

73VR21x PC CONFIGURATOR

Software model: 73VR21BLD

Users Manual

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1. INTRODUCTION

Thank you for choosing M-System's Paperless Recorder.

The 73VR21BLD Users Manual will guide you through the software program views and functions. Please read this manual carefully to ensure the safe use before getting started.

The 73VR21BLD will help you easily and smoothly program parameters for the 73VR21x. It also enables remote setup of the 73VR21x through Ethernet.

NOTE

This instruction manual conforms to the 73VR21BLD Version 3.00x or higher.

This software program is compatible with the following 73VR21x versions:

| 73VR21x versions | 73VR21BLD versions | | | |
|---|--------------------|---------|---------|---------|
| | V1.00.X | V2.00.X | V3.00.X | V3.01.X |
| V1.00X | Yes | No | No | No |
| V2.00X | No | Yes | No | No |
| V3.00X, V3.01X, V4.00X, V5.00X, V5.01X, | No | No | Yes | No |
| V5.02X or later | No | No | No | Yes |

X = Alphabets (A, B, C,...) or Number (01, 02, 03,...)

1.1 GENERAL DESCRIPTIONS

| | |
|----------------------------------|--|
| Configuring the 73VR21x: | Storing setting, Display setting, Input pen setting, function pen setting. Downloading a configuration (setup) file created on the 73VR21BLD to the 73VR21x. Uploading a configuration file stored in the 73VR21x to the 73VR21BLD. Configuration files can be stored in a storage media such as a hard disk. |
| Remote operating: | Starting / stopping the 73VR21x operation remotely. |
| Creating a data file: | Creating a data file in a CF Card |
| Exporting configurations to CSV: | Configuration files created on the 73VR21BLD can be converted into CSV format. |

1.2 SYSTEM REQUIREMENTS

The PC environment indicated below is recommended for use with the 73VR21BLD.

| | |
|---------------|---|
| OS | Windows XP SP2/SP3, Windows Vista Business 32-bit, or Windows 7 Professional 32-bit Note: Proper software functions may not be ensured under certain conditions. |
| Screen area | 1024 by 768 pixels or higher |
| Display color | 65000 colors (16 bits) |
| CD-ROM drive | Windows supported CD-ROM drive is used to install the software programs. |
| Card reader | Used to read/write the CF Card |
| Mouse | Windows supported |
| LAN card | LAN card required to connect to Ethernet (10BASE-T or 100BASE-TX cable) |

1.3 INSTALLATION INSTRUCTIONS

When you insert the CD-ROM (model: 73VRPAC2) into your CD drive, the Flash window will appear, where you are prompted to press Enter. With this, the 'Welcome to InstallShield Wizard' will appear. To proceed with the installation, press the program's Install button, and you are prompted to start installation by pressing the Next button successively, and finally press Finish to complete the installation.

If you already have the 73VR21BLD program installed on your PC, uninstall (remove) entirely before newly installing.

If the InstallShield Wizard does not appear automatically, please install manually using Add/Remove Programs in Control Panel in the following sequence.

■ INSTALL

1. Select Add/Remove Programs under Control Panel (proceed through Start > Settings > Control Panel). Or double-click My Computer icon on the desktop and click Control Panel to access Add/Remove Programs.
2. Double-click Add/Remove Programs to start.
3. Then the SETUP.exe will be executed and the installation will start.
4. After that, follow the step-by-step instructions that will appear on dialog boxes.
5. When the installation is successfully completed, "73VR21BLD" will be added to the menu under Programs.

■ REMOVE

1. To remove the 73VR21BLD, use Add/Remove Programs in Control Panel (proceed through Start > Settings > Control Panel).
2. At the Add/Remove Programs dialog box, select the 73VR21BLD, and then the Flash window will appear, and click Enter. Next, InstallShield Wizard will appear.

At the InstallShield Wizard, select Remove (check the radio button next to Remove) to accomplish the uninstallation.

Note for Windows Vista or Windows 7.

- 1: If the 'Install or run program' appears in AutoPlay dialog box, allow 73VRPAC2.EXE.
- 2: If during installation 'An unidentified program wants access to your computer' appears in User Account Control dialog box, then allow SETUP.EXE.

1.4 ACCESSING THE 73VR21x DATA

1.4.1 ETHERNET

A PC with the 73VR21BLD installed and the 73VR21x can communicate through Ethernet. The 73VR21x must be setup with an IP address in advance. Please refer to the 73VR21x Users Manual to set the IP address.

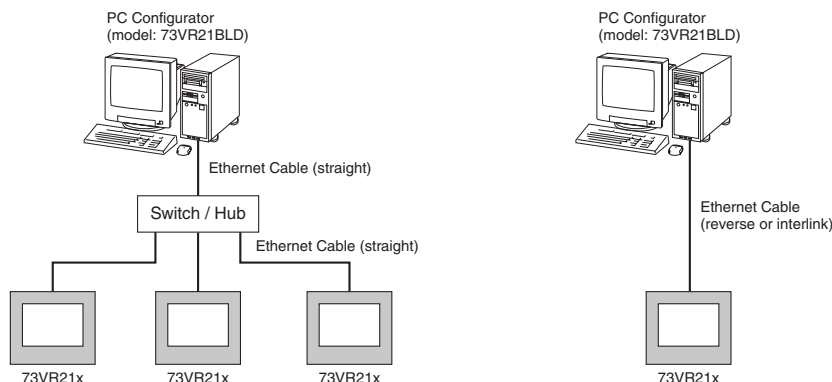
■ ETHERNET CABLE TYPE

When connecting the PC and the 73VR21x via a switching hub, use Straight type cables.

When the 73VR21x is directly connected to the PC, use a Reverse (interlink) type cable.

We recommend that you will choose connection with straight cables because the reverse cable connection may be unstable.

■ CONFIRMING CONNECTION



If a Connect Error (Socket connector error!) is displayed during connecting procedure, you can use the PING command to check whether a connection is properly established with an input module.

Type the PING command at the MS-DOS prompt window, and in response to the command...

```
C:\WINDOWS > ping ***.***.***.***
```

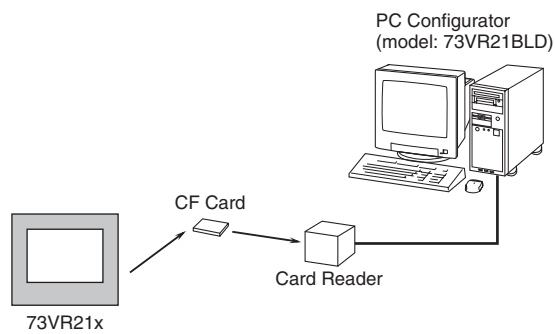
(For ***.***.***.***, enter the IP address in decimal format.)

```
ping ***.***.***.*** with 32 bytes of data :
Reply from ***.***.***.***: bytes = 32 time < 10 ms TTL = 64
Reply from ***.***.***.***: bytes = 32 time < 10 ms TTL = 64
Reply from ***.***.***.***: bytes = 32 time < 10 ms TTL = 64
Reply from ***.***.***.***: bytes = 32 time < 10 ms TTL = 64
Ping statistics for ***.***.***.***
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss)
```

...in response to the PING command, if a proper connection is established, the above response is returned. If a connection error takes place due to a wrong IP address you've typed, a 'time expired' notification will be shown.

1.4.2 CF CARD

In order to import data from a CF Card, a CF Card Reader is required.



1.5 HOW TO START UP & EXIT

Go to Programs > 73VR > 73VR21BLD, and then the 73VR21x PC Configurator window shown in the figure below will appear. To terminate the program, press the Close button [X] on the right-top of the window.

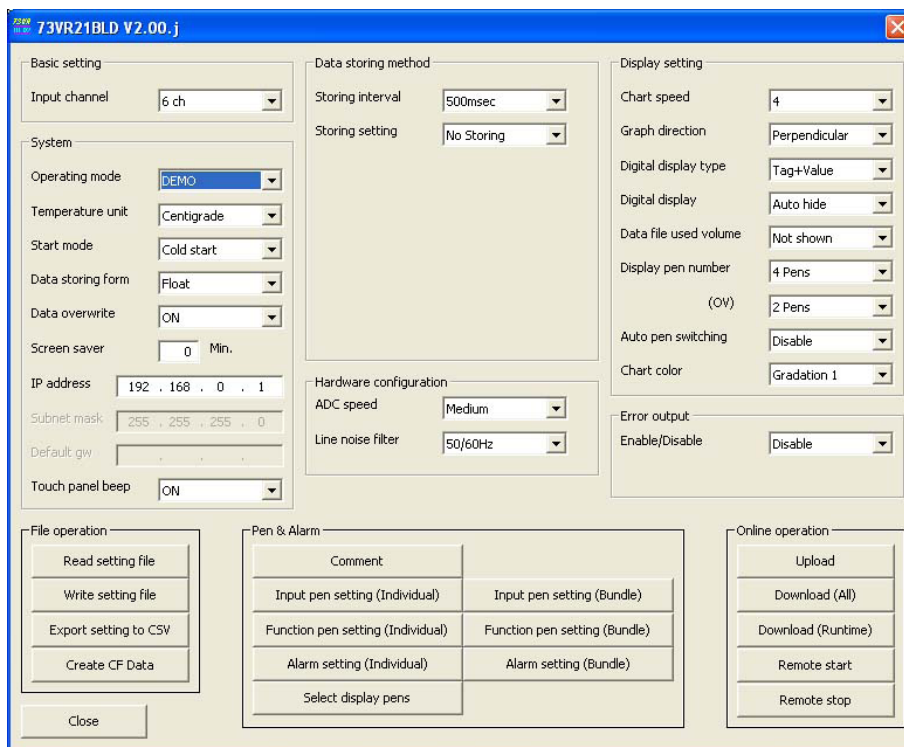


Figure 1.5. Initial view.

In order to quit the window, click [Close] button at the right-bottom.

Caution !

DO NOT change the 73V21x configuration while the FTP convert command is executed on the 73VR Data Viewer (model: 73VRWV).

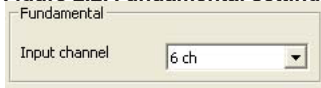
2. SETTING ON THE 73VR21BLD

2.1 FUNDAMENTAL SETTING

First, choose the number of input channels according to the hardware model number.

| | |
|----------------------|-----------------------|
| Model 73VR2102: 2 ch | Model 73VR2108: 8 ch |
| Model 73VR2104: 4 ch | Model 73VR2110: 10 ch |
| Model 73VR2106: 6 ch | Model 73VR2112: 12 ch |

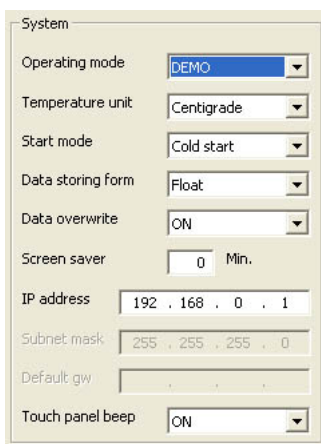
Figure 2.2. Fundamental setting.



2.2 SYSTEM SETTING

The System setting menu appears as below.

Figure 2.2. System setting.



CAUTION

Linger time setting is available only on the 73VR21x unit. Not selectable on the 73VR21BLD.

2.2.1 OPERATING MODE

Choose among the following options.

| | | |
|--------|--------------------|--|
| DEMO | Demonstration mode | You can run the 73VR21x program without actual signal input for learning, evaluation and demonstration when you choose DEMO. |
| Normal | Running mode | Choose this option when you connect actual input signals to the 73VR21x. |

2.2.2 TEMPERATURE UNIT

Choose among the following options.

| | |
|------------|----------------------|
| Centigrade | Centigrade (Celsius) |
| Fahrenheit | Fahrenheit |

2.2.3 START MODE

Choose among the following options.

| | |
|------------|---|
| Cold Start | At a restart, the 73VR21x stands by showing the initial view. |
| Hot Start | At a restart, the 73VR21x automatically starts recording. |

2.2.4 DATA STORING FORM

Choose among the following options.

| | | |
|-----------|----------------|--|
| Float | Floating point | 1 data size: 4 bytes |
| Short int | Short integer | Integer data multiplied by 10 (2-byte-long data) |

2.2.5 DATA OVERWRITE

Data can be overwritten when the data file is full.

| | |
|-----|---|
| ON | The oldest data is replaced with a new data when the file capacity is full. |
| OFF | The 73VR21x stops recording when the file capacity is full. |

2.2.6 SCREEN SAVER

The LCD display's backlight can be turned off when the screen is untouched for a specific time period.

Enter a desired time in minutes to initiate the screen saver.

| | |
|---------------------------|---|
| Screen saver time setting | Selectable range: 0 to 99 (minutes) The screensaver function is deactivated with the time set to zero (0). |
|---------------------------|---|

2.2.7 IP ADDRESS, SUBNET MASK, DEFAULT GATEWAY

In order to connect the 73VR21x to a PC via Ethernet when using the 73VR21BLD (Builder), set an appropriate IP address.

Enter the IP address assigned to the 73VR21x.

| | |
|------------|--------------------------------------|
| IP address | Factory default setting: 192.168.0.1 |
|------------|--------------------------------------|

The subnet mask and the default gateway are given only for indication. They are not modifiable.

2.2.8 TOUCH PANEL BEEP

You can specify if you want a beep sound or not whenever you touch the screen of the 73VR21x.

| | |
|-----|--------------------|
| OFF | Beep sound is off. |
| ON | Beep sound is on. |

2.3 DATA STORING METHOD

The Data storing method setting menu appears as below.

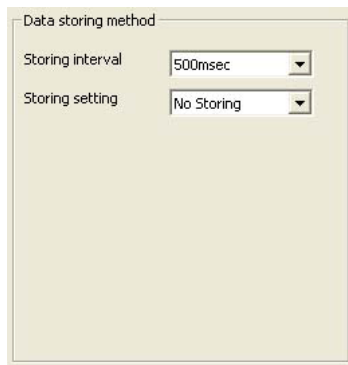


Figure 2.3. Data storing method.

2.3.1 STORING INTERVAL

The data is stored in time intervals preset as the Storing interval. Choose among the following options:

| | |
|---------|------------------|
| 100msec | 100 milliseconds |
| 500msec | 500 milliseconds |
| 1sec | 1 second |
| 2sec | 2 seconds |
| 5sec | 5 seconds |
| 10sec | 10 seconds |
| 1min | 1 minute |
| 10min | 10 minutes |

Total recording time in a CF Card depends upon the storing interval selection. Selecting greater storing interval allows longer recording time, though the data are more thinned, which may jeopardize the data accuracy.

CAUTION !

When the storing interval setting is changed, previously stored data are overwritten with new data.

2.3.2 STORING SETTING

There Five (5) storing modes as explained below:

| | | |
|-----------------|-------------------------------|---|
| No storing | No recording | Data is plotted on the chart or displayed on the digital meter or bargraph, but no data is stored in the CF Card. |
| Normal | Normal storing mode | Recording is manually initiated and stopped. Data is continuously stored while the recording is on. |
| Remote trigger | Remote trigger recording mode | Data is automatically recorded while the external trigger condition (analog or discrete input) is true. |
| Event recording | Event recording mode | The 73VR21x detects an external event by trigger signal, and stores preset number of samples (max. 1200 respectively) before and after the moment of event. |
| Time specified | Store at defined time mode | Recording is automatically initiated and stopped at a predefined time. |

REMOTE TRIGGER RECORDING

In the remote trigger recording mode, data is automatically stored while the external trigger condition (analog or discrete input) is true.

With an analog trigger, the signal are continuously compared with a preset threshold, and the 73VR21x starts and stops recording when it is in a pre-determined condition (higher or lower than the threshold).

With a discrete trigger, the signal logic state is continuously monitored, and the 73VR21x starts and stops recording when it is turned to a pre-determined state (ON or OFF).

■ Trigger Conditions for Analog

| | |
|-------------------|--|
| Value > Threshold | Data is stored while the trigger input signal value is higher than the threshold setpoint. |
| Value < Threshold | Data is stored while the trigger input signal value is lower than the threshold setpoint. |
| Value ≥ Threshold | Data is stored while the trigger input signal value is equal to or higher than the threshold setpoint. |
| Value ≤ Threshold | Data is stored while the trigger input signal value is equal to or lower than the threshold setpoint. |

■ Trigger Conditions for Discrete

| | |
|-----|---|
| ON | Data is stored while the trigger input signal logic is ON. |
| OFF | Data is stored while the trigger input signal logic is OFF. |

How to Set the Remote Trigger Recording

Figure 2.3.2. Remote trigger setting, analog.

Figure 2.3.2a. Remote trigger setting, discrete.

1. Storing setting: Pull down the arrow to the right of Storing Field and select Remote trigger. Choosing the Remote trigger on the Data storing method view changes the subsequent menu items to those suitable for the remote trigger recording mode.

2. Discrete / Analog: Choose a type of trigger signal.

| | | |
|----------|------------------------|---------------------------------------|
| Discrete | Contact signal trigger | A discrete signal triggers recording. |
| Analog | Analog signal trigger | An analog signal triggers recording. |

3. Threshold: For analog signals, set a threshold in an engineering unit value.

| | |
|-----------|--|
| Threshold | Engineering unit value. Max. 6 digits including decimal point and minus (–) sign. 'e' is used to set an exponential value. |
|-----------|--|

4. Condition: Choose among the abovementioned options.

5. Pen number: Choose a pen to be designated as trigger.

EVENT RECORDING

In the event recording mode, the 73VR21x detects an external event by trigger signal, and stores preset number of samples (max. 1200 respectively) before and after the moment of event.

With an analog trigger, the trigger signal is continuously compared with a preset threshold, and the 73VR21x initiates recording when it is in a pre-determined condition (higher or lower than the threshold).

With a discrete trigger, the signal logic state is continuously monitored, and the 73VR21x initiates recording when it is turned to a pre-determined state (ON or OFF).

■ Trigger Conditions for Analog

| | |
|-------------------|--|
| Value > Threshold | Data recording is initiated when the trigger input signal value goes above the threshold setpoint. |
| Value < Threshold | Data recording is initiated when the trigger input signal value goes below the threshold setpoint. |
| Value ≥ Threshold | Data recording is initiated when the trigger input signal values is equal to or goes above the threshold setpoint. |
| Value ≤ Threshold | Data recording is initiated when the trigger input signal values is equal to or goes below the threshold setpoint. |

■ Trigger Conditions for Discrete

| | | |
|------|--------------------|---|
| Up | Rising pulse edge | Data recording is initiated at a rising edge of the trigger input pulse. |
| Down | Sinking pulse edge | Data recording is initiated at a sinking edge of the trigger input pulse. |

How to Set the Event Recording

Figure 2.3.2b. Event recording setting, analog.

Figure 2.3.2c. Event recording setting, discrete.

1. Storing setting: Pull down the arrow to the right of Storing Field and select Event recording. Choosing the Event recording on the Data storing method view changes the subsequent menu items to those suitable for the event recording mode.

2. Discrete / Analog: Choose a type of trigger signal.

| | | |
|----------|------------------------|---------------------------------------|
| Discrete | Contact signal trigger | A discrete signal triggers recording. |
| Analog | Analog signal trigger | An analog signal triggers recording. |

3. Threshold: For analog signals, set a threshold in an engineering unit value.

| | |
|-----------|--|
| Threshold | Engineering unit value. Max. 6 digits including decimal point and minus (–) sign. 'e' is used to set an exponential value. |
|-----------|--|

4. Condition: Choose among the aforementioned options.

5. Pen number: Choose a pen to be designated as trigger.

6. Pretrigger / Posttrigger: Specify numbers of samples to be stored before (Pretrigger) and after (Posttrigger) the event respectively.

| | | |
|-------------|-------------------------------|--|
| Pretrigger | Number of pretrigger samples | Max. 1200 samples. Pretrigger recording is NOT applicable with the storing intervals set to 2 seconds or longer. |
| Posttrigger | Number of posttrigger samples | Max. 1200 samples. |

STORE AT A DEFINED TIME MODE

In the store at a defined time mode, recording is automatically initiated and stopped at a predefined time. Choose either 'One Time Only' or 'Every Day' under Condition option.

| | |
|---------------|---|
| One Time Only | Data is stored once at a predefined time. Specify Year-Month-Day and Hour-Min-Sec. to start the recording and the time duration. |
| Every Day | The 73VR21x runs recording once per day at a predefined time. Specify Hour-Min-Sec. to start the recording and the time duration. |

How to Set the Store-at-a-Defined-Time Mode

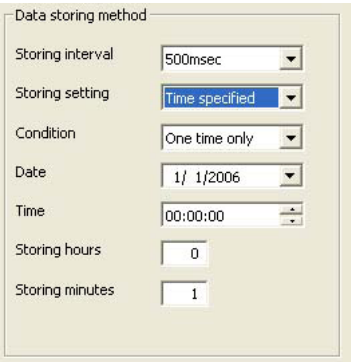


Figure 2.3.2d. Store at a defined time, one day only.

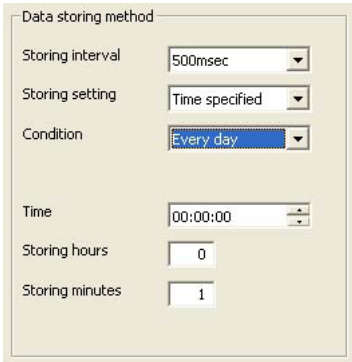


Figure 2.3.2e. Store at a defined time, every day.

1. Storing setting: Pull down the arrow to the right of Storing Field and select Time Specified. Choosing the Time Specified recording on the Data storing method view changes the subsequent menu items to those suitable for the storing mode.
2. Specify when you want to start recording (Date / time) and the time duration (Storing hours / min). With Every day setting, 'Date' is not indicated.

| | |
|---------------------|---|
| Date and/or time | Specify date and/or time to start recording. |
| Storing hours / min | Specify time duration of a recording. 'Hours' selectable between 0 and 23, 'Minutes' selectable between 0 and 59. |

How to Specify Date

You can either directly enter the date in the data fields, or use a calendar appearing on the screen when you click the arrow to the right of the Date field.

In order to change Year, click on the year description on top, and use UP/DOWN selector appearing to the right.

In order to change Month, click the arrows on top to go forward or back month by month, or alternatively, click the month description to open the options to choose.

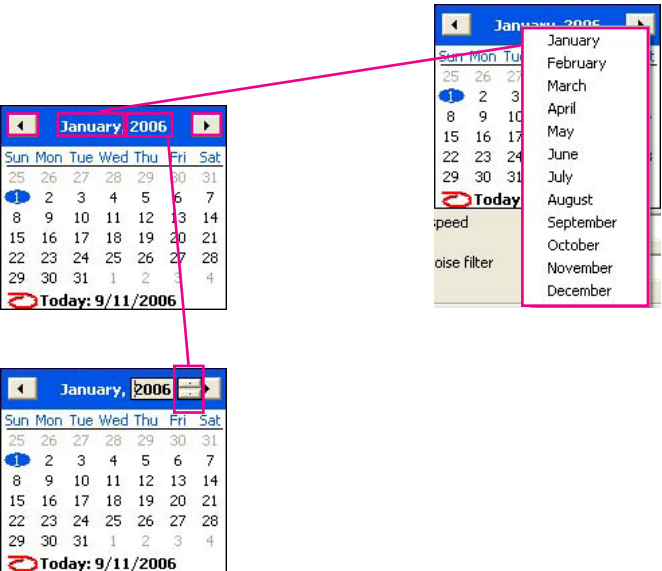


Figure 2.3.2f. Calendar.

2.4 DISPLAY SETTING

The Display setting menu appears as below.

Figure 2.4. Display setting.

2.4.1 CHART SPEED

Choose among the options in the table below. The numbers show how many pixels are used for one sample data. For example, if you choose '4,' one sample is plotted 4 pixels further than the previous one, and two sample points are connected to create a trend graph.

The chart speed options may be limited when certain storing intervals are selected. Refer to the table below.

| STORING INTERVAL | CHART SPEED | 4 | 1 | 1/5 | 1/32 | 1/160 | 1/480 | 1/960 |
|------------------|-------------|-----|-----|-----|------|-------|-------|-------|
| 100 msec. | | Yes | Yes | Yes | Yes | No | No | No |
| ≥500 msec. | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

2.4.2 GRAPH DIRECTION

You can specify if you want to show the chart in the perpendicular direction or the horizontal direction. Choose among the following options:

| | |
|---------------|-------------------------|
| Perpendicular | Perpendicular direction |
| Horizontal | Horizontal direction |

2.4.3 DIGITAL DISPLAY TYPE

Choose among the following options:

| | |
|-------------|---|
| Tag + Value | The momentary value and the tag name of the data plotted on the screen. |
| Tag | The tag name of the data plotted on the screen. |
| Value | The momentary value of the data plotted on the screen. |

2.4.4 DIGITAL DISPLAY

Choose among the following options:

| | |
|------------|--|
| Auto hide | Digital display is automatically hidden in 30 seconds after it appears on the screen. Touch the area of the display to call it up. |
| Continuous | Digital display remains on the screen. |

2.4.5 DATA FILE USED VOLUME SETTING

The Overview and the Bargraph view can show a bargraph how much volume of the data file has been used.

| | |
|-----------|--|
| Not shown | Data file used volume bargraph is not shown. |
| Show | Data file used volume bargraph is shown. |

2.4.6 DISPLAY PEN NUMBER

You can specify how many pens you want to show on the Trend and Bargraph views. Choose from 2, 4, 6 and 8.

2.4.7 DISPLAY PEN NUMBER (OV)

You can specify how many pens you want to show on the Overview. Choose from 2, 4, 6, 8 and 16.

2.4.8 AUTO PEN SWITCHING

You can automatically switch the pens on the enlarged digital display on the screen.

| | |
|---------|--|
| Enable | Once the enlarged digital display is activated on the screen, pens are automatically switched from one to another. |
| Disable | Digital display remains on the same pen when the enlarged digital display is activated. |

2.4.9 CHART COLOR

You can specify different color and style for the chart. Choose among the following options: Gradation 1, Gradation 2, Plain (Light), Plain (Dark), Plain (White).

2.5 ERROR OUTPUT

When the error output setting is enabled, the 73VR21x outputs an alarm contact at the alarm output terminal.

1. Choose Enable or Disable. When Enable is selected, the following selections appears.
2. Contact logic: Specify whether you want to open (OFF) or close (ON) the contact at alarm.

2.6 COMMENT

You can set up a list of comments to be used on the Trend view.

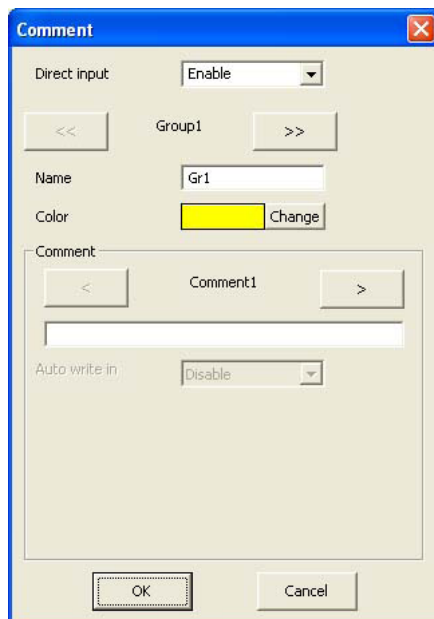


Figure 2.6. Comment.

2.6.1 DIRECT INPUT

Direct comment entry using a USB keyboard is available, without using preset comments. Comments registered in this way are stored in the 7th group. While this function is enabled, other comments in the groups 1 through 6 are not usable.

2.6.2 GROUP

The maximum of 7 groups of 8 comments can be created. The 7th group is for free comment entry during recording. Use [<<] and [>>] buttons to move between groups.

Name

| | |
|------|--------------------|
| Name | Max. 10 characters |
|------|--------------------|

Color

A specific color is applied to each group. Comments are shown in this color in the Trend view and also in the Comment History.

Comment

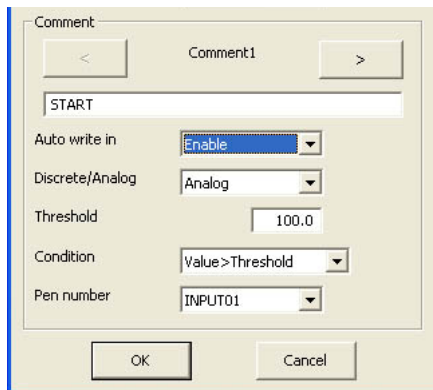
Use [<] and [>] buttons to move between comments. Max. 8 comments are selectable.

| | |
|---------|--------------------|
| Comment | Max. 30 characters |
|---------|--------------------|

Auto write in

You can automatically write predetermined comments when certain preset conditions are true.

| | |
|---------|---|
| Enable | Comment is automatically written in. Specify conditions. |
| Disable | Comment is manually written in, either by choosing from the list or by entering a free comment. |



Discrete/Analog

Specify the signal type (analog or discrete) that you want to use to trigger the automatic comment entry.

Threshold

Specify the threshold value for analog trigger signal.

| | |
|-----------|--|
| Threshold | Max. 6 digits including a decimal point and minus sign |
|-----------|--|

Condition

For analog trigger signal, the following conditions can be used to trigger the comment entry.

| | |
|-------------------|--|
| Value > Threshold | The comment is written in when the subject pen signal goes above the analog trigger signal value. |
| Value < Threshold | The comment is written in when the subject pen signal goes below the analog trigger signal value. |
| Value ≥ Threshold | The comment is written in when the subject pen signal is equal to or goes above the analog trigger signal value. |
| Value ≤ Threshold | The comment is written in when the subject pen signal is equal to or goes below the analog trigger signal value. |

For discrete trigger signal, the following conditions can be used to trigger the comment entry.

| | |
|------|---|
| Up | The comment is written in when the subject pen signal turns from OFF to ON. |
| Down | The comment is written in when the subject pen signal turns from ON to OFF. |

Pen number

Choose the pen number for the trigger signal.

2.7 INPUT PEN SETTING (INDIVIDUAL)

Pressing Input Pen Setting (Individual) button under Setting buttons opens the window shown in Figure 2.7.

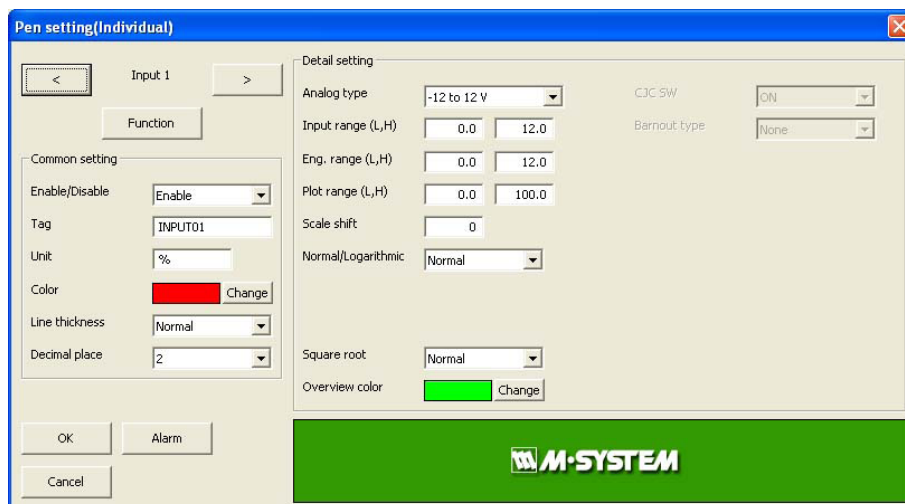


Figure 2.7. Input pen setting (Individual).

2.7.1 COMMON SETTING

Enable / Disable

Enable / Disable the recording. The pen's input data is stored when this selection is set to Enable.

Tag

Enter a desired tag name.

| | |
|----------|-------------------|
| Tag name | Max. 8 characters |
|----------|-------------------|

Unit

Enter a desired unit name.

| | |
|------|-------------------|
| Unit | Max. 4 characters |
|------|-------------------|

Color

Touching the current selection of the Color opens a color palette. Choose a desired color from the palette.

Line thickness

This setting is selectable even during recording.

| | |
|--------|-----------------------|
| Normal | Normal line (1 pixel) |
| Thick | Thick line (3 pixels) |

Decimal place

Specify how many decimal places you want to show on the digital indicators and the scale. Choose among 0, 1, 2 and 3. For a temperature input, only 0 or 1 is selectable.

Plot range with decimal place on the scale

Plot range in an engineering unit can be indicated on the scale in Trend and Bargraph views. For example, when the lower range is set to 0, and the upper range is set to 1000, the scale shows 10 divisions (0, 100, 200, ... 900, 1000). How many decimal places are to be shown depends upon the 'Decimal place' setting. For example, when '2' decimals are selected, the scale shows two decimal places.

For horizontal chart, only 1 decimal place is possible.

2.7.2 DETAILED SETTING

Figure 2.7.2. Detailed setting, analog.

Analog type and Input range

With 100 msec. storing interval, only DC voltage ranges are selectable

Selectable signal types and input ranges are as shown in the tables in the following page. For DC input, choose the upper and lower range values (0% and 100%) within the measurable range. For temperature input, the input range is equal to the measurable range, thus fixed.

'e' can be used to input an exponential value such as '1e9.' Entering 'e' in any other way (e.g. '1ee') will not be recognized as a numeral.

| | |
|-------------|--|
| Input range | Max. 6 digits including a decimal point and minus sign |
|-------------|--|

Eng. Range

Set up physical representation of the upper and lower input range values. This setting determines the momentary value unit displayed on the digital displays while recording. For a temperature input, this setting is greyed out.

'e' can be used to input an exponential value such as '1e9.' Entering 'e' in any other way (e.g. '1ee') will not be recognized as a numeral.

| | |
|------------|--|
| Eng. range | Max. 6 digits including a decimal point and minus sign |
|------------|--|

Plot position

Determines the display range on the chart when 'Normal' is selected at 'Normal / Log.' Log's detailed setting including the display range is conducted in the Exp. scale.

Set up the upper and lower display range values. It is usually the same as the engineering unit range, but is set to a different range when you want to enlarge a part of the range to view details.

'e' can be used to input an exponential value such as '1e9.' Entering 'e' in any other way (e.g. '1ee') will not be recognized as a numeral.

| | |
|---------------|--|
| Plot position | Max. 6 digits including a decimal and minus sign |
|---------------|--|

Scale shift

Plot positions can be shifted in parallel on the trend chart. This function is useful when multiple graphs are overlapping. You can separate the plot positions while no other data is changed.

| | |
|-------------|-----------------------------|
| Scale shift | Selectable within 0 to 100% |
|-------------|-----------------------------|

Normal / Log

When Normal plotting is selected, the plot area is divided equally. When Logarithmic is selected, the plot area is divided in specified scale of exponents of 10.

For Logarithmic plotting, specify the lower limit of exponent in 'Logarithmic Plot Position Exponent' field within -9 to 8, and how many divisions you wish to have in 'Exponential Scale' among 10, 5, 4, 2, and 1.

Square Root

Input data is square-root-extracted when this setting is enabled.

Overview Color

Specify the bargraph color for the pen in the Overview. Use the color palette.

Table. Analog types

| I/O TYPE | SELECTIONS | INPUT RANGE | USABLE RANGE | |
|-----------|----------------------|--------------------------|--------------|-------------|
| DC input | -12 to 12 V | ±12V | ---- | |
| | -6 to 6 V | ±6V | | |
| | -3 to 3 V | ±3V | | |
| | -1000 to 1000 mV | ±1000mV | | |
| | -500 to 500 mV | ±500mV | | |
| | -250 to 250 mV | ±250mV | | |
| | -125 to 125 mV | ±125mV | | |
| | -60 to 60 mV | ±60mV | | |
| T/C input | | | °C | °F |
| | (PR) | Same as the usable range | 0 – 1770 | 32 – 3218 |
| | K (CA) | | -270 – 1370 | -454 – 2498 |
| | E (CRC) | | -270 – 1000 | -454 – 1832 |
| | J (IC) | | -210 – 1200 | -346 – 2192 |
| | T (CC) | | -270 – 400 | -454 – 752 |
| | B (RH) | | 100 – 1820 | 212 – 3308 |
| | R | | -50 – 1760 | -58 – 3200 |
| | S | | -50 – 1760 | -58 – 3200 |
| | C (WRe 5-26) | | 0 – 2320 | 32 – 4208 |
| | N | | -270 – 1300 | -454 – 2372 |
| | U | | -200 – 600 | -328 – 1112 |
| | L | | -200 – 900 | -328 – 1652 |
| | P (Platinel II) | | 0 – 1395 | 32 – 2543 |
| RTD input | JPt 100 (JIS '89) | Same as the usable range | -200 – 510 | -328 – 950 |
| | Pt 100 (JIS '89) | | -200 – 660 | -328 – 1220 |
| | Pt 100 (JIS '97/IEC) | | -200 – 850 | -328 – 1562 |
| | Pt 50Ω (JIS '81) | | -200 – 649 | -328 – 1200 |
| | Ni 508.4 | | -50 – 280 | -58 – 536 |
| | Ni 100 | | -80 – 260 | -112 – 500 |
| | Ni 120 | | -80 – 260 | -112 – 500 |
| | Ni-Fe 604 | | -200 – 200 | -328 – 392 |
| | Pt 200 | | -200 – 850 | -328 – 1562 |
| | Pt 300 | | -200 – 850 | -328 – 1562 |
| | Pt 400 | | -200 – 850 | -328 – 1562 |
| | Pt 500 | | -200 – 850 | -328 – 1562 |
| | Pt 1000 | | -200 – 850 | -328 – 1562 |
| | Cu 10 @25°C | | -50 – 250 | -58 – 482 |

DISCRETE INPUT

Contact input at the trigger input terminal can be handled as discrete input. Input 3 (Input 5 for the 73VR2104, Input 7 for the 73VR2106, Input 9 for the 73VR2108, Input 11 for the 73VR2110, Input 13 for the 73VR2112) is used.



Figure 2.7.2a. Detailed setting, discrete.

OFF Description, ON Description

Short description for ON (1) and OFF (0) status can be specified.

| | |
|-----------------|-------------------|
| OFF description | Max. 5 characters |
| ON description | Max. 5 characters |

2.7.3 CHANNEL SELECTOR BUTTONS

These control buttons are commonly used in many windows.

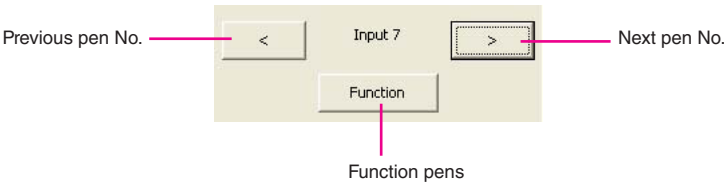


Figure 2.7.3. Channel selector buttons.

2.8 FUNCTION PEN SETTING (INDIVIDUAL)

Pressing Function Pen Setting (Individual) button under Setting buttons opens a pen setting window just like the Input Pen setting, but with Function pen selectors. Choosing Enable under the Common setting will open Detail setting to the right in the same window shown in Figure 2.8.

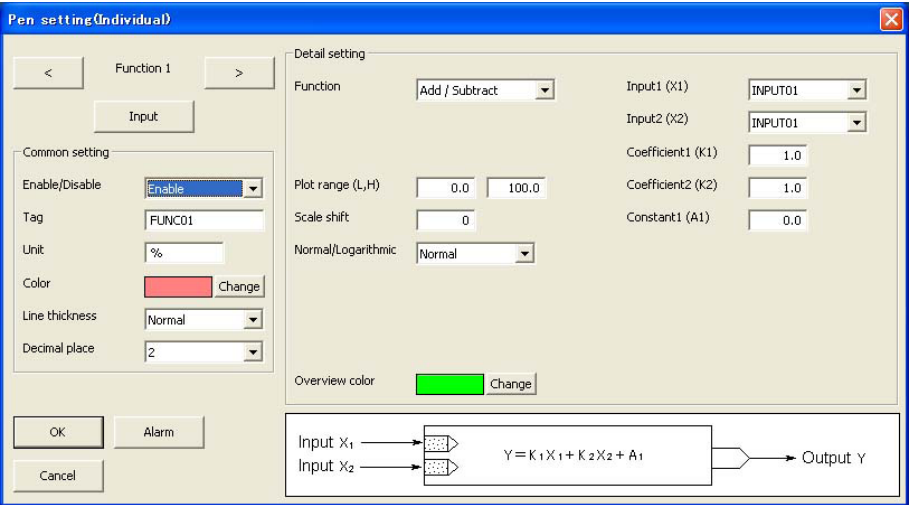


Figure 2.8. Function pen setting (Individual).

2.8.1 COMMON SETTING

Enable / Disable

Enable / Disable the recording. The pen's function data is stored when this selection is set to Enable.

Tag name

| | |
|----------|-------------------|
| Tag name | Max. 8 characters |
|----------|-------------------|

Unit

| | |
|------|-------------------|
| Unit | Max. 4 characters |
|------|-------------------|

Color

Choose a desired color from the palette.

Line thickness

| | |
|--------|-------------|
| Normal | Normal line |
| Thick | Thick line |

Decimal place

Specify how many decimal places you want to show on the digital indicators and the scale. Choose among 0, 1, 2 and 3.

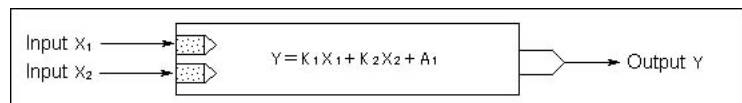
2.8.2 DETAILED SETTING

Selectable operating functions are as shown in the table below.

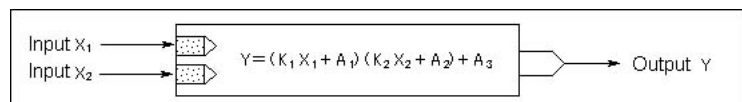
| | | |
|---------------------|-----------------|---|
| Arithmetic | Addition | $K1X1 + K2X2 + A1$ |
| | Multiplication | $(K1X1+A1) (K2X2+A2) + A3$ |
| | Division | $(K1X1+A1) / (K2X2+A2) + A3$ |
| Logical | AND | $X1 \wedge X2$ |
| | OR | $X1 \vee X2$ |
| | NOT | $\neg X1$ |
| | XOR | $X1 \wedge X2$ |
| Math | Square root | Square root extraction $K1 \sqrt{X1}$ |
| | Power | Power $X1^{A1}$ |
| Accumulation | | Analog accumulation |
| Peak hold | Peak hold (max) | Maximum value hold |
| | Peak hold (min) | Minimum value hold |
| Filter | First order lag | Time constant is a response time for a step input (0 to 100%) to reach 63%. |
| | Moving average | Multiple samples of input data are averaged. |
| F value calculation | | Typically used to calculate the sterilization or disinfection time in predefined conditions |
| Anemoscope | | Direction corresponding to measured data is displayed in the display view |

When you choose a type of operating functions, function blocks appear at the bottom of the window.

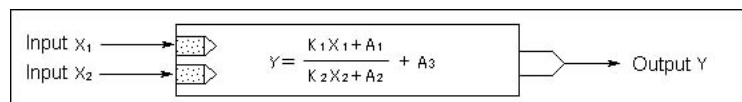
Addition / Subtraction



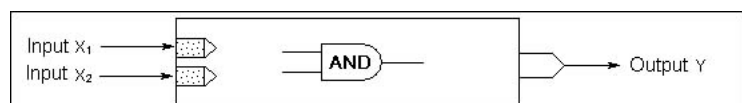
Multiplication



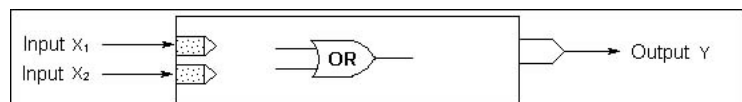
Division



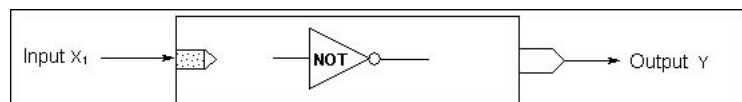
AND



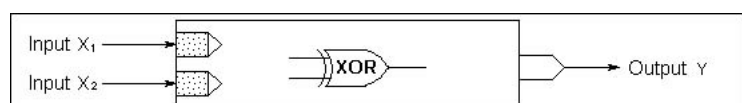
OR



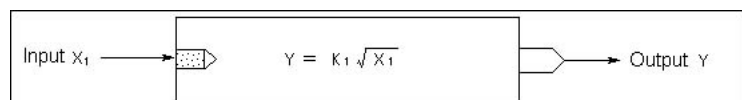
NOT



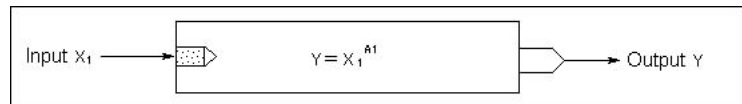
XOR



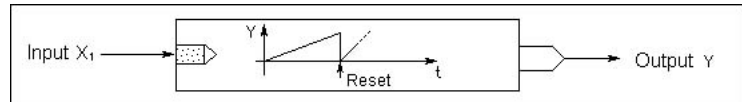
Square root



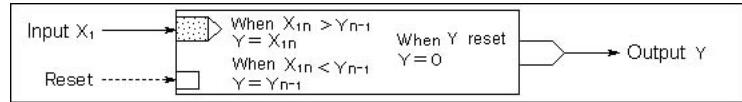
Power



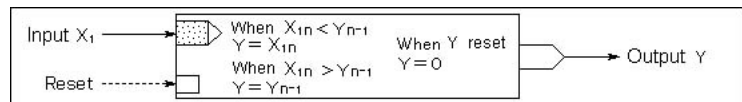
Analog accumulation



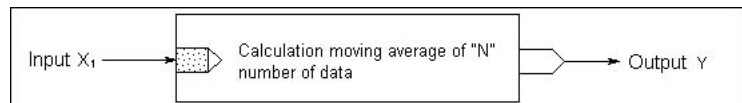
Peak hold (max)



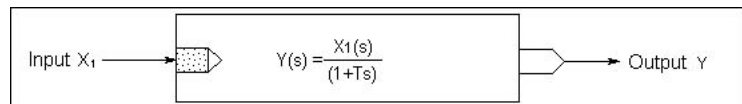
Peak hold (min)



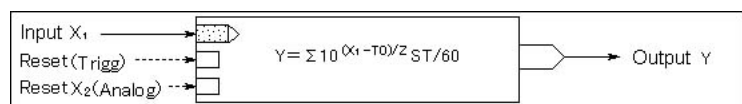
Moving average



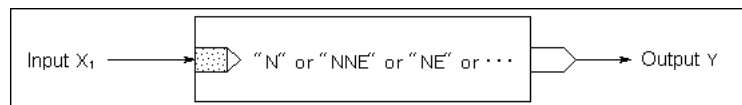
First order lag



F value calculation



Anemoscope



Input (X1, X2)

Select input signals used for the operating function. For Square root, Power, Analog accumulation, Peak hold, NOT, First order lag, only X1 is selectable.

To use last sampled or computed data in an equation, choose tags with asterisk (*).

Caution !

The tag name list shows only those 'enabled' in the common setting.

Caution !

Be careful to choose a pen of Not Itself. For example, you cannot choose Function Pen 1 or the last data of Function Pen 1 to be used as X1 or X2 in an equation for Function Pen 1. When assigning 'last' data sample to X1 or X2, specify also the initial value. Otherwise no data is recorded for the first operating cycle.

Coefficient (K), Constant (A)

For AND, OR, NOT, XOR functions, no coefficient or constant is selectable.

| | |
|-------------------------|--|
| Coefficients, Constants | Max. 6 digits including a decimal point and minus sign |
|-------------------------|--|

Initial value

Initial value is used in the function operation cycle as default data sample when 'last' data is specified in an equation. If you do not need, leave the field blank.

For Peak hold, First order lag, Moving average and F value calculation, the initial value is not available.

| | |
|--------------------------|--|
| Initial value (analog) | Max. 6 digits including a decimal point and minus sign |
| Initial value (discrete) | 1 for ON, 0 for OFF |

Caution !

For an analog signal, 'e' can be used to input an exponential value such as '1e9.' Entering 'e' in any other way (e.g. '1ee') will not be recognized as a numeral.

For Logic functions, any setting other than 0 and 1 will be handled as 0 as initial value. For the XOR function, setting other than 0 and 1 to X1 or X2 will result in '0.'

Moving average sample number

Specify number of samples used for the moving average operation.

| | |
|---------|--------------------------|
| Samples | Specify between 2 and 16 |
|---------|--------------------------|

First order lag filter time constant

Specify a time constant used for the filter function.

| | |
|---------------|---|
| Time constant | Specify between 0.00 and 100.00 seconds. Max. 2 decimal places. |
|---------------|---|

Reset conditions (peak hold and analog accumulation)

- Reset by time

Click the left arrow to choose among 30 minutes, 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 12 hours and 24 hours. To disable the resetting by time setting, specify None.

When '24 hours' is selected, specify also the reset time of the day.

| | |
|------------|--|
| Reset | None, 30 minutes, 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 12 hours, 24 hours |
| Reset time | Specify between 0 and 23 (hours) |

- Reset by trigger input

Click the right arrow to choose among Rise, Sink, ON and OFF. To disable the resetting by trigger input, specify None.

Reset conditions (F value calculation)

- Reset by trigger input

Click the right arrow to choose among Up, Down, ON and OFF. To disable the resetting by trigger input, specify None.

- Reset by analog input

Click the right arrow to choose between Value < Threshold and Value ≤ Threshold. To disable the resetting by analog input, specify None.

With one of the conditions selected, choose also Input 2 tag name and the threshold value. In order to avoid frequent start/reset operations due to instable analog input signal around the threshold value, specify also a deadband.

'e' can be used to input an exponential value such as '1e9'. Entering 'e' in any other way (e.g. '1ee') will not be recognized as a numeral.

| | |
|---------------------|--|
| Threshold, Deadband | Max. 6 digits including a decimal point and minus sign |
|---------------------|--|

Reference temperature (T0), Z value

Specify T0 and Z for the F value calculation.

'e' can be used to input an exponential value such as '1e9'. Entering 'e' in any other way (e.g. '1ee') will not be recognized as a numeral.

| | |
|-------------------------------------|--|
| Reference temperature (T0), Z value | Max. 6 digits including a decimal point and minus sign |
|-------------------------------------|--|

Storing rate

The storing rate is indicated (but not changed here) for the F value calculation. To change the storing rate, refer to Section 2.3.1.

Sum scale for analog accumulation

Choose among None, Second, Minute, Hour and Day.

Plot position, Scale shift, Normal/Log, Overview color

Refer to Section 2.7.2.

Log 2 is not selectable for function pens.

2.9 ALARM SETTING (INDIVIDUAL)

2.9.1 ANALOG ALARM

Alarm setting(Individual)

< Input 1 > Function

① Alarm Setpoint [] [] [] [] %

② Normal zone 0% [] [] [] [] 100%

① Deadband [] [] [] [] %

Relay ON OFF ⑤ [] [] [] []

Output ④ []

Alarm Output

Up ⑥ [] [] [] [] ⑦

Down ⑧ [] [] [] [] ⑨

③ [] [] [] [] [] Change Change Change Change Change

OK Cancel

Figure 2.9.1. Alarm setting for analog signal (Individual).

Alarm Setpoint, Deadband (1)

Specify up to 4 setpoints in engineering unit within the Input Range. Alarms are reset when the signal goes out of the alarm zone by the preset deadband values.

If you set only “High” and “Low” setpoints, they must be set immediately next to the “Normal” zone.

Deadband is used to avoid the alarm ON and OFF quickly and repeatedly around the setpoint when the input signal changes that way. The alarm, once triggered, does not reset until the signal passes the point by the preset deadband.

| | |
|---------------------------|--|
| Alarm setpoint / Deadband | Max. 6 digits including a decimal point and minus sign |
|---------------------------|--|

Normal Zone (2)

Set a specific range that is judged as a ‘normal state’ so that relevant data is continuously plotted. Consequently, while a pen you have set up is within this range, it means a corresponding input signal is in the normal state.

Zone Color (3)

You can apply specific colors to represent each zone divided by the limits for use in the Display views. Use the color palette.

NOTE

256 colors are used in the 73VR21x. If you choose a color out of this, it may not be represented accurately on the 73VR21x screen.

Output (4)

Alarm contact outputs can be provided to the alarm output terminal

Choose Enable to activate an relay output.

Relay (5)

Specify the zone(s) in which you wish the contact to be turned on or off.

Alarm Message (6)...(9)

Set Enable to the thresholds where Messages are to be displayed on the Alarm History.

Up messages appear when the signal goes across an alarm setpoint upward. Down messages appear when the signal goes across an alarm setpoint downward. Message contents up to 10 characters respectively for Up and Down.

2.9.2 DISCRETE ALARM

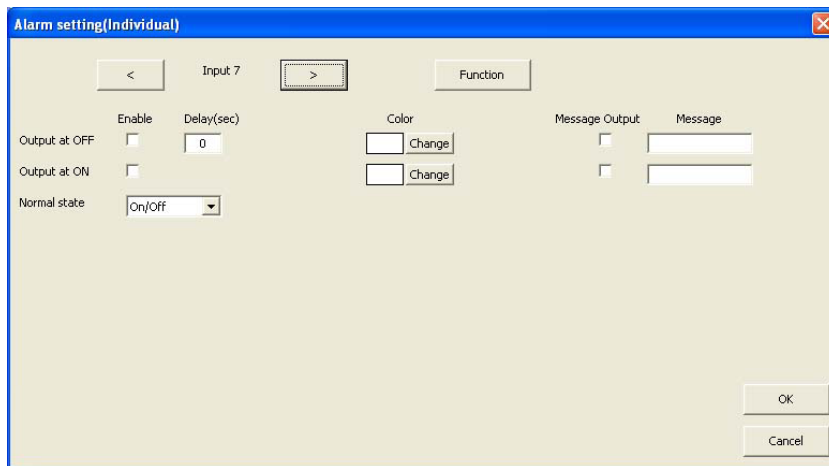


Figure 2.9.2. Alarm setting for discrete signal (Individual).

Output at OFF / ON Enable, Delay

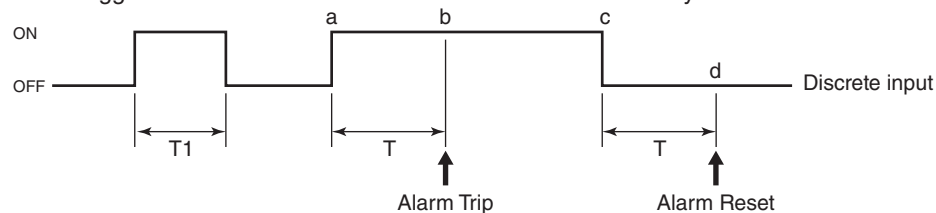
Alarm contact outputs can be provided to the alarm output terminal. Choose Enable to activate an relay output for respective signal status (input ON and OFF).

In order to eliminate noise interference, you can specify the time (seconds) to wait to apply change in signal status.

| | |
|-------|---------------------------------|
| Delay | Selectable from 1 to 99 seconds |
|-------|---------------------------------|

Caution !

Alarm is Not triggered if 'true' contact status lasts shorter than the delay time.



[Example] ON Alarm

- ON status for T_1 time duration does not trigger alarm because the duration is shorter than the delay time.
- 'True' contact status starts at (a) point but an alarm is triggered only at (b) point, after the delay time T has been elapsed.
- 'False' contact status starts at (c) point but the alarm is reset only at (d) point, after the delay time T has been elapsed.

Color

You can apply specific colors to represent each status for use in the Display views. Use the color palette.

OFF Message, ON Message

These messages are used for Overview and Alarm History. Choose Enable to activate a message output for respective signal status (input ON and OFF). Message contents up to 10 characters respectively for OFF and ON.

Normal state

Specify which trigger input contact status should be identified as normal.

2.10 INPUT PEN SETTING (BUNDLE)

In order to review and set all pens at once, click Input Pen Setting (Bundle) under Setting.

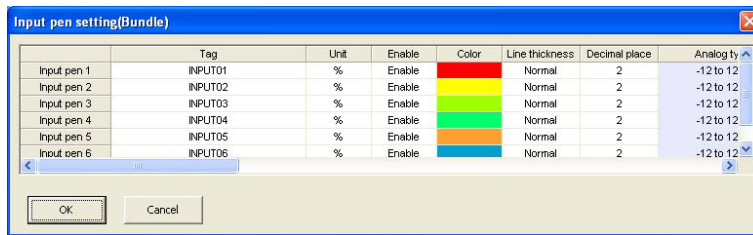


Figure 2.10. Input pen setting (bundle).

HOW TO MODIFY PEN SETTING

1. Click on the cell you want to change.
2. When a pull-down arrow appears to the right, pull down the menu options and select one.
3. Press Enter or move to a next cell.

HOW TO COPY ONE PEN SETTING TO ANOTHER

1. Click on the leftmost cell you want to copy.
2. Click on the right mouse button. Copy option appears, and click on it.
3. Click on the cell you want to paste the setting on.
4. Click on the right mouse button. Copy and Paste options appear, and choose Paste.

2.11 FUNCTION PEN SETTING (BUNDLE)

In order to review and set all function pens at once, click Function Pen Setting (Bundle) under Setting.



Figure 2.11. Function pen setting (bundle).

2.12 ALARM SETTING (BUNDLE)

In order to review and set all alarms at once, click Alarm Setting (Bundle) under Setting.

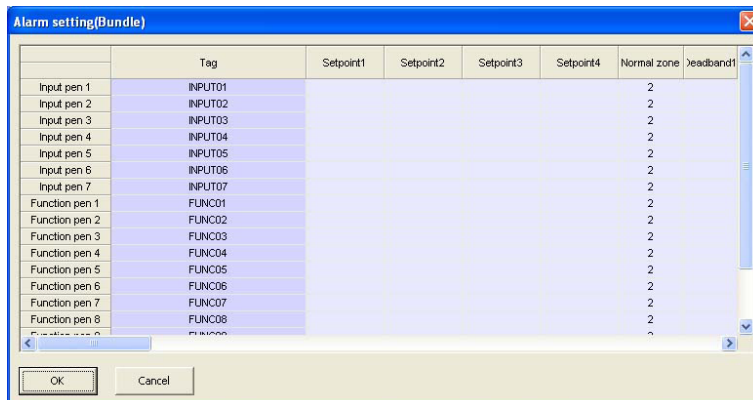


Figure 2.12. Alarm setting (bundle).

2.13 SELECT DISPLAY PENS

Press Select Display Pens button under Setting in order to specify how you want to arrange pens to appear on the Trend and Bargraph views.

Pull down the arrow to the right of each field and choose among the options in the pulled-down menu.

Number of pens that each group ('Page' on the 73VR21x screen) can show depends upon the 'Display pen number' setting.

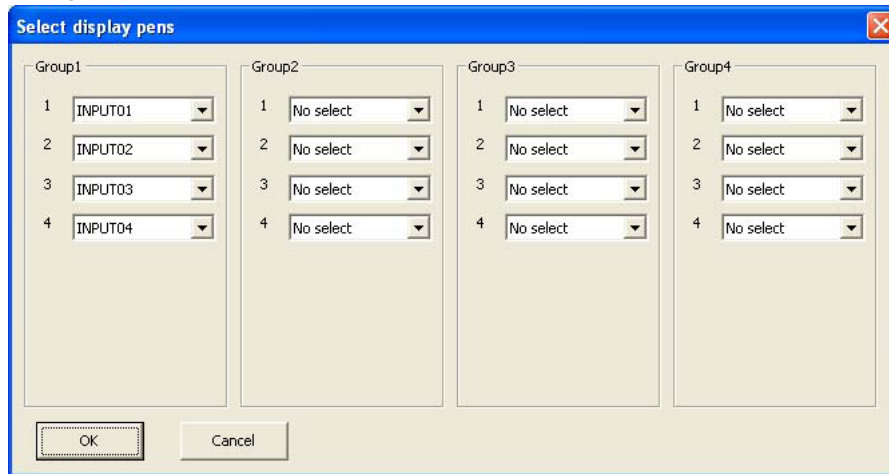


Figure 2.13. Select display pens.

2.14 HARDWARE CONFIGURATION

ADC Speed and Line Noise Filter type are specified. With 100 msec. storing intervals, these settings are not necessary.

ADC SPEED

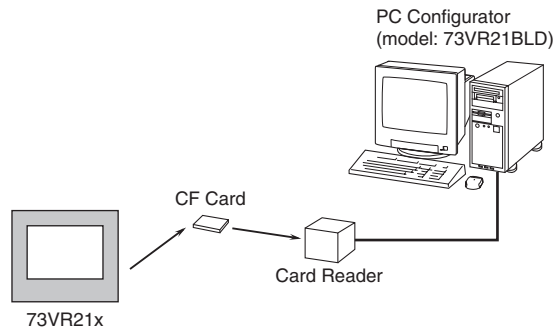
Choose among Low, Medium and High.

LINE NOISE FILTER

Choose among 50/60 Hz, 50 Hz and 60 Hz.

3 FILE OPERATION

File operation functions are applicable to data stored in a CF Card or in the PC's hard disk. A Card Reader device is required to interface between the PC and a CF Card.



3.1 READ SETTING FILE

When you need a specific set of parameter settings, press Read Setting File and choose one of the parameter files saved as in 3.2. The file displayed on the screen can be exported to CSV, or downloaded to the 73VR21x to apply the setting.

3.2 WRITE SETTING FILE

Parameters set on the 73VR21BLD can be saved in a file with user-specified file name.

Parameter contents uploaded from the 73VR21x also can be saved in the same manner.

When you use a file created on the 73VR21BLD for the 73VR21x, the file name must be 73VR.VRP21.

3.3 CONVERTING OLD VERSION SETTING FILES

Setting files saved in old version builders can be converted into the latest version one so that they can be used with the 73VR21x of the latest version.

1. Choose Read Setting File and open the old version file. It is converted into the setting file compatible with the 73VR21BLD you are using now.
2. Choose Write Setting File and save the converted file, or download the setting to the 73VR21x.

Note

A setting file once converted into the latest version cannot be used with the old version 73VR21x or the 73VR21BLD.

3.4 EXPORT SETTING TO CSV

Parameters set on the 73VR21BLD can be saved in the CSV format.

Parameter contents uploaded from the 73VR21x also can be saved in the same manner.

Pressing Export Setting to CSV opens up the dialog box shown below on the screen.

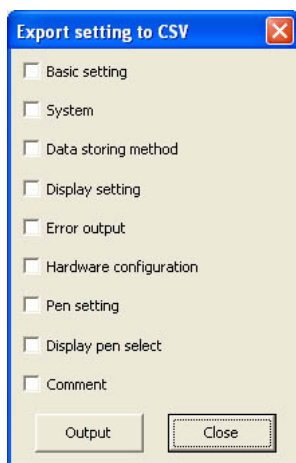


Figure 3.4. Export setting to CSV.

| | |
|------------------------|--|
| Basic setting | Input channel |
| System | Operating mode, Temperature unit, Start mode, Data storing form, Data overwrite, Screen saver, IP address, Touch panel beep |
| Data storing method | Storing interval, Storing setting |
| Display setting | Chart speed, Graph direction, Digital display type, Digital display, Data file used volume, Display pen number, Display pen number (OV), Auto pen switching, Chart color |
| Error output | Enable/Disable, Output channel, Contact logic |
| Hardware configuration | ADC speed, Line noise filter |
| Pen setting | Input pen setting, Function pen setting, Alarm setting |
| Display pen select | Select display pens |
| Comment | Direct input, Group name, Group color, Comment, Auto write in |

Choose one or more options and click Output. Specify a file name and save.

3.5 CREATE CF DATA

The 73VR21x automatically creates a data area dedicated to store data files when it starts up. It can also be created on the PC using the 73VR21BLD. Be sure to create a data file in a CF Card before trying to replace CF Cards while the 73VR21x is running.

Press Create CF Data and the window shown in Figure 3.5 appears on the screen.

Enter the drive ID where you have a CF Card and press Create. Then the window is replaced with the one shown in Figure 3.5a.

Pressing Cancel stops creating the file.

The field below the Cancel button shows two figures: file size to be created on the right, file size being created on the left.

When the operation is complete, Congratulations! appears on the screen.

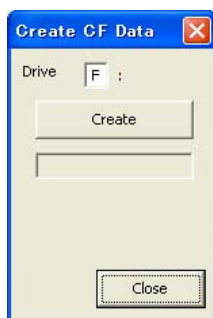


Figure 3.5. Create CF Data.

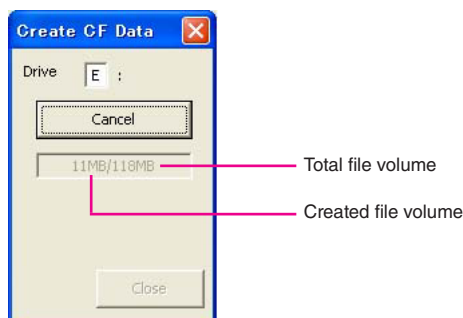


Figure 3.5a. Create CF Data in file creating process.

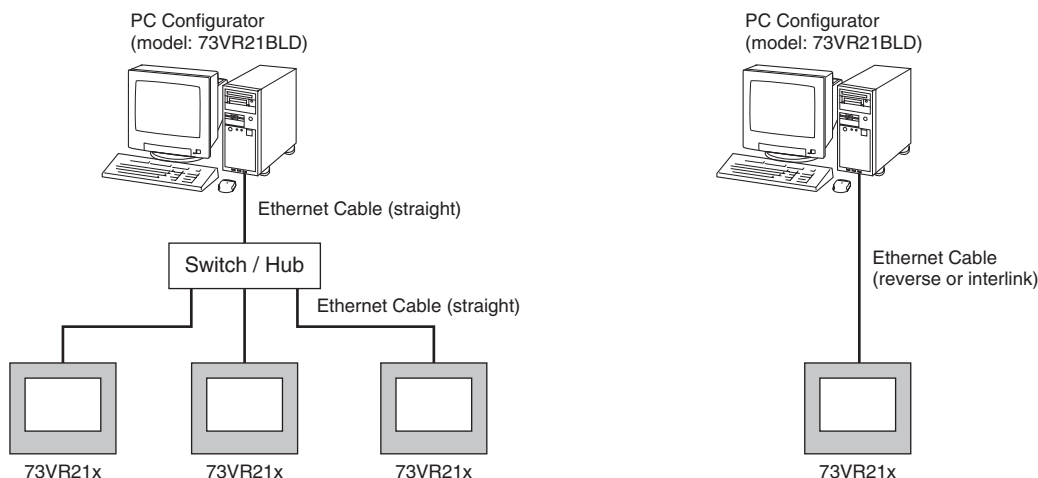
Caution !

In order to use the data area created by Create CF Data, insert the CF Card while the power to the 73VR21x is not supplied.

4. ONLINE OPERATION

File operation functions are usable between the PC and the 73VR21x.

Online Operation are accessible only when the 73VR21x is connected to a PC installed with the 73VR21BLD via Ethernet. Before using these functions, confirm that an appropriate IP address is set to the 73VR21x.



4.1 UPLOAD

The 73VR21BLD can read the current settings on the 73VR21x. Enter IP address of the 73VR21x in IP address setting under System setting, and press Upload button.

If you have set up a password to allow access the 73VR21x, the Enter Password dialog box will appear. Enter password and click OK.

When the upload is successfully complete, 'Congratulations!' appears on the screen.

4.2 DOWNLOAD (All)

Pressing Download button downloads the current settings configured on the 73VR21BLD to the 73VR21x.

If you have set up a password to allow access the 73VR21x, the Enter Password dialog box will appear. Enter password and click OK.

When the download is successfully complete, 'Congratulations!' appears on the screen. Downloading can be executed only while recording is stopped.

If there were changes for the following parameters in the new configuration, the data file, the alarm history and the comment history files are all reset: Storing interval, Data format, Number of enabled pens.

4.3 DOWNLOAD (Runtime)

The following parameters, runtime programmable items, can be downloaded even while recording.

| | |
|----------------------|---|
| System | Screen saver, Touch panel beep |
| Display setting | Graph direction, Digital display type, Digital display, Data file used volume, Display pen number, Display pen number (OV), Auto pen switching, Chart color |
| Input pen setting | Color, Line thickness, Decimal place, Plot range, Scale shift, Exponential scale, Overview color |
| Function pen setting | Line thickness, Decimal place, Plot range, Exponential scale, Overview color |
| Alarm setting | All parameters |
| Select display pens | Select display pens |
| Comment | All parameters |

If you have set up a password to allow access the 73VR21x, the Enter Password dialog box will appear. Enter password and click OK.

When the download is successfully complete, 'Congratulations!' appears on the screen.

4.4 REMOTE START / STOP

You can remotely start / stop the 73VR21x with these control buttons. When you need to change and download settings, the 73VR21x can be stopped at any time.

If you have set up a password to allow access the 73VR21x, the Enter Password dialog box will appear. Enter password and click OK.

APPENDIX-A SETTING FILE FORMAT IN CSV

Row A : Basic, item names

Row B : Basic, parameters

| | | |
|---|------------------------|------|
| 1 | Setting File Version 1 | |
| 2 | # Basic information # | |
| 3 | Input channel | 6 ch |

Row A : System, item names

Row B : System, parameters

| | | |
|----|-----------------------|---------------|
| 3 | Communication setting | DEMO |
| 4 | Temperature unit | Centigrade |
| 5 | Start mode | Cold start |
| 6 | Data storing form | Float |
| 7 | Data overwrite | ON |
| 8 | Screen saver | 0Min. |
| 9 | IP address | 192.168.0.1 |
| 10 | Subnet mask | 255.255.255.0 |
| 11 | Default gw | |
| 12 | Touch panel beep | ON |

Row A : Data storing method, item names

Row B : Data storing method, parameters

| | | |
|----|-------------------------------------|----------------|
| 12 | # Data storing method information # | |
| 13 | Sampling rate | 500msec |
| 14 | Storing mode | Time specified |
| 15 | Condition | One time only |
| 16 | Date | 2006/1/1 |
| 17 | Time | 0:00:00 |
| 18 | Storing hours | 0hours |
| 19 | Storing min. | 1 minutes |

Row A : Display setting, item names

Row B : Display setting, parameters

| | | |
|----|---------------------------------|---------------|
| 20 | # Display setting information # | |
| 21 | Chart speed | 4 |
| 22 | Graph | Perpendicular |
| 23 | Digital display pen No. | Tag+Value |
| 24 | Digital display | Auto hide |
| 25 | Use rate of DataFile | Not shown |
| 26 | Display pen number | 4 Pens |
| 27 | Display pen number (OV) | 2 Pens |
| 28 | Auto pen switching | Disable |
| 29 | Chart color | Gradation 1 |

Row A : Error output, item names

Row B : Error output, parameters

| | | |
|----|------------------------------|---------|
| 30 | # Error output information # | |
| 31 | Enable/Disable | Disable |

Row A : Hardware configuration, item names

Row B : Hardware configuration, parameters

| | | |
|----|--|---------|
| 32 | # Hardware configuration information # | |
| 33 | ADC speed | Medium |
| 34 | Line noise filter | 50/60Hz |

Row A : Pen setting, item names
 Row B : Pen setting, parameters
 Lower range values
 Row C : Upper range values

| | | | |
|----|-----------------------------|------------------|-----|
| 35 | # Pen setting information # | | |
| 36 | *Input 1* | | |
| 37 | Tag | INPUT01 | |
| 38 | Unit | % | |
| 39 | Color | RGB(255.0.0) | |
| 40 | Thick line | Normal | |
| 41 | Decimal place | 2 | |
| 42 | Analog type | -12 to 12 V | |
| 43 | Input range | 0 | 12 |
| 44 | Eng. range | 0 | 12 |
| 45 | Plot range | 0 | 100 |
| 46 | Scale shift | 0 | |
| 47 | Normal/Logarithmic | Normal | |
| 48 | Square root | Normal | |
| 49 | Overview color | RGB(0.255.0) | |
| 50 | CJC SW | ON | |
| 51 | Barnout type | None | |
| 52 | Alarm Setpoint | | |
| 53 | Normal Zone | 2 | |
| 54 | Deadband | | |
| 55 | Relay disable | | |
| 56 | UP1->2 message | Disable | |
| 57 | UP2->3 message | Disable | |
| 58 | UP3->4 message | Disable | |
| 59 | UP4->5 message | Disable | |
| 60 | DOWN1<-2 message | Disable | |
| 61 | DOWN2<-3 message | Disable | |
| 62 | DOWN3<-4 message | Disable | |
| 63 | DOWN4<-5 message | Disable | |
| 64 | Zone color1 | RGB(255.255.255) | |
| 65 | Zone color2 | RGB(255.255.255) | |
| 66 | Zone color3 | RGB(255.255.255) | |
| 67 | Zone color4 | RGB(255.255.255) | |
| 68 | Zone color5 | RGB(255.255.255) | |

Row A : Display pen select, item names
 Row B : Display pen select, parameters

| | |
|-----|------------------------------------|
| 255 | # Display pen select information # |
| 256 | Group 1 |
| 257 | 01:[001]INPUT01 |
| 258 | 02:[002]INPUT02 |
| 259 | 03:[003]INPUT03 |
| 260 | 04:[004]INPUT04 |
| 261 | Group 2 |
| 262 | 01:No select |
| 263 | 02:No select |
| 264 | 03:No select |
| 265 | 04:No select |
| 266 | Group 3 |
| 267 | 01:No select |
| 268 | 02:No select |
| 269 | 03:No select |
| 270 | 04:No select |
| 271 | Group 4 |
| 272 | 01:No select |
| 273 | 02:No select |
| 274 | 03:No select |
| 275 | 04:No select |
| 276 | |

Row A : Comment, item names

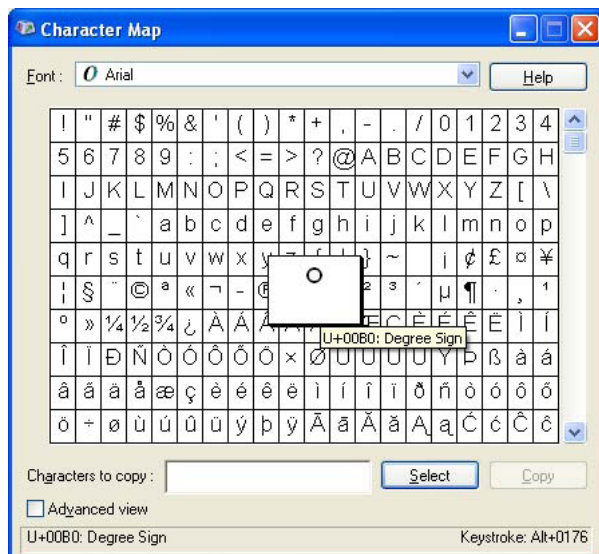
Row B : Comment, parameters

| # | Comment information # | |
|---|-----------------------|----------------|
| | Direct input | Enable |
| | Group 1 | |
| | Name | Grl |
| | Color | RGB(255,255,0) |
| | Comment 1 | |
| | Auto write in | Disable |
| | Comment 2 | |
| | Auto write in | Disable |
| | Comment 3 | |
| | Auto write in | Disable |
| | Comment 4 | |
| | Auto write in | Disable |
| | Comment 5 | |
| | Auto write in | Disable |
| | Comment 6 | |
| | Auto write in | Disable |
| | Comment 7 | |
| | Auto write in | Disable |
| | Comment 8 | |

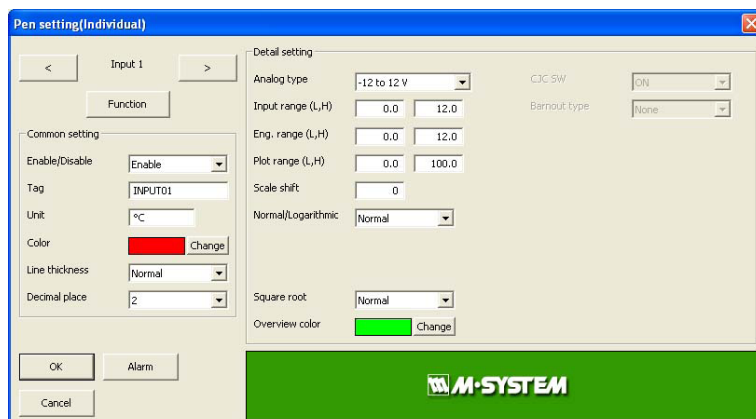
APPENDIX-B HOW TO SHOW TEMPERATURE UNIT

In order to enter '°C' or '°F' on the 73VR21x, please use the following procedure:

- (1) Choose on the task bar Start > Programs > Accessories > System Tools > Character Map.
- (2) Click on [°] (U+00B0: Degree Sign) and click Select button.



- (3) Click on [C] (U+0043: Latin Capital Letter C) or [F] (U+0046: Latin Capital Letter F) and click Select. [C] and [F] can be entered directly on the keyboard after the Character Map is closed.
- (4) Click Copy button to copy [°C] or [°F].
- (5) Open Pen setting (individual) window and paste the copied characters.



NOTE

Max. 4 characters can be used for an engineering unit. '°C' or '°F' takes two characters.
Characters may be garbled if an OS other than English is used.

APPENDIX-C SOFTWARE UPDATE HISTORY

Major software update history (version 3 or later) is as follows.

| | |
|--------------|--|
| Ver. 3.00D | When remote start after setting change, the recorded data will be erased. Dialog, which confirms whether accept it, was added. |
| Ver. 3.01.01 | "Anemoscope" function added. |

M-SYSTEM WARRANTY

1. What is covered.

M-System Co., Ltd. ("M-System") warrants, only to the original purchaser of new M-System products purchased directly from M-System, or from M-System's authorized distributors or resellers, for its own use not for resale, that the M-System products shall be free from defects in materials and workmanship and shall conform to the specifications set forth in the product catalogue applicable to the M-System products for the Warranty Period (see Paragraph 5 below for the Warranty Period of each product).

THE ABOVE WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE M-SYSTEM PRODUCTS AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

2. What is not covered.

This warranty does not cover any M-System product which has been: (1) modified, altered or subjected to abuse, misuse, negligence or accident; (2) improperly installed or installed in conjunction with any equipment for which it was not designed; or (3) damaged or destroyed by disasters such as fire, flood, lightning or earthquake.

In no event shall M-System be liable for any special, incidental, consequential or other damages, costs or expenses (including, but not limited to, loss of time, loss of profits, inconvenience or loss of use of any equipment).

3. Remedies.

If a defective product is returned to M-System in accordance with the procedures described below, M-System will, at its sole option and expense, either: (1) repair the defective product; (2) replace the defective product; or (3) refund the purchase price for the defective product paid by the purchaser. Except as otherwise provided by applicable state law, these remedies constitute the purchaser's sole and exclusive remedies and M-System's sole and exclusive obligation under this warranty.

4. Warranty Procedure.

If the purchaser discovers a failure of the M-System products to conform to the terms of this warranty within the Warranty Period, the purchaser must promptly (and, in any event not more than 30 days after the discovery of such failure) notify the relevant party as described below either by telephone or in writing at the below address to obtain an Authorized Return (AR) number and return the defective product to the relevant party. The designated AR number should be marked on the outside of the return package and on all correspondence related to the defective product. The purchaser shall return, at purchaser's expense, defective products only upon receiving an AR number. In order to avoid processing delays, the purchaser must include: copies of the original purchase order and sales invoice; the purchaser's name, address and phone number; the model and serial numbers of the returned product; and a detailed description of the alleged defect.

5. Warranty Period.

| | |
|---------------------|--|
| Signal Conditioner: | 36 months from the date of purchase. |
| M-Rester: | 12 months from the date of purchase. |
| Valve Actuator: | 18 months from the date of shipment from M-System or 12 months from the date of its installation, whichever comes first. |
| Other Products: | 36 months from the date of purchase. |

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