

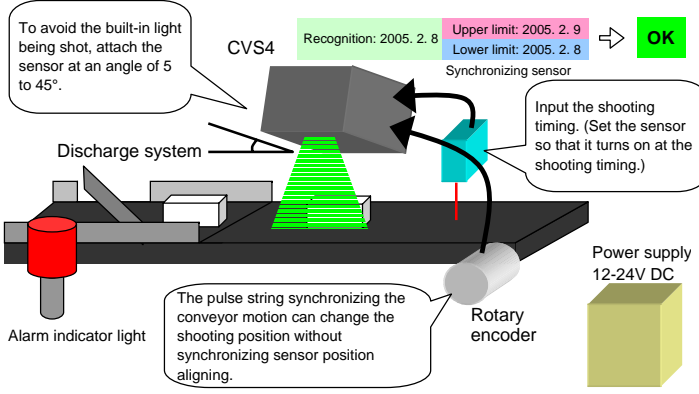
OCR Sensor (Optical Character Recognition) **CVS4** **OPTEX FA**  
**Instruction Manual**

\* Thank you for purchasing our OCR Sensor (Optical Character Recognition) character recognition sensor, CVS4 series.  
 \* Carefully read this manual for proper operation before use.  
 \* Keep this manual handy for future reference.  
 \* This product is not designed as a safety device to protect human body.

## 1 Before use

### What is CVS4 Series?

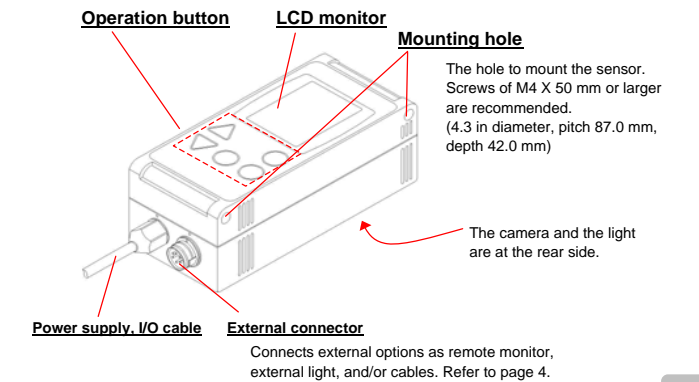
The CVS4 series converts the date and time such as an expiration date from the screen to the strings and output OK if they are within the upper and lower limit of setting date and time. The date and time are updated by the built-in calendar. In addition, the string of alphabetical and numerical characters can be identified.



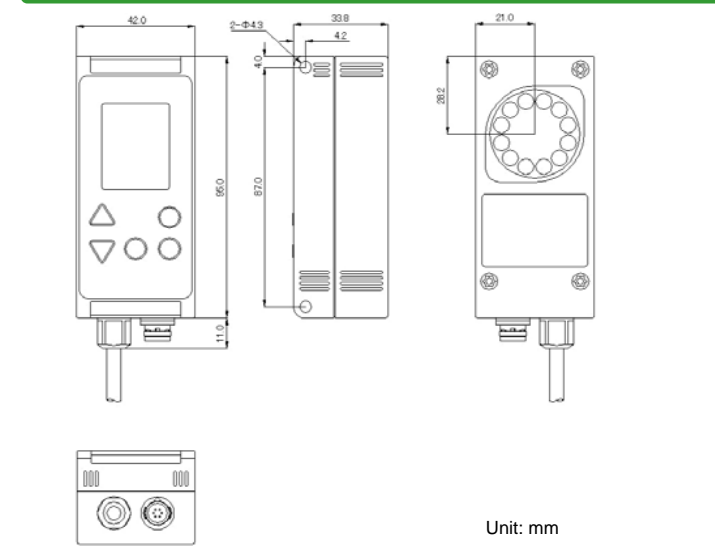
### Specification

Model	CVS4-N20 CVS4-P20	CVS4-N21 CVS4-P21	CVS4-N23 CVS4-P23	CVS4-N23R CVS4-P23R
Angle of view	20°			
Shooting distance, range	Refer to page 3.			
Light source	Green LED (12 pcs)			
Brightness	Approx. 70 cd	Approx. 35 cd	Approx. 70 cd	
Image sensor	330,000 pixels, CMOS black and white image sensor			
Supply voltage	12 to 24 V DC ± 10 %			
Power consumption	Max. 140 mA / 24 V DC			
Resolution	512 X 244		244 X 512	
Lifetime of light source	Approx. 100,000 hours* (In normal temperature and humidity. Brightness level down by 1/3 of the initial level)			
Built-in clock accuracy	Monthly difference: -45 sec to + 1min 15 sec (Representative value)			
Built-in clock Backup	Primary battery: 5 years with the power OFF (Representative value) Supercapacitor: 7.8 years (Representative value with 3 days of backup)			
Response time	20 characters of the date in 2 rows Approx. 45 to 85 ms (Rotation correction 0 to ±10°)			
Output signal	NPN/PNP Open collector output: 2, max. 100 mA, Residual voltage 1.0 V or less, OK/NG output, External light control			
Input signal	Bank selection, String addition, External teaching, Synchronism, Pulse train			
Input filter time	12 ms (max); Bank selection, String addition, External teaching input, 48 μs (turn on, max), 450 μs (turn off); Synchronism, Pulse train input			
Operation temperature/humidity	0 to 40°C (No condensation), 35 to 85 %/RH			
Storage temperature/humidity	-20 to 70°C, 25 to 95 %/RH			
Vibration and impact durability	10 to 55 Hz Amplitude 1.5 mm, 5 G (10 times)			
Housing material	ABS / Acrylic / Polycarbonate			
Protection class	IP67			
Weight	Approx. 200 g			
Recognized number of characters, rows	60 characters (All rows) / 6 rows			
Characters per row	30 characters			
Recognized number of dates, times, and strings	4 in total: Each 2 for the date and the time, 1 for 16 characters of the string			
User-defined dictionary	56 characters (Transferred from the PC)			
Date and time in letters	Month: 1 chr., Date: 2 chr., Hour: 1 chr., Minute: 1 chr., Converting to the above-mentioned alphabetical and numeric characters is available. (Transferred from the PC)			
Communication	RS232C (TTL Level) 4800 to 57600 bps			

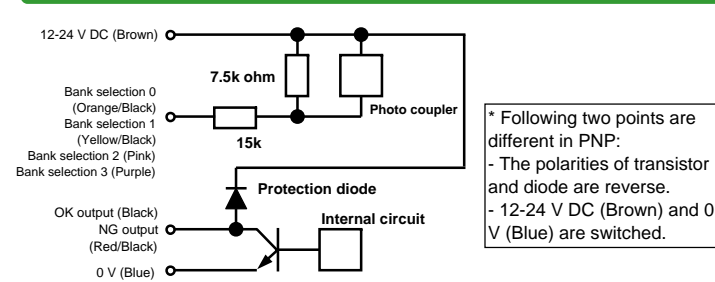
### Part Names and Functions



### Dimension Drawing



### I/O Circuit



### Bank Selection Table

Bank	Parameter (1.Parameter)				Line color				Selectable range		
	Synchron	String +	SyncPuls	Orange/Black	Yellow/Black	Pink	Purple				
BKIN	CONT	OFF	OFF	Bank selection 0	Bank slctn1	Bank selection 2	Bank selection 3	0 to 15			
		ON	ON					0, 1, 4, 5, 8, 9, 12, 13			
	UP, HIGH, DOWN, LOW	OFF	OFF					Pulse train	Bank slctn1	Synchronizing input	0 to 7
		ON	ON					Bank slctn 0	String +	0, 2, 4, 6	
TCH	CONT	OFF	OFF	Bank selection 0	Bank slctn1	External Teaching	Bank selection 3	0 to 3, 8 to 11			
		ON	ON					String +	0, 1, 8, 9		
	UP, HIGH, DOWN, LOW	OFF	OFF					Pulse train	Bank slctn1	Synchronizing input	0 to 3
		ON	ON					Bank slctn 0	String +	0, 2	
0 to 15, COMM	CONT	OFF	OFF	Invalid	Invalid	Invalid	Invalid	0 to 15 (Switches with the setting value)			
		ON	ON					String +	COMM: Sets with communication		
	UP, HIGH, DOWN, LOW	OFF	OFF					Pulse train	Invalid	Synchronizing input	0
		ON	ON					Invalid	String +	0	

Bank Number	Line Color			
	Orange/Black	Yellow/Black	Pink	Purple
0	OFF	OFF		
1	ON		OFF	
2	OFF	ON		
3	ON			OFF
4	OFF	OFF		
5	ON		ON	
6	OFF	ON		
7	ON			
8	OFF	OFF		
9	ON	OFF	OFF	
10	OFF	ON		ON
11	ON			
12	OFF	OFF		
13	ON		ON	
14	OFF	ON		
15	ON			

**External teaching input**  
 Performs 7.Semiauto at rising.

**String + input**  
 The last digit of string registered at rising will be the character of the next ASCII code. However, the numerical characters repeat from 0 to 9 and the alphabetical characters repeat from A to Z. When 9 turns to 0, or Z to A, the next left character will be the next ASCII code.

**Bank selection input**  
 The duration from input to the actual switch is approx. 30 ms, but it takes approx. 100 ms to accept the next shooting.

**Pulse string input**  
 Counts at rising of input and starts shooting when the value reaches SyncDely value or more. The count is reset at rising of synchronizing input (at falling when Synchron=DOWN).

### Setup Flow

(1) Select the model according to the shooting range and the character size.

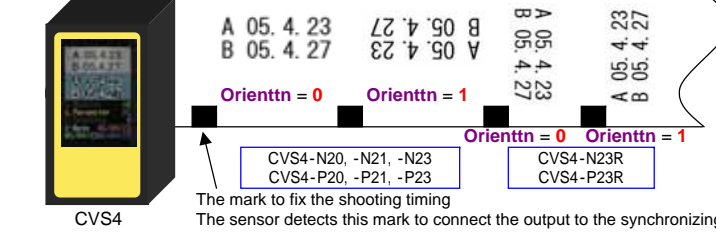
	Shooting range	Focal distance	Minimum character height	Recommended character height
CVS4-N20	53 x 25 to 79 x 38 mm	90 to 150 mm	3.0 to 4.5mm	3.7 to 30mm
*1	53 x 50 to 79 x 76 mm		6.0 to 9.0mm	7.3 to 60mm
CVS4-N23	30 x 15 mm	50 ± 6 mm	1.5mm	2.2 to 10mm
*1	30 x 30 mm		3.0mm	4.4 to 20mm
CVS4-N21	21 x 10 mm	35 ± 4 mm	1.0mm	1.5 to 7.5mm
*1	21 x 20 mm		2.0mm	3 to 15mm

\*1 The condition when the parameter Wide (Vertical direction) is ON.

(2) Connect the power supply and I/O.

Line color	Name
Blown	Power supply 12-24 V DC
Blue	Power supply 0 V
Orange/Black	Bank selection 0 input / Pulse string input (at SyncPuls = ON)
Yellow/Black	Bank selection 1 input / String +input (at String+ = ON)
Pink	Bank selection 2 input / External teaching input (at other than Bank = BKIN)
Purple	Bank selection 3 input / Synchronizing input (at other than Synchron = CONT)
Black	OK output / Light control output (at LightOut = OK)
Red/Black	NG output / Light control output (at LightOut = NG)

The direction to recognize characters depends on the model.

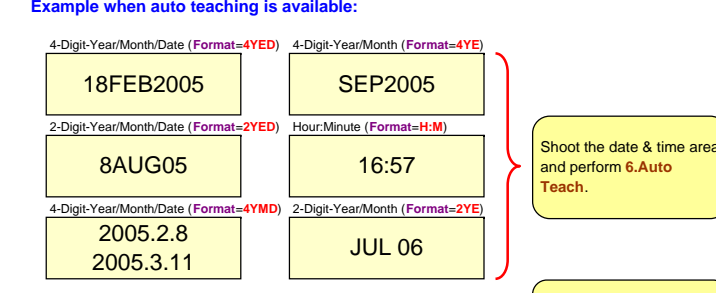


Sets to Synchron (the setting value in 1.Parameter) = UP or DOWN. The shooting is given at rising or falling of synchronizing sensor.  
 To align the shooting position, adjust the synchronizing sensor position. For details, refer to page 4.  
 For the desktop test, set to Synchron = CONT to allow continuous shooting.

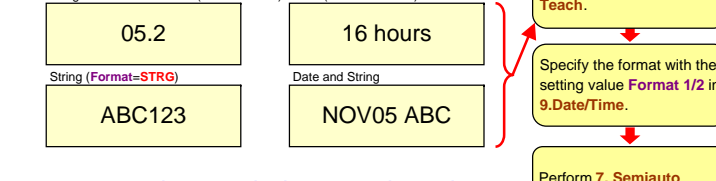
(3) Specify the date format.

Specify the date among Year/Month/Date, Month/Date/Year, and Date/Month/Year. (The default is Year/Month/Date.)  
 (Example) The date format such as 28.2.2005: Set to the setting value of DateFmt = DMY in 9.Date/Time.  
 When displayed in other than the Western calendar, set the time gap from the year 2000 to YearOfst in 9.Date/Time.

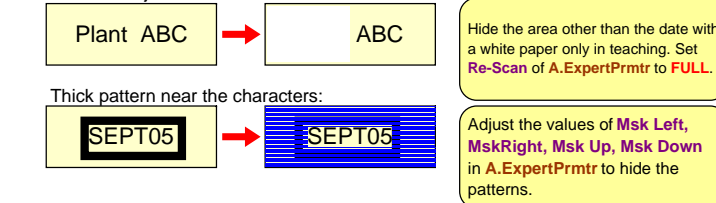
(4) Perform teaching.  
 Example when auto teaching is available:



Example when teaching is started after format setting:



Example when hide or masking is necessary in teaching:



(5) Check the operation.

Operation is normal if the recognized date is correct and judged as OK. In case of abnormal operation, refer to the troubleshooting (page 13).

### To Shoot Moving Object

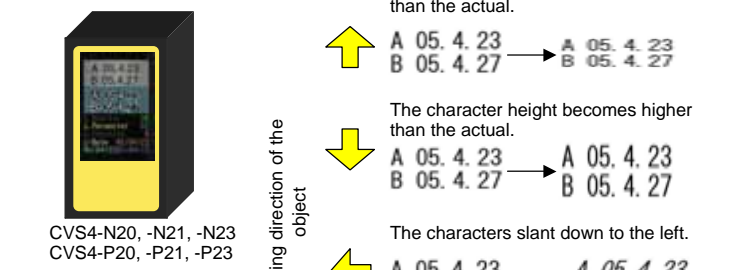
Limitation of shutter time with object moving speed

High-speed moving of the object blurs the shot images. Set the shutter time upper limit calculated in the formula below to ShtrLimit (the setting value in 8.Adj Parameter) to limit the shutter time in teaching.

Shutter time upper limit = 10 x desired line width (mm) ÷ the object moving speed (m/s)

When the screen is dark due to short shutter time, set LightPwr (the setting value in 8.Adj Paramtr) to HIGH to double the built-in light brightness. Note that the brightness is strong: Do not look the light directly, or it may damage your eyes.

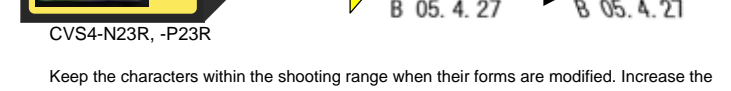
Rolling shutter interference



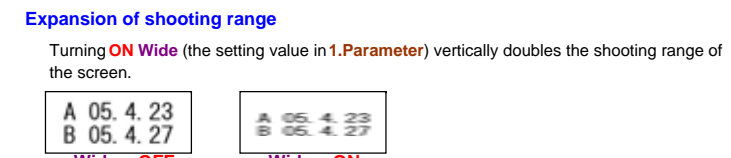
Keep the characters within the shooting range when their forms are modified. Increase the Slant value (the setting value in 8. Adj Paramtr) when the characters slant. The optimal value is automatically saved just by performing the teaching. To use the fixed value, turn On FixRSlit (in A.ExpertPrmtr).

Expansion of shooting range

Turning ON Wide (the setting value in 1.Parameter) vertically doubles the shooting range of the screen.

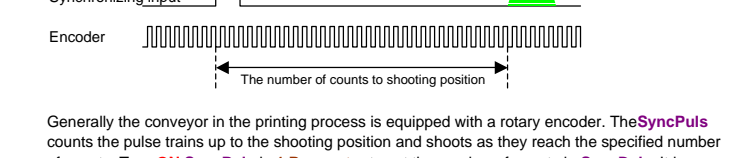


Adjusting shooting position with SyncPuls



Generally the conveyor in the printing process is equipped with a rotary encoder. The SyncPuls counts the pulse trains up to the shooting position and shoots as they reach the specified number of counts. Turn ON SyncPuls in 1.Parameter to set the number of counts in SyncDely. It is valid only when Synchron is set to UP or DOWN. Although it requires the encoder and occupies the bank selection 0 input, SyncPuls responds the object speed change.

Adjusting shooting position with SyncDely



Delay time = Cycle of synchronizing input x SyncDely setting value ÷ 8192  
 Or,  
 Shooting delay distance = Synchronizing mark interval x SyncDely setting value ÷ 8192  
 \* The shooting position may be incorrectly set when the object speed changes in the process, and the intervals of synchronizing marks are shifted.

### Optional Devices

CVS-M1: Remote monitor  
 Convenient when performing operation of the monitor and the switch from a distance.

CVS-LW1, -LU1: External light  
 Convenient in shortage of the light intensity or in detecting highlighted characters. "-LW1" means white and "-LU1" means ultraviolet rays. For use, set Communic to OFF. Other types of external lights are also available. For details, contact our Customer Service Department.

CVS-C3S: Extension cable for remote monitor (3m)  
 The extension cable for CVS-M1. Connectable up to 4 cables.

CVS-C2C: RS-232C communication cable (2m)  
 The cable is to transfer the setting values, register the dictionary, read and set strings, absorb NG screens, and select banks. For extension, use the level converter to avoid communication error.



## 2 Details and Operation of LCD

**Main menu**

(1) **Shot screen:** Switches according to the monitor display mode of (5).

(2) **Scale per approx. each 50 pixels:** Use as a guide to adjust the character width.

(3) **Menu display:** The selected item is displayed in yellow.

(4) **Judgment result:**  
**OK:** Date and time are within the upper and lower limits. The strings are identified.  
**NG:** Date and time are out of the upper and lower limits, or the strings are not identified.  
**ER:** Backup error of the calendar timer. (It disappears by resetting **SECOND** in **4.Calendar** in the menu.)

- (7) **Displayed date/time items:**  
 1-Date : The 1st date  
 2-Date : The 2nd date  
 1-Time : The 1st time  
 2-Time : The 2nd time  
 Char# : Number of characters and character string
- (5) **Screen display mode:**  
**D:** Live screen, **2:** Differential screen, **C :** Cut-off screen
- (6) **Current bank number** (0 to 15)  
**(8) Recognized date/time**  
**(9) Upper limit of date/time**  
**(10) Lower limit of date/time**

**UP button**  
Use to select a menu or setting items as well as to increase the setting value.

**DOWN button**  
Use to select a menu or a setting item as well as to decrease the setting value.

**VIEW button**  
Use to select a screen display mode. In switching the string to be monitored, press this button with Up/Down button together. Use also to select a menu or setting items as well as to increase the setting value.

**SET button**  
Use to perform the selected menu or to write the setting value.

**EXIT button**  
Use to switch between the main menu and the teaching menu, cancel the change of setting value, or to return to the menu.

↓ + SET  
Press >3sec. simultaneously  
Locks editing all parameters and disables teach-in, editing character string and calendar. (Locked) Press these button on main menu or teaching menu.

↑ + SET  
Cancels the lock. Press on **9.Date/Time**, releases lock only parameter of **1-Date+** and **2-Date+**.

Pressing **VIEW** to select the monitor display.

**DC screen**  
Displays both of the live screen (D) and the Cut-off screen (C).

**D screen**  
Displays the live screen (D).

**2 screen**  
Displays the differential screen (2).

**C screen**  
Displays the Cut-off screen (C).

Pressing **UP** or **DOWN** with **VIEW** switches the recognized string display.

**Date 1/2 Display**  
Displays: the 1st/2nd date (lower left), its upper limit (upper right), and the lower limit (lower right).

**Time 1/2 Display**  
Displays: the 1st/2nd time (lower left), its upper limit (upper right), and the lower limit (lower right).

**String Display**  
Displays the recognized number of characters and strings.

\* When no date or time is specified, the string is displayed. The character color shows the identical rate with the dictionary. The character turns to ? when the difference exceeds the **CharMrgn** setting value.

Identical rate High	Low
Conversion value of <b>CharMrgn</b>	0 4 8 12 16 20 24 28 32

### Menu Configuration

**Main menu**

- Parameter**  
Necessary to set at start up as inputs and outputs.
- Teaching**  
Moves to the teaching menu.
- View NG Log**  
Displays the screen or the recognized string at the moment that the OK judgment turns to NG.
- Calendar**  
Refers or sets the current date and time. Set to the Western calendar for leap year adjustment.
- Monitor**  
Displays the block separation result of characters or the processing time.

**Teaching menu**

- 6.Auto Teach**  
Automatically recognizes date/time from the shutter time to the upper and lower setting of the date.
- 7.Semiauto**  
Specifies the format of date, time and string to perform teaching in the condition that the characters have already been displayed.
- 8.Adj Paramtr**  
The setting value such as the shutter time, edge threshold, correction of rotation, slant, and trapezoid, and bold display to correctly extract character parts.
- 9.Date/Time**  
The setting value regarding to dates such as the upper/lower limit and the format of date and time.
- A.ExpertPrmtr**  
The setting value for special cases to restrict the character size or search range, set the dictionary, and retry.
- B.String**  
Refers or sets the string to be verified.

### Operation of Menu, Parameter Reference, Selection Screen

**Menu screen** → **Parameter reference screen** → **Parameter selection screen**

Navigation controls:  
 UP: To the previous menu / To the previous setting value / The setting value +1  
 DOWN: To the next menu / To the next setting value / The setting value -1  
 SET: To the selected menu / Saves and returns to the setting value reference screen.  
 EXIT: Selection between the main menu and the teaching / Cancels and returns to the reference screen.  
 Or press SET and press UP: Saves and returns to the reference screen.

### Function Detail of Each Menu

#### 3.View NG Log

Saves the screen when the OK judgment changes to NG in turning ON **Save NG** (the setting value in **1.Parameter**). This screen can be referred.

Screen Number: The latest screen number is 1.  
 Date and time of NG occurrence  
 Recognized string  
 String display mode

Can switch the recognized string display.

Navigation:  
 UP: To the previous NG screen  
 DOWN: To the new NG screen

Comparison logic:  
 \*The character with smaller difference with the dictionary in the numerical and alphabetical characters. → The result compared only with the numerical and symbol dictionary. → The result compared only with the alphabetical dictionary.

Up to 30 pages can be saved. When exceeding 30 pages, the oldest data is overwritten.  
 - During NG screen reference, the NG screen is not saved even judged as NG.  
 Automatically returns to the main menu when there is no switch operation for approx. 1 minute.

#### 4.Calendar

**Main menu** → **Calendar modify screen**

Navigation:  
 UP: To the previous date/time  
 DOWN: To the next date/time  
 SET: To the selected menu  
 EXIT: Cancels and returns to the reference screen.  
 Or press SET and press UP: Saves and returns to the reference screen.

Set the date and time of built-in calendar timer.

#### 5.Monitor

**Main menu** → **Monitor**

Navigation:  
 UP: To the previous setting value  
 DOWN: To the next setting value  
 SET: To the selected menu  
 EXIT: Selection between the main menu and the teaching  
 Or press SET and press UP: Saves and returns to the setting value reference screen.

Response time (From synchronizing input to judgment output)

Block separation of cut-off characters by 7 x 7

Check the recognition result for correct block separation.

#### B.String

**Teaching menu** → **String modify screen**

Navigation:  
 UP: To the previous character  
 DOWN: To the next character  
 SET: To the selected menu  
 EXIT: Cancels and returns to the reference screen.  
 Or press SET and press UP: Saves and returns to the reference screen.

Setting string (Up to 16 characters)  
 Recognized string

Navigation:  
 UP: ASCII code +1  
 DOWN: ASCII code -1

Navigation:  
 Hold down VIEW and press UP: Switches the strings to be recognized: Character with high identical rate Numeric only  
 Hold down VIEW and press DOWN: Switches the strings to be recognized: Alphabet only Character with high identical rate

Set the string to be verified.  
 The position specified as "?" accepts any character.

## 3 Teaching

#### 6.Auto Teach

Performs teaching including shutter time, thresholds of characters and backgrounds, and the surface condition of object. Four (4) shootings are given before teaching completes. Automatically recognizes the format of date and time (Except for some formats).

#### 7.Semiauto

Imports necessary information such as character size, fixing shutter time for recognition. Teaching completes without additional shooting in the condition that the characters have already been shot on the screen. When the date and time formats have already been set with the setting value **Format 1 to 4** in **8.Adj Paramtr**, these formats are used in priority.

#### Teaching menu

Select **6.Auto Teach** or **7.Semiauto**.

Internal process proceeds to 1 to 15.  
**7.Semiauto** starts from 4.

Upon completion, **Completed** is displayed.

#### Ending messages

**Completed**  
Successfully completed.

**String not found**  
No character was detected. The setting value returns to the original one. For correct display, adjust the setting values of **8.Adj Paramtr** (**Shutter**, **ShtrLimt**, **Surface**, **Threshld**) before performing **7.Semiauto**.

**Format not found**  
The format of date and time was not found. The settings for the shutter time or the character size are saved Specify **Format 1 to 4** in **9.Date/Time** before performing **7.Semiauto**.

**Date overflow**  
The recognized date exceeds 5000 days from today. The wrong date might have been recognized. The setting such as the shutter time or the character size are saved. Specify **Format1 to 4**, **DateFmt**, and **YearOfst** in **9.Date/Time** before performing **7.Semiauto**.

**Date underflow**  
The recognized date exceeds 999 days before today. The wrong date might have been recognized. The setting such as the shutter time or the character size are saved.

#### Setting value available only in 6.Auto Teach

<b>Format 1 to 4</b>	<b>String format</b> Searches the format of date and time among the recognized strings. Does not search <b>2YM</b> , <b>HOUR</b> , <b>STRG</b> , <b>A-XX</b> . The setting value is overwritten.
<b>LightPwr</b>	<b>Built-in light power</b> Select <b>HIGH</b> when <b>Synchron</b> is other than <b>CONT</b> , and the required shutter time exceeds the upper limit ( <b>ShtrLimt</b> ).
<b>Luster</b>	<b>Luster cancel</b> Saturates the object surface with much luster by lighting to control the luster interference.
<b>Shutter</b>	<b>Shutter time</b> Calculates and sets the optimal shutter time.
<b>Surface</b>	<b>Object surface</b> Rewrites the setting to <b>WHIT</b> only when the surface is obviously white.
<b>Threshld</b>	<b>Characters/Background threshold</b> Calculates and sets the optimal threshold.
<b>DotCheck</b>	<b>Dot Check</b> Rewrites the setting to <b>ON</b> . If any format was not found, rewrites the setting to <b>OFF</b> and searches again.

#### Setting value set in 7.Semiauto and 6.Auto Teach

<b>Bold</b>	<b>Bold display</b> Displays the size <b>-2</b> to <b>+6</b> in order in bold and sets the value with minimum difference from the dictionary.
<b>Format 1 to 4</b>	<b>String format</b> Checks for the format with preset value. Finds the optimal format from the start to rewrite when the setting value is ---.
<b>Rotate</b>	<b>Rotation search angle</b> Rewrites the setting value added 1 to the rotating angle in teaching. Perform teaching when it rotates most.
<b>Slant</b>	<b>Range of character slant correction</b> Rewrites the setting value to half of the slant angle in teaching. Perform teaching when it slants most.
<b>SlantOfs</b>	<b>Offset angle of character slant correction</b> Rewrites the setting value to the slant angle in teaching. Perform teaching when it slants most.
<b>1-Date+, 2-Date+</b>	<b>Date additional value</b> Saves the number of days subtracting the current date from the recognized date.
<b>1-Time+, 2-Time+</b>	<b>Time additional value</b> Saves the number of minutes subtracting the current time from the recognized time.
<b>CharHght</b>	<b>Character height</b> Saves the 72 % value of typical character height. Does not cut-out characters whose height is equal to this height or less. The low characters such as "-" or "." are separated into blocks with the height maintained.
<b>CharNarw</b>	<b>Minimum character narrowness</b> Saves the eighth value of typical character width. Does not cut-out characters whose width is less than the above-mentioned width.
<b>CharWdth</b>	<b>Character width</b> Saves the 90 % value of typical character width. Separates narrow width characters such as "1" or "." into blocks, maintaining the width. As for characters with double width or more, separates them into two.
<b>String to be compared</b>	When <b>STRG</b> is set in any of <b>Format 1 to 4</b> , saves the existing characters. Maximum characters to save can be modified with the setting value <b>Max Strg</b> , and the maximum rows to save can be modified with the setting value <b>StrgLine</b> .



## 4 Settings

### 1. Parameter

Function LCD display	Setting range (Default)	Description
Bank Specification <b>Bank</b>	0 to 15, TCH, BKIN, COMM (BKIN)	Specifies how to select the bank number selection. <b>0 to 15</b> : Selects the set bank. <b>TCH</b> : Selects the bank with the bank selection 0, 1, 3 inputs. <b>BKIN</b> : Selects the bank with the bank selection 0 to 3 input. <b>COMM</b> : Selects the bank with communication. The bank number set with communication returns 0 by turning off the power supply. (*The bank selection 2 input turns to the external teaching input other than with <b>BKIN</b> .)
Bank Copy <b>BankCopy</b>	0 to 15 (0)	Copies the current bank setting value and the string to the bank of set copy source bank number. The setting value becomes 0 when the power source is turned off.
Communication setting <b>Communic</b>	OFF, 4.8k, 9.6k, 19.2k, 38.4k, 57.6k (57.6k)	Sets the communication function. <b>OFF</b> : Disables communication function. Set when using the external light (CVS-LW1, -LU1). <b>4.8k to 57.6k</b> : Uses the communication function. The baud rate order is 4800, 9600, 19200, 38400, 57600 bps. Data length without parity 8 bit and 1 stop bit. The external light or the remote monitor cannot be used.
Initialization <b>Initialz</b>	----, EXEC (----)	Saving the setting value as <b>EXEC</b> initializes all setting values and strings.
Built-in light ON/OFF <b>Light</b>	OFF, ON (ON)	Controls the built-in light. Turn it <b>OFF</b> and use the external light when shooting transparent bottles as it is difficult to shoot with the built-in light. <b>OFF</b> : Built-in light=OFF <b>ON</b> : Built-in light=ON
External light control signal <b>LightOut</b>	--, NG, OK, NG-P, OK-P (--)	--: Uses the red and black lines as NG output. <b>NG</b> : NG output (red/black line) turns OFF in synchronization with shooting. Use this when controlling commercial lights. OK output (black line) turns ON as usual when it is OK. <b>OK</b> : OK output (black line) turns OFF in synchronization with shooting. NG output (red/black line) turns ON as usual when it is NG. <b>NG-P</b> : NG output (red/black line) turns ON in synchronization with shooting. <b>OK-P</b> : OK output (black line) turns ON in synchronization with shooting.
NG Delay <b>NGDelay</b>	0-255 (0)	Outputs NG only when NG judgment continuously exceeds the specified counts. Even with no NG output, NG is displayed on the screen and the NG screen is saved. (i.e.) When the setting value is 1, outputs OK for only a single NG judgment.
Off Delay <b>OffDelay</b>	0 to 5000 (0)	Delays OK/NG output turning OFF. Turns OFF when the judgment result continuously maintains the off condition for the setting time (ms) or longer.
On Delay <b>OnDelay</b>	0 to 5000 (0)	Delays OK/NG output turning ON. Turns ON when the judgment result continuously maintains the on condition for the setting time (ms) or longer.
One shot /Output holding <b>One-shot</b>	0, 1 (0)	When setting to 1, keeps the output ON by the off delay time since the output turns ON. When the off delay time is 0, holds the output ON. To turn OFF the output, switch the bank. This is valid in the condition other than <b>Synchron=CONT</b>
Shooting orientation <b>Orienttn</b>	NORM, REVS (NORM)	Switches the shooting orientation. <b>NORM</b> : Takes out the characters without rotating the shooting screen. (CVS4-XX R rotates to the left by 90°). <b>REVS</b> : Takes out the characters by rotating the shooting screen by 180°. (CVS4-XX R rotates to the right by 90°.)
Output synchronous delay count <b>OutSynDI</b>	0 to 15 (0)	Delays OK/NG output timing by counting synchronizing input. Available on the parameter One-shot is 1 and Synchron is UP or DOWN. In the case of reject process is after measuring process, be able to use the NG output for rejecting signal.
Save NG screen <b>Save NG</b>	OFF, ON (OFF)	Saves the screen in which OK judgment turns to NG up to 30 screens in the built-in memory. The saved items are the contents of D and C screens, date and time of occurrence, and recognized strings. The screen is not saved when the power is cut while saving.
String additional input <b>String +</b>	OFF, ON (OFF)	<b>OFF</b> : Uses the yellow and black lines as a bank selection 1 input. <b>ON</b> : Uses the yellow and black lines as a string additional input. The characters registered in <b>B.String</b> is counted up. At rising, changes the rightmost digit to the next character. The numerical part turns to 0 from 9 and the alphabetical character turns to A from Z accordingly. By turning off the power supply or switching the bank returns to the previous strings. (Example) The registered characters of <b>B.String</b> : <b>AB0123</b> It turns to <b>AB0124, AB0125, ---, AB0129, AB0130, AB0131, ---</b> at rising of the yellow/black lines.
Synchronizing input delay coefficient <b>SyncDely</b>	0 to 8000 (0)	Calculates the time from the synchronizing input to the actual shooting based on the cycle (Max. 4.19 sec) of synchronizing input. The shooting position remains stable even with the object speed changed, the stability deteriorates with the speed increased or decreased. The maximum delay time is 0.52 sec. Setting value = 8192 × delay time ÷ cycle width of the synchronizing input * Delay time will be the number of pulse count when the setting value of <b>SyncPuls</b> is <b>ON</b> , calculated the setting value of <b>SyncDely</b> × 64μs when the setting value of <b>SyncPuls</b> is <b>TIME</b> .

### 8. Adj Paramtr

Function LCD display	Setting range (Default)	Description
Bold/Thin <b>Bold</b>	-2 to +6 (0)	Displays the characters in bold or thin style. Makes clear the feature of characters by displaying the dot characters in bold or the laser marked characters in narrow, or thinning the line seize of bold characters.
Built-in light power <b>LightPwr</b>	LOW, HIGH (LOW)	<b>LOW</b> : Sets the built-in light power to half. Continuously lights when not using the synchronizing input ( <b>Synchron=CONT</b> ). <b>HIGH</b> : Sets the built-in light power to maximum. Protect your eyes with the sunglasses in operating as the light flashes even when the synchronizing input is not used.
Luster cancel <b>Luster</b>	0 to 63 (16)	Strengthens the screen brightness to avoid the luster effect. In <b>6.Auto Teach</b> , the optimal value is set according to the lustrous strength of object surface.
Rotation search angle <b>Rotate</b>	0 to 20 (1)	Specifies the maximum angle of rotation search. Searches the correct character orientation by rotating every ± 0.94° per setting value. (Maximum ± 19°).
Shutter time upper limit <b>ShtrLimit</b>	0 to 132 (132)	Sets the upper limit of fixing shutter time at teaching ( <b>6. Auto Teach</b> ). Sets the value according to the moving object speed. Setting value = 10 × desired line width (mm) ÷ object moving speed (m/s)
Shutter time <b>Shutter</b>	0 to 132 (70)	Sets the shutter time (0.1ms). When the object moves, Keep the value within that obtained from the formula above to prevent the image blurring.
Range of character slant correction <b>Slant</b>	0 to 20 (1)	Specifies the maximum range of the character slant correction. Searches the correct character orientation centering around the setting value of <b>SlantOfs</b> by rotating every ± 0.85° per setting value.
Offset angle of character slant correction <b>SlantOfs</b>	0 to +26 to -26 (0)	Specifies the offset angle of the character slant correction. Refer to above setting <b>Slant</b> .
Object surface <b>Surface</b>	WHIT, BLAK (WHIT)	Specifies the surface condition of the object. In <b>6.Auto Teach</b> , rewrites to <b>WHIT</b> only when the surface is obviously white. <b>WHIT</b> : Black characters on the white background <b>BLAK</b> : White characters on the black background
Character/Back round threshold <b>Threshld</b>	0 to 255 (35)	Sets the differential threshold of characters and background. Decreasing the setting value allows to detect even the slight change of brightness as the character, however increase it when stain or luster is detected.
Trapezoid correction <b>Trapezid</b>	-45 to +45 (0)	Sets the angle difference between the CVS4 main unit and the object. Attaching them at an angle to avoid specular reflection and correct that the front side is displayed wider. The unit is angle.

Automatically set Items in Teaching (**6.Auto Teach**, **7.Semiauto**)

Automatically set items in Teaching (**6.Auto Teach**)

The yellow setting items are common to all banks.  
The purple setting items depend on each bank.



Synchronizing pulse input <b>SyncPuls</b>	OFF, ON, TIME (OFF)	<b>OFF</b> : Shoots when after waiting the time calculated by <b>SyncDely</b> formula. <b>ON</b> : Shoots when the rising count of bank selection 0 input reaches the <b>SyncDely</b> setting value of the synchronizing input rising (at <b>Synchron=UP</b> ). Inputs the pulse string of encoder. <b>TIME</b> : Shoots when after waiting for the setting value of <b>SyncDely</b> × 64(μs)
Synchronizing input <b>Synchron</b>	LOW, DOWN, HIGH, UP, CONT (CONT)	Sets the synchronizing input. When setting other than <b>CONT</b> , the bank selection 3 input becomes the synchronizing input. The followings are the shooting conditions: <b>LOW</b> : Shoots while the synchronizing input is OFF. <b>DOWN</b> : Shoots when the synchronizing input turns off from ON. <b>HIGH</b> : Shoots while the synchronizing input is ON. <b>UP</b> : Shoots when the synchronizing input turns on from OFF. <b>CONT</b> : Continuously imports the images.
Spread of shooting range (vertically) <b>Wide</b>	OFF, ON (OFF)	<b>OFF</b> : Sets the shooting range to the normal resolution. <b>ON</b> : Doubles the shooting range height from the normal. Double roughness is applied with the same vertical resolution. Re-teaching is required when switching from <b>Wide</b> .

### 9.Date/Time

Function LCD display	Setting range (Default)	Description
Date additional value <b>1-Date +</b> <b>2-Date +</b>	-999 to 5000 (0)	Compares the date added with the set days with the recognized date against today. <b>1-Date+</b> corresponds to the 1st date, <b>2-Date+</b> to the 2nd date. When the value larger than 0 is set in <b>1-Time(2-Time)</b> and the additional value of the current time and <b>1-Time(2-Time)</b> exceeds 23.59, the date turns to the next day. (The unit: day) When <b>Format1</b> is set to ---, sets the number of characters to compare.
Date tolerance <b>1-Date ±</b> <b>2-Date ±</b>	0 to 1000 (0)	Sets the margin level of date to compare. If the range is within before and after the setting value, it is acceptable. (The unit: day) When <b>Format1</b> is set to ---, sets the margin of the number of characters to compare. (i.e.) When <b>1-Date+</b> is 10, and <b>1-Date±</b> is 1, the acceptable range for the number of characters is 9-11.
Time additional value <b>1-Time +</b> <b>2-Time +</b>	0 to 1439 (0)	Compares the time added with the set minutes with the recognized time. <b>1-Time+</b> corresponds to the 1st time, <b>2-Time+</b> to the 2nd time. (The unit: minute)
Time tolerance <b>1-Time ±</b> <b>2-Time ±</b>	0 to 720 (30)	Sets the margin level of time to compare. If the range is within before and after the setting minute, it is acceptable. The margin level also works to the date. When crossing dates, the dates before and after are acceptable. (The unit: minute)
Date Format <b>Datefmt</b>	YMD, MDY, DMY (YMD)	Specifies the order of date. <b>YMD</b> : Year/Month/Date <b>MDY</b> : Month/Date/Year <b>DMY</b> : Date/Month/Year
String format <b>Format 1</b> <b>Format 2</b> <b>Format 3</b> <b>Format 4</b>	---, 4YMD, 4YM, 2YMD, H:M, 2YM, HOUR, STRG, A-MD, A-M, A-HM, A-H, A-D, MD, 4YED, 4YE, 2YED, 2YE, PY (---)	Specifies the format of the date, time, and the string. Simultaneously judges four types of formats from <b>Format1</b> to 4. Remember that the only two dates, two times and one string can be specified. <b>4YMD</b> to <b>H:M</b> and <b>4YED</b> to <b>2YE</b> are automatically recognized in teaching. For other formats, specify them before performing <b>7.Semiauto</b> . ---: Does not specify the format. <b>4YMD</b> : 4-Digit-Year/Month/Date (2005.10.26 or 26.10.2005) <b>4YM</b> : 4-Digit-Year/Month (2005.10 or 10.2005) *3 <b>2YMD</b> : 2-Digit-Year/Month/Date (05.10.26 or 26.10.05) <b>H:M</b> : Hour and minute divided with ":" (13:57) <b>2YM</b> : 2-Digit-Year/Month (05.10 or 10.05) *3 <b>HOUR</b> : Hour only (13) *4 <b>STRG</b> : String up to 16 characters (AB13009) <b>A-MD</b> : Month/Date in alphabetical/numerical characters *1 <b>A-M</b> : Month in alphabetical/numerical characters *1,*3 <b>A-HM</b> : Hour and minute in alphabetical/numerical characters <b>A-H</b> : Hour in alphabetical/numerical characters *4 <b>A-D</b> : Date written in alphabetical/numerical characters. *1,*2 <b>MD</b> : Month/Date (10.26 or 26.10) *1 <b>4YED</b> : 4-Digit-Year/Month in English/Date (2005OCT26) <b>4YE</b> : 4-Digit-Year/Month in English (2005OCT) *3 <b>2YED</b> : 2-Digit-Year/Month in English/Date (05OCT26) <b>2YE</b> : 2-Digit-Year/Month in English (05OCT) *3 <b>PY</b> : Year only (5) If equal to current year, possible to read 1-digit year. *2, *3 Setting <b>Format1</b> to --- enables the characters judgment function, that accepts the result when the total number of recognized characters are within setting range. Set the characters with <b>1-Date+</b> , and set the margin with <b>1-Date±</b> .
Max string characters <b>Max Strg</b>	0 to 16 (0)	Specifies the maximum characters to register when <b>STRG</b> is specified in <b>Format1</b> to 4. The setting 0 means the same with that of 16. Even the characters are less than the setting value, the rows exceeding the setting value in <b>StrgLine</b> are not registered. Set the top number of characters for the case including the string and dates in a row, such as "ABC 05.3.25." (Set 3 for this case.)
Number of character for month notation <b>MonthChr</b>	3 to 9 (3)	Specifies the number of character for month notation in English. ( <b>Format1</b> to 4= <b>4YED, 4YE, 2YED, 2YE</b> ) The setting 3 means "JAN" is January. The setting 7 and above means "JANUARY" is January.
String lines <b>StrgLine</b>	1 to 10 (1)	Specifies the number of string lines at the time of specifying the <b>STRG</b> in <b>Format1</b> to 4. The line feed is inserted even in the large interval between characters. Therefore, the part with large interval is counted as a line.
Year Offset <b>YearOfst</b>	0 to 99 (0)	Subtracts the setting value from the recognized year to compare the current date. The built-in calendar corresponds only to the Western calendar. The Japanese calendar is converted to the Western one by subtraction.

\*1  
For the year unsaved with **MD, A-MD**, etc, that of saved in the previous **Format** is set. When nothing is saved, the current value of year is set. If the judgment was NG, the next value of year is set and re-judge. For example, when today is 2005.12.31 and **1-Date+** is 1, the upper and lower limit is 2006.1.1. Next the printed character is 1.1, the current value of year is 2005 then the recognized date is 2005.1.1 and the judgment is NG. But set the next value of year 2006 and re-judge then the recognized date is 2006.1.1 and the judgment is OK.

\*2  
For the month unsaved with **A-D**, that of saved in the previous **Format** is set. When nothing is saved, the current value of month is set.

\*3  
For the day unsaved with **4YM, 2YM**, etc, that of saved in the previous **Format** is set. When nothing is saved, the current value of day is set. If the judgment was NG and today is 1st to 15th, 30 is set. If today is 16th to 31st, 1 is set.  
For example, when today is 2005.10.31 and **1-Date+** is 1, the upper and lower limit is 2005.11.1. Next the printed character is 2005.11, the current value of day is 31 then the recognized date is 2005.11.31 and the judgment is NG. But set 1 (because today is 31st) and re-judge then the recognized date is 2005.11.1 and the judgment is OK. (Please set the value of **1-Date±** to 3 and above.)

\*4  
In the case of the hour format (**HOUR, A-H**), the current minute is placed on the recognized hour. (Please set the value of **1-Time±** to 60 and above.)

### A. ExpertPrmtr

Function LCD display	Setting range (Default)	Description
Character height <b>CharHght</b>	0 to 200 (50)	Specifies the character height (pixel). Does not cut-out characters whose width is under the setting value. Used for correct recognition of small characters such as "."
Character recognition margin <b>CharMrgn</b>	0 to 255 (30)	Specifies the range to allow the difference between cut-out characters and the data in the dictionary. When the difference exceeds the setting value, the character is displayed as "?" During teaching, the setting value is processed to 1/2.
Minimum character <b>CharNarw</b>	0 to 100 (5)	Specifies the width of the narrowest character to be cut-out (pixel). Does not cut-out characters whose width is under the setting value.
Character width <b>CharWdth</b>	0 to 200 (40)	Specifies the character width (pixel). Used to separate two characters in link for correct recognition of narrow characters such as "1" or "1."
Character space <b>ChrSpace</b>	x1.5 to x7.0 (x4.0)	Inserts the space (Line feed) when the interval between characters becomes the set magnification of character width ( <b>CharWdth</b> ).
Dot Check <b>DotCheck</b>	OFF, ON (ON)	Checks if there is a dot between the date. <b>OFF</b> : Accepts when recognized as the date, regardless of dot presence. <b>ON</b> : Judges as NG if there is no dot. (05.3.10 is judged as NG.)
Extension dictionary <b>ExpDctnr</b>	0 to 56 (0)	The number of characters registered in the extension dictionary. Automatically written in registering with PC.
External teach-in function <b>ExtTeach</b>	SEMI, AUTO (SEMI)	<b>SEMI</b> : Perform <b>7.Semiauto</b> when the external teach-in input is turned on. <b>AUTO</b> : Perform <b>6.Auto Teach</b> when the external teach-in input is turned on.
Rotation/Slant correction and characters size fixing <b>FixRSlt</b>	OFF, ON, CHAR, C+RS (OFF)	<b>OFF</b> : Automatically sets the rotation correction range ( <b>Rotate</b> ) and the slant correction range ( <b>Slant</b> ) during teaching. <b>ON</b> : Does not rewrite the value of <b>Rotate, Slant</b> . When the object moves faster than in teaching, preset the larger value in <b>Rotate, Slant, CHAR</b> . Does not rewrite the character size ( <b>CharHght, CharNarw, CharWdth</b> ) during teaching. When there are bold and narrow characters, adjust the above-mentioned setting value to be recognized before performing teaching. <b>C+RS</b> : Does not rewrite the rotation/slant correction nor the character size. * When performing <b>6.Auto Teach</b> , these settings are ignored.
Internal dictionary <b>IntDctnr</b>	OFF, ON (ON)	The function to separate the internal dictionary. Turn it <b>OFF</b> when comparing the character only by the extension dictionary.
LCD Up Down reverse <b>LCD View</b>	NORM, REVS (NORM)	<b>NORM</b> : The normal LCD display. <b>REVS</b> : Displays the LCD by reversing upside-down. Uses when attaching the sensor with facing the upside-down.
Mask Left Coordinate <b>Mask Left</b>	0 to 255 (0)	Specifies the left edge coordinate which does not perform the character cut-out search.
Mask Right Coordinate <b>Mask Right</b>	0 to 255 (255)	Specifies the right edge coordinate which does not perform the character cut-out search.
Mask Up Coordinate <b>Mask Up</b>	0 to 243 (0)	Specifies the top edge coordinate which does not perform the character cut-out search.
Mask Down coordinate <b>Mask Down</b>	0 to 243 (243)	Specifies the bottom edge coordinate which does not perform the character cut-out search.
Character Re-scan <b>Re-Scan</b>	OFF, ON, FULL (ON)	Searches again the date and time from the next character at NG judgment. Ignores unnecessary characters on the screen. In <b>ON, FULL</b> , ignores "." (dot) in the recognized strings when comparing the strings. ( <b>Format1</b> to 4= <b>STRG</b> ). <b>OFF</b> : Does not re-scan. <b>ON</b> : Starts re-scan from the character of the next line feed including the large interval between characters. <b>FULL</b> : Starts from the next character. Scans even without interval between characters. However, note that 10:00 is regarded as OK even when 0:0 is OK. When recognizing the time, set to <b>ON</b> .
Slant Re-try <b>Re-Slant</b>	OFF, ON, 2.5, 4.3, 6.0 (ON)	Performs re-recognition operation by slanting the characters to the left and right at NG judgment. The more increase setting value, it prolongs the processing time at NG. Setting value means correction angle, and <b>ON</b> means ±0.85°.
Character separation ON (1-3 lines) <b>Sprt 123</b>	xxx to ooo (ooo)	Enables the process to separate two, three, and four characters in link. Enables by changing to 0 in the first lines from the left.
Character separation ON (4-6 lines) <b>Sprt 456</b>	xxx to ooo (ooo)	Specifies from the 4th line to the 6th line in the same way as <b>Sprt 123</b> .
Zero Check <b>ZeroChck</b>	--- to 123 (---)	Judges as NG when the value for the month/date/minute is 1 digit. Judges as NG when the year is not 2 or 4 digits. (Without <b>Format=PY</b> ) ---: Accepts either 1 digit or 2digits. (05 and 5 are recognized as the same.) <b>1-</b> : Checks if the first numerical values are 2 digits. If the time is 1 digit in <b>Format=H:M</b> , judged as NG. <b>-2-</b> : Checks if the second numerical values are 2 digits. When <b>Format=2YMD</b> , and the month is 1 digit, judges as NG. <b>12-</b> : Checks if the first and second numerical values are 2 digits. --- <b>123</b> : Checks if the 3 numerical values are 2 digits.



(1) Character is linked with the next character



The situation that the character is linked with the next character occurs in unsuccessful cut-out of the interval between characters. This may occur in the case of shooting with other bold characters in teaching.

Solution

- (1-1) Decrease the setting value **Bold** in **8.Adj Paramtr**.  
>> Decrease the bold level and widen the interval between characters. Adjust the lightness of characters by decreasing the **Threshld** value.
- (1-2) Decrease the setting value **CharWdth** in **A.ExpertPrmtr**.  
>> The separation function for up to two characters operates against the characters with double width of the **CharWdth** setting value. The interval between white dots under the shooting screen is approx. 50 pixels. Adjust the setting value referring to the character size.

(1-3) Adjust the value of the setting value **Trapezoid** in **8.Adj Paramtr**.  
>> The screen changes to a trapezoid shape when **CVS4** is set to the object. When changed, the characters slant at the both edges on the screen. Adjust the setting value to correct this situation. Set the setting value to the mounting angle of **CVS4**.

(1-4) Increase the setting value **Rotate** or **Slant** in **8.Adj Paramtr**.  
>> Correct the object slant or rotation. Increase the setting value when the object rotates or slants more than in teaching.

(1-5) Set the setting value **Sprt123** or **Sprt456** in **A.ExpertPrmtr** to valid (ooo).  
>> Forcibly separate the linked characters into two when their width becomes twice or more than the character width (**CharWdth**).

(2) Characters are incorrectly compared with dictionary or wrongly read



Check the cut-out character in **5.Monitor**.  
>> When the character becomes narrow due to block separation or the one character is separated into two.

Solution

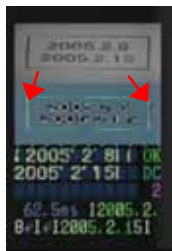
- (2-1) The character is thinned when the value of **CharWdth** in **A.ExpertPrmtr** is too large or separated into two when it is too small. Normally the 90 % of value of typical character width is saved in **6.Auto Teach** or **7.Semiauto**. However, adjust it if saved imperfectly.



>> Block separation is successful but the characters are too small to be recognized stably.

Solution

- (2-2) Set the characters so that they are displayed as wide as possible. Set the **Re-Slant** in **A.ExpertPrmtr** to **ON** to improve. Adjust the **Bold** value in **8.Adj Paramtr** so that the character obtains the adequate width. Set **Slant** and **Rotate** in **8.Adj Paramtr** to 0 when the object rotation or the character slant is hardly found. Setting **Trapezoid** to 0 also eliminates strain of the image at correction to improve the accuracy. Set to **OFF** when **Wide** in **1.Parameter** is set to **ON**.



>> Patterns or other characters exist around the characters.

Solution

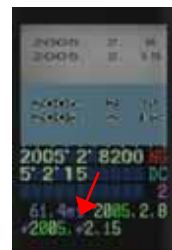
- (2-3) Set **Re-Scan** in **A.ExpertPrmtr** to **ON** or **FULL** to skip unnecessary characters.
- (2-4) Decrease the **ChrSpace** value and add the line feed mark in the wide space between characters to avoid wrong recognition.
- (2-5) Exclude the pattern being displayed or apply masking by adjusting **Msk Left**, **MskRight**, **Msk Up**, and **Msk Down** in **A.ExpertPrmtr**.



>> Patterns exist around the characters and the characters are not cut-out.

Solution

- (2-6) Exclude the pattern being displayed or apply masking by adjusting **Msk Left**, **MskRight**, **Msk Up**, and **Msk Down** in **A.ExpertPrmtr**.



>> Line feed mark exists between date of time.

Solution

- (2-7) The line feed mark is inserted in a wide interval between characters. Increase **ChrSpace** value in **A.ExpertPrmtr** to exclude the line feed mark inserted.



>> Block separation is successful but the recognized characters are not displayed.

Solution

- (2-8) When **IntDctnr** in **A.ExpertPrmtr** is set to **OFF**, the characters are compared only with the extension dictionary without using the internal dictionary. If the extension dictionary is not registered at this time (**ExpDctnr=0**), all characters turns to "?".



>> Images are unstable due to the lustrous characters or backgrounds.

Solution

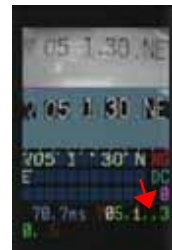
- (2-9) Increase the **Luster** value in **8.Adj Paramtr** and saturate the screen with the light to cancel the lustrous part. Adjust the **Threshld** value to allow the characters pop-up. If the problem still persists, adjust the **CVS4** setting angle or use the external light to avoid the direct reflected light.



>> Images are blurred.

Solution

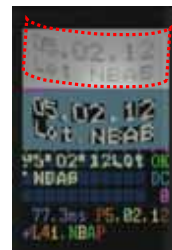
- (2-10) When not focused correctly, the feature of character becomes blurred. Adjust the distance between **CVS4** and the object to focus.



>> Fine noises on the screen are recognized as dots.

Solution

- (2-11) Increase the value in **CharNarw** **A.ExpertPrmtr** to ignore the characters with narrower width than this setting values.
- (2-12) Increase the **Threshld** value in **8.Adj Paramtr** to avoid fine noises displayed on the screen.

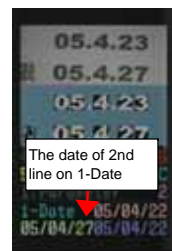


>> Character cut-out is not successful due to the shooting of the cylinder-shape object shot at an angle.

Solution

- (2-13) Shoot from the front side. To avoid reflection of the built-in light, set **Light** in **1.Parameter** to **OFF** and use the external light.

(3) String is not recognized as the specified date or time

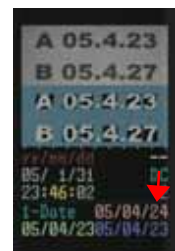


The date and time may not be correctly displayed even though the strings show the correct date and time order. This problem occurs when **Re-Scan** in **A.ExpertPrmtr** is set to **FULL** or **ON**. The string within the upper and lower limit of date and time is searched from the top. Therefore, if no string of OK judgment exists, the date and time recognized in the last part of string are displayed.

Solution

- (3-1) Select **OFF** for the **Re-Scan** setting or correctly set the upper and the lower setting of date and time in **9.Date/Time**.

(4) Judged as NG at the point at the date change

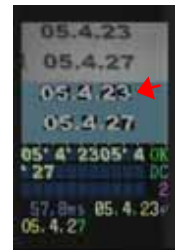


This trouble occurs when the difference exists between the printer for the date and the **CVS 4** calendar.

Solution

- (4-1) Increase the **1-Time±** value in **9.Date/Time**. Set the duration of specified time (minutes) as the upper and lower limit of the date before the date change. Also set the current date and the previous date as the upper and lower limit on the current date, the next date and the after the date change. Set with **2-Time±** for the second date (**2-Date**).
- (4-2) Increase the **1-Date±** value in **9.Date/Time**. In the format of Y/M, the difference of months occurs at the month change with the different days. Normally, setting to 3 avoids any trouble in any month.

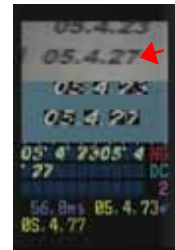
(5) Wrong recognition in high speed of object



The slant correction is insufficient as the object moves in higher speed than in teaching.

Solution

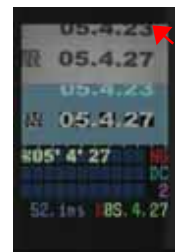
- (5-1) Set **FixRtSlit** in **A.ExpertPrmtr** to **ON** in advance and increase the **Slant** value in **8.Adj Patamtr** by the value of required slant correction. Doing this avoids rewriting of the **Slant** and **SlantOfs** value in teaching.



High speed of the object blurs the shot images.

Solution

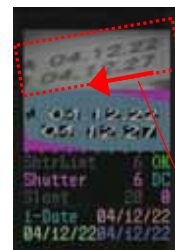
- (5-2) Refer to the page for to set the **ShtrLimt** value in **8.Adj Patamtr** before performing teaching. Add the external light if the screen is not enough light in teaching (the case the **ShtrLimt** value becomes 5 or less).



Changing the speed of the object shifts the shooting position and the characters run out of the screen.

Solution

- (5-3) Refer to page 4 to take a counter measure to avoid the shooting position.



Extreme slant does not allow the characters to be straightened with the slant correction.

Solution

- (5-4) When the object moves to the right and left, adjust **CVS4** so that the object is displayed at an angle. (In this picture, the work moving at 0.7m/s is shot.) Setting **Wide** in **1.Parameter** to **ON** changes the slant to half. (The character height also becomes half.)

Moving direction of the work



When the object moves in high speed, the character height changes to disable cutting them out.

Solution

- (5-5) Perform teaching in the condition that the object moves in high speed. Or decrease the **CharHght** value in **A.ExpertPrmtr** to cut-out. (In this picture, the work moving at 0.7m/s is shot.)

Moving direction of the work

Long processing time misses the next shooting.

Solution

- (5-6) To shorten the processing time, decrease the **Rotate** and **Slant** values in **8.Adj Paramtr**. Or decreasing the character size to shoot also shortens the time. Also to avoid unnecessary characters being displayed, adjust **Msk Left**, **MskRight**, **Msk Up**, and **Msk Down** in **A.ExpertPrmtr** or set **Re-Slant** to **OFF**.

(6) Unsuccessful String registration in 7.Semiauto

In the string registration (specifies **STRG** in **Format 1 to 4**), assign the numerical character to the numerical part and alphabetical character to the alphabetical part if the strings have already been registered.

Solution

- (6-1) Clear the string with **B.String** before performing **7.Semiauto**. Clearing the top character (change to \*) also clears the remaining characters. Characters before **A\*** of the ASCII code are judged as numerical ones, and as alphabetical ones if after **A\***.

(7) NG judgment in spite of date within upper and lower limit

When performing **6.Auto Teach**, if the characters other than desired date are registered as the date or time for registration, NG may occur in the other date and time judgment.

Solution

- (7-1) Check **Format 2 to 4** in **9.Date/Time**. If there are values other than ---, rewrite them to ---.

When performing **7.Semiauto**, if the format other than desired date for registration remains in **Format 1 to 4**, NG judgment may occur.

Solution

- (7-2) Check **Format 1 to 4** in **9.Date/Time** and select the desired format.

ASCII characters list that **CVS4** is able to indicate on LCD screen.

!#\$%&()\*+,-./0-9:;<=>?@A-Z[\]^\_`a-z~  
./0-9:A-Zg

This instruction manual corresponds to the software version 1.30 or greater (Screen display at startup is 130 or greater).

Indicates hardware version. The setting value **NG-P**, **OK-P** in **LightOut** is available at 102 and above. Specification of minimum and recommended character height is available at 103 and above. The setting value **TIME** in **SyncPuls** is available at 104 and above.

The exclusive software describes the following information: The extension dictionary registration, the date registration in alphabetical characters, save and transfer of setting value, the string reading by communication, and bank selection. Contact our Customer Service Department to obtain the software.



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