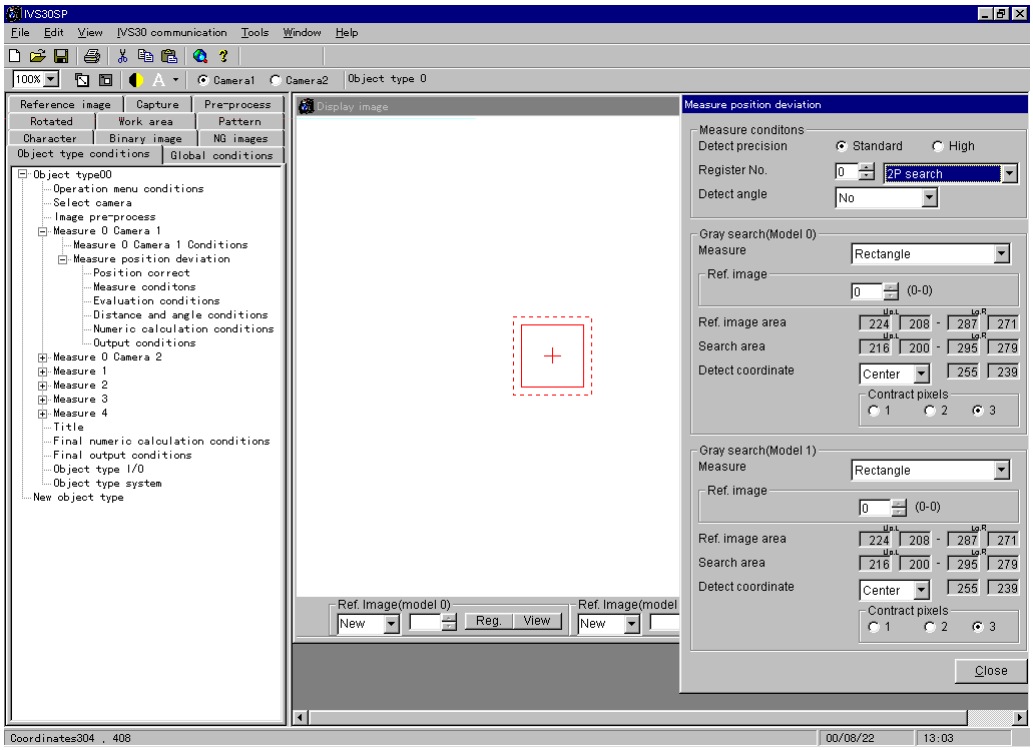
Select the "Measure position deviation" tab and double-click on the "Measure conditions" item on the parameter list. The measurement condition screen will appear.

■ Operation details: When setting up the positional deviation measurement (2-point search)

Click on the "▼" button to display the registration condition items on the "Measure position deviation" setting screen(previous page). Then click on the "2P search" item.



⇨ The measurement condition screen for the "2P search" will appear.

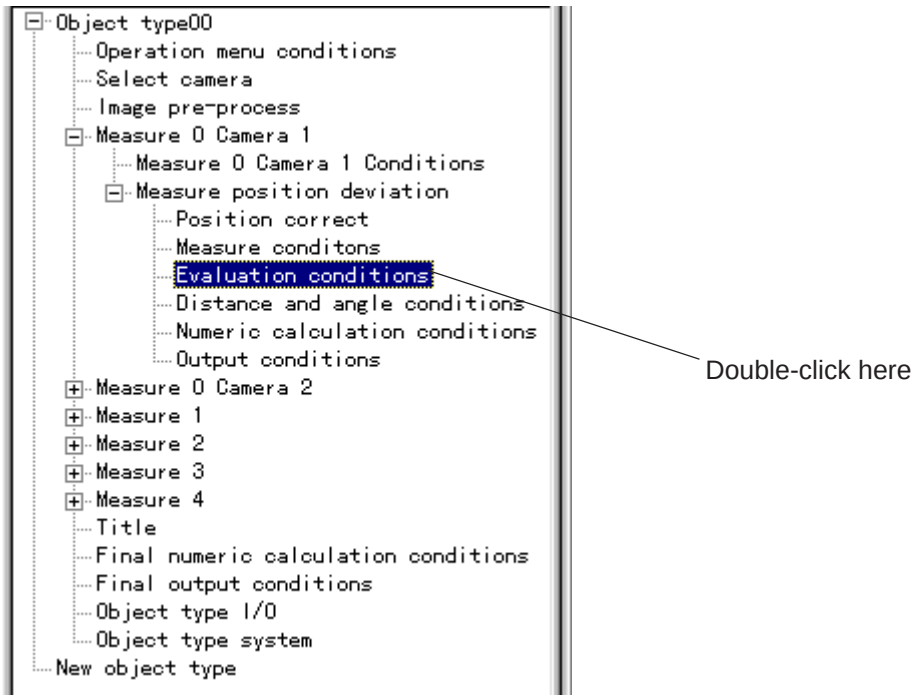


For details about the settings, see the "IV-S30/C35M user's manual."

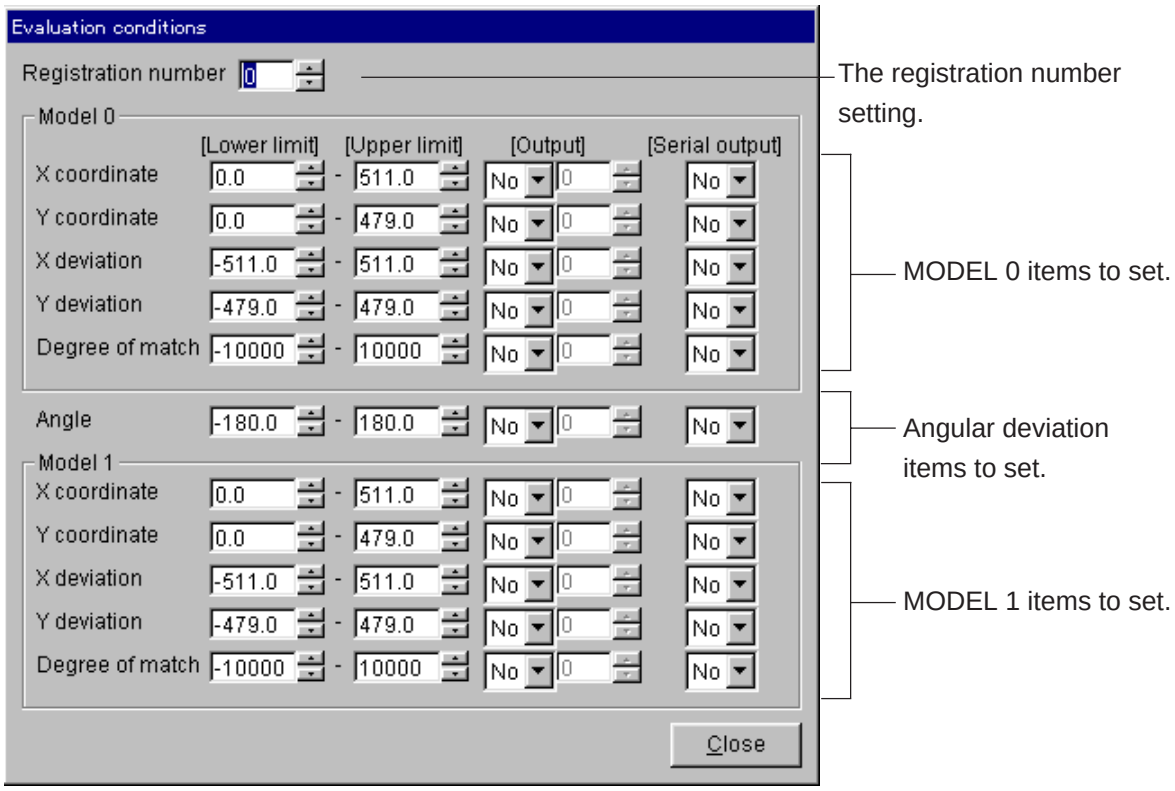
3-2 Setting the evaluation conditions

Select the "Object type condition" tab and double-click on the "Evaluation conditions" item on the parameter list. The evaluation condition screen will appear.

■ Operation details: When setting up the positional deviation measurement (2-point search)
Double-click on the "Evaluation conditions" menu on the parameter list.



⇨ The evaluation condition screen for a 2-point search will appear.



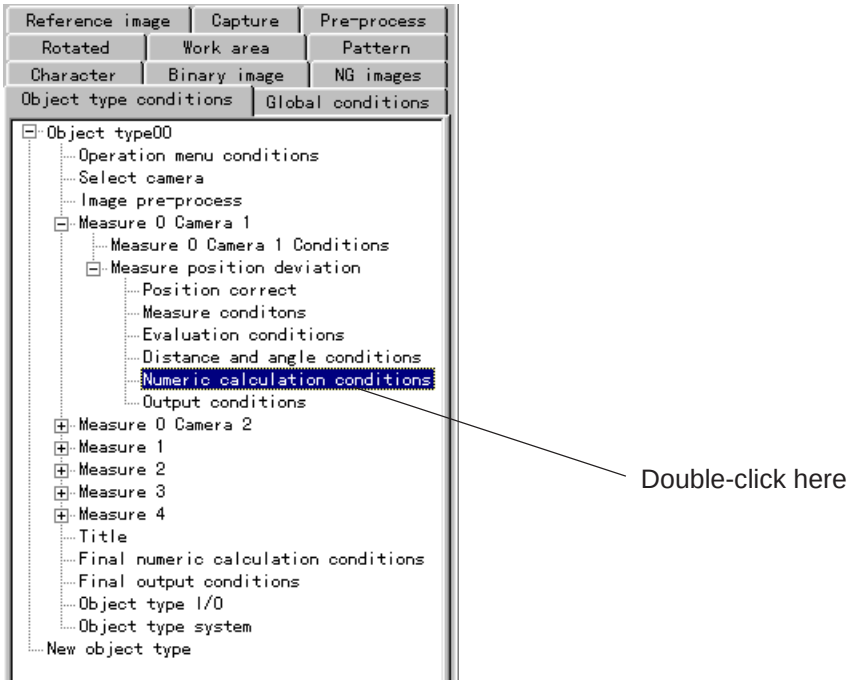
For details about the settings, see the "IV-S30/C35M user's manual, Function and Operation."

3-3 Setting the numerical calculation conditions

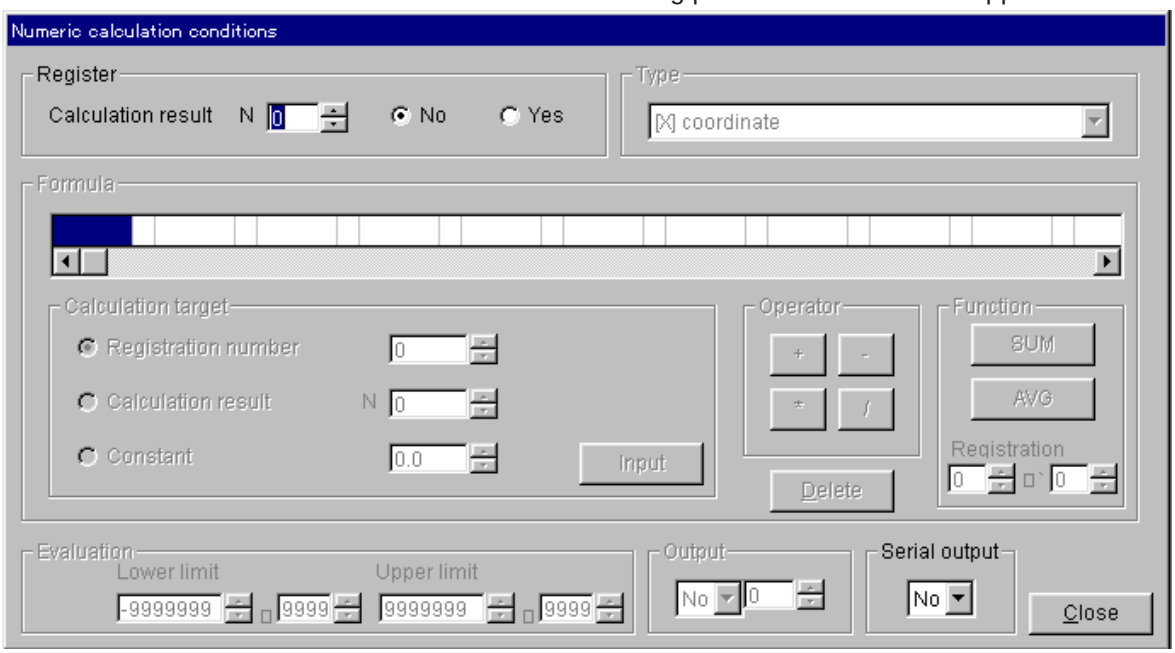
Select the "Object type conditions" tab and double-click on the "Numeric calculation conditions" item on the parameter list. The numerical calculation screen will appear.

■ Operation details: When setting up the positional deviation measurement

Double-click on the "Numeric calculation conditions" menu on the parameter list.



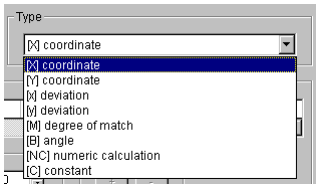
⇨ The "Numeric calculation conditions" screen for measuring positional deviation will appear.



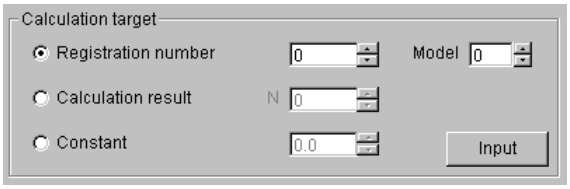
- Enter a calculation result number and click on "Yes" in the "Register" item. Then, you can specify each setting individually (type, formula, evaluation, and output). (See the next page.)

Click on each of the individual setting sections ① to ⑤ below, on the numerical calculation setting table. The details for each setting will appear.

① Object type setting details

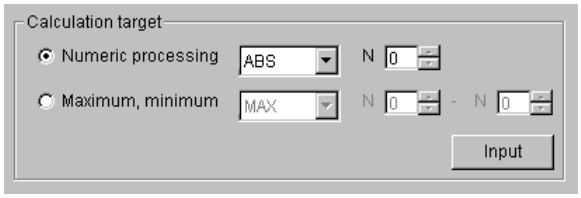


② Setting details for formula 1-1 (When the type is the X ad Y coordinates, x and y deviations, degree of match M, or angle B)

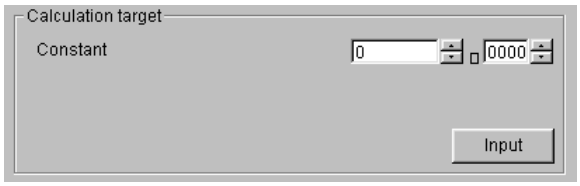


· When angle B is selected, the model item is not displayed.

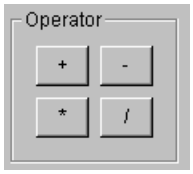
② Setting details for formula 1-2 (When the type is a numerical calculation NC)



② Setting details for formula 1-3 (When the type is a constant C)



③ Setting details for formula 2

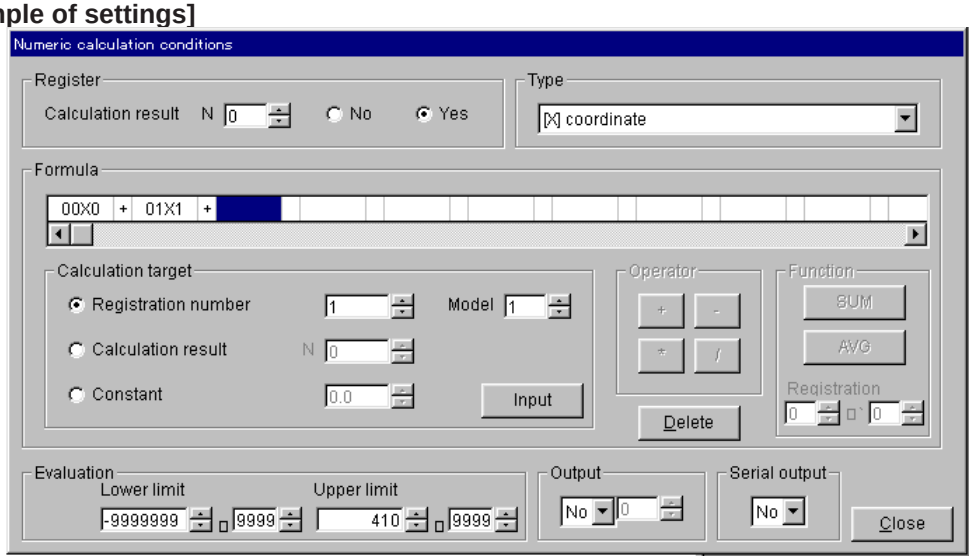


④ Setting details for upper & lower limits

⑤ Setting details for output

For details about these settings, see the section describing the numerical calculation in the "IV-S30/C35M user's manual (Function and Operation)."

[Example of settings]

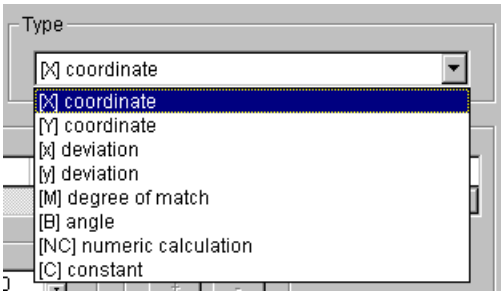


Described below is the process used to set the calculation result N0 for the setting example shown on the previous page.

(1) Setting the object type

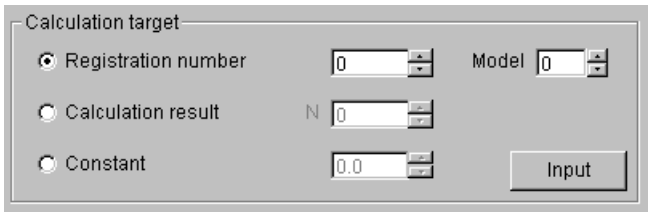
1. Enter "0" for the calculation result number and click on "Yes" in the "Register" dialog box.

2. Click on "[X] coordinate."

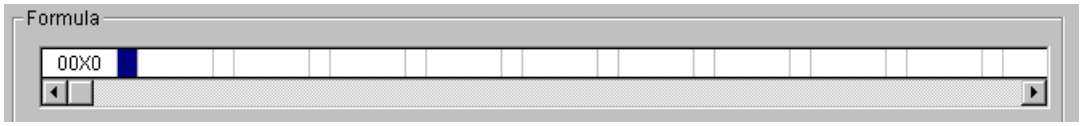


(2) Setting the formula

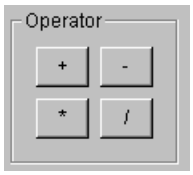
1. Enter "0" for the registration number and model number, and click on the "Input" button.



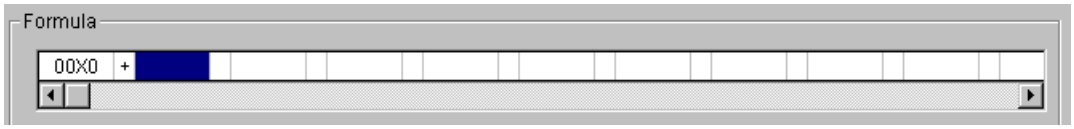
⇨ The setting details for the formula will appear.



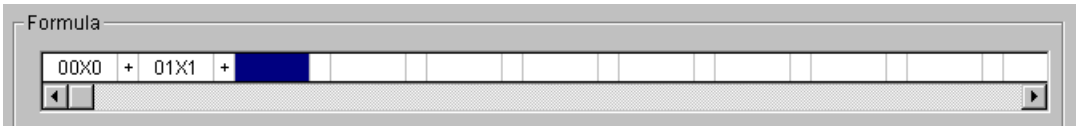
2. Click on the "+" button.



⇨ The "+" symbol will be shown on the cell to the right of "00X0."



3. Repeat steps 1 and 2 to enter more formula steps.



Continued on the following page

From the previous page

(3) Setting the upper & lower limits

Specify the upper limit for evaluating the output.

1. Click inside the upper limit box for the upper limit.

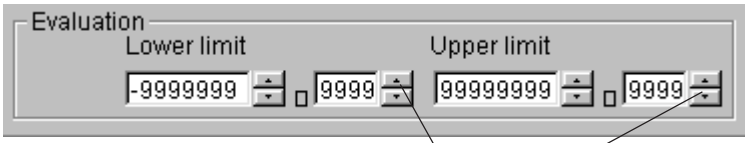
Click here

⇨ The current value will be highlighted.

2. Type in the number "410."

(Reference)

You can also set the upper & lower limits by clicking on the ▲/▼ buttons.

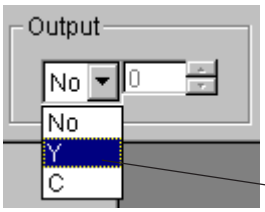


Click here

(4) Set the output.

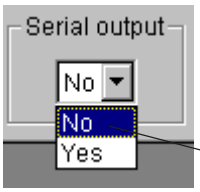
Specify the upper limit for evaluating the output.

1. Click on "Y."



Click here

2. Click on "No."



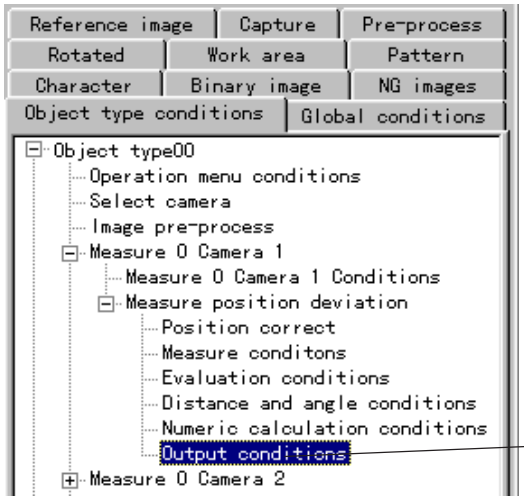
Click here

3-4 Setting the output conditions

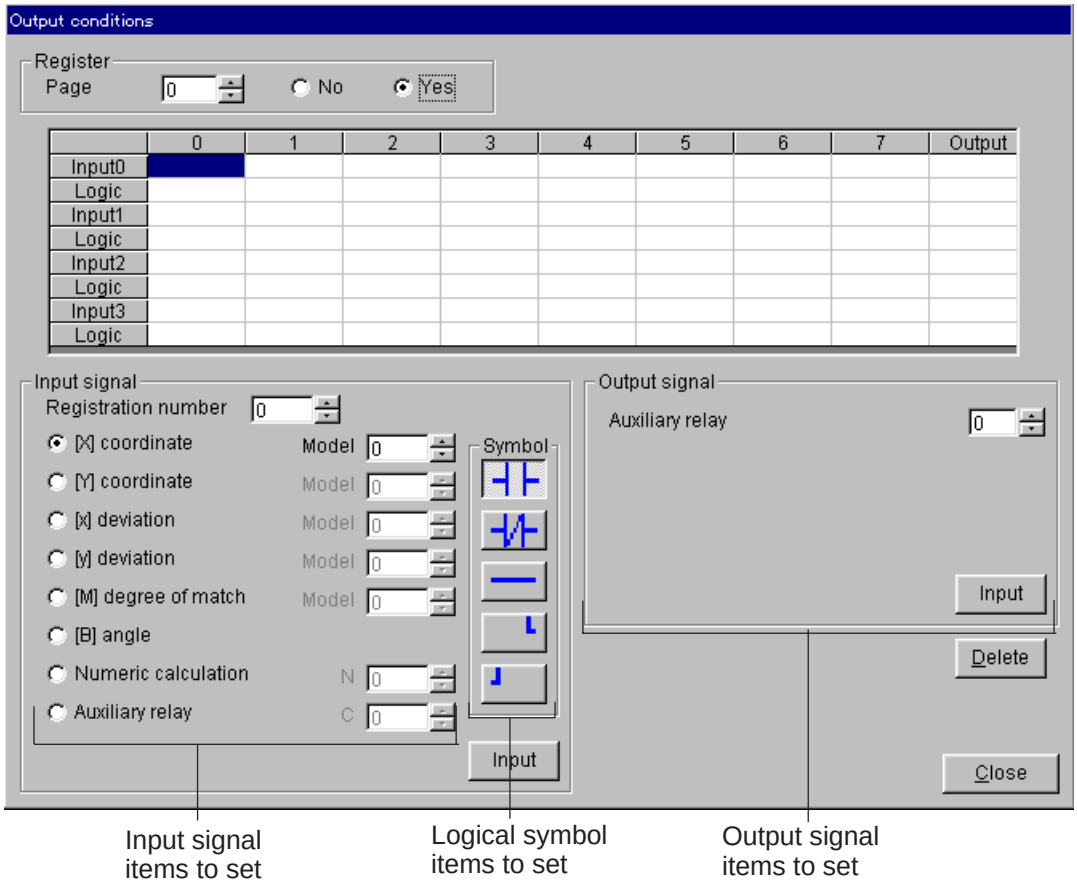
Select the "object type conditions" tab and double-click on the "Output conditions" item on the parameter list. The output conditions screen will appear.

■ Operation details: When setting up the positional deviation measurement

Double-click on the "Output conditions" menu on the parameter list.

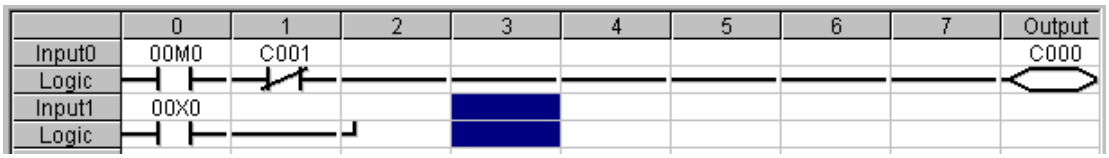


⇨ The "Output conditions" screen for measuring positional deviation will appear.



- Select the page number, and click on the "Yes" item. Then you can specify each setting individually. For details about these setting, see the "IV-S30/C35M user's manual, Function and Operation: PC Function."

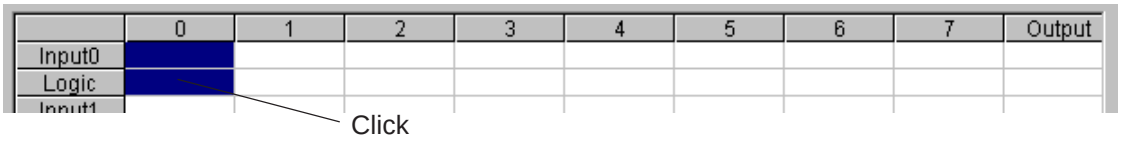
[Example of settings]



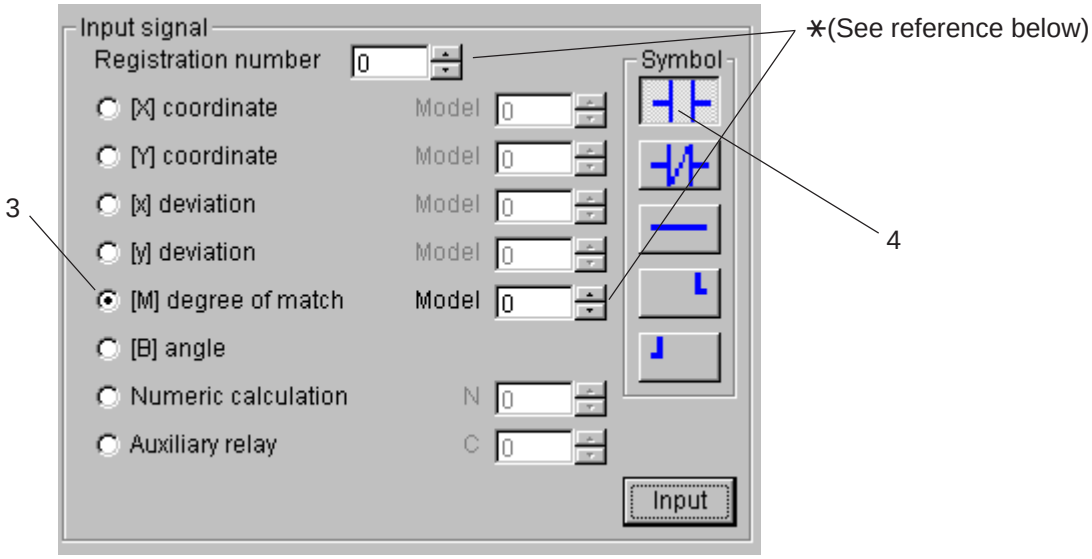
Described below is the process used to create the example above.

1. Enter "0" for the page number, and click on "Yes" in the "Register" item.

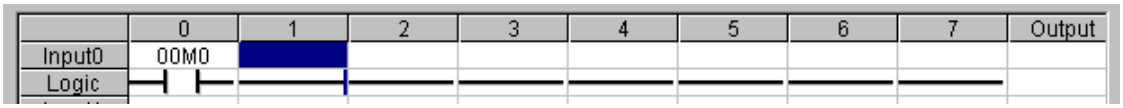
2. Click on column 0 on the "INPUT 0" line.



3. Click on "Degree of match M" as the parameter you want to change.

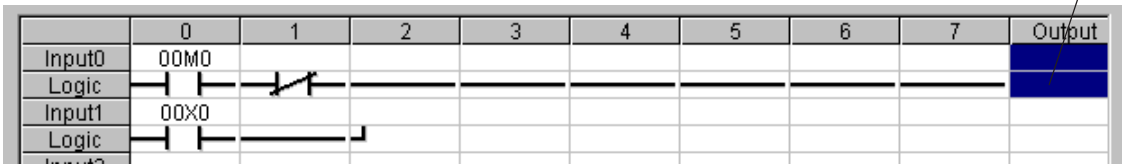


4. Click on the [–| |–] item in the "LOGICAL SYMBOL." area.
   ⇨ The selected input signal and logical symbol will be shown.

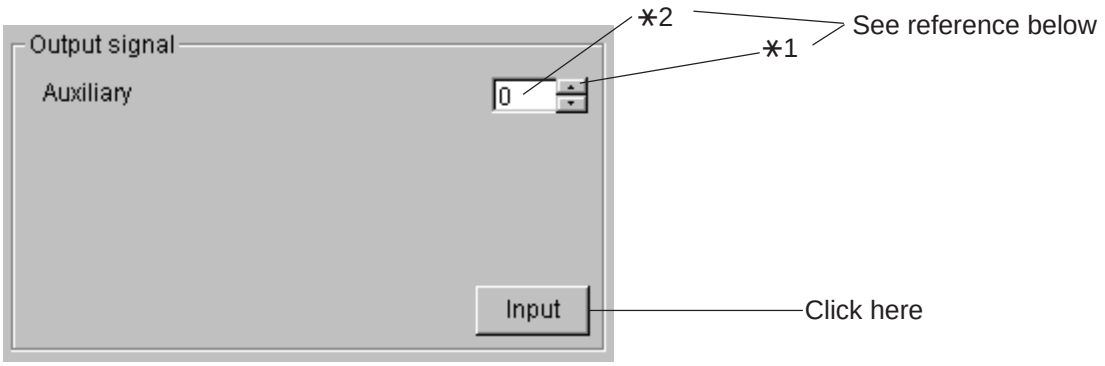


(Reference)
· Enter the registration number and the model number (0 or 1) by clicking inside the box or on the ▲/▼ arrows (see above ✳).

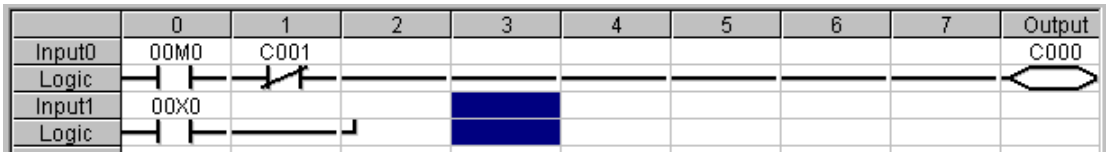
5. To create the input section, click on the desired cell, logical symbol, and objective parameter repeatedly, the same as in steps 1 to 4 above. (The cursor will automatically move to the right of the specified column.)
6. Click the output column on the "INPUT0" line.1.



7. Specify the output number for the output signal, and the click on the "Input" (enter) button.



⇨ The output signal and the auxiliary relay C000 will be shown in the table.



(Reference)

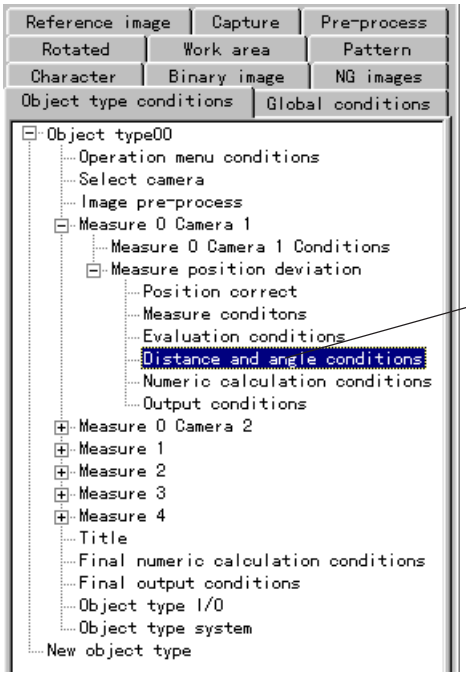
- Set the auxiliary relay number (0 to 127) by entering a number of by clicking on the ▲/▼ arrows (∗1) on the auxiliary relay box, or click inside of the relay number window (∗2) to highlight, then enter the number directly.

3-5 Setting the distance and angle conditions

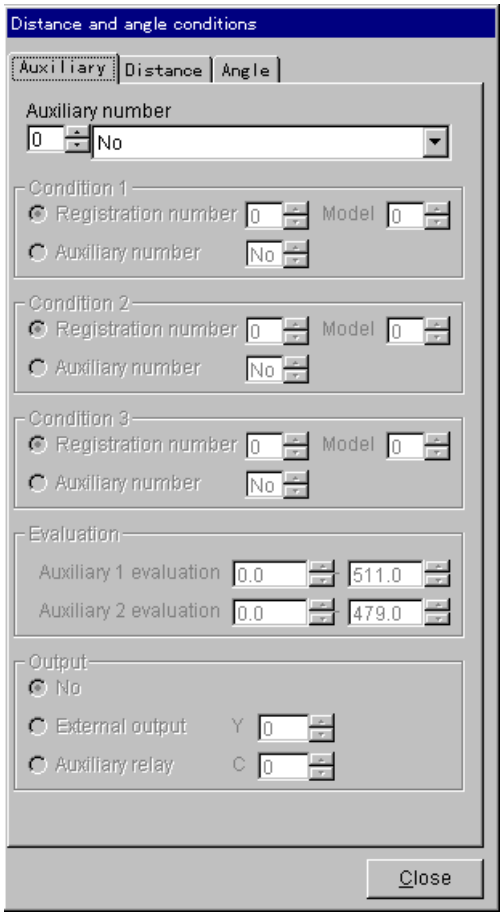
Select the "Object type conditions" tag and double-click on the "Distance and angle conditions" item on the parameter list. The distance and angle conditions screen will appear.

■ Operation details: When setting the positional deviation measurement

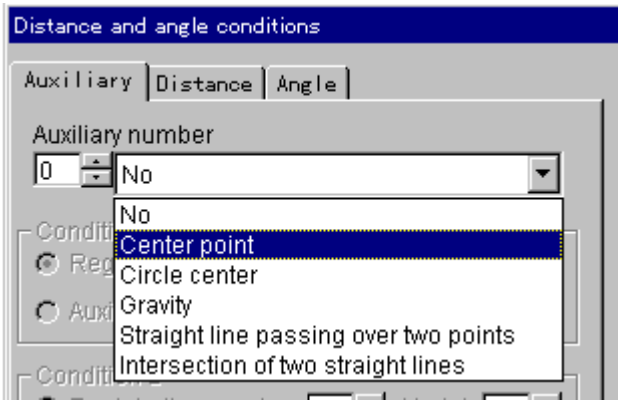
1. Double-click on the "Distance and angle conditions" menu on the parameter list.



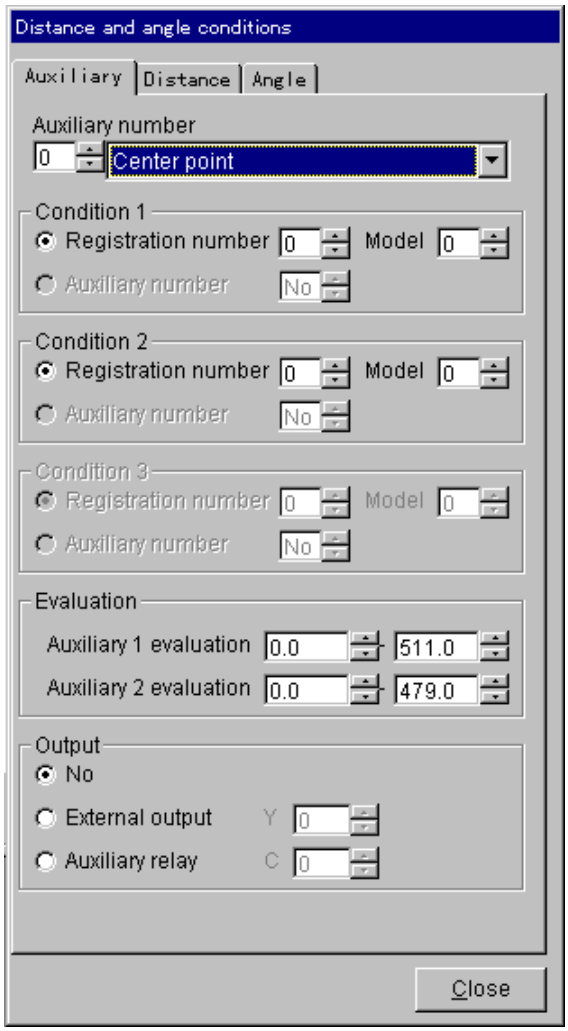
⇨ The "Distance and angle conditions" screen for measuring positional deviation will appear.



2. Specify the auxiliary conditions in the "Distance and angle conditions" dialog box.



3. Specify the other conditions.



Chapter 4: Reading/Writing Parameters and Images

You can save the parameter settings and images (display images, messages, patterns) stored in an IV-S30/C35M controller using a personal computer. Parameter settings can also be downloaded into an IV-S30/C35M.

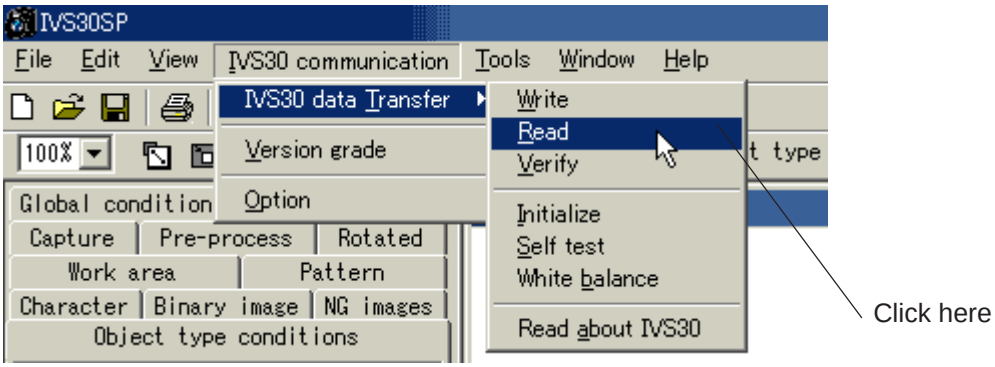
- For details about setting the specific controller model, see page 5-2.

4-1 Read

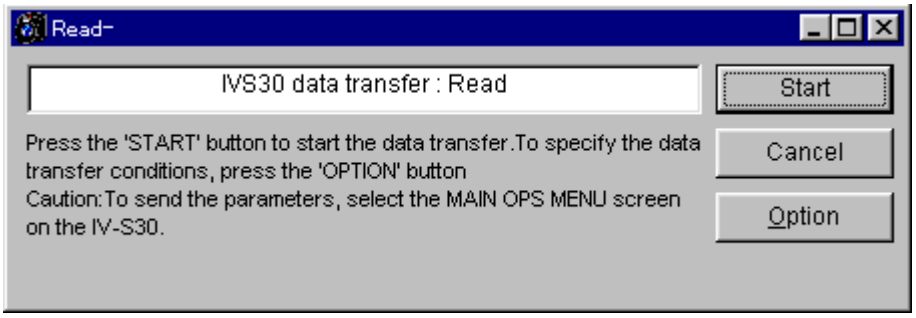
Reads the parameter settings and images stored in the IV-S30/C35M to a personal computer.

1. Select the "Read" item using the following menu sequence.

   "IVS30 communication" → "IVS30 data transfer" → "Read"



   ⇨ The dialog box for the "Read" session will appear.



2. Click on the "Start" button to start the data transfer.

   - If you want to specify or modify the transfer or communication conditions, click on the "Option" button. (To send the parameters and gray scale images, select the MAIN OPS MENU screen on the IV-S30/C35M.)

   ⇨ [Chapter 2: Optional settings]

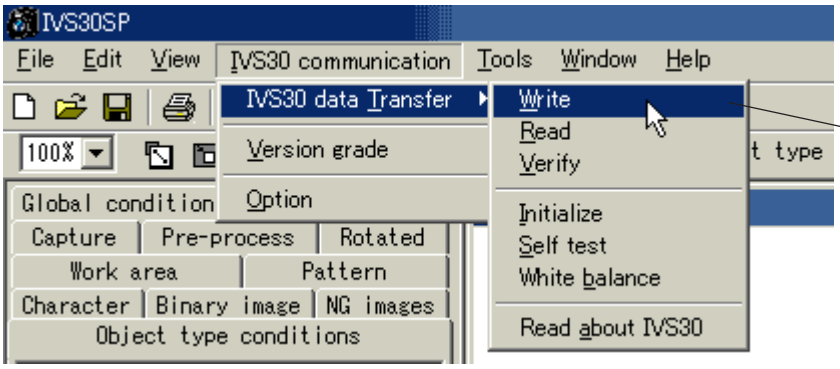
3. After the transfer is complete, the "Data transfer complete" message box will appear.

   - To end the operation, click on the "OK" button.

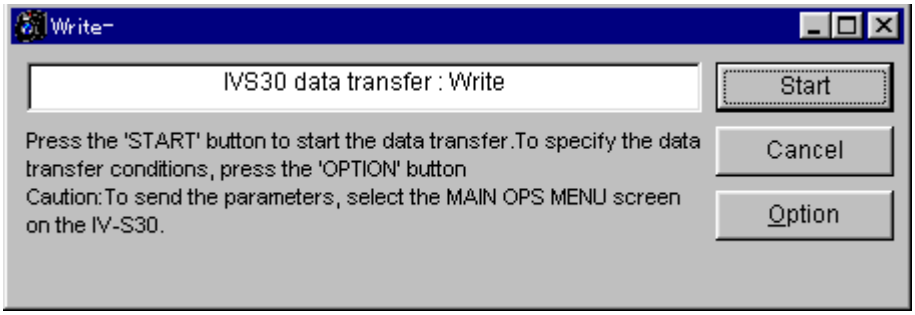
4-2 Write

Write the parameter settings and images stored into a personal computer to the IV-S30/C35M.

1. Select the "Write" item using the following menu sequence.
   "IVS30 communication" → "IVS30 data transfer" → "Write"



⇨ The dialog box for the "Write" session will appear.



2. Click on the "Start" button to start the data transfer.
   - If you want to specify or modify the transfer or communication conditions, click on the "Option" button.
   ⇨ [Chapter 2: Optional settings]

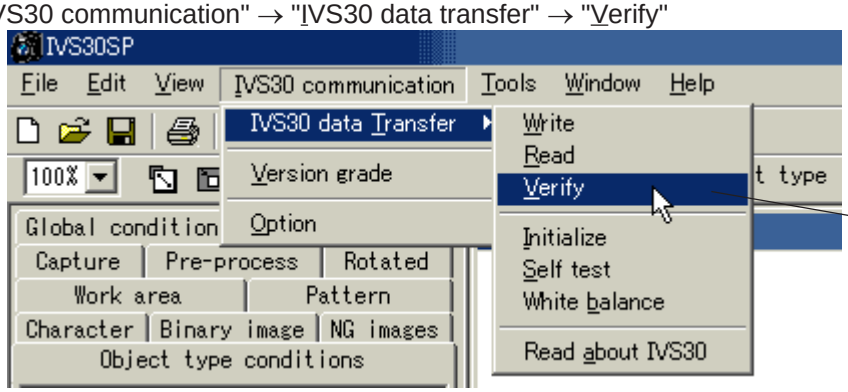
3. After the transfer is complete, the "Data transfer complete" message box will appear.

   - To end the operation, click on the "OK" button.

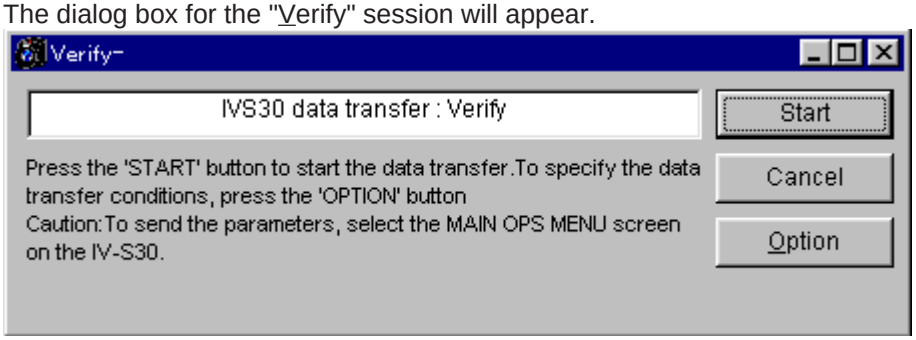
4-3 Verify

Verify that the parameter settings and images are the same in the personal computer and the IV-S30/C35M.

1. Select the "Verify" item using the following menu sequence.
   "IVS30 communication" → "IVS30 data transfer" → "Verify"



⇨ The dialog box for the "Verify" session will appear.



2. Click on the "Start" button to start the data transfer.
   - If you want to specify or modify the transfer or communication conditions, click on the "Option" button.
   ⇨ [Chapter 2: Optional settings]

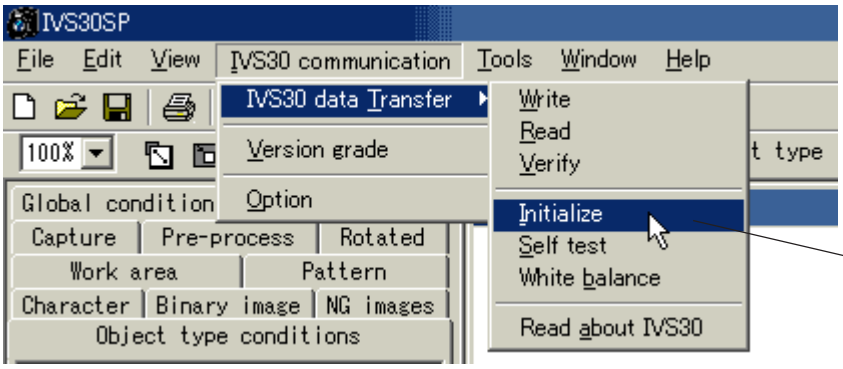
3. After the transfer is complete, the "Data transfer complete" message box will appear.

   - To end the operation, click on the "OK" button.

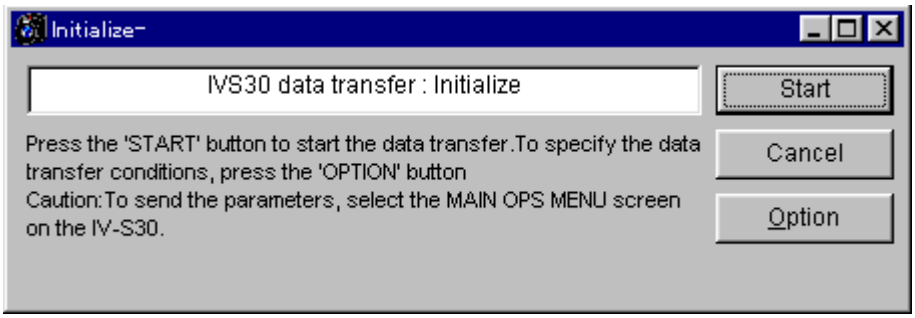
4-4 Initialization

Initialize all parameters in the IV-S30/C35M.

1. Select the "Initialize" item using the following menu sequence.
   "IVS30 communication" → "IVS30 data transfer" → "Initialize"



   ⇨ The dialog box for the "Initialize" will appear.



2. Click on the "Start" button to start the data transfer.
   - If you want to specify or modify the transfer or communication conditions, click on the "Option" button.
   ⇨ [Chapter 2: Optional settings]

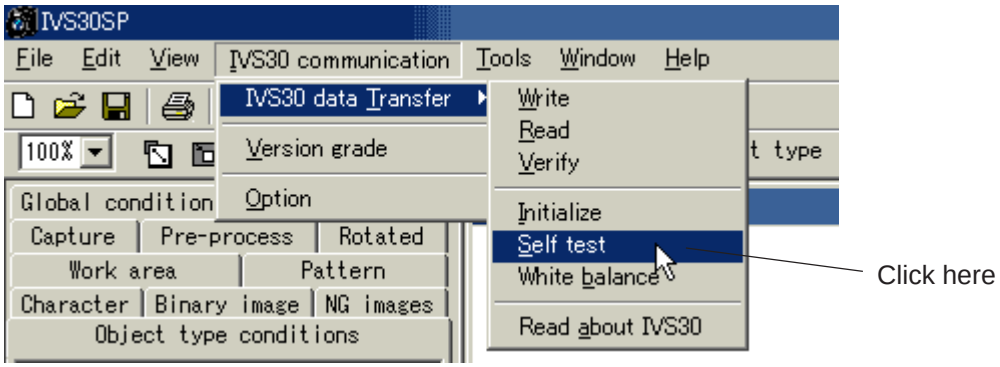
3. After the transfer is complete, the "Data transfer complete" message box will appear.

   - To end the operation, click on the "OK" button.

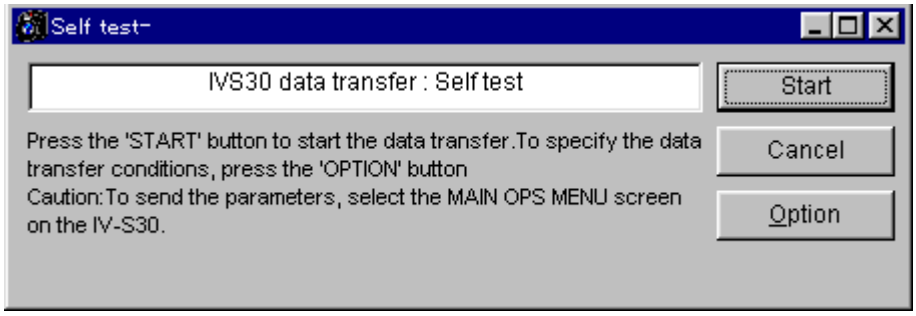
4-5 Self diagnosis

Start the self-diagnosis function in the IV-S30/C35M.

1. Select the "Self test" item using the following menu sequence.
   "IVS30 communication" → "IVS30 data transfer" → "Self test"



⇨ The dialog box for the "Self test" will appear.



2. Click on the "Start" button to start the self-diagnosis.
   - If you want to specify or modify the transfer or communication conditions, click on the "Option" button.
   ⇨ [Chapter 2: Optional settings]

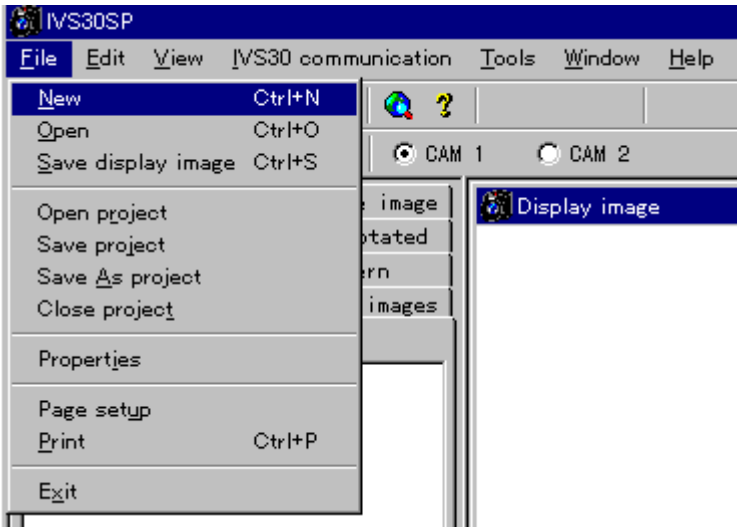
3. After the transfer is complete, the "Data transfer complete" message box will appear.

   - To end the operation, click on the "OK" button.

Chapter 5: File operations

Save the IV-S30/C35M's parameter settings and images in a file or load the same type of stored data back into the IV-S30SP.

The "File" menu shown below is used by all the parts of this program.



■ **New**

Start a new file from the IV-S30SP parameter. All of the parameters will be set to their default values.

- Select the "New" item from the "File" menu.

■ **Open**

You can open the types of files listed below.

File extensions	Details
*.bmp	Bit map file of the display and reference images
*.msr	Object type setting conditions
*.prm	Global conditions

- Select the "Open" item from the "File" menu.

  ⇨ The "Open" dialog box will appear.

■ **Save the currently displayed image**

Save the image that is currently open on the IV-S30SP.

- Select the "Save display image" item from the "File" menu.

  ⇨ The "Save display image" dialog box will appear.

■ **Open project**

Open a project file (*.apm).

- Select the "Open project" item from the "File" menu.

■ **Save project**

Save all of the files currently open, which have any of the extensions described in the "Open" file section. The files, including all of the data, are seved in a project file (*.apm).

- Select the "Save project" item from the "File" menu.

■ Save As project

Save all of the files currently open, which have any of the extensions described in the "Open" file section. The files, including all of the data, are saved in a new project file (*.apm). The data is stored under the new name.

- Select the "Save As project" item from the "File" menu.

■ Close project

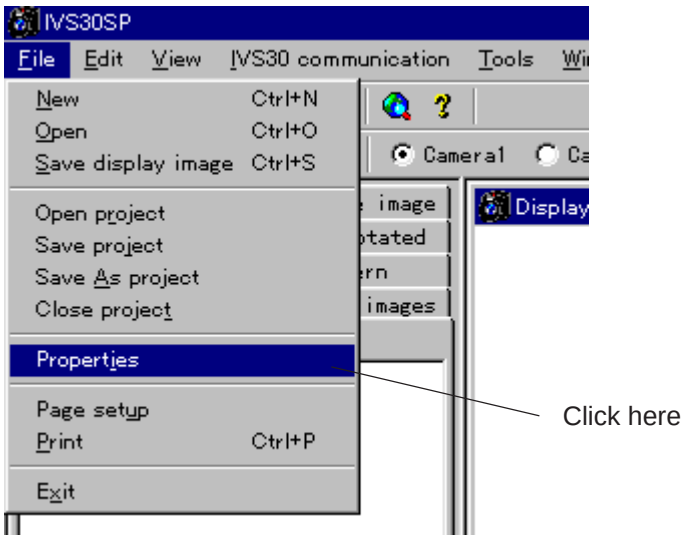
Close the project files (*.apm).

- Select the "Close project" item from the "File" menu.

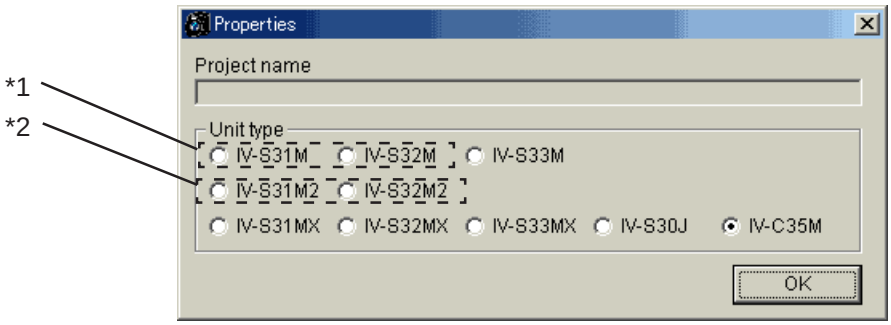
■ Property

Select the controller type you are using and enter a project name.

1. Click on the [Properties] item on the [File] menu.



2. The [Properties] dialog box will appear.



*1: When the IV-S31M/S32M software version is V1.**.

*2: When the IV-S31M/S32M software version is V2.**.

- When the controller type is changed, the software will automatically change the project's parameters.

Note: A project file is a file used to manage all of the various types of parameters in the IV-S30/C35M.

Chapter 6: Document Creation

You can automatically create a spreadsheet (table of the current parameters) using Excel or other standard applications, so that you can easily manage and store parameter sets as documents.

6-1 Document creation (Project file)

This section describes the procedures for creating a document that contains the parameters in a personal computer file.

(1) Setting/operating the IV-S30/C35M

Bring up the MAIN OPS MENU screen on the IV-S30/C35M.

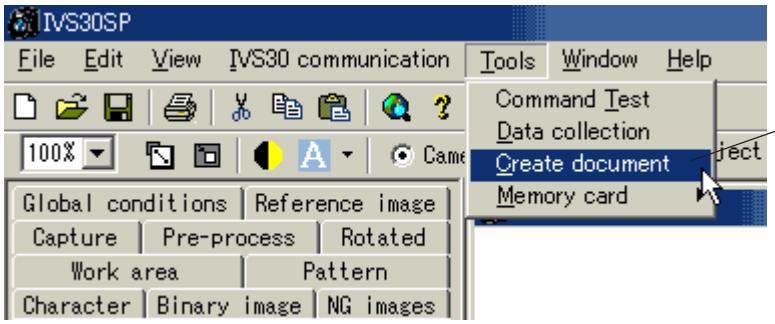
(2) Communication setting

Set the parameters for communicating with the IV-S30/C35M.

⇨ See "Chapter 2: Optional settings."

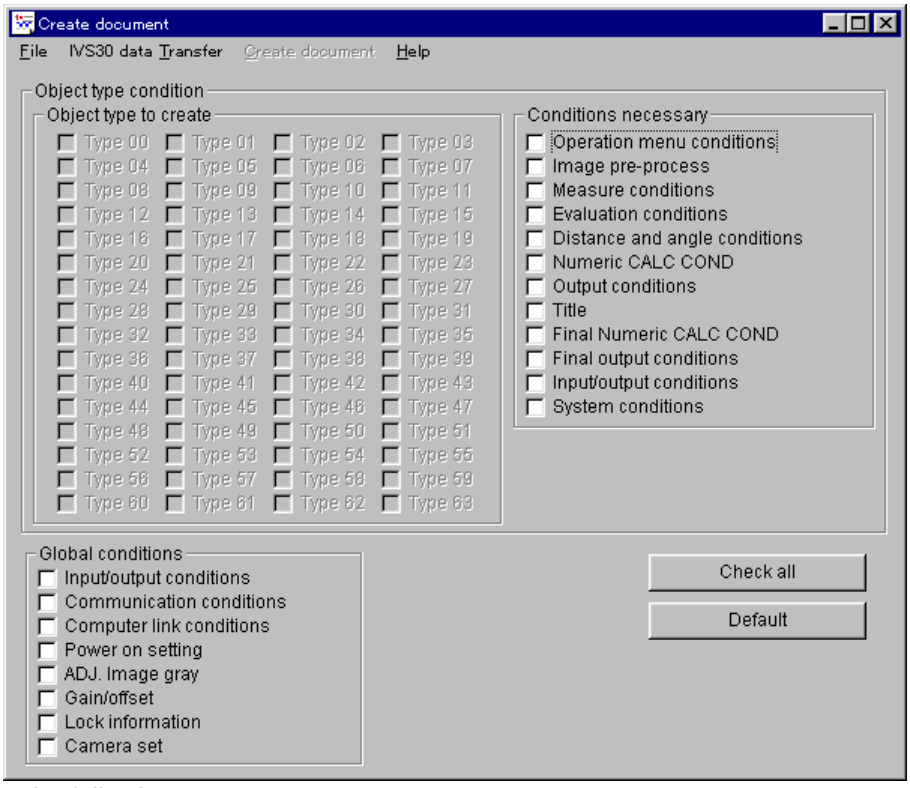
(3) Loading the parameters

1. Click the "Create document" item on the "Tools" menu.



Click here

⇨ The "Create document" dialog box will appear.



Continued on the following page

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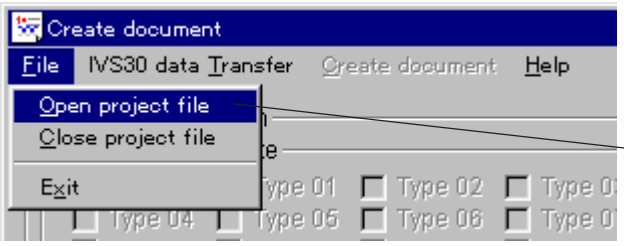
(4) Create a document from a project file.

Click on the "Open project file" item in the "File" menu.



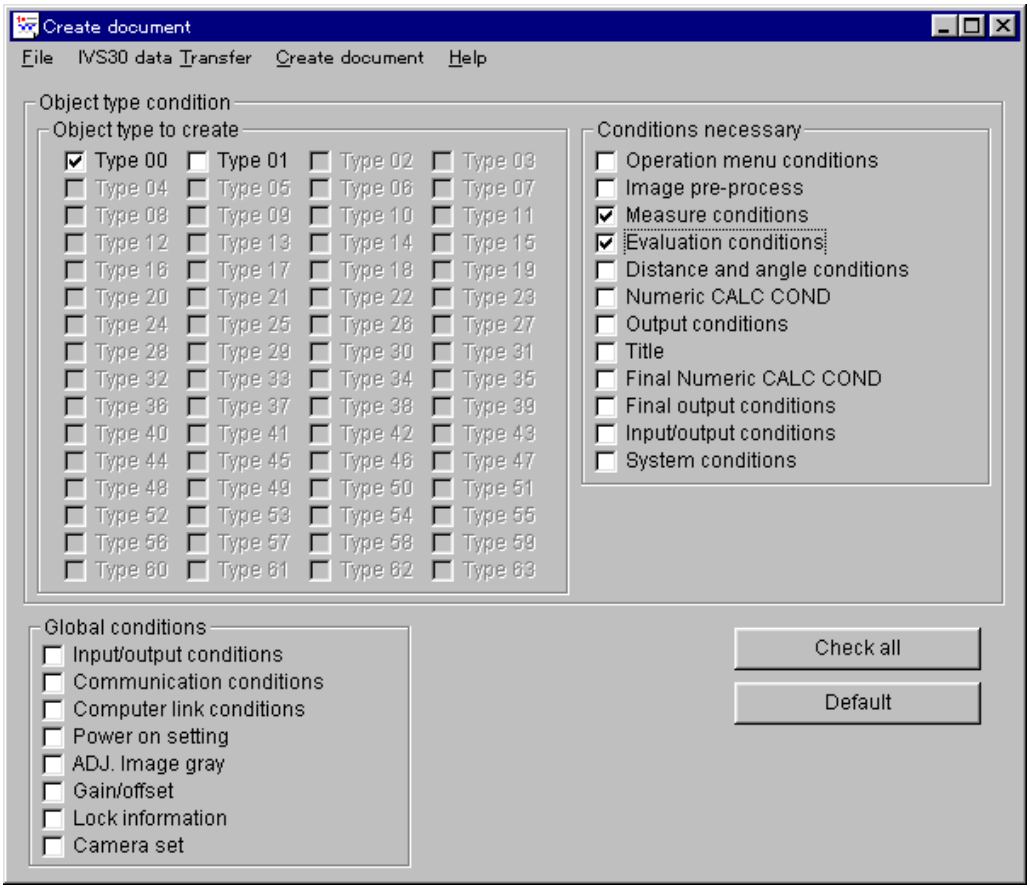
⇨ The dialog box for "Open project file" will appear.

(5) Select a file

Select the project file that you want to create a document from in the "Create document" dialog box (project file extension: *.apm).

(6) Document creation details

Check the boxes next to all of the conditions you want to use in creating the document. Then, click on the "Create document" menu.



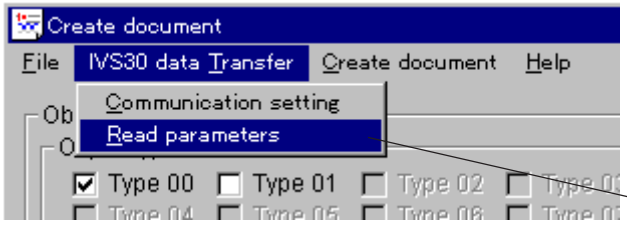
⇨ The dialog box for saving the file will appear. Enter the new document file name (document creation file extension: *.csv).

6-2 Document creation (IV-S30/C35M parameter loading)

This section describes the procedures for creating a document from the parameters already in the IV-S30/C35M.

(1) Select a file in which to save the parameter settings

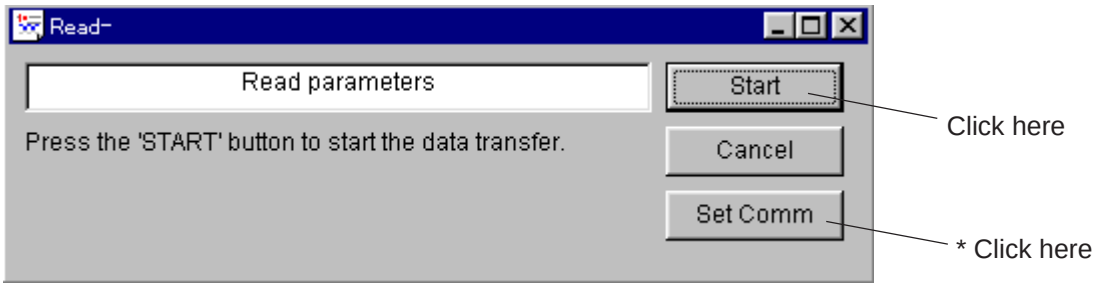
Click on "Read parameters" on the "IV-S30 data Transfer" menu.



⇨ The "Read parameters" dialog box will appear.

(2) Start data transmission

Click on the "Start" button to start the data transmission.



* If you want to specify or change the communication settings, select the "Communication setting" item in the "IVS30 data Transfer" menu, or click on the "Set Comm" button in the "Read parameters" dialog box.

[Example of document creation]

Shown below is an example file document (with ".csv" extension) that contains conditions for each object type and can be opened using Excel.

<<< Object type number 00 >>>

TITLE	SAMPLE
---- Main ----	
MEAS.0, CAMERA 1	POSITIONAL DEVIATION MEASUREMENT
MEAS.0, CAMERA 2	NO
MEAS.1	NO
MEAS.2	NO
MEAS.3	NO
HALT MEAS ON NG	NO
POS. ADJ.CAMERA 1	NO CALIBRATION
POS. ADJ.CAMERA 2	NO CALIBRATION

---- Positional deviation measurement (Camera 1) ----

[MEAS. PROG. COND]		
* Registration number		0
Mode	2 point search	
<First point>		
MEAS WINDOW	RECTANGLE	
REF IMAGE upper left X COORD		68
REF IMAGE upper left Y COORD		232
REF IMAGE lower right X COORD		139
REF IMAGE lower right Y COORD		295
SEARCH AREA upper left COORD		60
SEARCH AREA upper left COORD		224
SEARCH AREA lower right COORD		147
SEARCH AREA lower right COORD		303
DTECT COORD	CNTR	
DTECT COORD (X)		104
DTECT COORD (Y)		264
CONTR. PIXEL		3
<Second point>		
MEAS WINDOW	RECTANGLE	
REF IMAGE upper left X COORD		356
REF IMAGE upper left Y COORD		232
REF IMAGE lower right X COORD		427
REF IMAGE lower right Y COORD		295
SEARCH AREA upper left COORD		348
SEARCH AREA upper left COORD		224
SEARCH AREA lower right COORD		435
SEARCH AREA lower right COORD		303
DTECT COORD	CNTR	
DTECT COORD (X)		392
DTECT COORD (Y)		264
CONTR. PIXEL		3
DETECT ACCURACY	STANDARD	

Chapter 7: Data Collection (Measurement result/NG image)

You can transmit the measurement result/NG image result data from the IV-S30/C35M to a personal computer via communication cable (general purpose serial I/F), and automatically create a result sheet.
The data collection function is used to manage or save measurement data, and collect data settings such as the evaluation conditions.

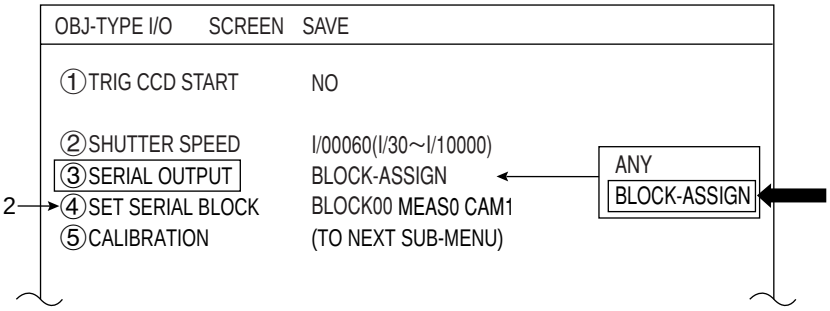
- For details about setting the specific controller model, see page 5-2.

This chapter explains the procedures for data collection.

(1) Setting/operation of the controller

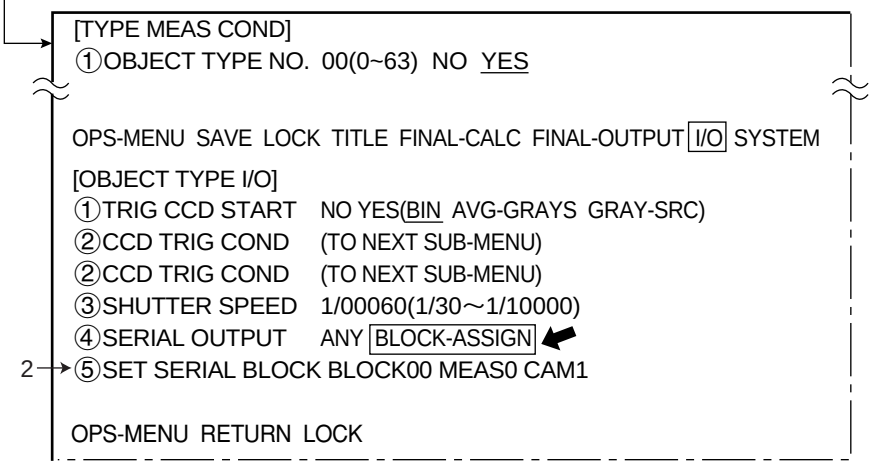
1. Select "BLOCK-ASSIGN" on the "SERIAL OUTPUT" line of the [OBJ-TYPE I/O] menu.

● When using the IV-S31MX/S32MX/S33MX, IV-S30J, or IV-C35M



● When using the IV-S31M/S32M/S33M

On the "MAIN OPS MENU," move the cursor to MEA-CND and press the SET key.
⇨ On the [TYPE MEAS COND] menu, move the cursor to [I/O] and press the SET key.



2. Assign block numbers to be used to collect data on the "SET SERIAL BLOCK" line.

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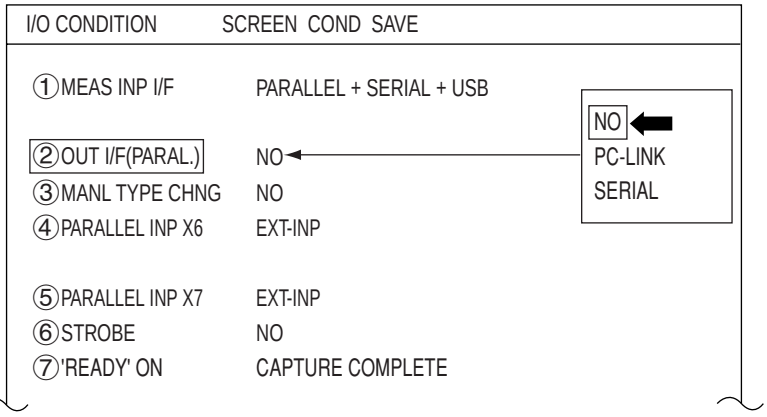
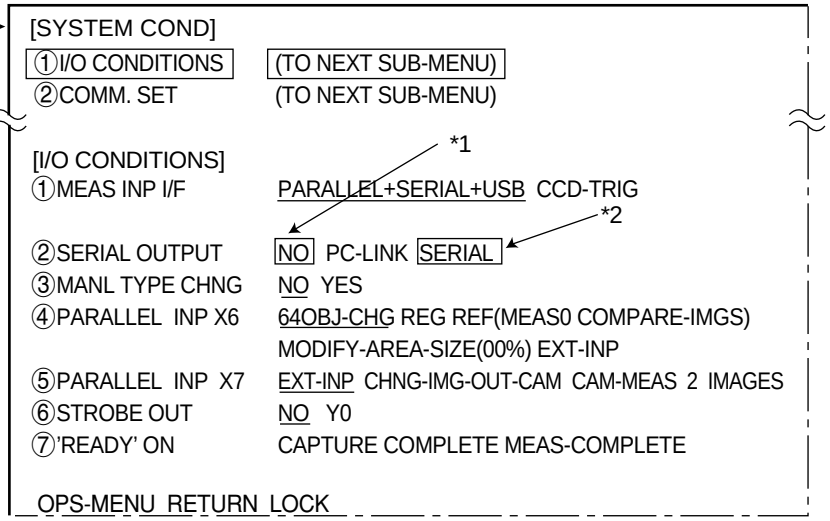
3. Set the "SERIAL OUTPUT" or "OUT I/F (PARAL.)" item on the [I/O CONDITIONS] menu. The settings will depend on the type of controller you are using.

● When using the IV-S31MX/S32MX/S33MX, IV-S30J, or IV-C35M
Select "No."



● When using the IV-S31M/S32M/S33M
The settings will depend on the type of controller (software version) you are using.
On the "MAIN OPS MENU," move the cursor to [SYS-CND] and press the SET key.
- On the [SYSTEM COND] menu, move the cursor to "①I/O CONDITIONS" and press the SET key.



*1: When the IV-S33M, IV-S31M/S32M (software version V2.01 or later) is used. ⇨ Select "NO."
*2: When the IV-S31M/S32M (software version V1.15 or before) is used. ⇨ Select "SERIAL."

4. Return the IV-S30/C35M screen to the "MAIN OPS MENU."

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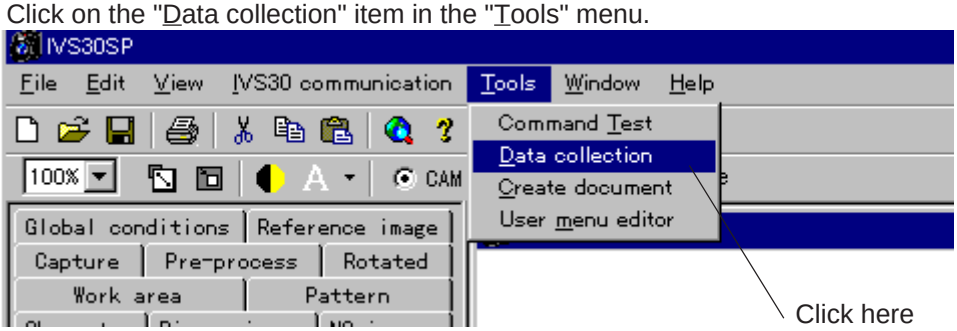
(2) Starting the data collection screen

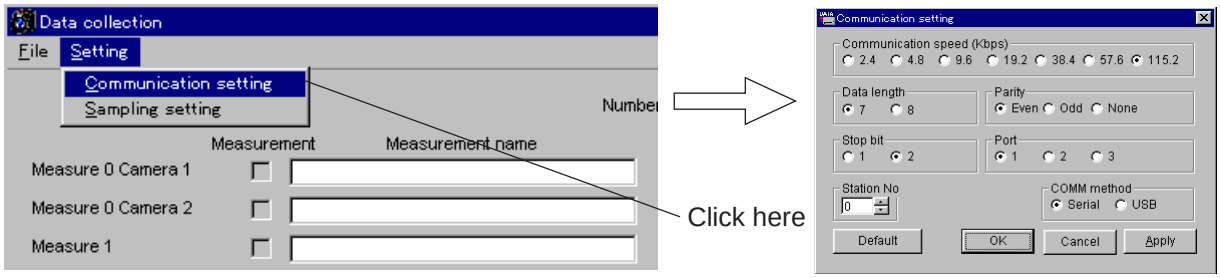
Click on the "Data collection" item in the "Tools" menu.



⇨ The "Data collection" dialog box will appear.

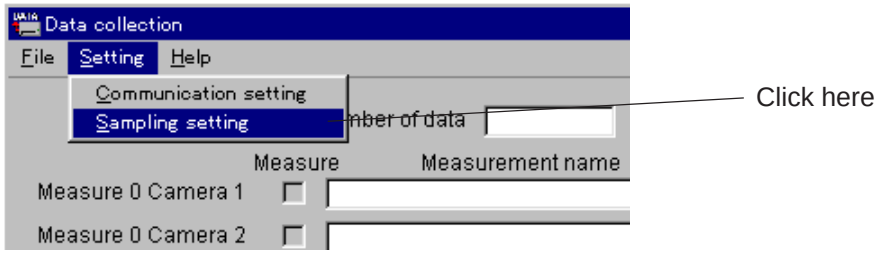
(3) Communication settings

Specify the communication settings by selecting the "Communication setting" item in the "Setting" menu on the IV-S30SP program and communication setting of the IV-S30/C35M.



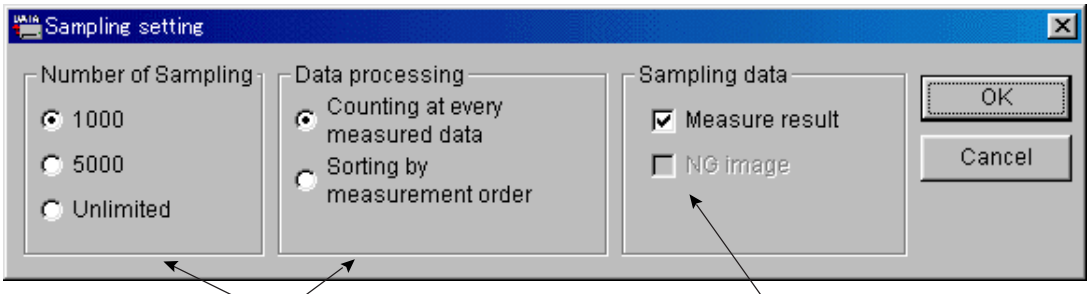
(4) Sampling setting

1. Click on the [Sampling setting] item on the [Setting] menu.



⇨ The [Sampling setting] dialog box will appear.

2. Set the sampling data, number of samples, and data processing required in the screen below, according to your use and application.



The number of samples and data processing settings affect the "measurement result data" obtained from the sampling data.

"NG image data" can be selected when "USB" is selected for the communication method (see above).

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[Sampling data]

- Measurement result data: Collect the results from the data measured.
- NG image data: Collect NG images.

(In order to collect NG images, select "YES" for NG image registration on the "OBJECT TYPE SYS." menu on the controller (except IV-S31M/S31MX.))

[Number of sampling]

Enter the number of samplings and method here.

- 1000: Collect up to 1000 sets of data
- 5000: Collect up to 5000 sets of data
- Unlimited: Save data on a hard disk (the sampling speed will be slower).

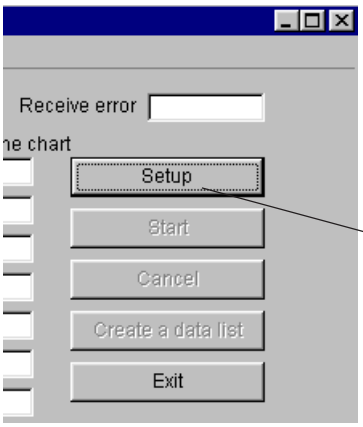
[Data processing]

Set the data processing method for the data samples.

- Count the number of samples in each set of measurement data: Total the number of data samples in each set of measurement data, and output the total and number of samples.
- Sort in measurement order: Output the measurement results in same order that the samples were taken.

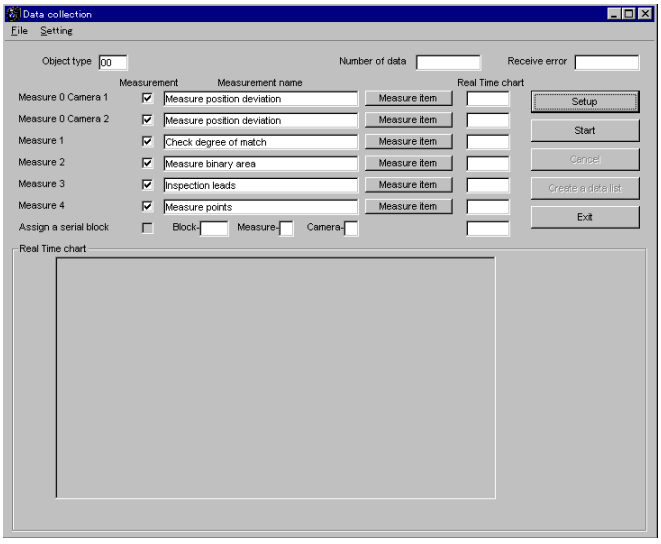
(5) Setting the data collection conditions

1. Click on the "Setup" button.



⇨ Load the IV-S30/C35M parameters and display the data collection conditions that can be specified.

2. Select the items for data collection.



Continued on the following page

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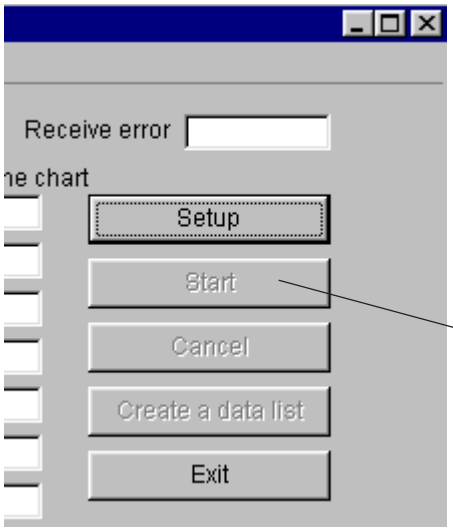
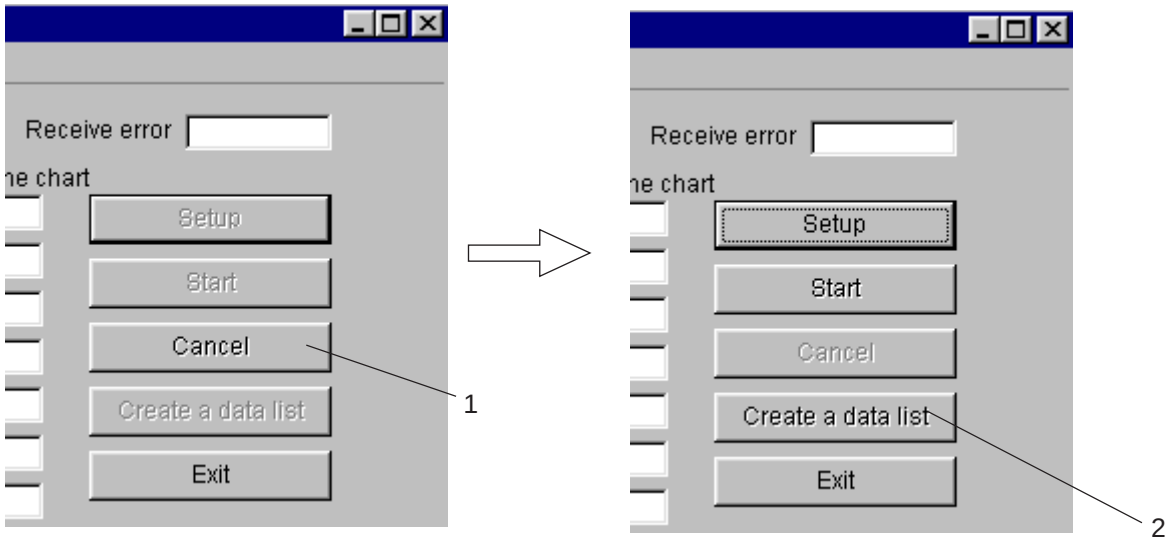
(6) Execute a data collection

Click on the "Start" button.



⇨ Now the IV-S30SP is ready to load data.

(7) Create a summary table of the measurement data, collect NG image data



1. Click on the "Cancel" button.
   ⇨ The data collection will stop.
2. Click on the "Create a data list" button.
   - When the [Open] dialog box appears, select the directory position and assign a file name in which to save the data.
   - The data summary file will be created automatically.
   - The file extension used for the measurement data is "csv" and NG image data is saved as "bmp" files.

Note

- If processing speed of a personal computer is slower than the data transmission speed of the IV-S30/C35M, some parts of the data may be lost.
- Displaying the real time chart will reduce the IV-S30SP program's processing speed.

[Data collection example]

Shown below is an example in which the graph creation feature in Excel is used to make a graph of the measured data file (with ".csv" extension) created with the data collection function.

Example: Measuring an area by binary conversion, and setting the upper and lower limits for the evaluation conditions of the surface area.

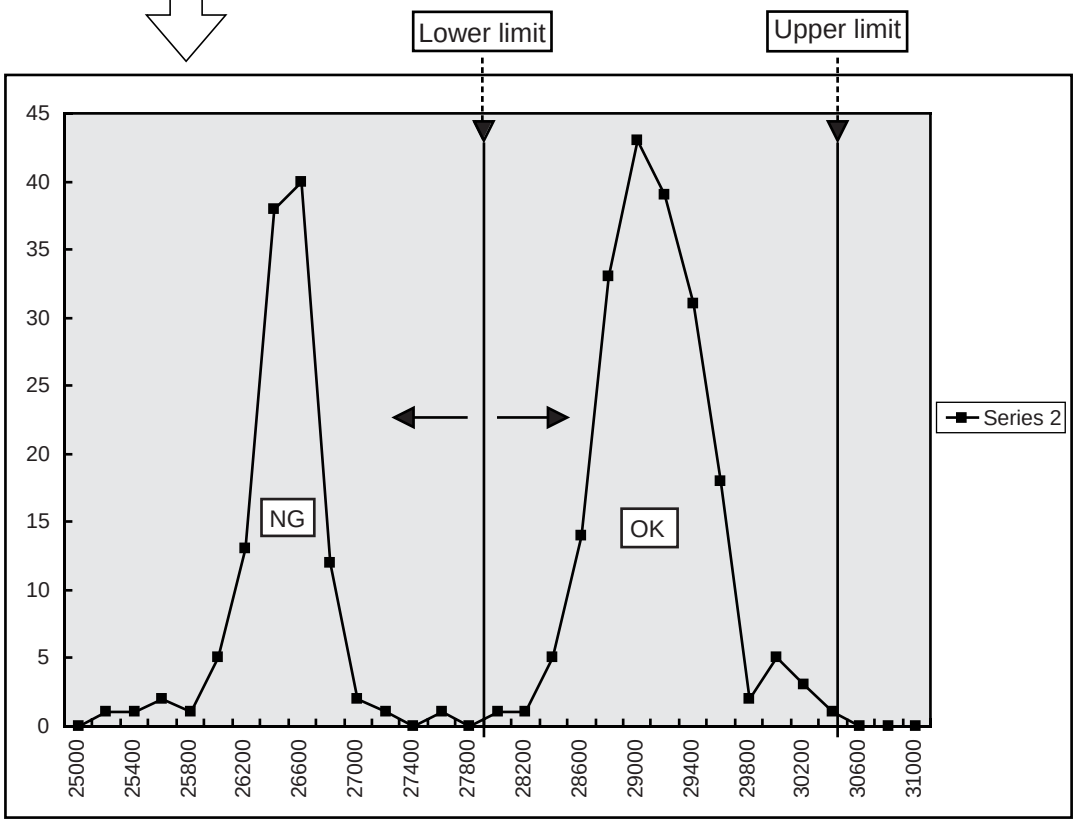
Data file (with .csv extension)

25000	0
25200	1
25400	1
25600	2
25800	1
26000	5
26200	13
26400	38
26600	40
26800	12
27000	2
27200	1
27400	0
27600	1
27800	0
28000	1
28200	1
28400	5
28600	14
28800	33
29000	43
29200	39
29400	31
29600	18
29800	2
30000	5
30200	3
30400	1
30600	0
30800	0
31000	0

Create a table using Excel.

Area	Frequency
25000	0
25200	1
25400	1
25600	2
25800	1
26000	5
26200	13
26400	38
26600	40
26800	12
27000	2
27200	1
27400	0
27600	1
27800	0
28000	1
28200	1
28400	5
28600	14
28800	33
29000	43
29200	39
29400	31
29600	18
29800	2
30000	5
30200	3
30400	1
30600	0
30800	0
31000	0

Create a graph using Excel.



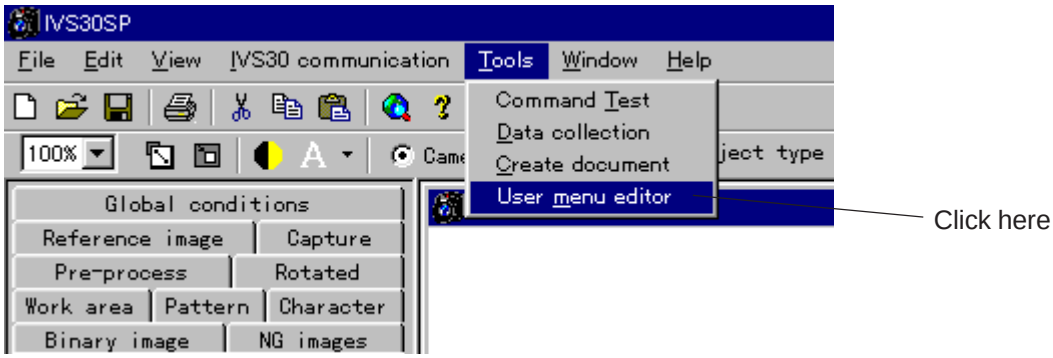
Chapter 8: User Menu Editor

This function lets you create and modify the MAIN OPS MENU screen and all of the other user menus on the IV-S31M/S32M/S33M. You can also change the text and titles displayed on those screens.

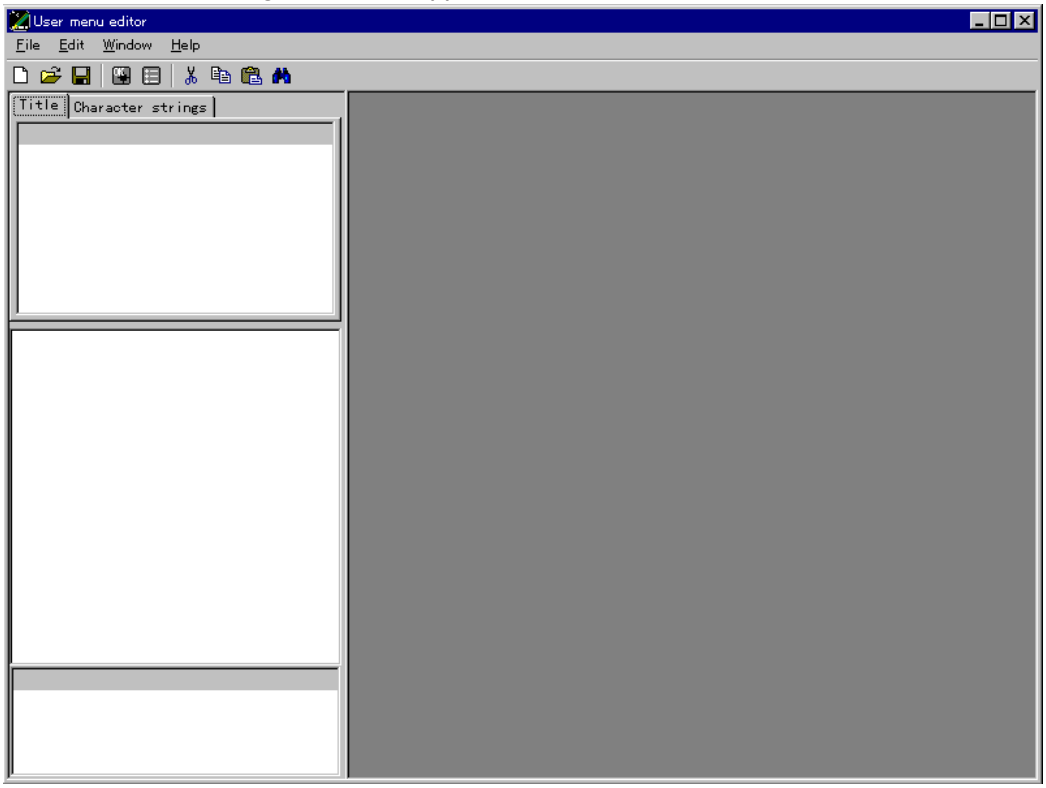
- For details about setting the specific controller model, see page 5-2.

8-1 How to start the editor

1. Click on the "User menu editor" item on the "Tools" menu.



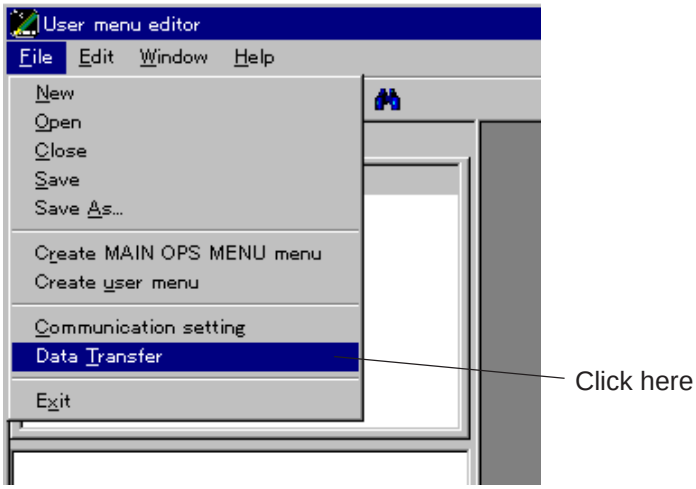
⇨ The user menu editing screen will appear.



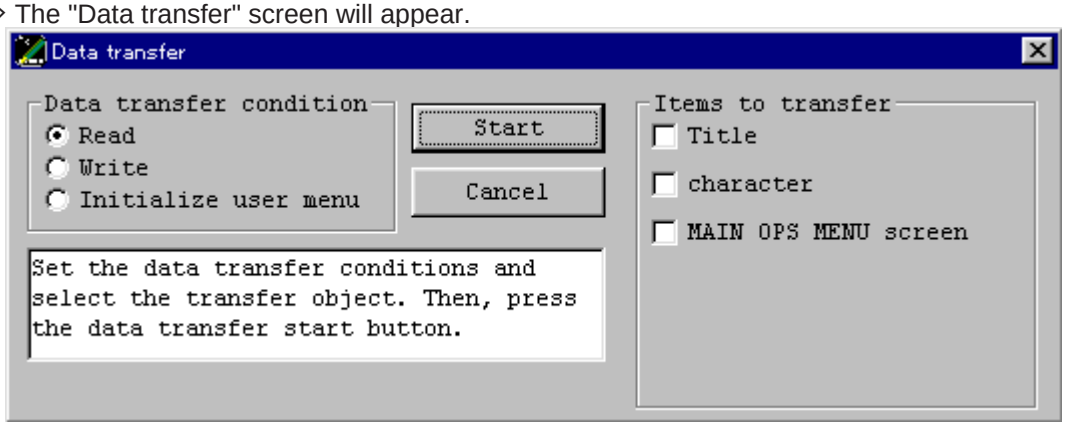
8-2 Read

Read in the menu you want to edit, or select the MAIN OPS MENU screen, from the IV-S33M etc.

1. Click on the "Data Transfer" item in the "File" menu.



⇨ The "Data transfer" screen will appear.



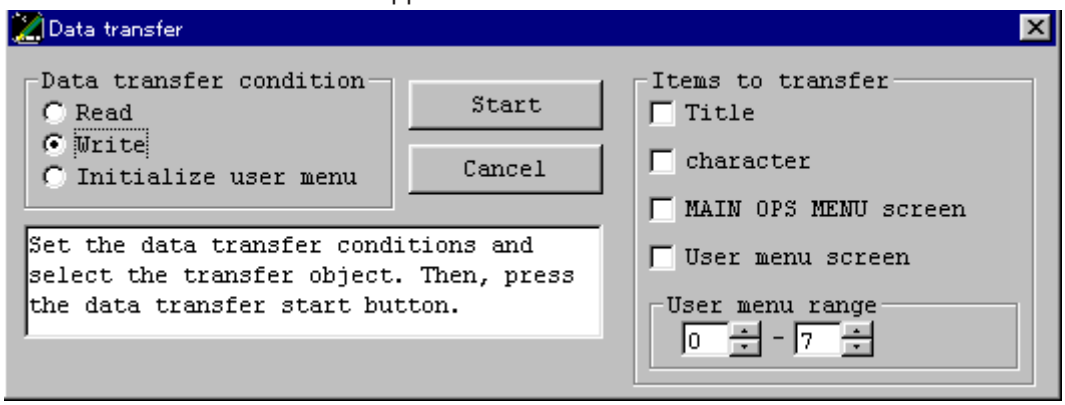
2. Select "Read" in the "Data transfer condition" area and check the boxes next to the items you want to read in the "Items to transfer" area. Click on the "Start" button to read the data from the IV-S33M etc.

8-3 Write

Write new or modified menus, or the MAIN OPS MENU screen, back into the IV-S33M etc.

1. Click on the "Data Transfer" item from the "File" menu (see "8-2 Read").

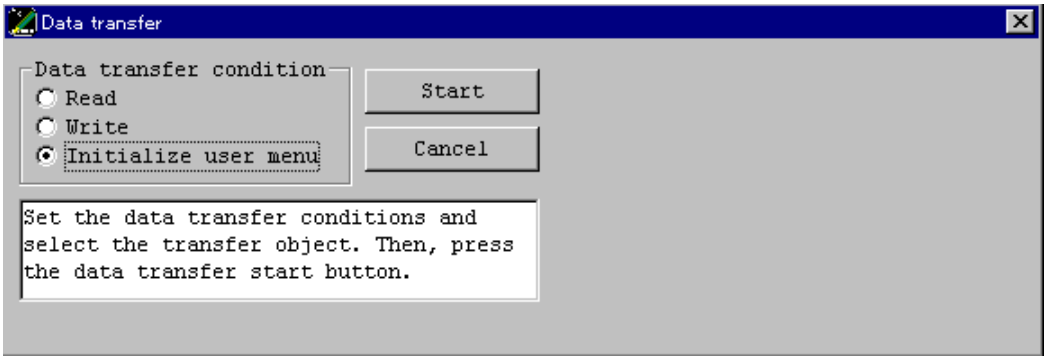
⇨ The "Data transfer" screen will appear.



2. Select "Write" in the "Data transfer condition" area. In the "Items to transfer" area, check all of the boxes next to the items you want to send back to the IV-S30. Click on the "Start" button to write the data back into the IV-S33M etc.

8-4 Initialize the user menus

1. Click on the "Data Transfer" item in the "File" menu (see "8-2 Read").
   ⇨ The "Data transfer" screen will appear.



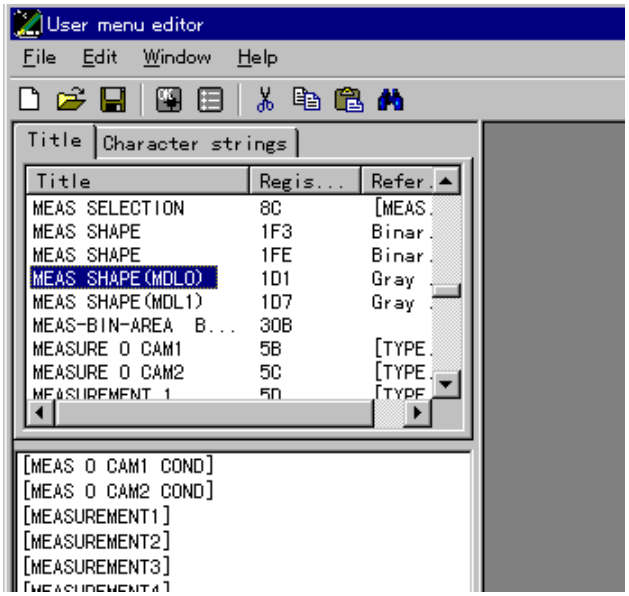
2. Select "Initialize user menu" in the "Data transfer condition" area. Click on the "Start" button to initialize the user menus in the IV-S33M etc.

8-5 Editing Titles

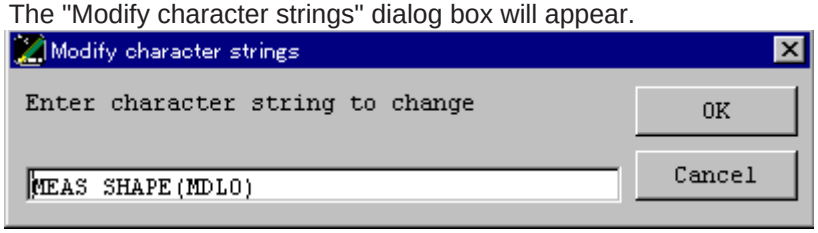
The word "title" refers to the "MEAS SHAPE (MDL0)" text shown inside the rectangle, in the example below.

MEAS SHAPE (MDL0) RECTANGLE X-LINE Y-LINE

1. Change the title.
   Click on the "Title" tab to display the title list. Double-click on the title you want to change.



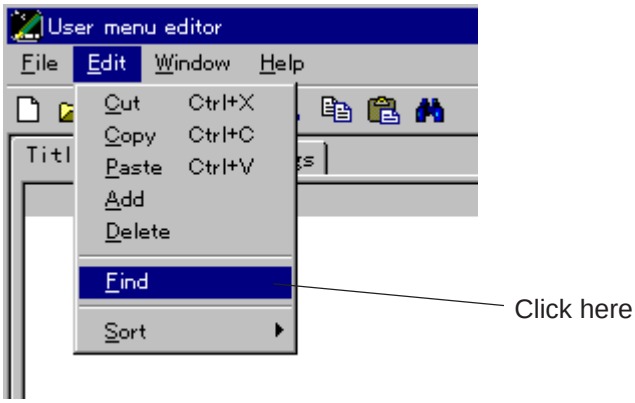
⇨ The "Modify character strings" dialog box will appear.



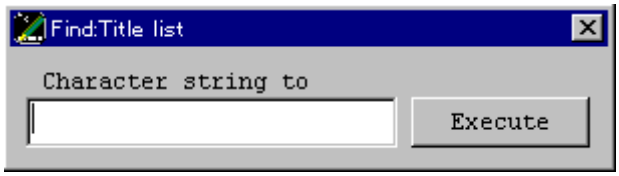
2. Change or delete the characters directly in the dialog box, and then click on the "OK" button. The title will be changed.

■ To search for a title you want to change

1. Select the "Find" item from the "Edit" menu. (You can also select the "Find" item from the pop up menu, by clicking the right mouse button when the cursor is over any title.)



⇨ The "Find Title list" dialog box will appear.

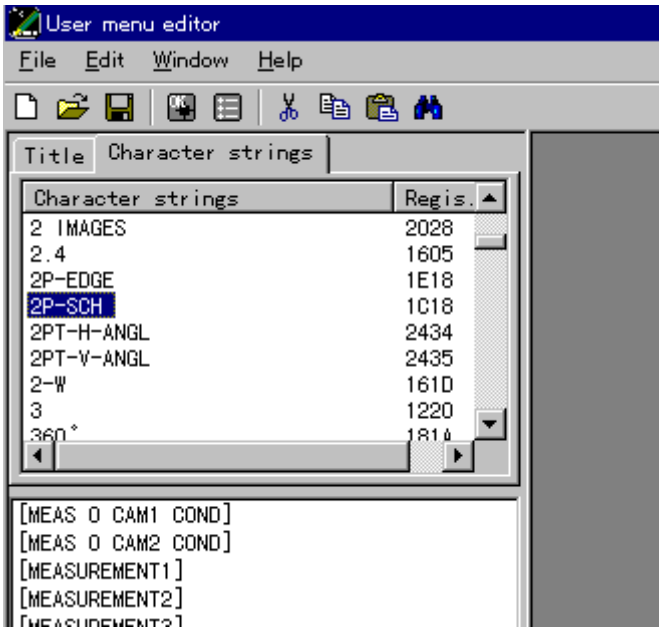


2. Enter the phrase you want to find. Then click on the "Execute" button to start the search.

8-6 Editing character strings

"Character strings" refers to the words which come after the title, such as "RECTANGLE," "VER-LINE," and "HORI-LINE" shown inside the rectangles in the example below.
MEAS SHAPE (MDL0) RECTANGLE X-LINE Y-LINE

1. To change a character string.
   Click on the "Character string" tab to display the character string list. Double-click on the text you want to change.



⇨ For details about changing, deleting, and searching for text, see section, "8-5 Editing Titles."

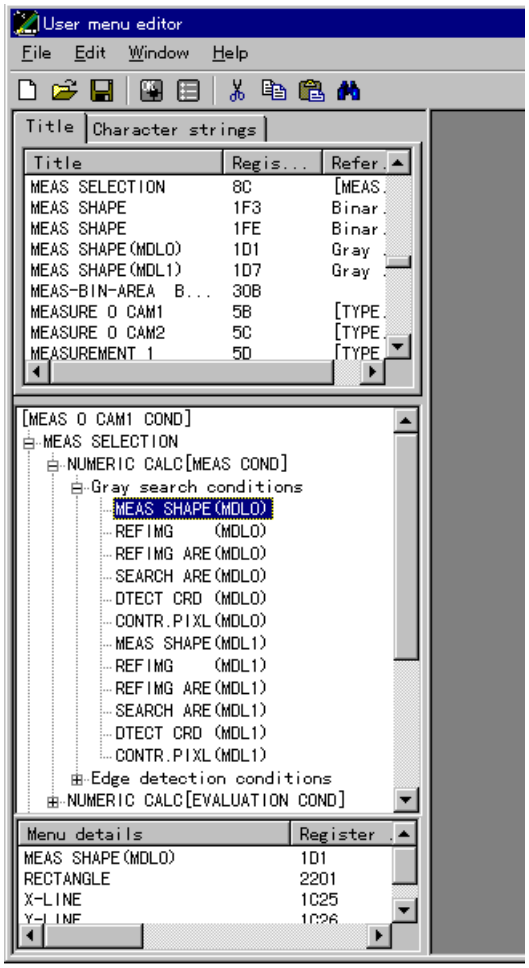
8-7 Menu editing

"Character strings" refers to any part of the complete line of text in the example below.

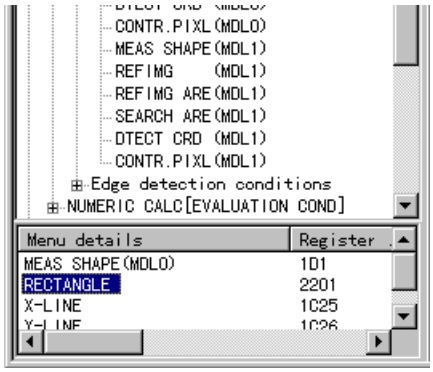
MEAS SHAPE (MDL0) RECTANGLE X-LINE Y-LINE

■ To change the title or any of the text which comes after it in the menu

1. Select the menu item in the menu list. The title and character string will be displayed in the menu details list.



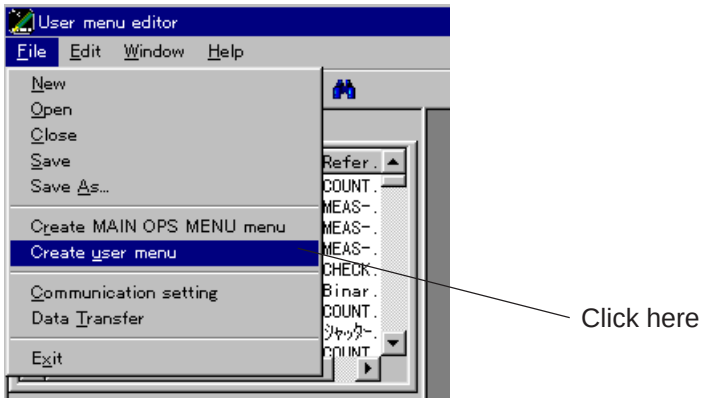
2. Double-click on the title or character string in the menu details list that you want to change. The "Modify character strings" dialog box will appear.



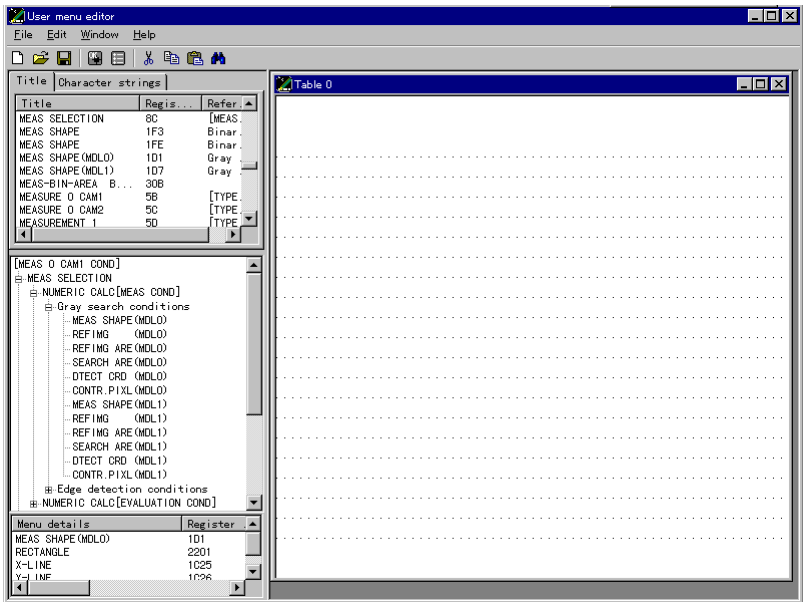
For details about changing, deleting, and searching for text, see section, "8-5 Editing Titles."

8-8 Create a user menu

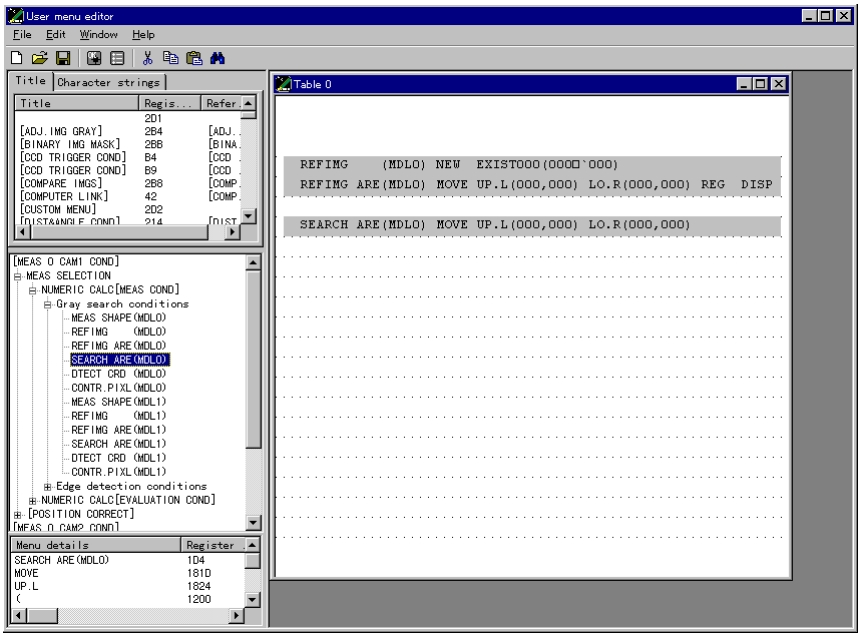
1. Click on the "Create user menu" item in the "File" menu.



⇨ The table for creating a user menu will appear.

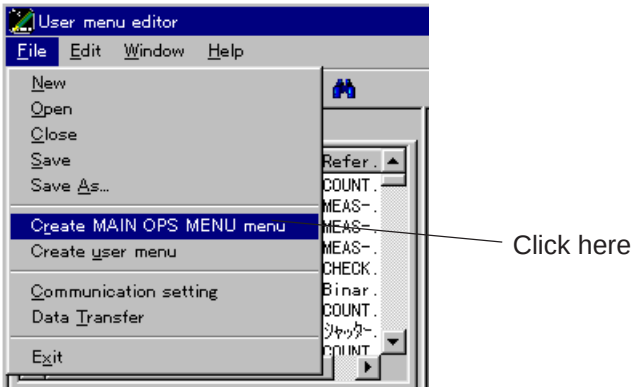


2. Select the menu that you want to assign as a user menu from the menu list. To add the item, drag and drop it onto the menu table.

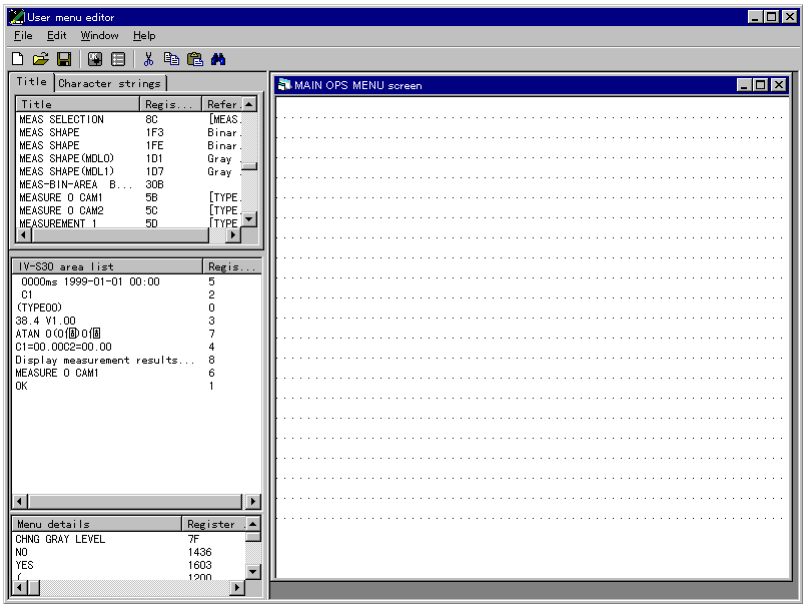


8-9 Create a new MAIN OPS MENU screen

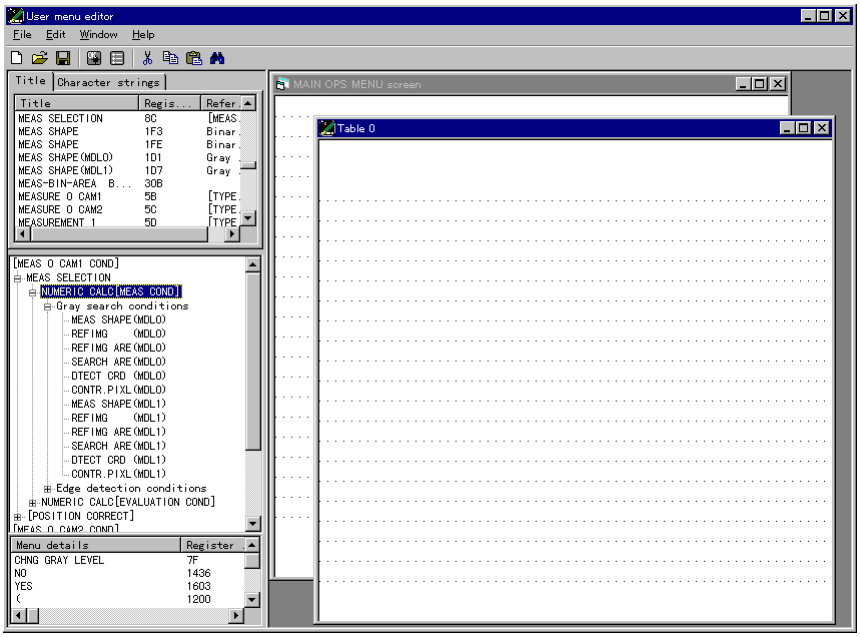
1. Click on the "Create MAIN OPS MENU menu" item from the "File" menu.



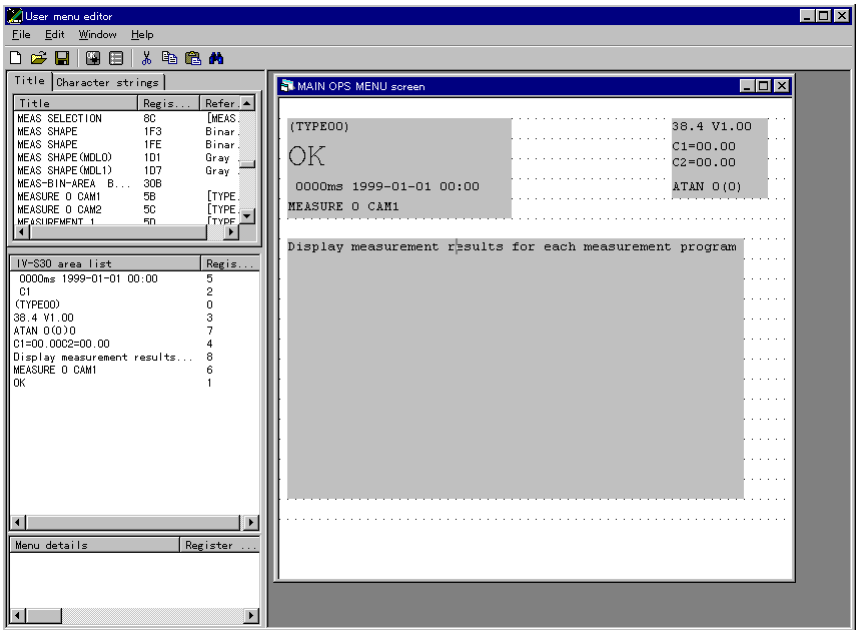
⇨ The table for creating a MAIN OPS MENU screen will appear.



2. To add a new user menu, select the "Create user menu" item from the "File" menu. The table for creating a new menu will appear.
   - You can create up to two screens for the IV-S31M, and eight screens for the IV-S32M/S33M.



3. Select the area that you want to assign to the MAIN OPS MENU screen from the area list. To add the item, drag it to the MAIN OPS MENU table. You can change the display position once it is in the table.

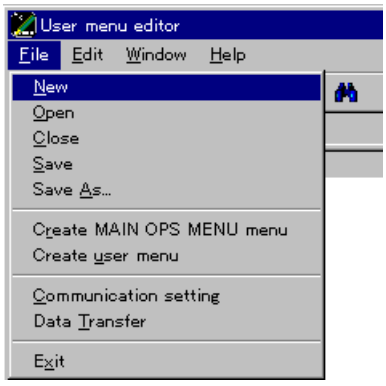


8-10 File operation

■ Create a new file

All the data on the menu editor will be initialized.

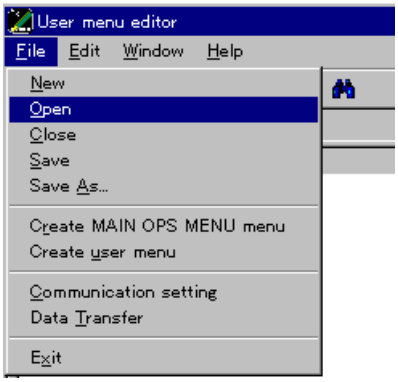
- Select the "New" item from the "File" menu.



■ Open a file

Open a saved file.

- Select the "Open" item in the "File" menu.



File extensions	Details
*. str	Title and character string data
*. ume	User menu data
*. urm	MAIN OPS MENU data
*. fnt	User font data

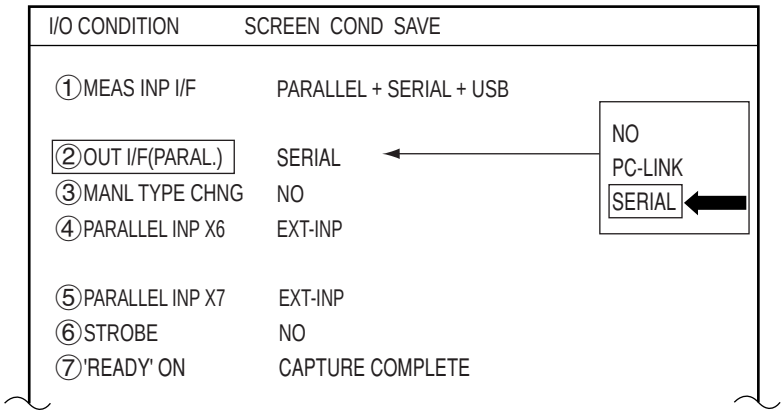
Chapter 9: Command Test

The command test function is used to communicate to the IV-S30/C35M through the serial or USB interface and confirm that communication has been established when the personal computer is started.
This chapter describes the command test procedures.

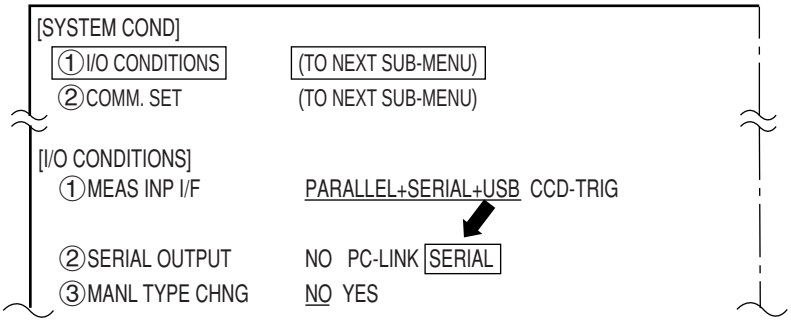
(1) Setting/operating of IV-S30/C35M

1. Set the "SERIAL OUTPUT" item in the "I/O CONDITIONS" menu of the IV-S30/C35M to "SERIAL."

● When using the IV-S31MX/S32MX/S33MX, IV-S30J, IV-C35M



● When using the IV-S31M/S32M/S33M



2. Bring up the MAIN OPS MENU screen on the IV-S30/C35M.

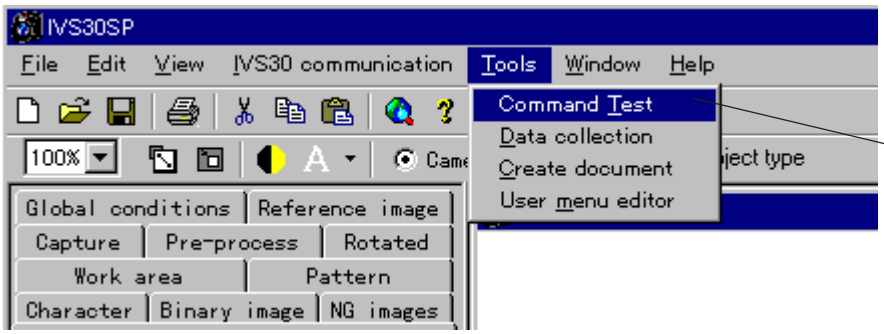
(2) Communication settings

Set the protocols for communication with the IV-S30/C35M.

⇨ See "Chapter 2: Optional Settings."

(3) Starting the command test screen

Click on the "Command Test" item on the "Tools" menu.



⇨ The "Command test" dialog box will appear.

Continued on the following page

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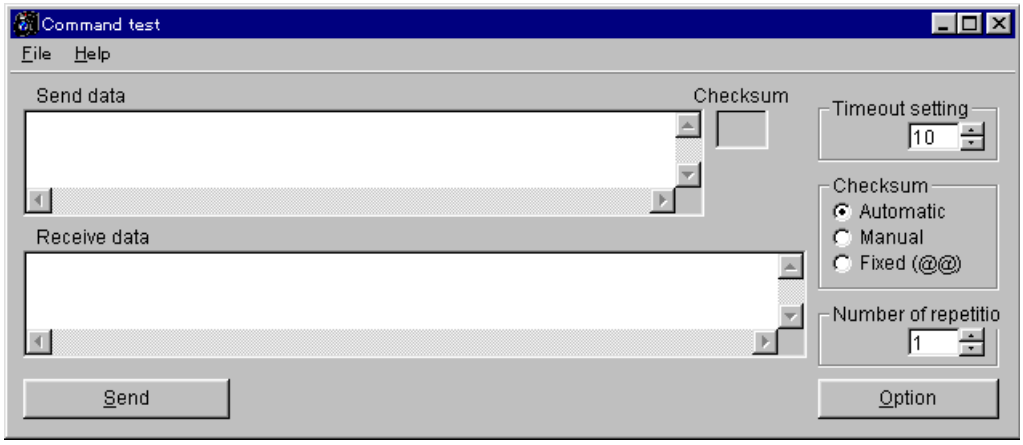
(4) Setting the conditions for the command test

In the "Command test" dialog box, set the conditions for the command test (set the time out, checksum, and number of repeats).



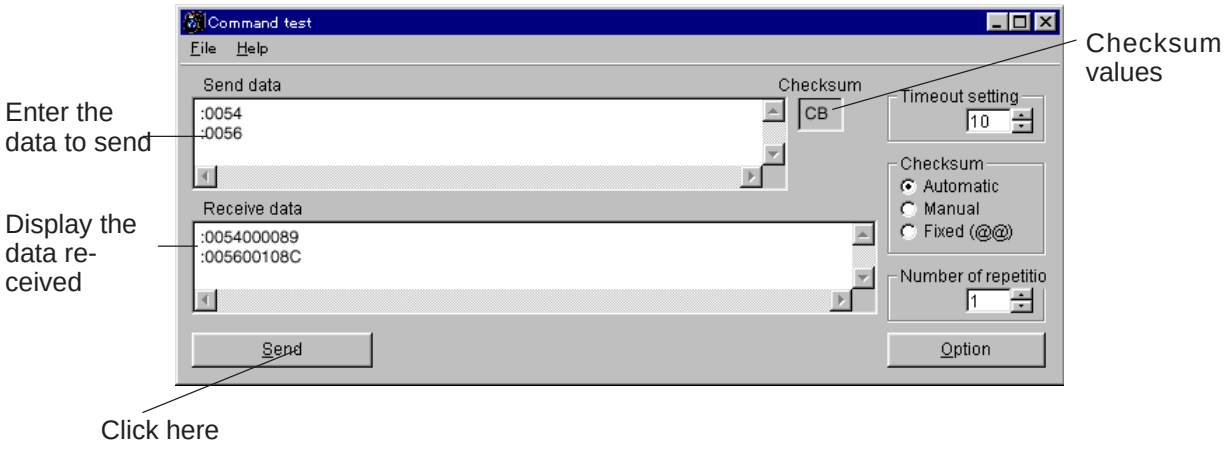
Setting details		Description
Setting the time out (O: 10 sec.)		Specify the communication time-out time, in units of seconds.
Checksum	Automatic O	Calculates the checksum automatically, and attaches it to the transfer command.
	Manual	Enter a checksum together with the command. (The IV-S30SP will not attach the checksum when transmitting.)
	Fixed (@@)	A checksum is not executed, and @@ will be transmitted.
Number of repeats (O: 1 time)		Send the command that was entered in the send data box the same number of times as specified in the "number of repeats" box.

- The "O" indicates the default setting.

(5) Transmitting serial command

Enter the data to send in the "Command test" dialog box, and press the "Send" button.

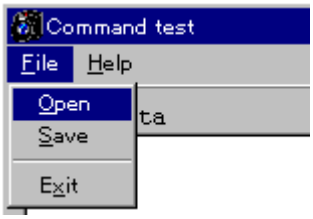
⇨ The data will be transmitted to the IV-S30/C35M. The response data will be displayed in the receive data area.



Continued on the following page

From the previous page

(6) Saving files



- Saving the data received to a file

1. Click on the "Open" item in the "File" menu.
   ⇨ The "Open" dialog box will appear.
   - When you want to create a new file (with the ".tst" extension) to save the data received, specify the folder name, enter the file name, and click on the "Open" button.
     If you want to save it to an existing file, select the file and click on the "Open" button.
2. Click on the "Save" item in the "File" menu.

Chapter 10: Upgrade Version

To upgrade the IV-S30/C35M system version (improved functions) you simply download the new version from a personal computer.

- The IV-S30/C35M software consists of the "system program," used to set up and execute image processing operations, and a "boot program" to load the other programs.
  In some cases, both programs need to be upgraded. (Refer to our sales department for the latest version of the system software.)

Described below are the procedures for upgrading the program version.

(1) Preparation

Create the folders below for installing the software.

SXXYYY.mot system program
BXXYYY.mot boot program

"XX" will vary depending on the models, and "YYY" will vary depending on the versions.

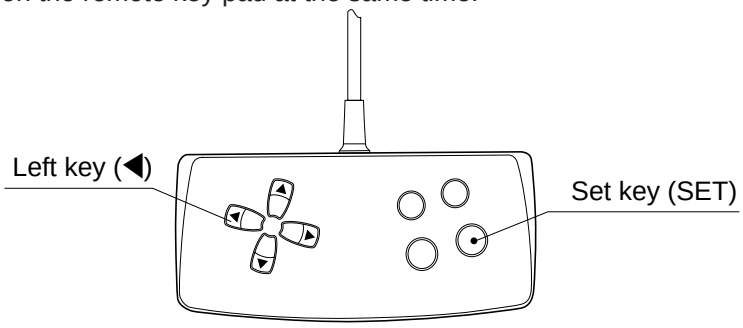
(2) Communication settings

Set the protocols for communication with the IV-S30/C35M.

⇨ See "Chapter 2: Optional settings."

(3) Setting/operating of IV-S30/C35M

1. Turn on the IV-S30/C35M.
   - Turn on the controller IV-S30/C35M, while pressing and holding down both the left key (◀) and the set key (SET) on the remote key pad at the same time.



⇨ The IV-S30/C35M upgrade version menu (IV**** VERSION UPGRADE MENU) will appear on the monitor.

[IV-S3*** VERSION UPGRADE MENU]	
①IVS3*** SYSTEM RECEIVE (USB)	RUN
②IVS3*** SYSTEM RECEIVE (RS232C)	RUN
③BOOT RECEIVE (USB)	RUN
④BOOT RECEIVE (RS232C)	RUN
⑤RS232C BAUDRATE	115.K bps 19.2K bps
⑥ALL INITIALIZE	RUN
⑦POWER ON RESET	RUN

(When an IV-S3*** is used)

2. Select the upgrade version menu.
   - Move the up and down keys to select the "① IV-S3*** SYSTEM RECEIVE (USB)" item and press the set key (SET).
     (The "③ BOOT RECEIVE (USB)" item may also be needed to perform the upgrade, depending on the upgrade conditions.)

Continued on the following page

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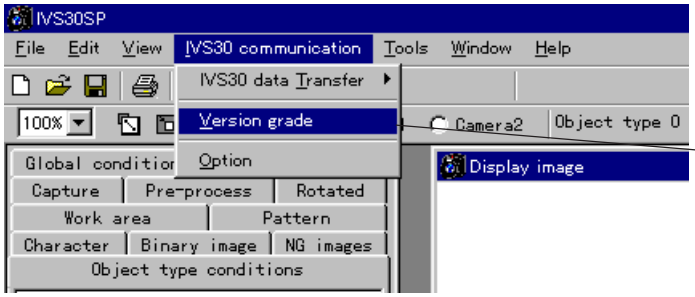
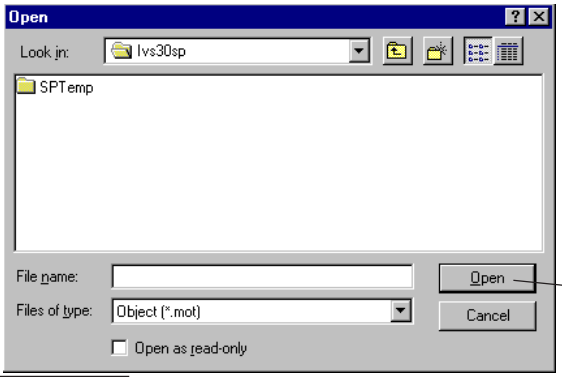
(4) File selection

Click on the "Version upgrade" item on the "IVS30 communication" menu.



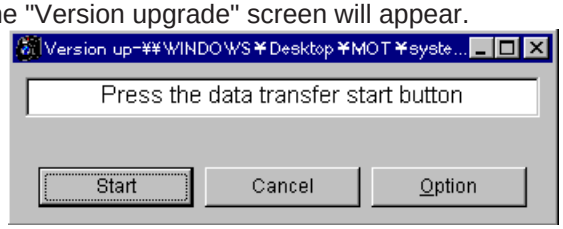
⇨ The "Open" dialog box will appear.

- Select the (SXXYYY.mot) file and click on the "Open" button.



(5) Transmission

The "Version upgrade" screen will appear.



⇨ Click on the "Option" button. Specify the communication and upgrade conditions.
(See pages 2-1, 2-2, and 2-4.)

Click on the "Start" button to start the data transmission. (To stop the transmission, click on the "Cancel" button.)

- When the [≡ ON RECEIVE] message appears on the IV-S30/C35M monitor and the [≡] flashes, the transmission has been successful.
- It takes approximately 20 seconds to transmit the complete file through the USB interface. (Note: When an RS-232C interface is used, it will take approximately 10 minutes with a Pentium 266 MHz personal computer.)
- When the [≡ ON RECEIVE] display disappears, the new system program has been successfully written to the flash memory.

(6) Starting the new version of the system

Move the up and down keys to select "⑦ POWER ON RESET" on the IV-S30/C35M upgrade version menu (displayed on the monitor) and press the [SET] key.

[IV-S3*** VERSION UP MENU]	
①IVS3*** SYSTEM RECEIVE (USB)	RUN
②IVS3*** SYSTEM RECEIVE (RS232C)	RUN
③BOOT RECEIVE (USB)	RUN
④BOOT RECEIVE (RS232C)	RUN
⑤RS232C BAUDRATE	115.K bps 19.2K bps
⑥ALL INITIALIZE	RUN
⑦POWER ON RESET	RUN

(When an IV-S3*** is used)

⇨ The power to the IV-S30/C35M will be reset and the new version of the system program will start.

Chapter 11: Additional Descriptions

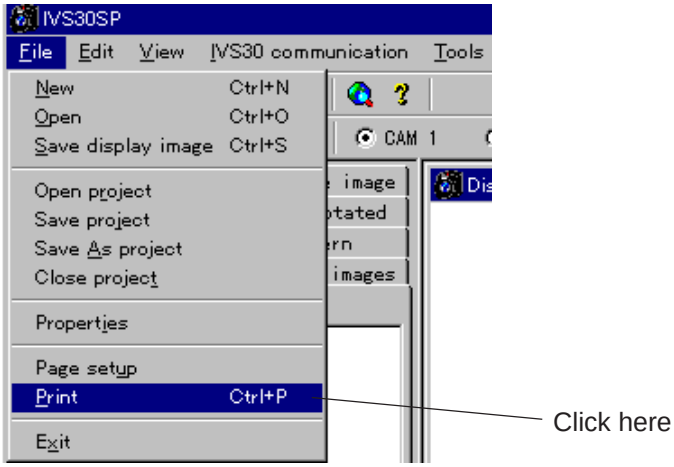
This chapter describes other functions such as Printing, Changing the Message Display Color, Changing the Image Brightness, Accessing the SMS Web page and Memory card (IV-C35M).

[1] Print

Images displayed on the IV-S30SP monitor can be printed.

(Printing procedure)

1. Click on the "Print" item in the "File" menu.



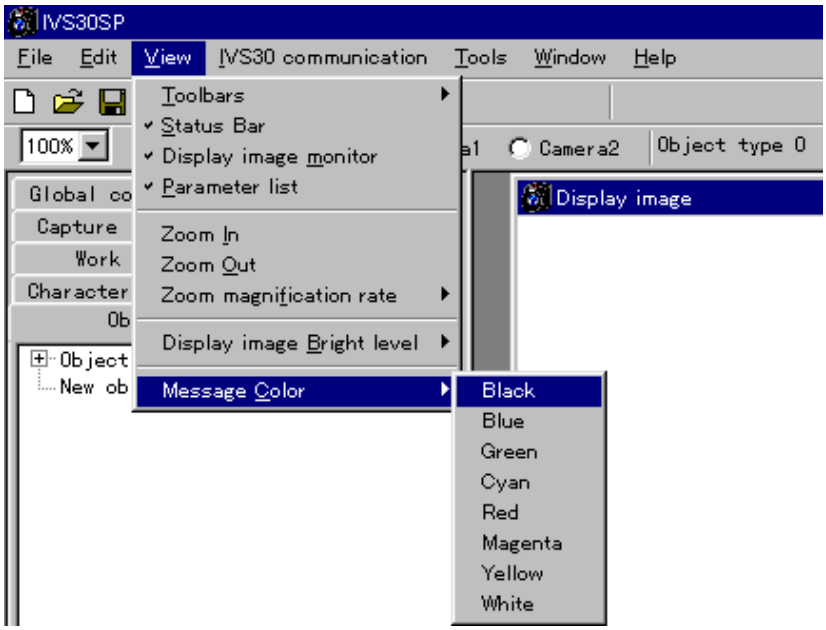
[2] Changing the message display color

You can select oen of 8 colors for the display image color. If the image and the message are same colors, use different message color to allow you to see the message.

- The colors you can chose from are black, blue, green, cyan, red, magenta, yellow, and white.

(Operation procedures)

1. Move the cursor to "Message color" on the "View" menu.



2. Select a color.

   Select the desired color. (Default: black)

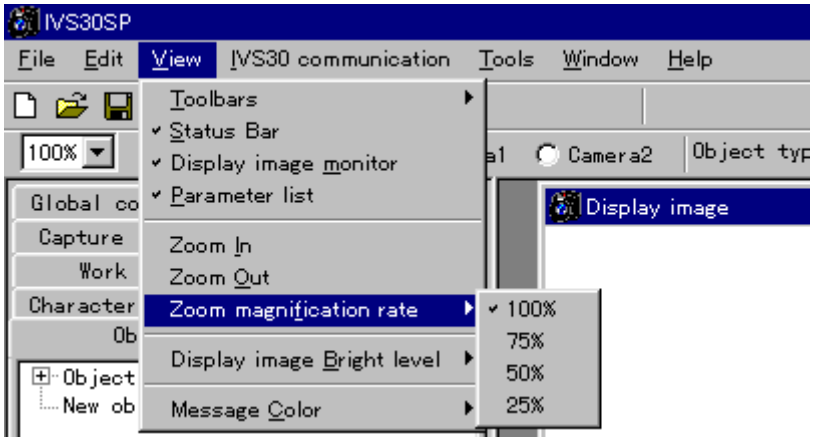
   ⇨ The message color will be changed.

[3] Zoom

You can change the display magnification of the image by changing the zoom setting.

(Zoom setting)

1. Select the "Zoom magnification rate" item in the "View" menu.



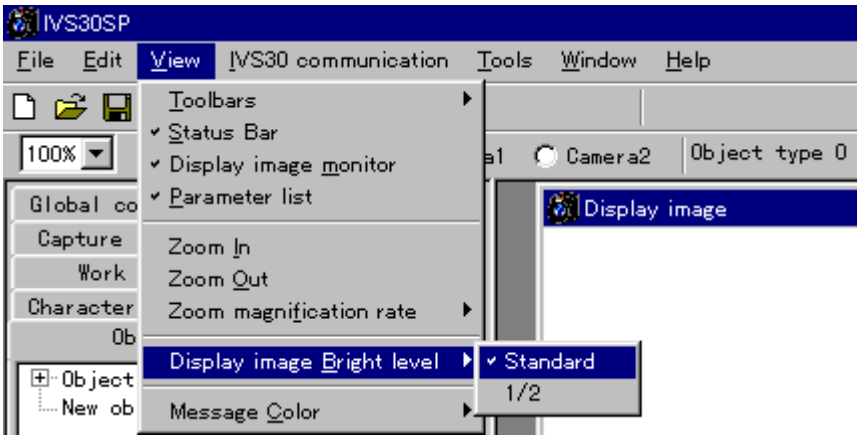
2. Select a rate.
   Click on the level of magnification you want. (Default: 100%)
   ⇨ The zoom setting will be changed.

[4] Changing the image brightness

You can set the displayed image brightness to "Standard" or "1/2."

(Operation procedures)

1. Move the cursor to the "Display image Bright level" item on the "View" menu.



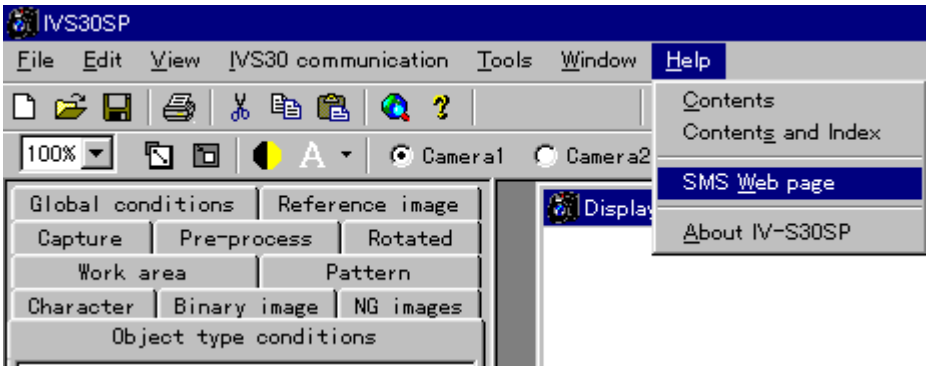
2. Select a brightness.
   - Click on "Standard" or "1/2." (Default: Standard)
   ⇨ The displayed image will be changed to the selected brightness.

[5] SMS Web page

If your personal computer is ready to connect to the Internet, the default Web browser will be started and automatically connect you to the Sharp Manufacturing Systems Corporation Web site.
(The URL address is listed on the back cover of this manual.)

(Connecting to the Sharp web site)

1. Select the "SMS Web page" item in the "Help" menu.

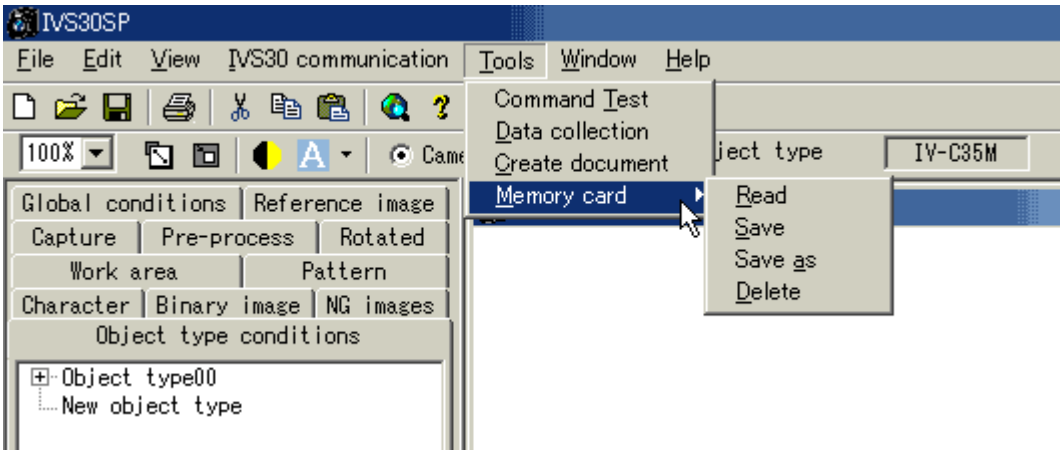


[6] Memory card (IV-C35M)

When the IV-C35M is used, you can read, save, or delete data from a flash memory card (max. 192 MB) using the IV-S30SP.

(Operation procedures)

1.Select the "Memory card" on the "Tools" popup menu.



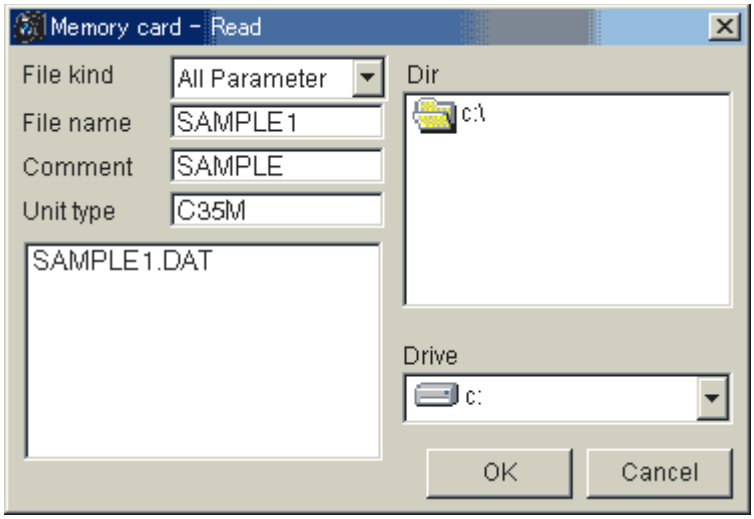
2. Select any operation, such as "Read", on the "Memory card" popup menu.

⇨ A dialog box will open for the selected operation.

Operation	Details
Read	Read the IV-C35M parameters and NG images that were stored on the flash memory card.
Save	Copy and paste the IV-C35M parameters and NG images that were stored in a PC onto the flash memory card.
Save as name	Create a file with a new name for the IV-C35M parameters and NG images that were stored on the flash memory card, and save it on the flash memory card.
Delete	Delete the IV-C35M parameters and NG images that were stored on the flash memory card.

3. Specify file type (parameter or NG image) and select the drive, directory, and file on the flash memory card. Then click on the [OK] button.

⇨ The specified operation will be executed.

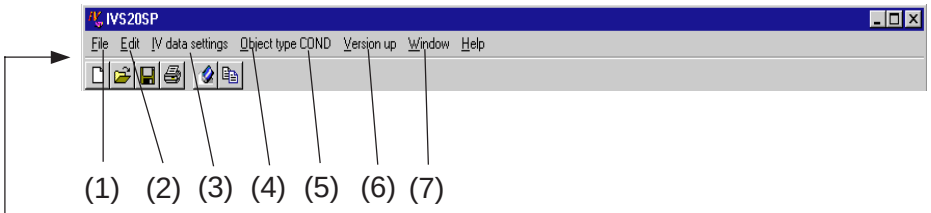


(When reading data)

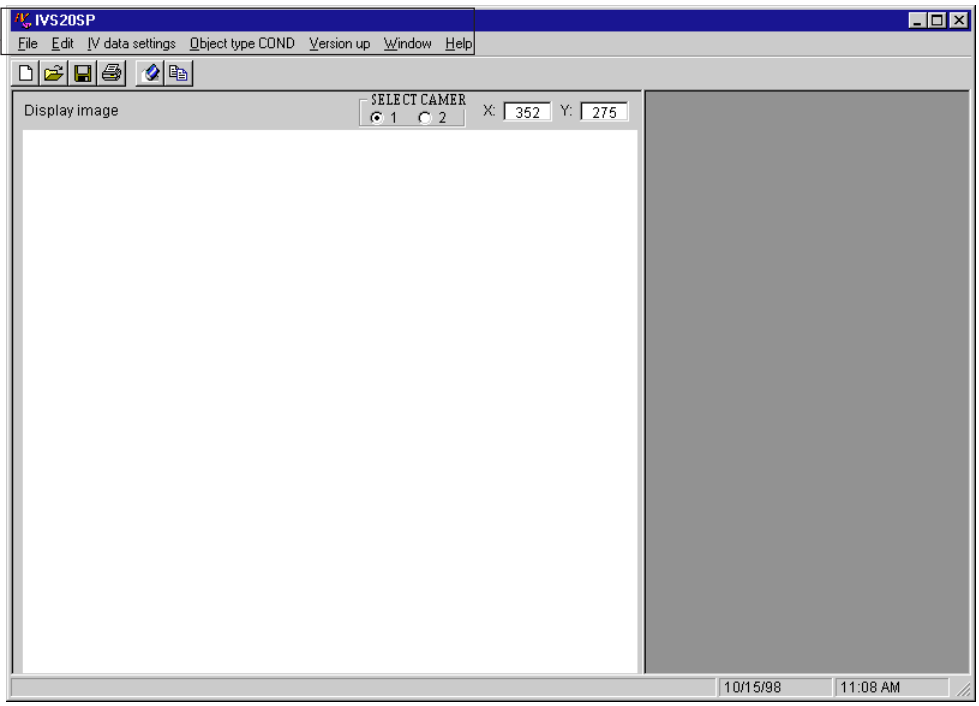
Version for the IV-S20

Chapter 1: Menu Organization

After starting this software (for the IV-S20), the screen shown below will appear. The menu organization on the menu bar is also shown below.
The following menus (1) to (7) correspond to the items from the next page.



- This screen will be displayed when this software (for the IV-S20) is started.



(1) File

	(Description)
New Ctrl + N	Create a new file.
Open image Ctrl+O	Open an existing image file. (*.bmp)
Save	
— Image only	Save the display images only.
— Messages only	Save messages only.
— Image + Message	Save both the images and messages.
Read image	
— Display image (Camera 1)	Read the display image (camera 1) from the IV-S20.
— Display image (Camera 2)	Read the display image (camera 2) from the IV-S20.
— Message	Read messages from the IV-S20.
Write image	
— Display image (Camera 1)	Write the display image to the IV-S20.
— Display image (Camera 2)	Write the display image to the IV-S20.
Set Communication	Set the communication conditions of the IV-S20SP.
Command Test	Send any serial command to the IV-S20.
Print Ctrl+P	Print
Select printer type	Set up a printer.
Exit Ctrl+Q	Quit the IV-S20SP.

(2) Edit

	(Description)
Delete display image	Delete the images displayed on the IV-S20SP.
DISP image bright level	
— Normal	Set the display image brightness to normal.
— Half	Decrease the display images brightness to half level.
Copy display image	
— Image only	Copy the images only to the clipboard.
— Messages only	Copy messages only to the clipboard.
— Image + Message	Copy both the image and messages to the clipboard.
Message color	
— Black, Blue, Green, Cyan, Red, Magenta, Yellow, and White	Change the message display color to the specified color.

(3) IV data settings

	(Description)
Select a file	Select an IV-S20 setting data file to treat.
Load	
File ⇨ IV	Load the setting parameters from the file to the IV-S20.
File ⇨ Set screen	Load the setting parameters from the file to the set screen.
Set screen ⇨ IV	Load the setting parameters from the set screen to the IV-S20.
Save	
IV ⇨ File	Save the setting parameters from the IV-S20 to the file.
Set screen ⇨ File	Save the setting parameters from the set screen to the file.
IV ⇨ Set screen	Save the setting parameters from the IV-S20 to the set screen.
Verify	
File ⇦⇨ IV	Verify the file with the IV-S20 setting parameters.
File ⇦⇨ Set screen	Verify the file with the set screen setting parameters.
IV ⇦⇨ Set screen	Verify the IV-S20 data and the set screen setting parameters.
Initialize	
IV-S20	Initialize the IV-S20.
Set screen	Initialize the set screen.
Self diagnosis IVS20	Self diagnose the IV-S20.
Creates a document	Automatically create the setting data document.
Data collection	Save the measurement result data from the IV-S20.

(4) Object type COND

	(Description)
Object type NO. (0 - 15)	Set and change object type number.
Title registration	Set a title to each object.
MEAS.0 Camera 1	
└ MEAS-POSITION-DEVIATE	Set and change each condition of positional deviation measurement (Camera 1).
POS.ADJ. Camera 1	Set and change position adjust condition.
MEAS.0 Camera 2	
└ MEAS-POSITION-DEVIATE	Set and change each condition of positional deviation measurement (Camera 2).
POS.ADJ. Camera 2	
Measurement 1	
CHECK-DEG-OF-MATCH	Set and change various conditions of degree of match inspection.
DIST/ANGLE (GRAY/EDGE)	Set and change various conditions of distance and angle measurement (gray and edge).
DIST/ANGLE (C-GRAV)	Set and change various conditions of distance and angle measurement (Gravity center).
INSPECT-LEADS	Set and change various conditions of lead inspection.
MEASR-BIN-AREA	Set and change various conditions of area measurement by binary conversion.
COUNT-BIN-OBJ	Set and change various conditions of counting quantities by binary conversion.
LABEL-BIN-OBJ	Set and change various conditions of label measurement by binary conversion.
└ MEASURE POINTS	Set and change various conditions of point measurement.
Measurement 2	
(Same as Measurement 1)	
Measurement 3	
(Same as Measurement 1)	
FINAL NUMERIC CALC	Set and change various conditions of final calculation result.
FINAL OUTPUT COND	Set and change various conditions of final output condition.
SYSTEM-IN/OUT	Set and change various conditions of system-In/Out for each object style.
HALT MEAS ON NG	
NO	Continues measurements even if a NG evaluation occurs.
└ YES	Halt all measurement if a NG evaluation occurs.

(5) Version up

	(Description)
Select a file	Select a file to meet version of the IV-S20.
Transfer data Without INIT	After data transmission, upgrades the version without initialization.
Transfer data and INIT MEAS COND	After data transmission, upgrades the version with initializing measuring conditions.
Transfer data and INIT All data	After data transmission, upgrades the version with initializing all.

(6) Window

	(Description)
Monitor display image	Change between display or not display the display image.
Option	
All object type list display	Display conditions of all object types on the setting screen.
Object type display	Display conditions of one object type on the setting screen.
Tool bar	Change between display or not display the tool bar.
Status bar	Change between display or not display the status bar.
Cascade display	Overlap the open windows.
Tile Vertically	Display the open windows in a vertical layout.
Tile Horizontally	Display the open windows in a horizontal layout.

(7) Help

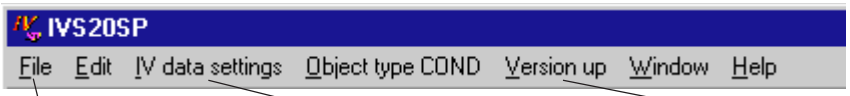
	(Description)
Search topic	Display the help menu search topic screen.
About program information	Display the version information for the IV-S20SP program.

Chapter 2: Set Communication

When you communicate between the PC and the IV-S20, you must specify the "Set communication."

■ Communication menu items

Display items for communication between the PC and the IV-S20.



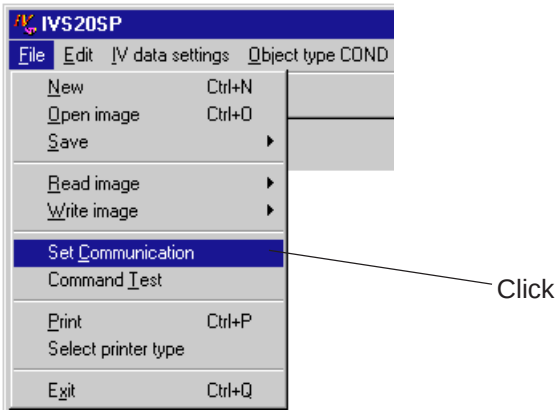
File	
Read image	Display image (Camera 1)
	Display image (Camera 2)
	Message
Write image	Display image (Camera 1)
	Display image (Camera 2)

IV data settings	
Load	File ⇨ IV
	Set screen ⇨ IV
Save	IV ⇨ File
	IV ⇨ Set screen
Verify	File ⇦⇨ IV
	IV ⇦⇨ Set screen
Initialize	IV-S20
Self diagnosis IVS20	
Data collection	

Version up
Transfer data Without INIT
Transfer data and INIT MEAS COND
Transfer data and INIT All data

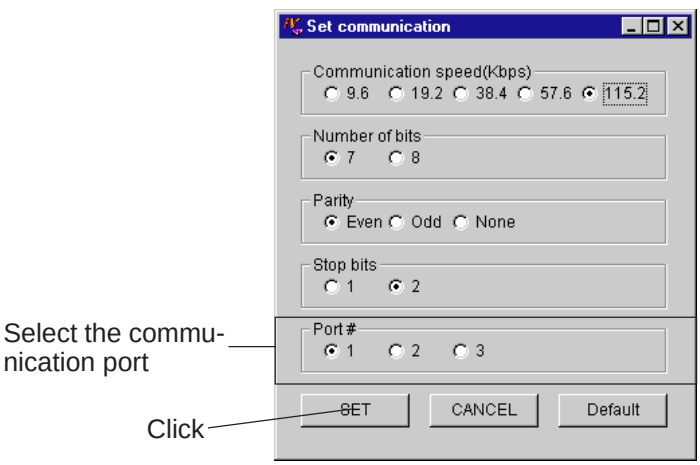
■ Operation of the communication settings

1. Click "Set Communication" on the "File" menu.



⇨ The "Set communication" dialog box will appear.

2. Select the port number, and then click the "SET" button.



Setting items	Default setting
Communication speed	115.2 kbps
Number of bits	7
Parity	Even
Stop bits	2
Port	1

- Set the personal computer's communication port.

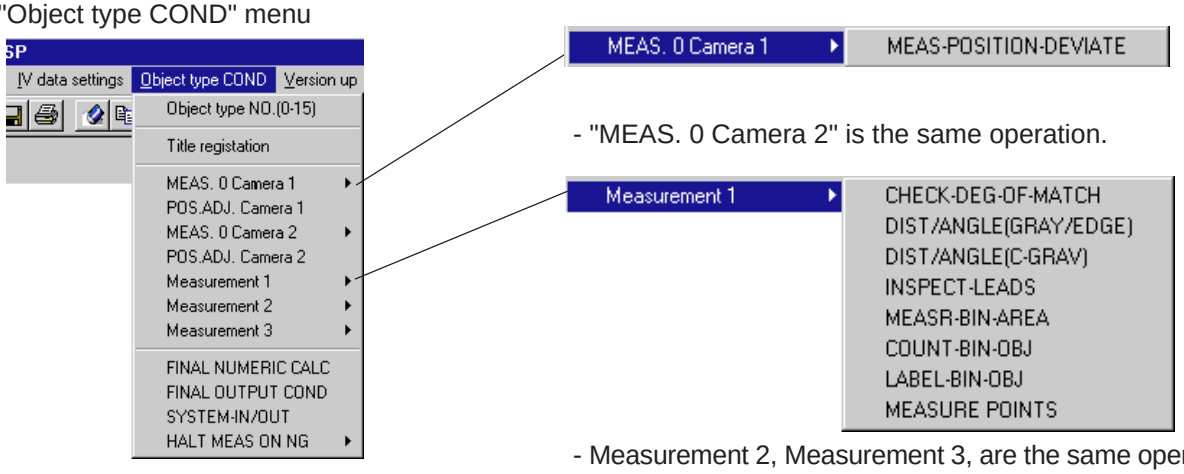
Setting items other than the "Port" can be operated with the default setting (set at delivery).

Chapter 3: Setting Object Type Conditions

Set object type conditions (Measurement conditions, Evaluation conditions, Numerical conditions, and output conditions) by clicking each item from the "Object type COND" menu.

- You can set and change the conditions offline. (You can set and change without stopping the line while the production line while it is operating.)
- For details about the setting details, see the "IV-S20 user's manual."

■ "Object type COND" menu



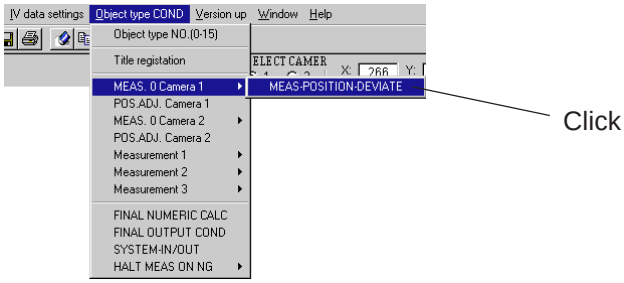
- "MEAS. 0 Camera 2" is the same operation.

- Measurement 2, Measurement 3, are the same operation.

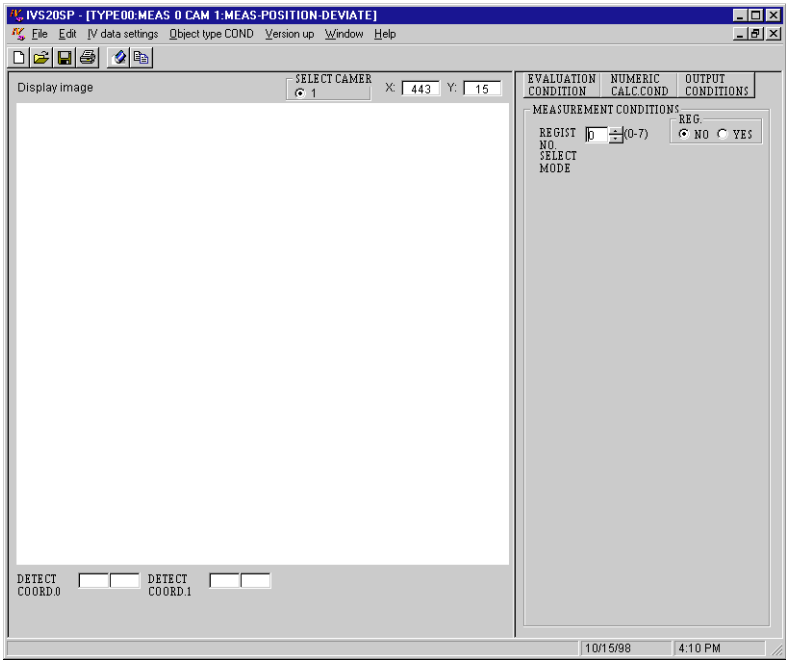
Click the item. Each setting screen will appear.

■ Operation details: When setting up the positional deviation measurement

Click the "MEAS. 0 Camera 1" or "MEAS .0 Camera 2" from the "Object type COND" menu, then select the "MEAS-POSITION-DEVIATE."



⇨ The positional deviation measurement setting screen will appear.

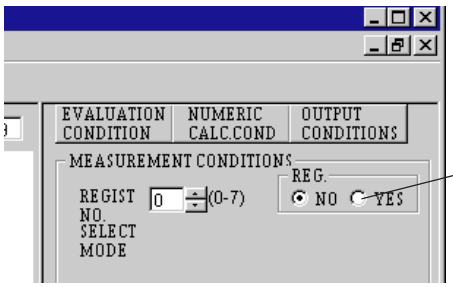


3-1 Setting the measurement conditions

Click each measuring program from the "Object type COND" menu. The "MEASUREMENT CONDITIONS" screen will appear.

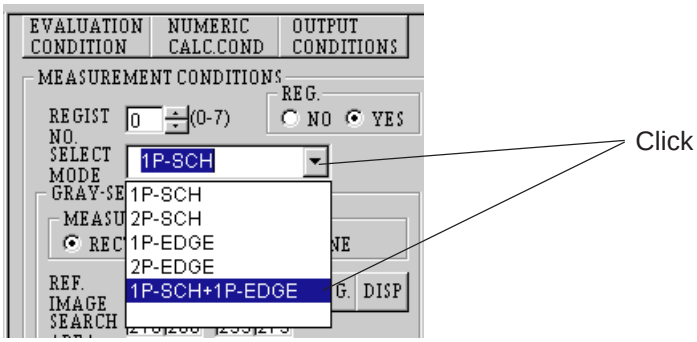
■ Operation details: When setting up the positional deviation measurement (1-point search + 1-point edge)

1. Click the "YES" button on the "REG." on the position deviation measurement setting screen (previous screen.)

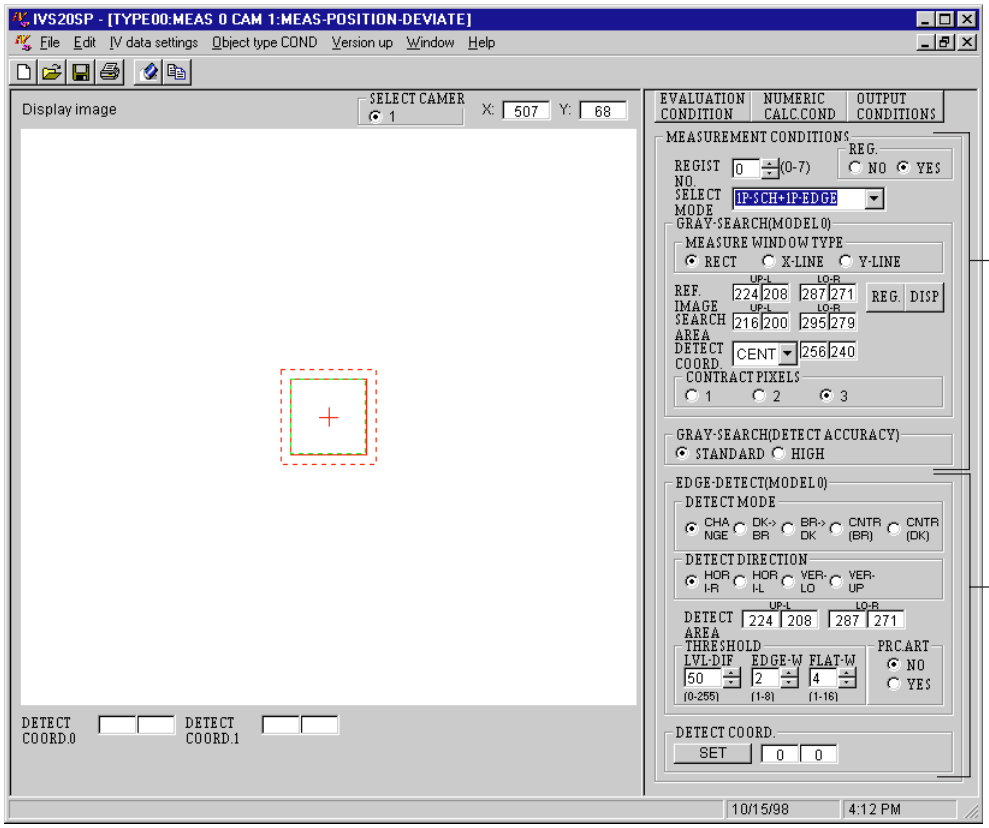


⇨ The setting screen for the "1P-SCH" (1-point search) will appear.

2. Click the "▼" of the "MODE", then select the "1P-SCH + 1P-EDGE."



⇨ The "MEASUREMENT CONDITIONS" screen for the "1P-SCH + 1P-EDGE" will appear.

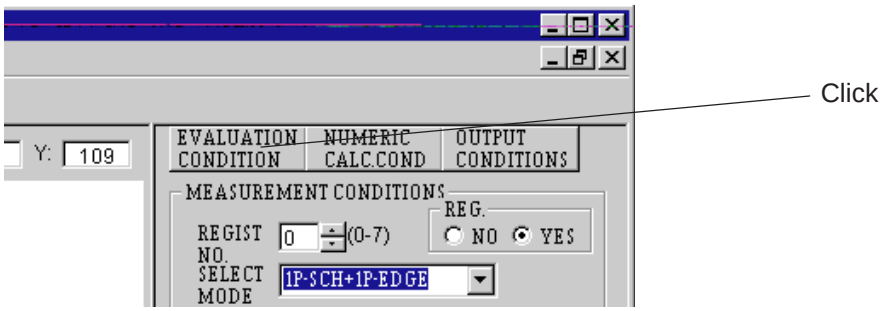


For details about the settings, see the "IV-S20 user's manual."

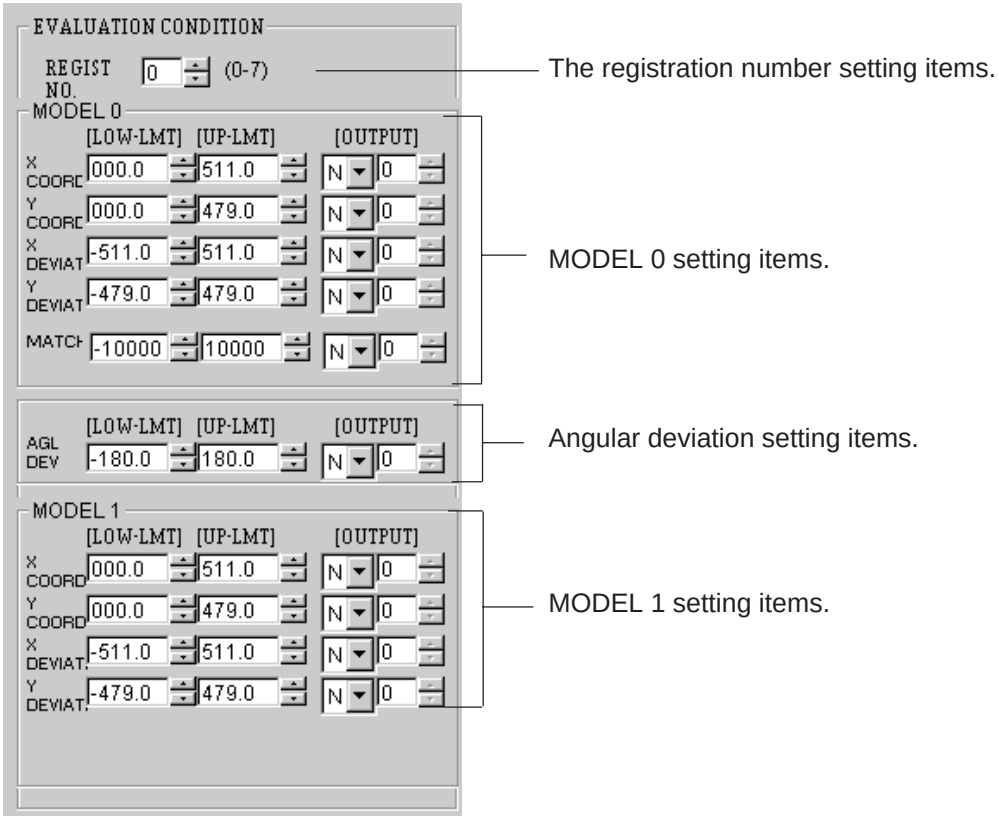
3-2 Setting the evaluation conditions

Click the "EVALUATION CONDITION" from each measuring program setting screen. The "EVALUATION CONDITION" screen will appear.

■ Operation details: When setting up the positional deviation measurement (1 point search + 1 point edge)
Click the "EVALUATION CONDITION" in the positional deviation measurement setting screen (previous screen.)



⇨ The "EVALUATION CONDITION" screen for the "1P-SCH + 1P-EDGE" will appear.



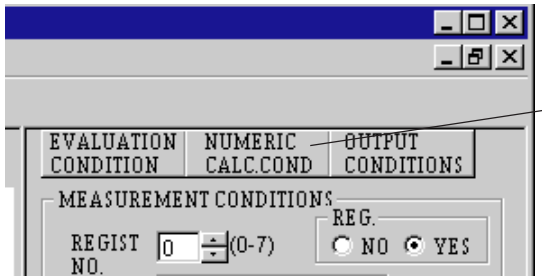
For details about the settings, see the "IV-S20 user's manual."

3-3 Setting the numerical calculation conditions

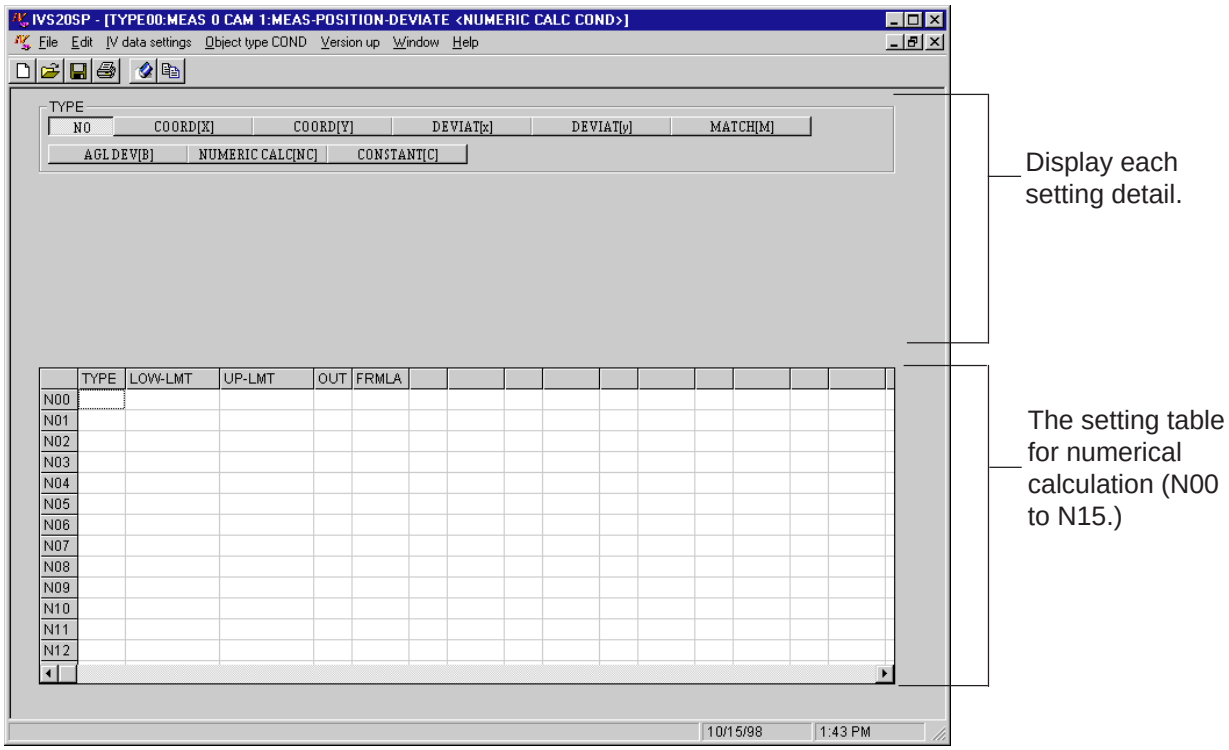
Click the "NUMERIC CALC. COND" from each measuring program setting screen. The "NUMERIC CALC. COND" screen will appear.

■ Operation details: When setting up the positional deviation measurement

Click the "NUMERIC CALC. COND" on the position deviation measurement setting screen (page 3-2).



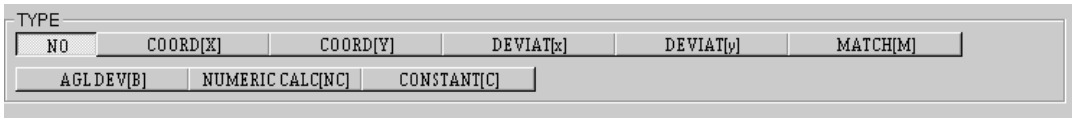
⇨ The "NUMERIC CALC. COND" screen for positional deviation measurement will appear.



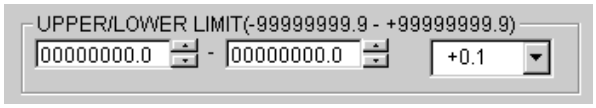
- Click each setting section (object type, upper&lower limit, output, and formula) for numerical calculation. The each setting detail will appear. (See the next page.)

Click on each of the individual setting sections ① to ⑤ below, on the numerical calculation setting table. The details of each setting will appear.

① Object type setting details



② Setting details for upper & lower limit



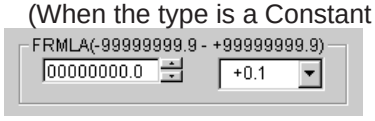
③ Setting details for output

④ Setting details for formula 1-1 (When the type is X and Y coordinates, x and y positional deviation coordinates, and degree of match M, or angular deviation B)

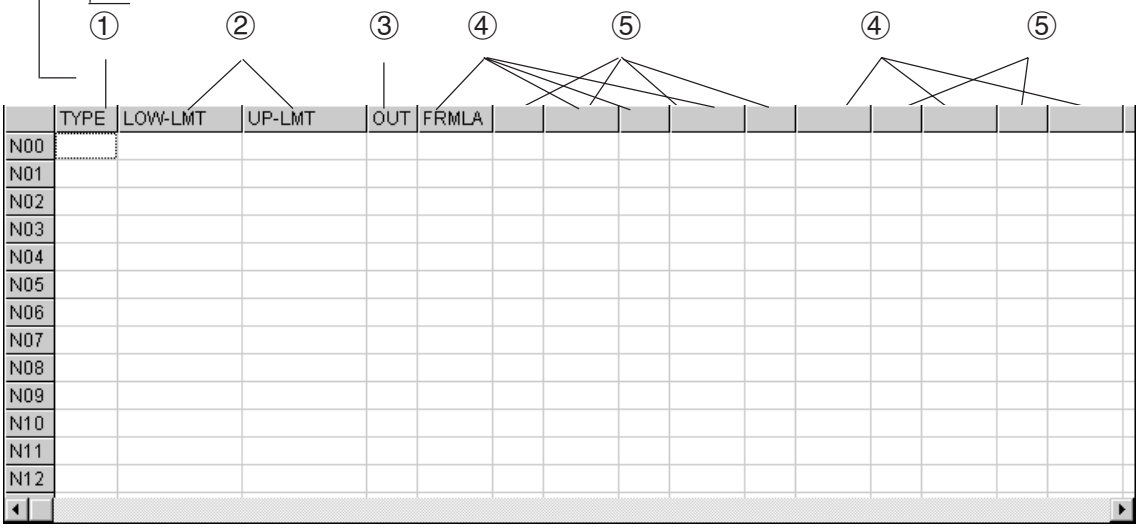
· When angular deviation B is selected, the model item is not displayed.

④ Setting details for formula 1-1 (When the type is a numerical calculation NC)

④ Setting details for formula 1-1 (When the type is a Constant C)



⑤ Setting details for formula 2



For details about these setting details, see the "IV-S20 user's manual: Chapter 9: Numerical Calculations."

[Example of settings]

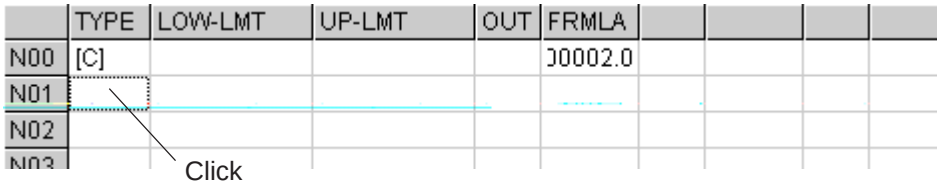
	TYPE	LOW-LMT	UP-LMT	OUT	FRMLA				
N00	[C]				00002.0				
N01	[X]	00000000.0	00000410.0	Y0	0X0	*	N0		
N02									
N03									

The setting process of the calculation result N01 is described on the next page.

Described below is the process used to set the calculation result N01 for the setting example shown on the previous page.

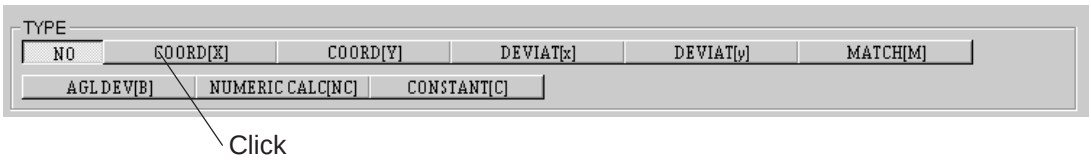
(1) Setting the object type

1. Click the "TYPE" cell N01.



⇨ The setting details for object type will appear.

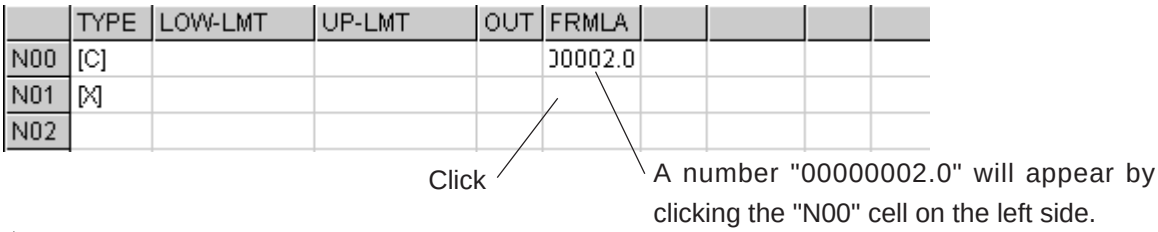
2. Click the "COORD [X]."



⇨ The [X] will be indicated on the "TYPE" cell N01.

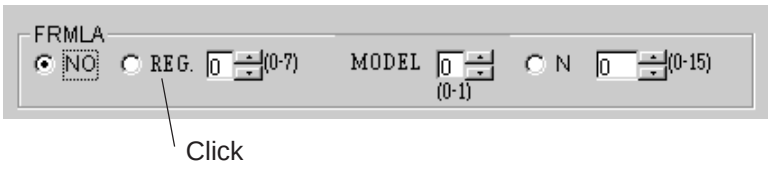
(2) Setting the formula

1. Click the "FRMLA" cell N01.



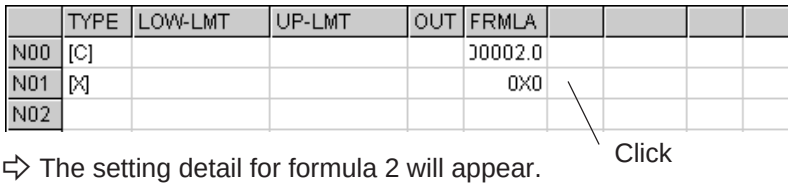
⇨ The setting details for formula 1 will appear.

2. Click the "REG." item.



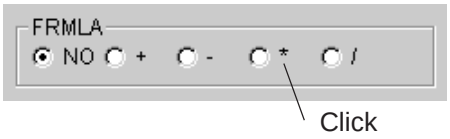
⇨ A "0X0" will be indicated.

3. Click the right cell of the "0X0."



⇨ The setting detail for formula 2 will appear.

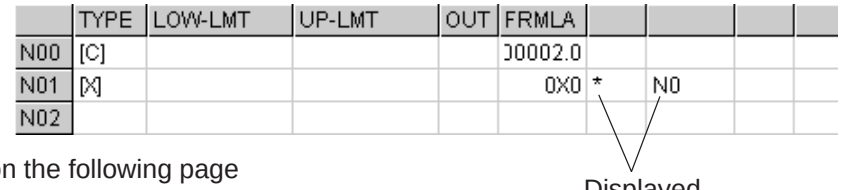
4. Click the [*] item.



⇨ The "*" will be indicated on the right cell of the "0X0."

5. Click the right cell of "*", then click the "N" item in the setting detail for formula 1.

⇨ The "N0" will be indicated on the right cell of the "*."



Continued on the following page

From the previous page

(3) Setting the upper & lower limits

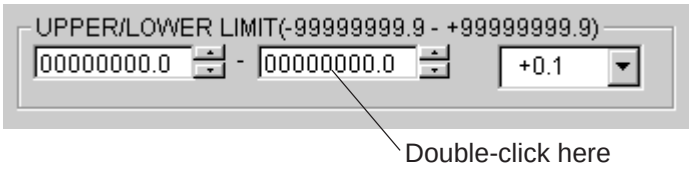
1. Click the "LOW-LMT" (lower limit) or "UP-LMT" (upper limit) cell on the "N01" line.

	TYPE	LOW-LMT	UP-LMT	OUT	FRMLA				
N00	[C]				J0002.0				
N01	[X]				0X0	*	N0		
N02									

Click here

⇨ The setting detail for the upper limit or lower limit will appear.

2. Double-click the inside of the upper limit item.



⇨ The display will be highlighted.

3. Type in the number "410", then press the "Enter" key.

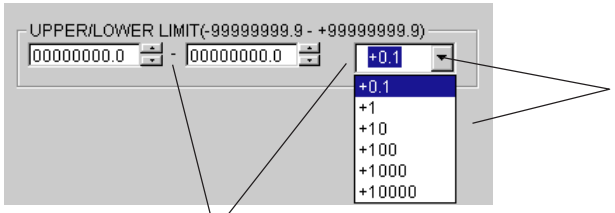
⇨ The number "00000410.0" will be indicated.

	TYPE	LOW-LMT	UP-LMT	OUT	FRMLA				
N00	[C]				J0002.0				
N01	[X]	00000000.0	00000410.0		0X0	*	N0		
N02									

Indicated

(Reference)

You can also set the upper & lower limits by clicking on the number of digits and ▲/▼ buttons.



① Click the ▼ item to select the number of digits.

② Click the ▲/▼ item of the upper & lower limit.

(4) Set the output.

1. Click the "OUTPUT" cell on the "N01" line.

⇨ The setting detail for the output will appear.

2. Click "Y."

⇨ A "Y0" will be displayed on the "OUT" cell of the "N01" line.

	TYPE	LOW-LMT	UP-LMT	OUT	FRMLA				
N00	[C]				J0002.0				
N01	[X]	00000000.0	00000410.0	Y0	0X0	*	N0		
N02									

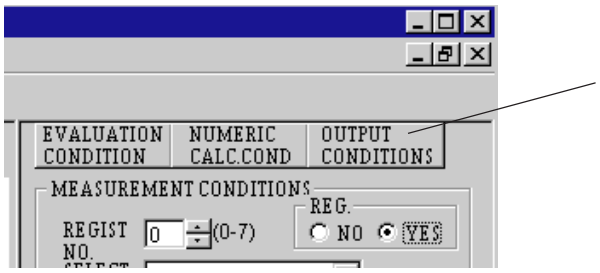
Displayed

3-4 Setting the output condition

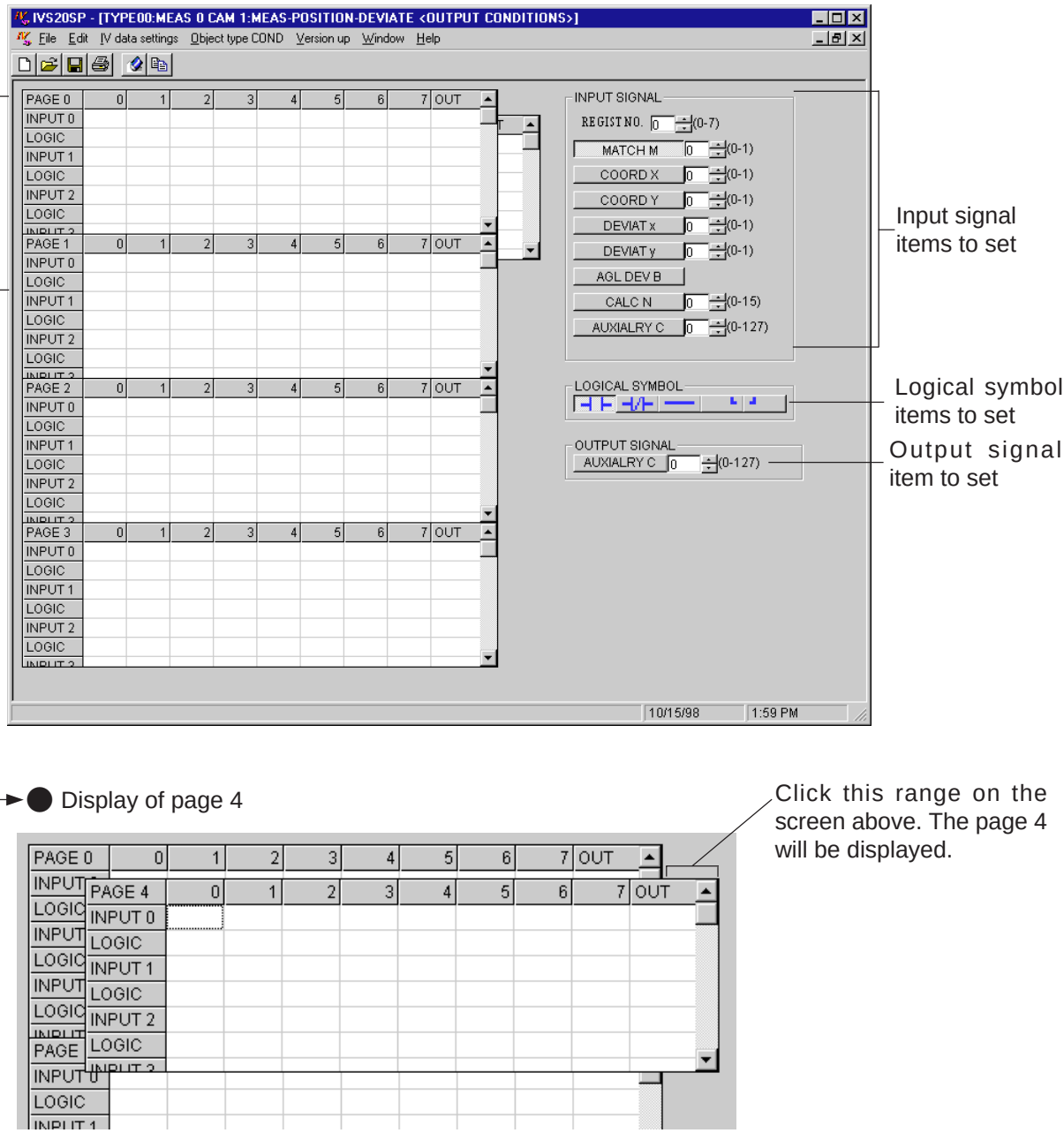
Click the "OUTPUT CONDITIONS" from each measuring program setting screen. The "OUTPUT CONDITIONS" screen will appear.

■ Operation details: When setting up the positional deviation measurement

Click the "OUTPUT CONDITIONS" on the position deviation measurement setting screen (page 3-2).



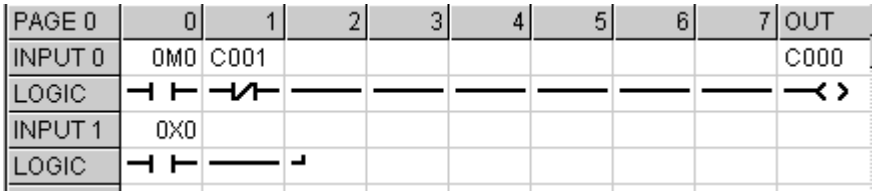
⇨ The "OUTPUT CONDITIONS" screen for positional deviation measurement will appear.



● Display of page 4

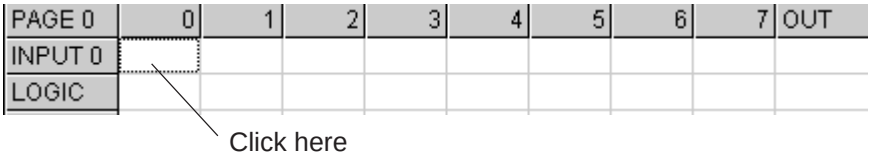
For details about these settings, see the "IV-S20 user's manual: Chapter 10: PC Function."

[Example of settings]

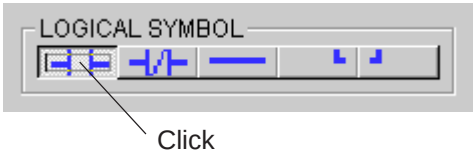


Described below is the process used to create the example above.

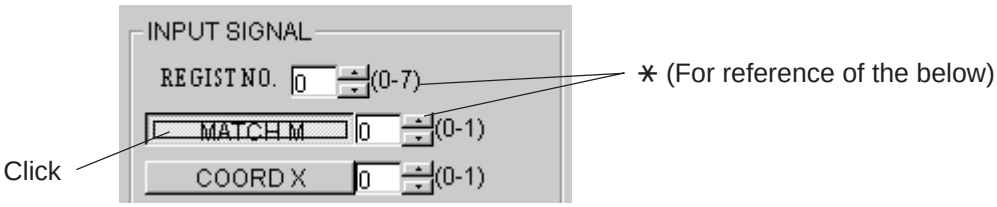
1. Click the column 0 on the "INPUT 0" line (PAGE 0).



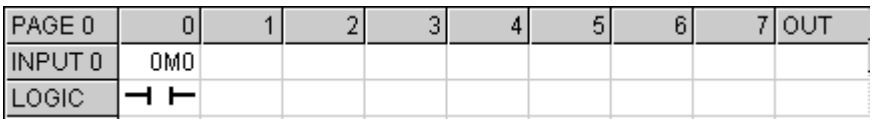
2. Click on the [⊣ ⊢] item in the "LOGICAL SYMBOL" area.



3. Click on the [MATCH M] item in the "INPUT SIGNAL" area.



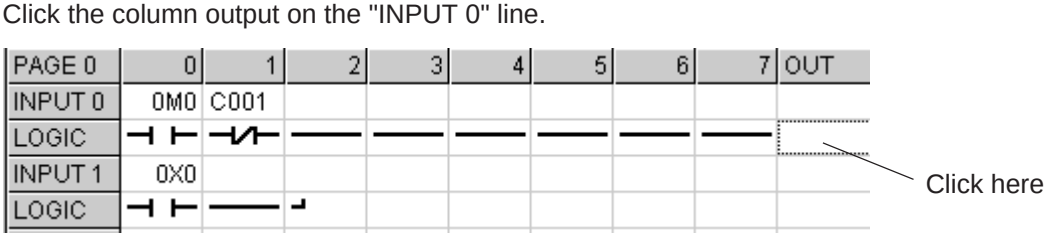
⇨ The selected input signal and logical symbol will be shown.



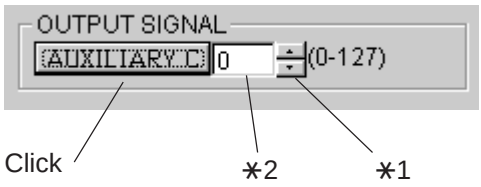
(Reference)

- Enter the registration number (0 to 7) and the object type number (0 or 1) by clicking the ▲/▼ arrows (see above ∗).

4. To create the input section, click on the desired cell, logical symbol, and input signal repeatedly, the same as in steps 1 to 3 above.
5. Click the column output on the "INPUT 0" line.



6. Click on the [AUXILIARY C] in the "OUTPUT SIGNAL" area.



⇨ The output signal and the auxiliary relay C000 will be shown in the table.

PAGE 0	0	1	2	3	4	5	6	7	OUT
INPUT 0	0M0	C001							C000
LOGIC	⊣ ⊢	⊣/⊢	—	—	—	—	—	—	—< >
INPUT 1	0X0								
LOGIC	⊣ ⊢	—	⌟						

(Reference)

- Set the auxiliary relay number (0 to 127) by clicking the ▲/▼ item (✳1) of auxiliary relay C, or directly enter a number after double-clicking inside the relay number window (✳2) to highlight the window.

3-5 Operation example (positional deviation measurement)

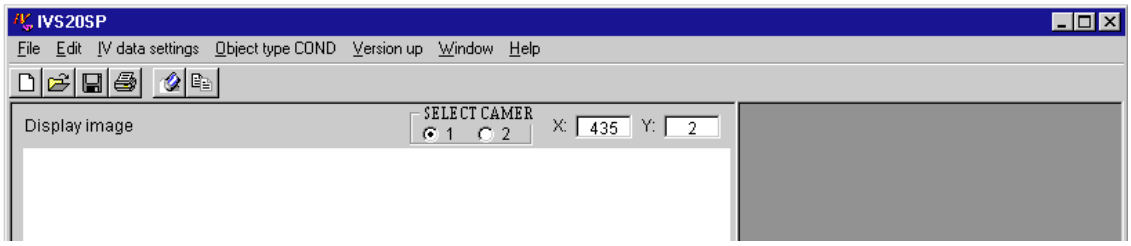
This section describes the operation example for positional deviation measurement (2 points search) as a use example of setting Object type conditions.

(1) Setting/operating of IV-S20

Let the IV-S20 to show the MAIN OPS MENU screen.

(2) Starting up IV-S20SP

⇨ See page Setup-4.



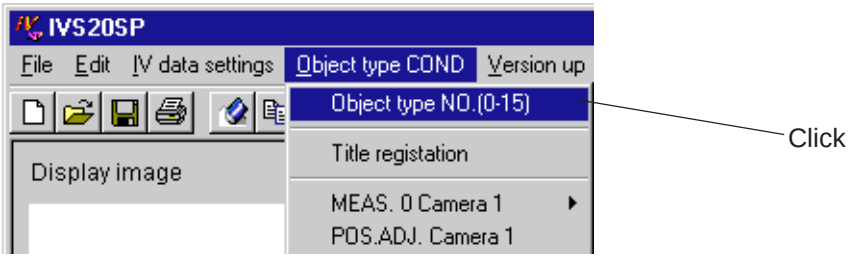
(3) Communication settings

Set the protocols to communicate with the IV-S20.

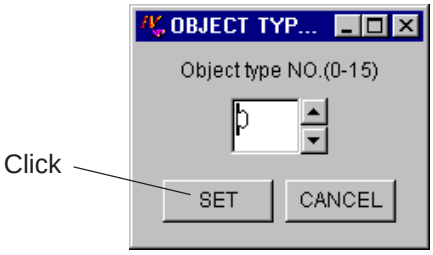
⇨ See "Chapter 2: Set Communication."

(4) Assign an object type number

Click the "Object type NO. (0 - 15)" from the "Object type COND" menu.



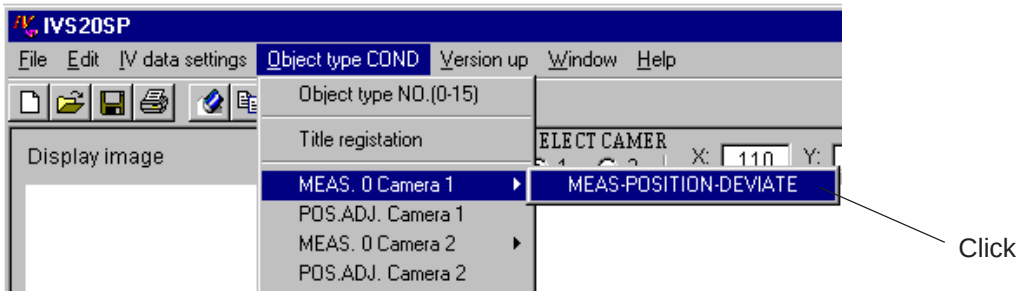
⇨ The "OBJECT TYP..." dialog box will appear.



- Select the object type number (0 to 15) using the ▼/▲ buttons. Then click the "SET" button.

(5) Starting up the setting screen for the "Positional deviation measurement."

Click the "MEAS. 0 Camera 1" → "MEAS-POSITION-DEVIATE" items from the "Object type COND" menu.



⇨ The setting screen for the "Positional deviation measurement" will appear. (see the next page.)

Continued on the following page

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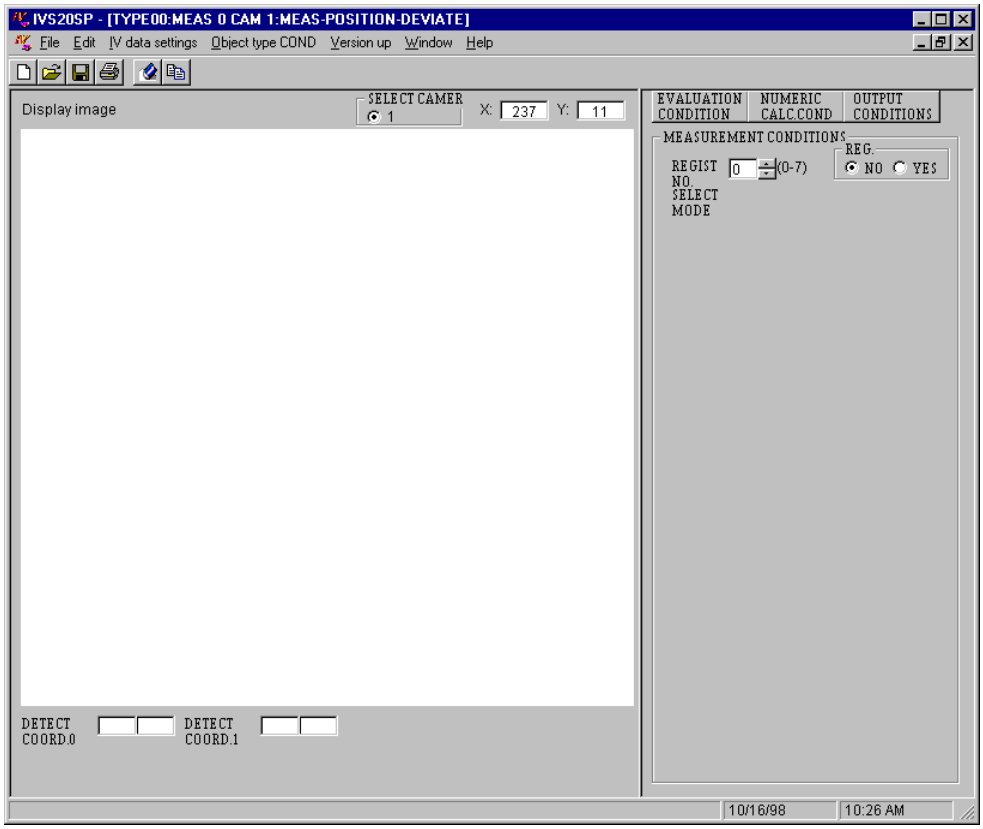
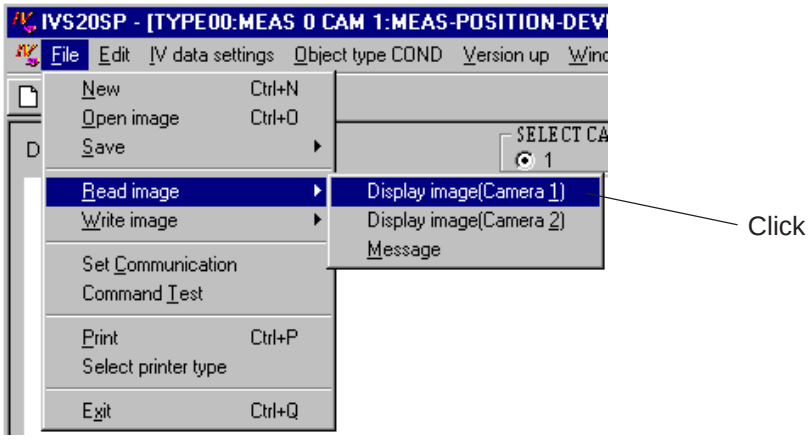
- Setting screen of positional deviation measurement

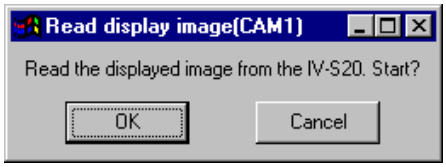


(6) Reading display images

1. Click the "Read image" → "Display image (Camera 1)" items from the "File" menu.



⇨ The "Read display image (CAM 1)" dialog box will appear.



2. Click the "OK" button.
   ⇨ The display image will be loaded. (See the next page.)

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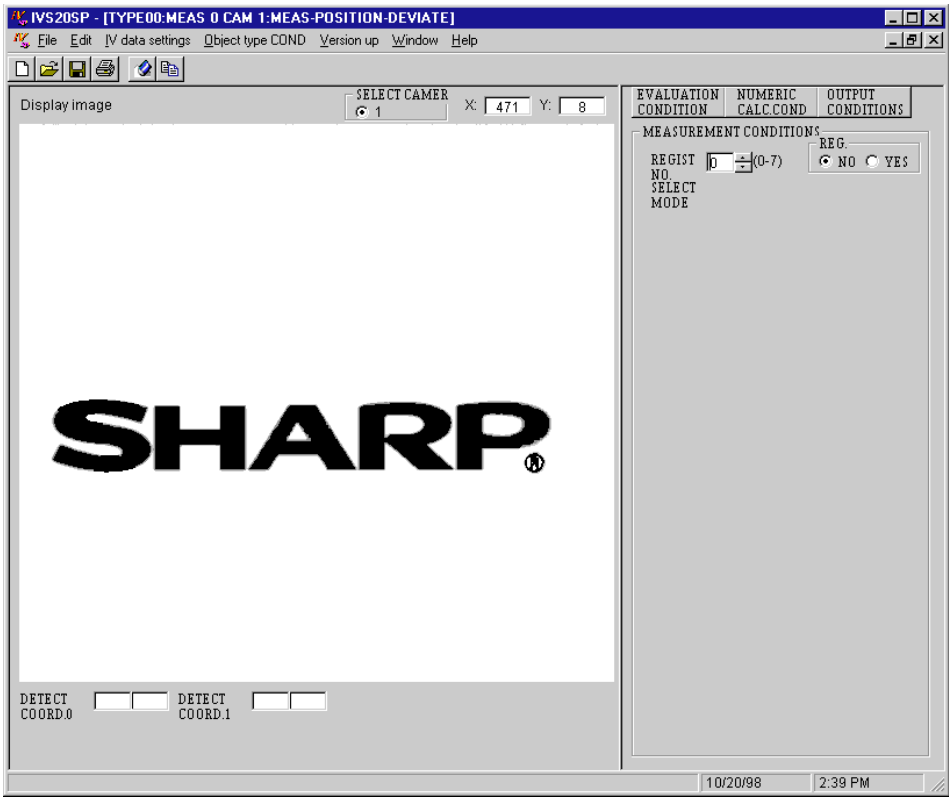
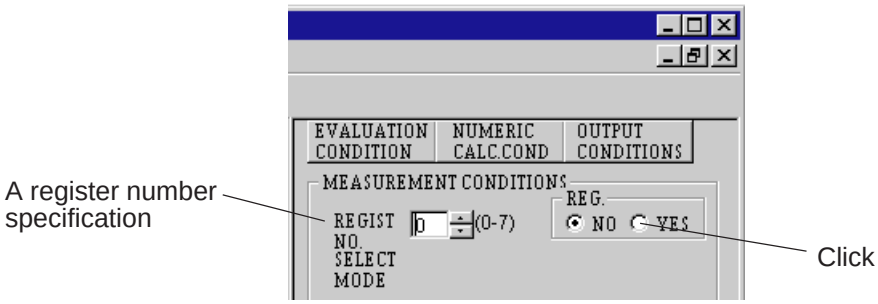
- An example of reading display image

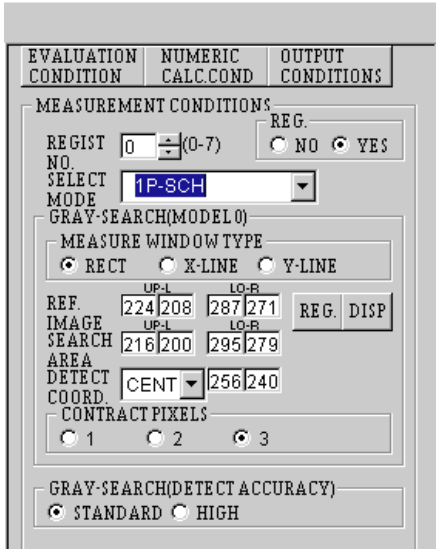


(7) Mode settings

1. Specify a register number (0 to 7) using the ▲/▼ buttons, then click "YES" in the "REG." window.



⇨ The measurement conditions for the mode (1 point search) will appear.



Continued on the following page

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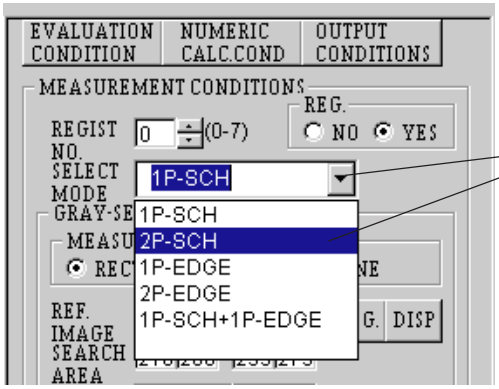
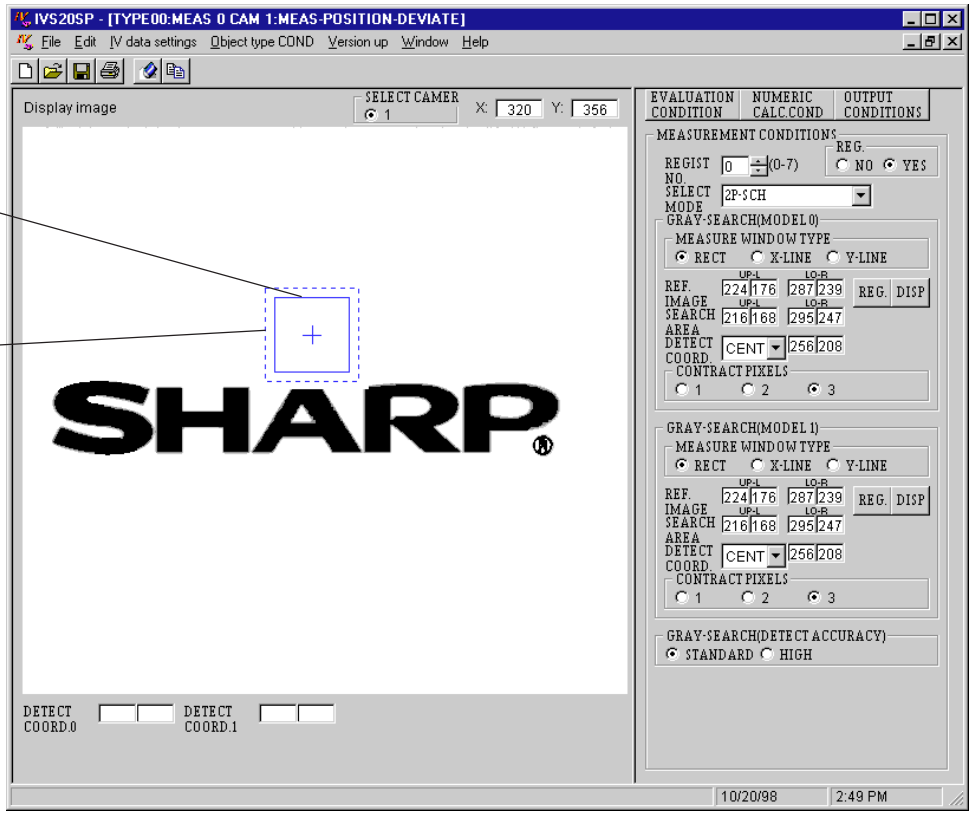
2. Click the ▼ item on the "MODE," and select "2 P-SCH" (2 points search).



⇨ The measurement conditions for the mode (2 points search) will appear.

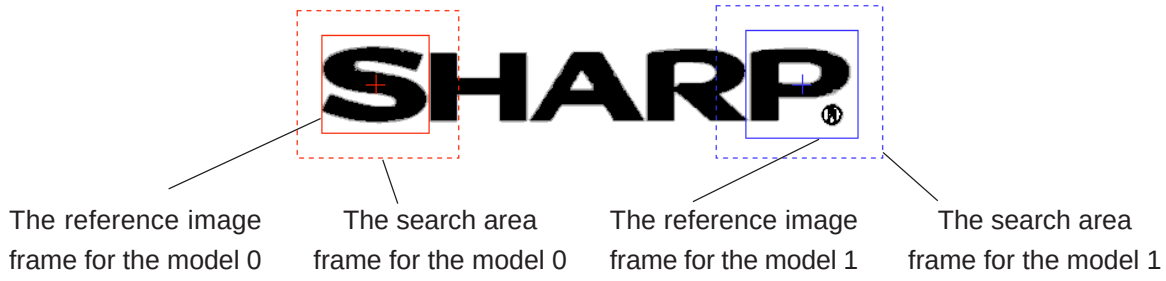


The setting frame for the reference image (solid line)

The setting frame for the search area (dotted line)

(8) Registration of the reference image

1. Drag the setting frame of the reference image or the search area using the mouse to define the position.
   - Example of settings



Continued on the following page

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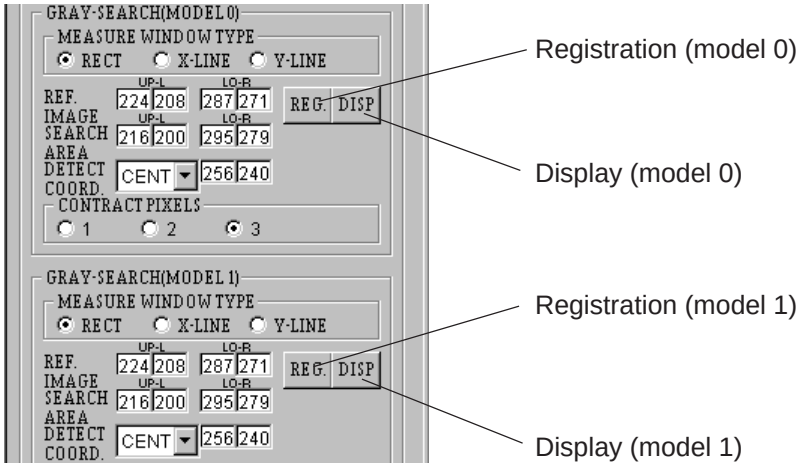
2. Click the "REG." button. Then click the "DISP" button.

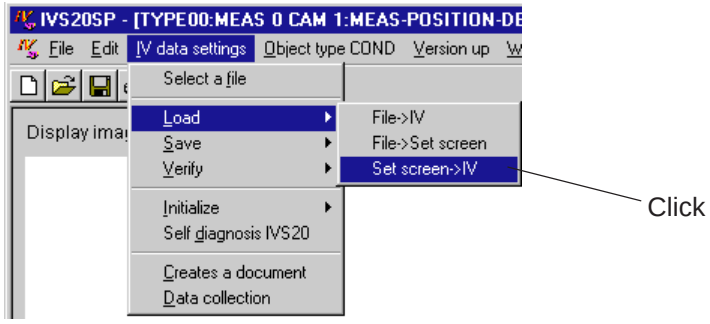


⇨ If an image is registered, its image will be displayed.
- Click the "DISP" button again to disappear the image.

● Loading the measurement conditions to IV-S20

(9) Execute loading

1. Click the "Load" → "Set screen ⇨ IV" items from the "IV data settings" menu.



⇨ The "IV data settings" dialog box will appear.

2. Click the "START" item on the "IV data settings" dialog box.
⇨ The set measurement conditions will be loaded in the IV-S20.
After the loading is complete, the "Load all parameters completed (Set screen → IV)" will appear.

Chapter 4: Document Creation

You can automatically create a spreadsheet (table of the current parameters) using Excel or other standard applications, so that you can easily manage and store parameter sets as documents.

4-1 Document creation (IV-S20 parameter)

This section describes the procedures for creating a document that contains parameters.

(1) Setting/operating the IV-S20

Bring up the MAIN OPS MENU screen on the IV-S20.

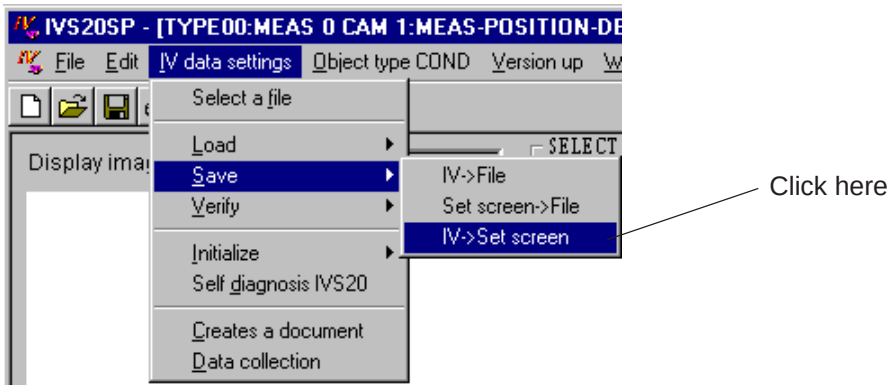
(2) Communication setting

Set the parameters for communicating with the IV-S20.

⇨ See "Chapter 2: Set Communication."

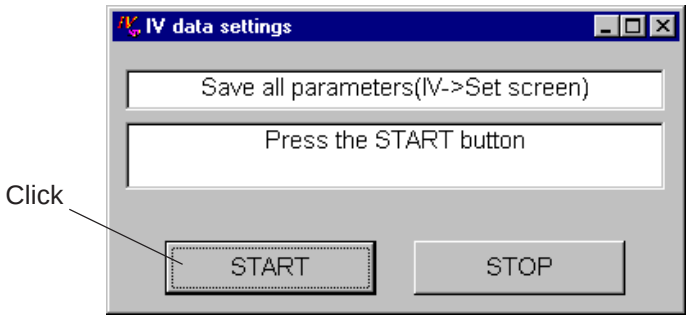
(3) Loading the parameters

1. Click the "Save" → "IV -> setting screen" items on the "IV data settings" menu.



⇨ The "IV data settings" dialog box will appear.

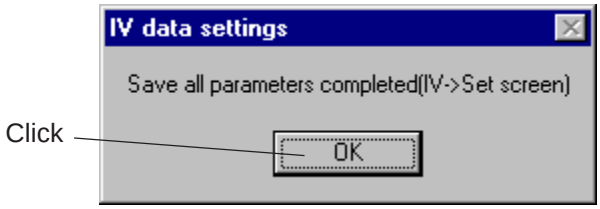
2. Click the "START" button.



⇨ The data set in the IV-S20 will be stored on the setting screen.

- After the saving data is complete, the "IV data settings" dialog box will appear.

3. Click the "OK" button.



Continued on the following page

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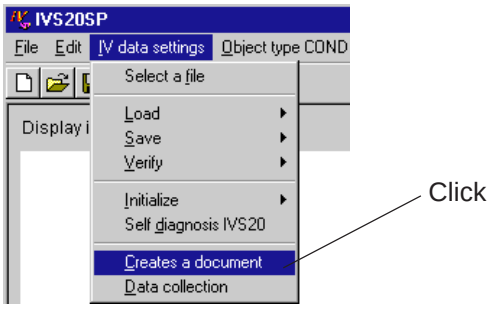
(4) Starting up the document creation screen

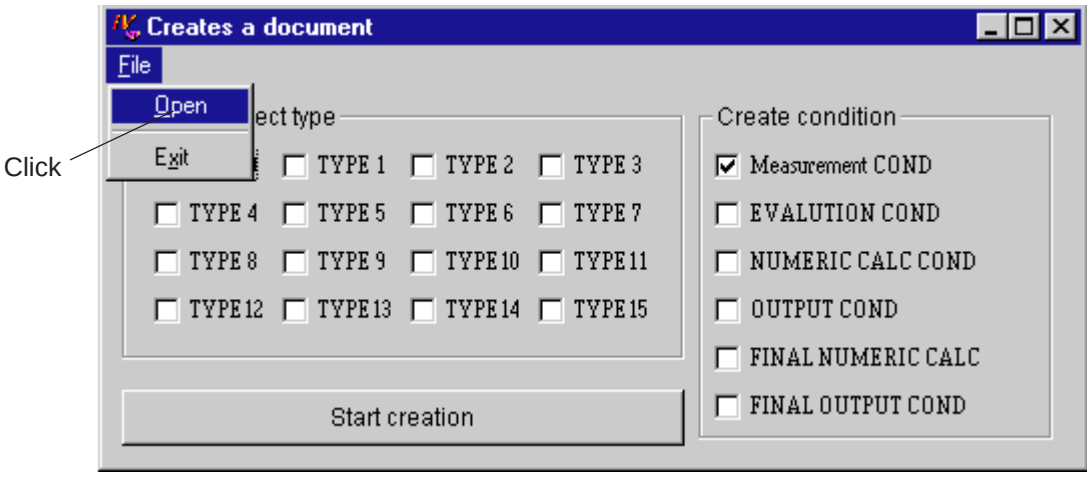
Click the "Creates a document" item from the "IV data settings" menu.



⇨ The "Creates a document" dialog box will appear.

(5) Select a file

Click "Open" from the "File" menu on the "Creates a document" window.

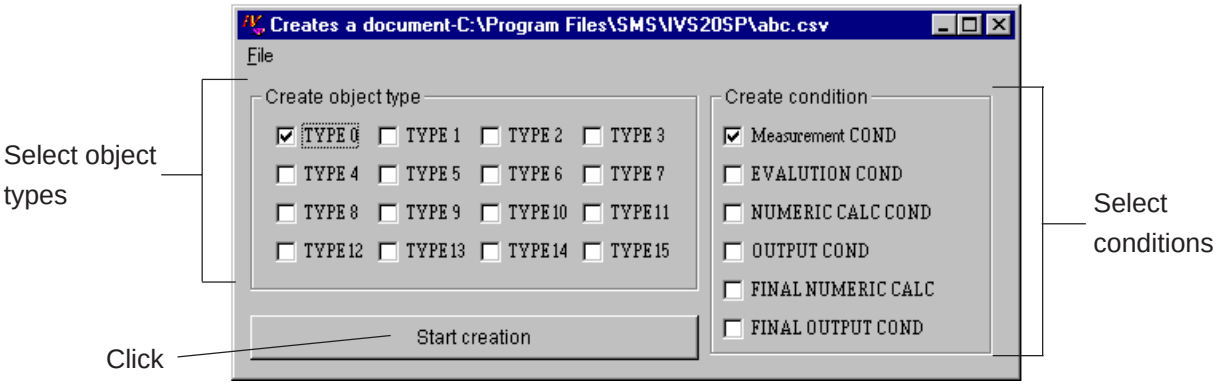


⇨ The "Open" dialog box will appear.

- When you want to create new file (with ".csv" extension) for making document, specify the folder name, enter the file name, and click the "Open" button.
  If you want to save it to an existing file, select the file and click the "Open" button.

(6) Document creation details

Select document type and the conditions and click the "Start creation" button.



⇨ The program will create the document automatically. After the creation is complete, the "Creates a document" dialog box will appear.

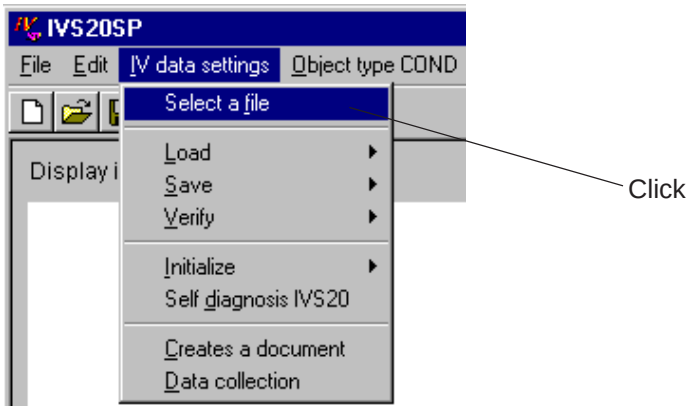
- Click the "OK" button on the box. (See page 4-4 for the example of the document creation.)

4-2 Document creation (file data)

This section describes the procedures for creating a document from the parameters already in a personal computer file.

(1) Select a file in which to save the parameter settings

Click on "Select a file" on the "IV data settings" menu.

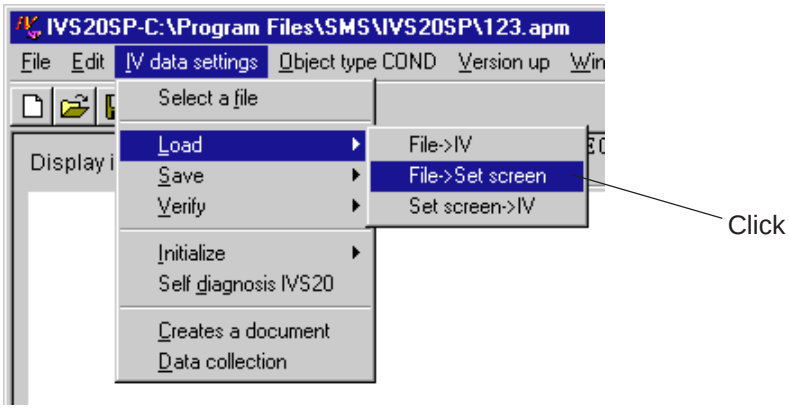


⇨ The "Open" dialog box will appear.

- Select a file (with ".apm" extension) to create a document, then click the "Open" item.

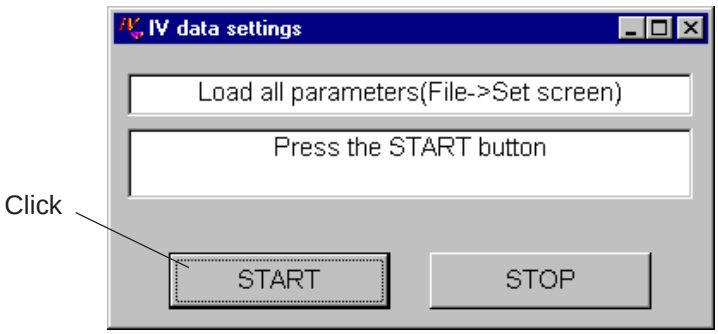
(2) Reading the setting parameters

1. Click the "Load" → "File -> Set screen" items from the "IV data settings" menu.



⇨ The "IV data settings" dialog box will appear.

2. Click the "START" button.



⇨ The file data is loaded on the set screen.

For the following document creation processes after this, see the "4-1 Document creation (IV-S20 parameter)."

(See page 4-2 (4) to (6).)

[Example of document creation]

Shown below is an example which a document file (with ".csv" extension) that contains the conditions for each object type and can be opened using Excel.

<<< Object type number 00 >>>

TITLE	SAMPLE	
---- Main ----		
MEAS.0, CAMERA 1	POSITIONAL DEVIATION MEASUREMENT	
MEAS.0, CAMERA 2	NO	
MEAS.1	NO	
MEAS.2	NO	
MEAS.3	NO	
HALT MEAS ON NG	NO	
POS. ADJ.CAMERA 1	NO CALIBRATION	
POS. ADJ.CAMERA 2	NO CALIBRATION	
---- Positional deviation measurement (Camera 1) ----		
[MEAS. PROG. COND]		
* Registration number		0
Mode	2 point search	
<First point>		
MEAS WINDOW	RECTANGLE	
REF IMAGE upper left X COORD		68
REF IMAGE upper left Y COORD		232
REF IMAGE lower right X COORD		139
REF IMAGE lower right Y COORD		295
SEARCH AREA upper left COORD		60
SEARCH AREA upper left COORD		224
SEARCH AREA lower right COORD		147
SEARCH AREA lower right COORD		303
DTECT COORD	CNTR	
DTECT COORD (X)		104
DTECT COORD (Y)		264
CONTR. PIXEL		3
<Second point>		
MEAS WINDOW	RECTANGLE	
REF IMAGE upper left X COORD		356
REF IMAGE upper left Y COORD		232
REF IMAGE lower right X COORD		427
REF IMAGE lower right Y COORD		295
SEARCH AREA upper left COORD		348
SEARCH AREA upper left COORD		224
SEARCH AREA lower right COORD		435
SEARCH AREA lower right COORD		303
DTECT COORD	CNTR	
DTECT COORD (X)		392
DTECT COORD (Y)		264
CONTR. PIXEL		3
DETECT ACCURACY	STANDARD	

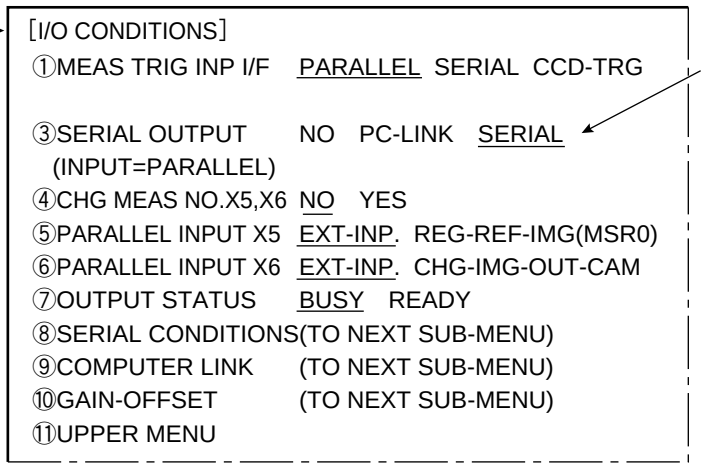
Chapter 5: Data Collection

You can transmit the measurement result data from the IV-S20 to a personal computer via a communication (general purpose serial I/F), and automatically create a result sheet.
The data collection function is used to manage or save measurement data, and collect data settings such as the evaluation conditions.

This chapter explains the operation procedures for the data collection.

(1) Setting/operation of the IV-S20

1. Set the serial output (input/output conditions) on the IV-S20 to "general purpose serial."
   On the "MAIN OPS MENU", move the cursor to SET-SCRN, and press the SET key.
   ⇨ On the [SYSTEM SETUP] menu, moves the cursor to item ③ I/O CONDITIONS and press the SET key.



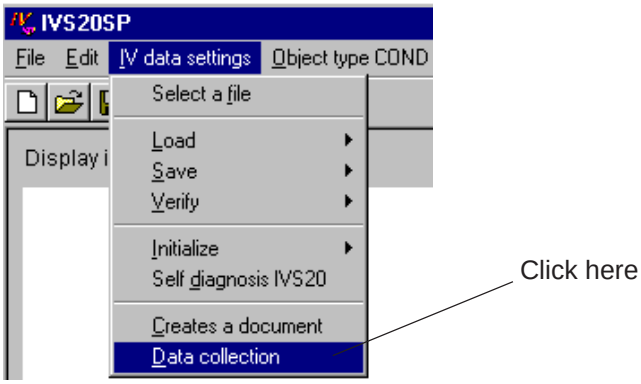
2. Return to the MAIN OPS MENU screen.

(2) Communication settings

Set the protocols to communicate with the IV-S20.
⇨ See the "Chapter 2: Set Communication."

(3) Starting the data collection screen

Click on the "Data collection" item in the "IV data settings" menu.



⇨ The "Data collection" dialog box will appear.

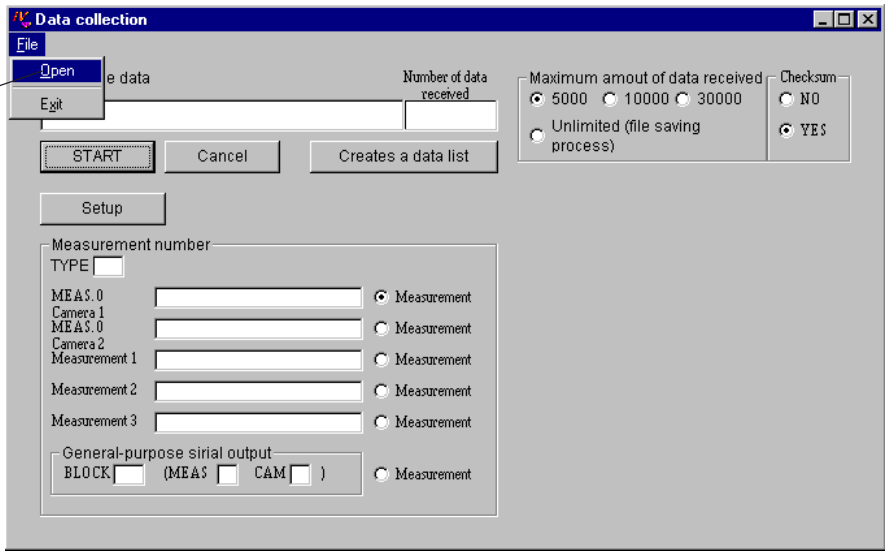
Continued on the following page

From the previous page

(4) File selection

Select the "Open" item from the "File" menu on the "Data collection" dialog box.

Click here



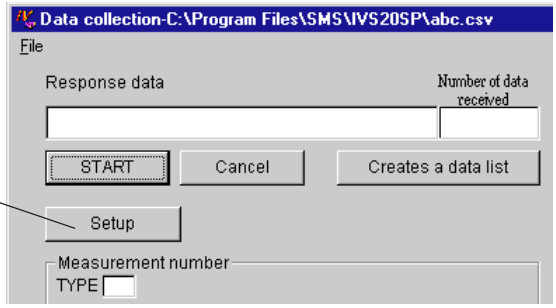
⇨ The "Open" dialog box will appear.

- When you want to create a new file (with ".csv" extension) to save the collected data, specify the folder name, enter the file name, and click the "Open" button.
  If you save the collected data to an existing file, select the file and click the "Open" button.

(5) Setting the data collection conditions

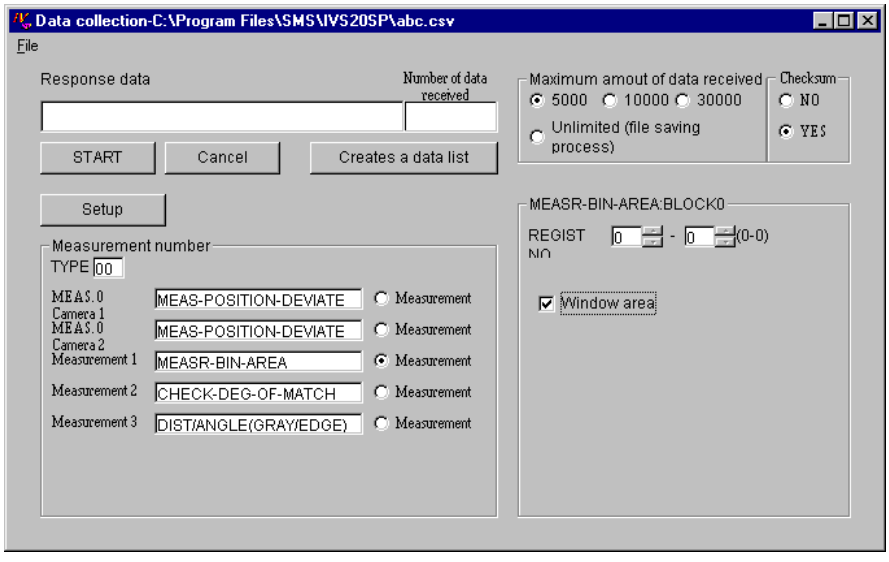
1. Click on the "Setup" button.

Click here



⇨ The setting conditions for the IV-S20 will be loaded.

2. Select the items for data collection.



Continued on the following page

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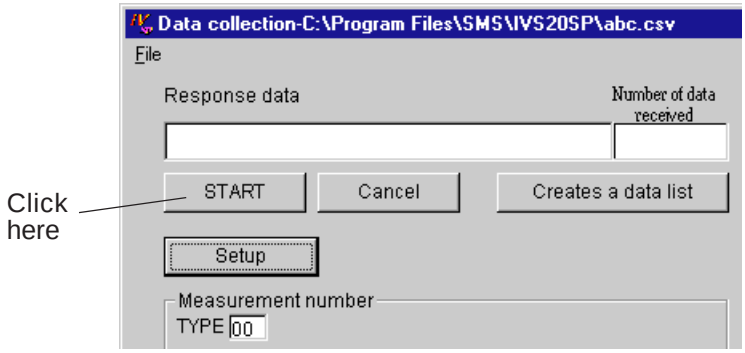
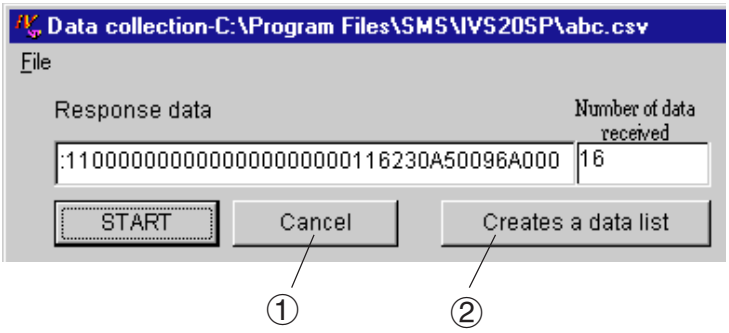
(6) Execute a data collection

Click on the "START" button.



⇨ The data collection from the IV-S20 will start.

(7) Creation of a data collection table



1. Click on the "Cancel" button.
   ⇨ The data collection will stop.
2. Click on the "Create a data list" button.
   ⇨ The total file of the data collected will be created automatically. After the creation ends normally, the "Total data creation is complete" message will appear.

Note

- If processing speed of a personal computer is slower than the data transmission speed of the IV-S20, some parts of the data may be lost.

[Data collection example]

Shown below is an example in which the graph creation feature in Excel is used to make a graph of the data file (with ".csv" extension) created with the data collection function.

Example: Measuring an area by binary conversion, and setting the upper and lower limits for the evaluation conditions of the surface area.

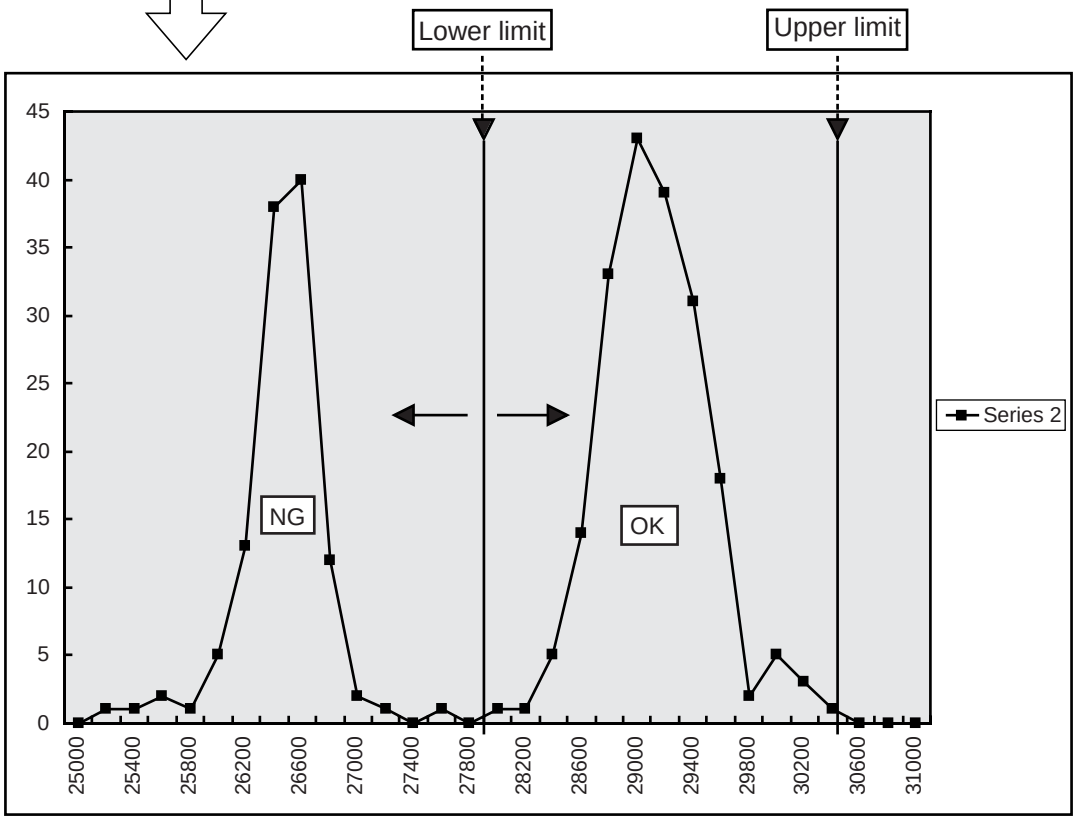
Data file (with ".csv" extension)

25000	0
25200	1
25400	1
25600	2
25800	1
26000	5
26200	13
26400	38
26600	40
26800	12
27000	2
27200	1
27400	0
27600	1
27800	0
28000	1
28200	1
28400	5
28600	14
28800	33
29000	43
29200	39
29400	31
29600	18
29800	2
30000	5
30200	3
30400	1
30600	0
30800	0
31000	0

Create a table using Excel.

Area	Frequency
25000	0
25200	1
25400	1
25600	2
25800	1
26000	5
26200	13
26400	38
26600	40
26800	12
27000	2
27200	1
27400	0
27600	1
27800	0
28000	1
28200	1
28400	5
28600	14
28800	33
29000	43
29200	39
29400	31
29600	18
29800	2
30000	5
30200	3
30400	1
30600	0
30800	0
31000	0

Create a graph using Excel.



Chapter 6: Reading/Writing Parameters and Images

Setting parameters and images (display images/messages) can be stored in a personal computer. Uploading and downloading of the setting parameters is also available.

- This function can be used to evaluate samples locally by transmitting setting parameters saved in a file via E-mail or other means of communication.
  It can be also used to create copies of settings by reading or writing the setting parameters.

■ Loading/saving/verifying setting parameters

By selecting the "Load," "Save" or "Verify" item from the "IV data settings" menu, the operations below is available.

Setting parameters	Operation items	Section on this chapter for reference
Load	File -> IV	6-3
	File -> Set screen	
	Set screen -> IV	
Save	IV -> File	6-1
	Set screen -> File	
	IV -> Set screen	
Verify	File <-> IV	6-2
	File <-> Set screen	
	IV <-> Set screen	

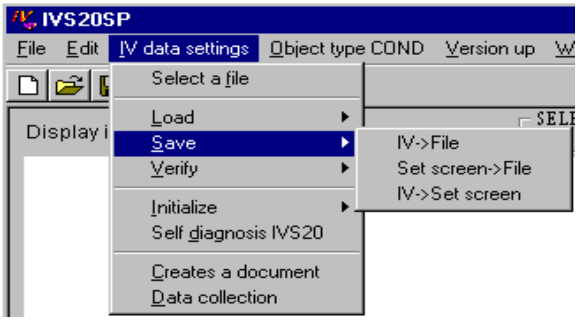
■ Read/write image

By selecting the "Read image" or "Write image" item from the "File" menu, the operations below is available.

Image	Operation items	Reference section on this chapter
Read image	Display image (Camera 1)	6-4 [1]
	Display image (Camera 2)	
	Message	
Write image	Display image (Camera 1)	6-4 [2]
	Display image (Camera 2)	
	Message	

6-1 Saving setting parameters

Select the "Save" item from the "IV data settings" menu. The operation item below will appear.



Save	Operation details
IV -> File	Save the setting parameters of the IV-S20 to the file of the personal computer.
Set screen -> File	Save the setting parameters of the set screen to the file of the personal computer.
IV -> Set screen	Save the setting parameters of the IV-S20 to the set screen of the personal computer.

Below describes the operation procedures to save (IV -> File) the IV-S20 setting parameters to the file in the personal computer.

(1) Setting/operating of IV-S20

Let the IV-S20 to show the MAIN OPS MENU screen.

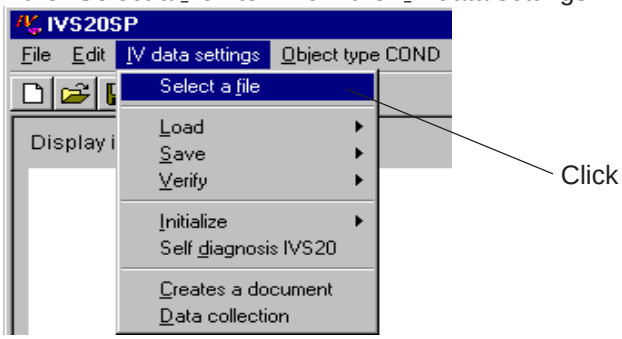
(2) Communication settings

Set the protocols to communicate with the IV-S20.

⇨ See "Chapter 2: Set Communication."

(3) File selection

Click the "Select a file" item from the "IV data settings" menu.

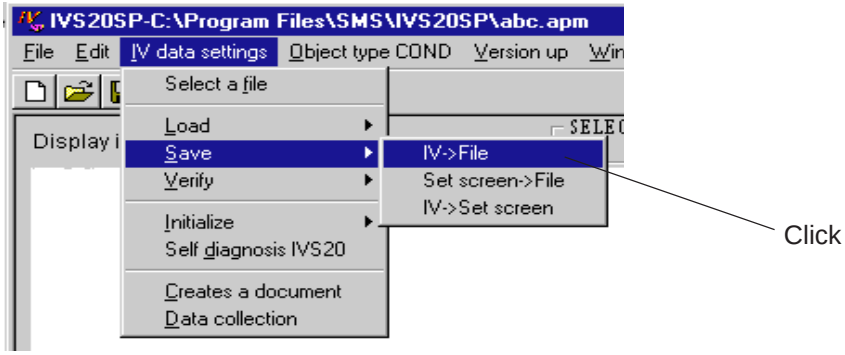


⇨ The "Open" dialog box will appear.

- When you want to create new file (with ".apm" extension) for saving setting parameters, specify the folder name, enter the file name, and click the "Open" button.
  If you want to save it to an existing file, select the file and click the "Open" button.

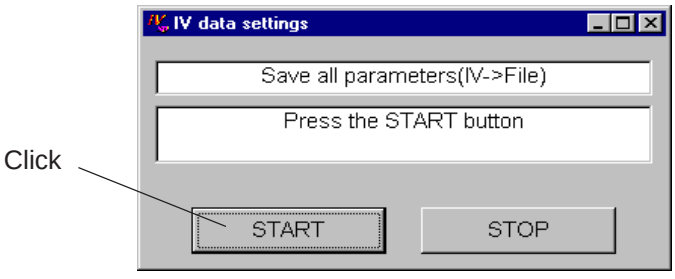
(4) Saving all parameters

1. Click the "Save" → "IV -> File" items from the "IV data settings" menu.



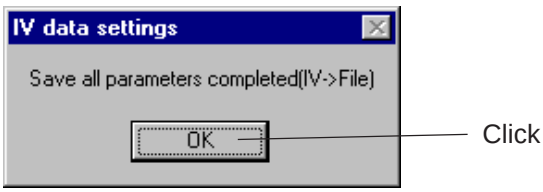
⇨ The "IV data settings" dialog box will appear.

2. Click the "START" button.



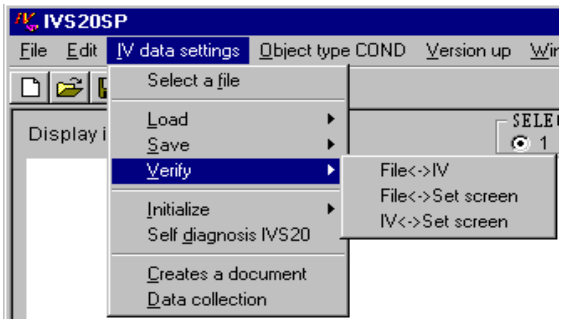
⇨ All setting data in the IV-S20 will be saved to the specified file (enter the file name above.)
When the saving is complete, the "IV data settings" dialog box will appear.

3. Click the "OK" button.



6-2 Verifying setting parameters

Select the "Verify" item from the "IV data settings" menu. The operation item below will appear.



Verify	Operation details
File <-> IV	Verify the personal computer s file (setting parameters) with the IV-S20 setting parameters.
File <-> Set screen	Verify the personal computer s file (setting parameters) with the set screen setting parameters.
IV <-> Set screen	Verify the IV-S20 setting data and the personal computer set screen setting parameters.

Below describes the operation procedures to verify (File <-> IV) the PC file with the IV-S20 setting parameters.

(1) Setting/operating of IV-S20

↓ Let the IV-S20 to show the MAIN OPS MENU screen.

(2) Communication settings

Set the protocols to communicate with the IV-S20.

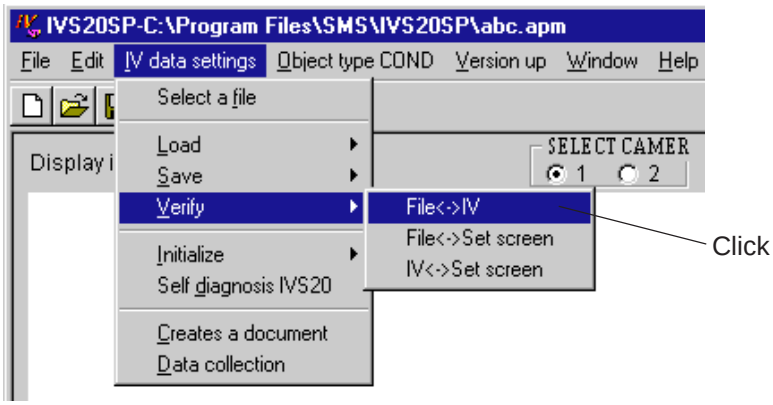
⇨ See "Chapter 2: Set Communication."

3) File selection

Same as the procedures section 6-1. ⇨ See page 6-2.

(4) Saving all parameters

1. Click the "Verify" → "File <-> IV" items from the "IV data settings" menu.



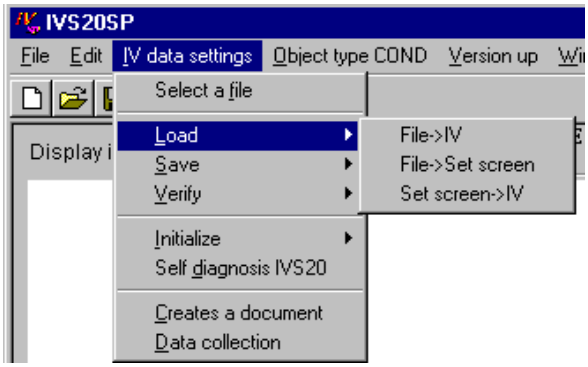
⇨ The "IV data settings" dialog box will appear.

2. Click the "START" button on the "IV data settings" dialog box.

⇨ All setting data in the IV-S20 and the personal computer specified file will be verified.
When the verifying is complete, the "IV data settings" dialog box will appear.
Click the "OK" button.

6-3 Loading setting parameters

Select the "Load" item from the "IV data settings" menu. The operation item below will appear.



Loading	Operation details
File -> IV	Load the setting parameters from the personal computer's file to the IV-S20.
File -> Set screen	Load the setting parameters from the personal computer's file to the personal computer set screen.
Set screen -> IV	Load the setting parameters from the personal computer set screen to the IV-S20.

Below describes the operation procedures to load (File <-> IV) the setting parameters from the personal computer's file to the IV-S20.

(1) Setting/operating of IV-S20

Let the IV-S20 to show the MAIN OPS MENU screen.

(2) Communication settings

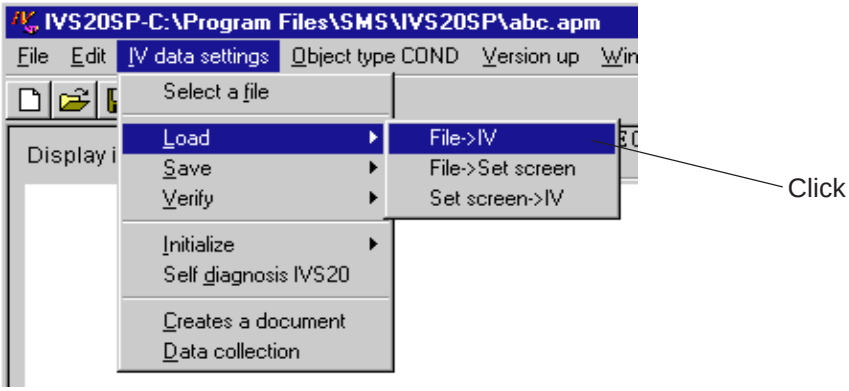
Set the protocols to communicate with the IV-S20.

⇨ See "Chapter 2: Set Communication."

(3) File selection Same as the procedures section 6-1. ⇨ See page 6-2.

(4) Loading all parameters

1. Click the "Load" → "File -> IV" items from the "IV data settings" menu.



⇨ The "IV data settings" dialog box will appear.

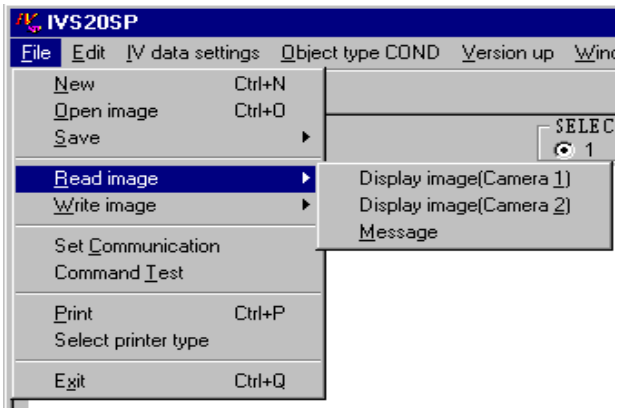
2. Click the "START" button on the "IV data settings" dialog box.

⇨ The personal computer's specified file (setting parameters) will be loaded to the IV-S20. When the loading is complete, the "IV data settings" dialog box will appear. Click the "OK" button.

6-4 Reading/writing images

[1] Reading images (display images and messages)

Select the "Read image" item from the "File" menu. The operation item below will appear.



Read image	Operation details
Display image (Camera 1)	Read the display images (camera 1) of the IV-S20 to the personal computer set screen.
Display image (Camera 2)	Read the display images (camera 2) of the IV-S20 to the personal computer set screen.
Message	Read the display messages of the IV-S20 to the personal computer set screen.

Below describes the operation procedures to read display images (camera 1) of the IV-S20 to the PC set screen and save it to the personal computer's file.

(1) Setting/operating of IV-S20

↓ Let the IV-S20 to show the MAIN OPS MENU screen.

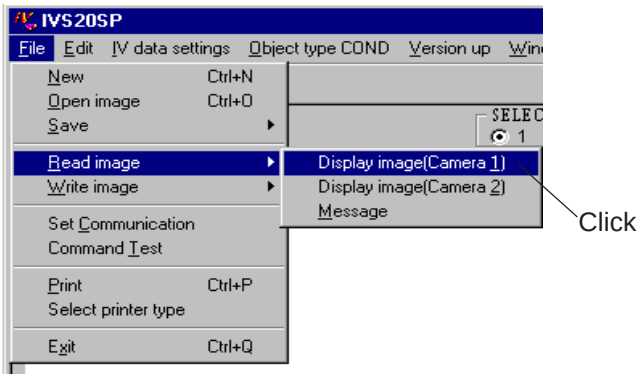
(2) Communication settings

Set the protocols to communicate with the IV-S20.

⇨ See "Chapter 2: Set Communication."

(3) Loading display images

1. Click the "Read image" → "Display images (Camera 1)" items from the "File" menu.



⇨ The "Read display image (CAM1)" dialog box will appear.

Continued on the following page

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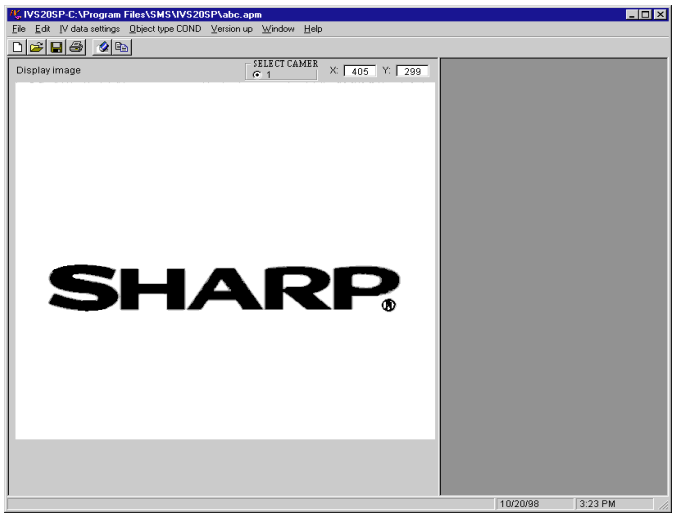
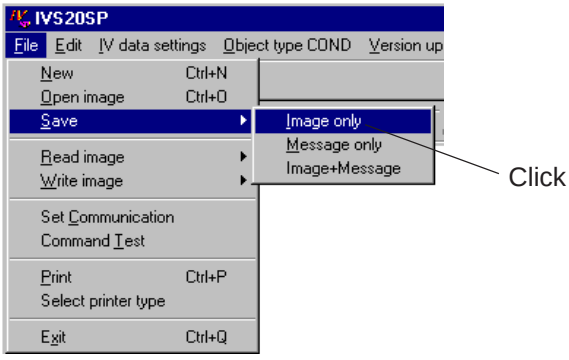
2. Click the "OK" button on the "Read display image (CAM1)" dialog box.
   ⇨ The camera image of the IV-S20 will be transmitted and displayed on the personal computer's image display area.

(Example of display)



(4) Saving the image as an image file (.bmp format)

Click the "Save" → "Image only" items from the "File" menu.



⇨ The "Save as" dialog box will appear.

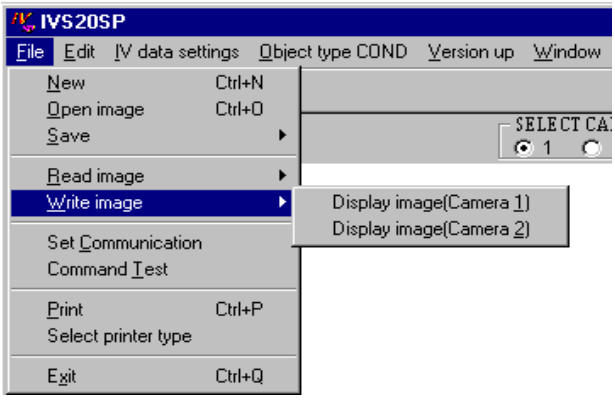
- When you want to create new file (with ".bmp" extension) for saving an image file, specify the folder, enter the file name, and click the "Save" button.
  If you want to save it to an existing file, select the file and click the "Save" button.
  ⇨ The image file will be stored in the specified file.

[2] Writing images (load images)

On the "RUN MENU SETTINGS" menu of the IV-S20, select "NO" in the "CAPTURE AN IMAGE." You can measure using the loaded images from the personal computer.

- Transmit the image files over a communication cable to evaluate samples and inspect troubles on remote.
- You can process images using the PHOTOSHOP or PAINT SHOP PRO application, and load it to the IV-S20 as a gray scale, 8 bit BMP file.

Select the "Write image" item from the "File" menu. The operation item below will appear.

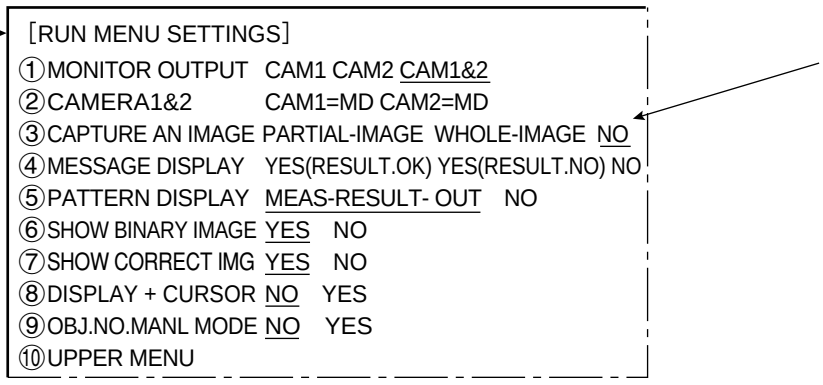


Write image	Operation details
Display image(Camera 1)	Write the displayed image on the PC to the IV-S20 (camera 1).
Display image(Camera 2)	Write the displayed image on the PC to the IV-S20 (camera 2).

Below describes the operation procedures to write displayed images on the PC screen to the IV-S20 (camera 1.)

(1) Setting/operating of IV-S20

1. On the "RUN MENU SETTINGS" menu of the IV-S20, select "NO" in the "CAPTURE AN IMAGE."\
   On the "MAIN OPS MENU", move the cursor to "SET-SCRN" item, and press the "SET" key.
   ⇨ On the [SYSTEM SEUP] menu, move the cursor to "① RUN MENU SETTINGS" and press the "SET" key.



2. Let the IV-S20 to show the MAIN OPS MENU screen.

(2) Communication settings

Set the protocols to communicate with the IV-S20.
⇨ See "Chapter 2: Set Communication."

Continued on the following page

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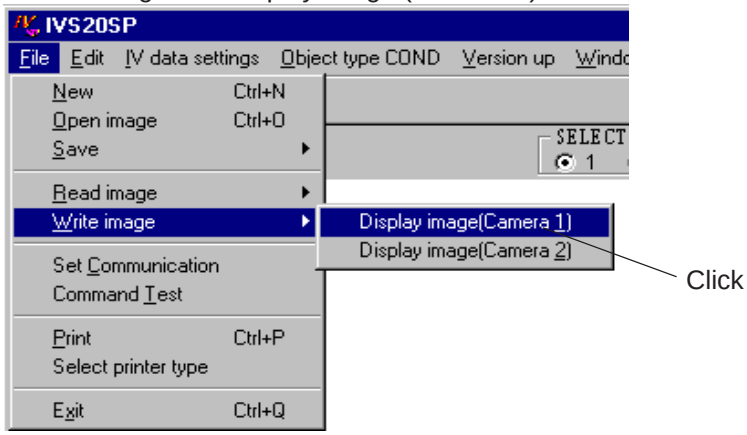
(3) Loading display images

1. Click the "Write image" → "Display image (Camera 1)" items from the "File" menu.



⇨ The "Write display image (CAM1)" dialog box will appear.

2. Click the "OK" button on the "Write display image (CAM1)" dialog box.

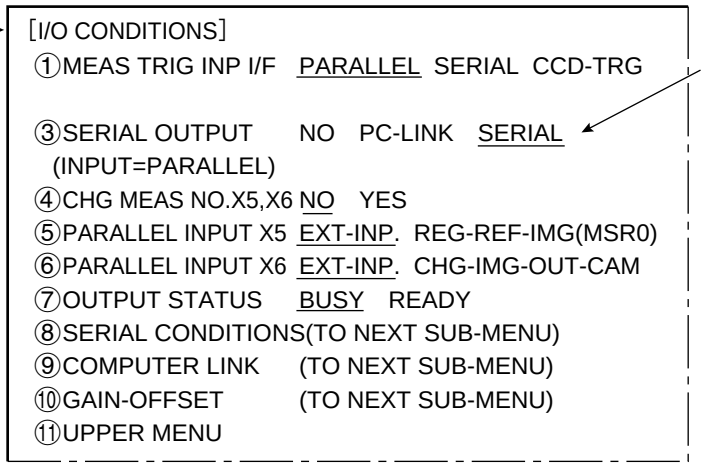
⇨ The image displayed on the PC will be written to the IV-S20 (camera 1).

Chapter 7: Command Test

The command test function is used to communicate to the IV-S20 through the serial interface and confirm that communication has been established when the personal computer is starting started.
This chapter describes the command test procedures.

(1) Setting/operating of IV-S20

1. On the "I/O CONDITIONS" menu on the IV-S20, select "SERIAL" in the "SERIAL OUTPUT" item.
   On the "MAIN OPS MENU", move the cursor to SET-SCRN, and press the SET key.
   ⇨ On the [SYSTEM SETUP] menu, moves the cursor to item ③ I/O CONDITIONS and press the SET key.



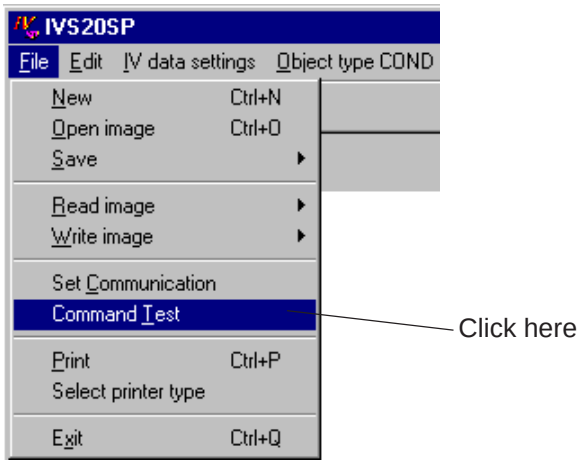
2. Bring up the MAIN OPS MENU screen.

(2) Communication settings

Set the protocols for communication with the IV-S20.
⇨ See "Chapter 2: Set Communication."

(3) Starting the command test screen

Click on the "Command Test" item on the "File" menu.



⇨ The "Command test" dialog box will appear.

Continued on the following page

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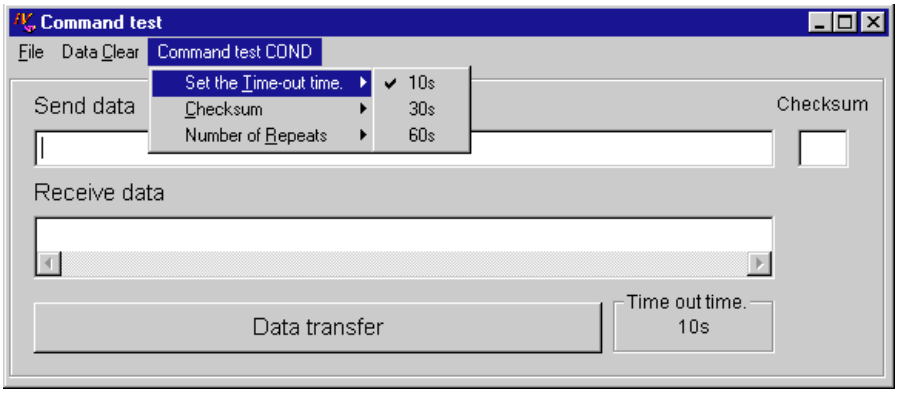
(4) Setting the conditions for the command test

In the "Command test" dialog box, set the conditions for the command test (set time out, checksum, and number of repeats).



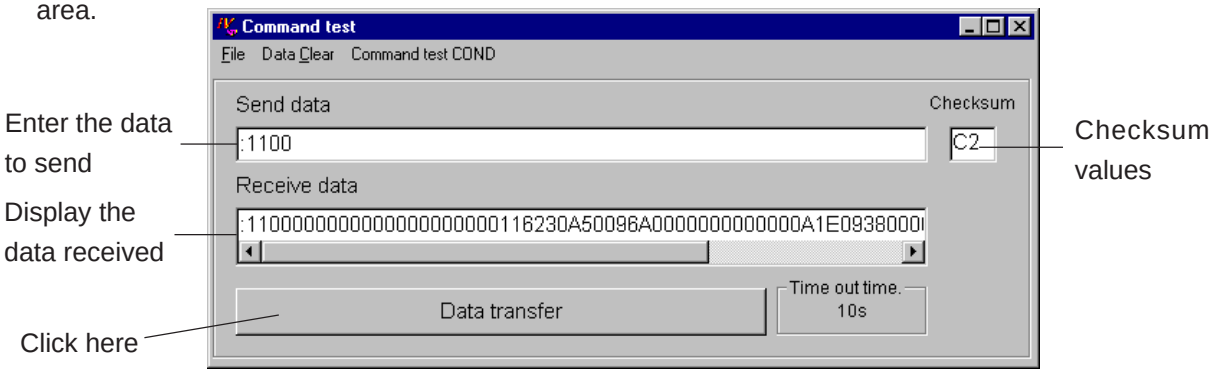
Setting details		Description
Setting the time out	10 sec. ○	Wait 10 seconds for a response.
	30 sec.	Wait 30 seconds for a response.
	60 sec.	Wait 60 seconds for a response.
Checksum	Automatic ○	A checksum is automatically created when data is transmitted.
	Manual	An operator counts a checksum, and attach it to a send data directly before transmitting.
	Fixed (@@)	A checksum is not executed, and @@ will be transmitted.
Number of repeats	1 time ○	The data transmission terminates with one time even a communication error occurs.
	2 times	The data transmitted until twice when a communication error occurs.
	3 times	The data will be transmitted until three times when a communication error occurs.
	Others	The number of repeats can be set over four times.

- The "○" indicates the default setting.

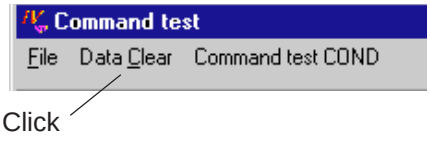
(5) Transmitting serial commands

Enter the data to send in the "Command test" dialog box, and press the [Enter] key or click the "Data transfer" button.

⇨ The data will be transmitted to the IV-S20. The response data will be displayed in the receive data area.



Reference: Click the "Data Clear" menu to delete the displays of the sending data, the receiving data, and the checksum values.



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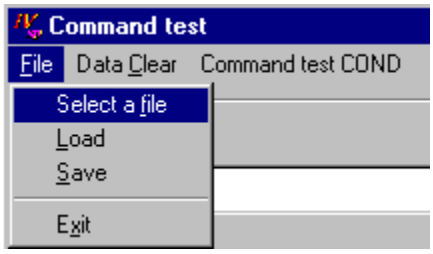
(6) Saving/loading files



- Saving the data received to a file

1. Click on the "Select a file" item in the "File" menu.
   ⇨ The "Open" dialog box will appear.
   - When you want to create a new file (with ".tst" extension) to save the data received, specify the folder name, enter the file name, and click on the "Open" button.
     If you want to save it to an existing file, select the file and click on the "Open" button.
2. Click on the "Save" item in the "File" menu.

- Loading the receiving file from a file

1. Click the "Select a file" item from the "File" menu.
   ⇨ The "Open" dialog box will appear.
   Select the loading folder or file (with ".tst" extension) name.
2. Click the "Load" item from the "File" menu.

Chapter 8: Upgrade Version

To upgrade the IV-S20 system version (improved functions) you simplydownload the new version from a personal computer.

- The IV-S20 software consists of the "system program," used to set up and execute image processing operations, and a "boot program" to load the other programs. In some cases, both programs need to be upgraded. (Refer to our sales department for the latest version of the system software.)

Described below are the procedures for upgrading the program version.

(1) Preparation

Create the folders below for installing the software.

SVXXX.mot VXXX system program
BVXXX.mot VXXX boot program
(X is different between versions.)

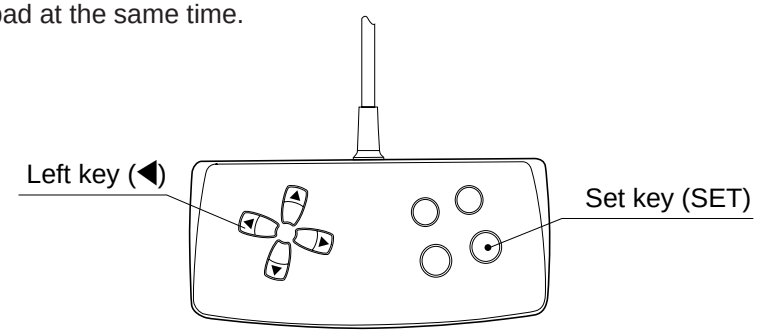
(2) Communication settings

Set the protocols for communication with the IV-S20.

⇨ See "Chapter 2: Set Communication."

(3) Setting/operating of IV-S20

1. Turn on the IV-S20.
   - Turn on the IV-S20, while pressing and holding down both the left key (◀) and the set key (SET) on the remote key pad at the same time.



⇨ The IV-S20 upgrade version menu (IVS20 VERSION UP MENU) will appear on the monitor.

```
[IVS20 VERSION UP MENU]
①SYSTEM RECEIVE     RUN
②SYSTEM TRANSFER    RUN
③BOOT RECEIVE       RUN
④BOOT TRANSFER      RUN
⑤ALL INITIALIZE     RUN
→⑥POWER ON RESET    RUN
```

2. Select the upgrade version menu.
   - Move the up and down keys to select the "① SYSTEM RECEIVE" item and press the set key (SET).
     (The "③ BOOT RECEIVE" item may also be needed to perform the upgrade, depending on the upgrade conditions.)

Continued on the following page

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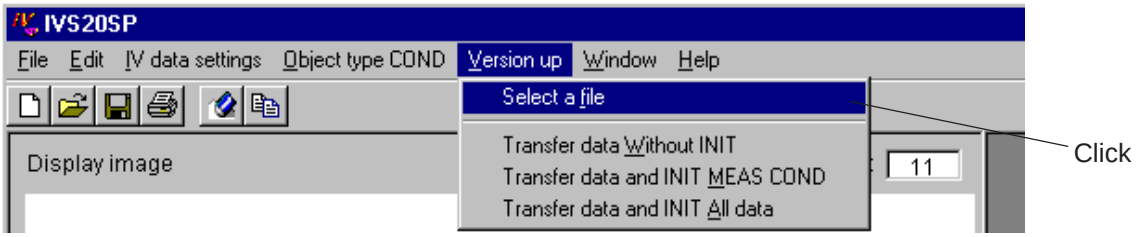
(4) File selection

Click on the "Select a file" item on the "Version up" menu.

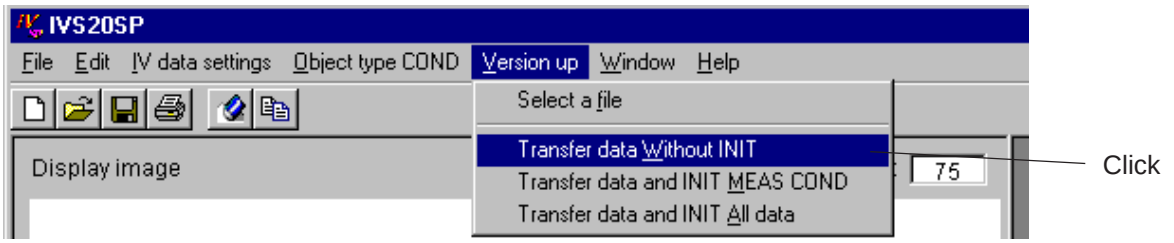


⇨ The "Open" dialog box will appear.

- Select the SVXXX.mot file and click on the "Open" button.

(5) Transmission

Click the "Transfer data Without INIT" item from the "Version up" menu.



⇨ Transmission is started.

- When the [≡ ON RECEIVE] message appears on the IV-S20 monitor and the [≡] flashes, the transmission has been successful.
- It takes approximately five minuets to transmit the file from a Pentium 266 MHz personal computer.
- When the [≡ ON RECEIVE] display disappears, the new system program has been successfully written to the flash memory.

(6) Starting the g new version of the system

Move the up and down keys to select "⑥ POWER ON RESET" on the IV-S20 upgrade version menu (displayed on the monitor) and press the [SET] key.

```
[IVS20 VERSION UP MENU]
①SYSTEM RECEIVE     RUN
②SYSTEM TRANSFER    RUN
③BOOT RECEIVE       RUN
④BOOT TRANSFER      RUN
⑤ALL INITIALIZE     RUN
→⑥POWER ON RESET    RUN
```

⇨ The power to the IV-S20 will be reset and the new version of the system program will start.

Chapter 9: Additional Descriptions

This chapter describes additional description; copy to the clipboard, changing the message display color, and changing the image brightness.

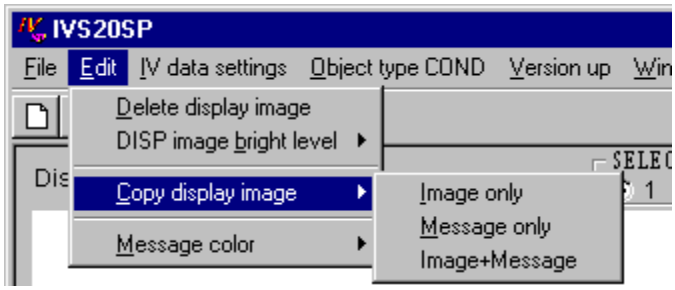
[1] Copy to the clipboard

The displayed images can be copied to the Windows95/98 clipboard.

- To paste a display image into an Excel or Word file, click "Paste" on the "Edit" menu of Excel or Word. The image will appear at the cursor in the active document.
  (Word and Excel are registered trademarks of Microsoft Corporation.)

(Operation procedures)

1. Move the cursor to "Copy display image" on the "Edit" menu.



2. Select the object to copy.
   Click "Image only," "Message only," or "Image + Message."
   ⇨ The object will be copied to the Windows95/98 clipboard.

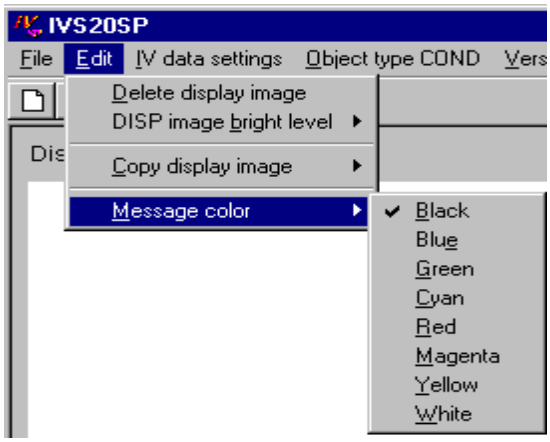
[2] Changing the message display color

You can select one of 8 colors for the display image color. If the image and the message are same colors, use a different message color to allow you to see the message.

- The colors you can chose from are black, blue, green, cyan, red, magenta, yellow, and white.
- If you display images and messages, set the image brightness to "Half," and select a white message display color. Then, you can easily view the screen.
- If you are only going to display messages, change message display color to black, so that you can paste the messages to a clipboard or into other documents.

(Operation procedures)

1. Move the cursor to "Message color" on the "Edit" menu.



2. Select a color.
   Select the desired color. (Default: black)
   ⇨ The message color will be changed.

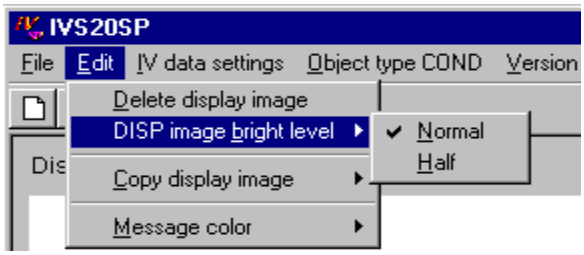
[3] Changing the image brightness

You can set the displayed image brightness to "Normal" or "Half."

- When you display "Image + Message," select the image brightness to "Half." (Message color is "white.")

(Operation procedures)

1. Move the cursor to the "DISP image bright level" item on the "Edit" menu.



2. Select a brightness.
   - Click on "Normal" or "Half." (Default: Normal)
     ⇨ The displayed image will be changed to the selected brightness.

Error code

If an error occurs and an error code appears while operating the IV-S30SP, use the error code list below for details about the error.

Error code	Possible cause
7	Not enough memory to perform the save operation.
9	The parameter entered is outside the effective range.
13	The data is not in the status to be able to use.
52	The filename cannot be found.
53	Cannot find the required file.
55	The selected file is already open.
61	There is not enough disc space.
62	There is no more data in the file.
70	Unable to write the data.
71	The disk is not ready.
75	Invalid path name.
380	Incorrect parameter value.
481	Faulty picture.
485	Unacceptable picture format.
8002	Invalid port number.
8005	The port is already opened.

For information about error codes not listed above, see "Cause and Treatment of a termination code (when an error occurs)" in the user's manual for the IV-S31MX/S32MX/S33MX, or IV-S20).