

Mold Marshalling System for
In-mold Measurements

Injection Molding Monitoring System

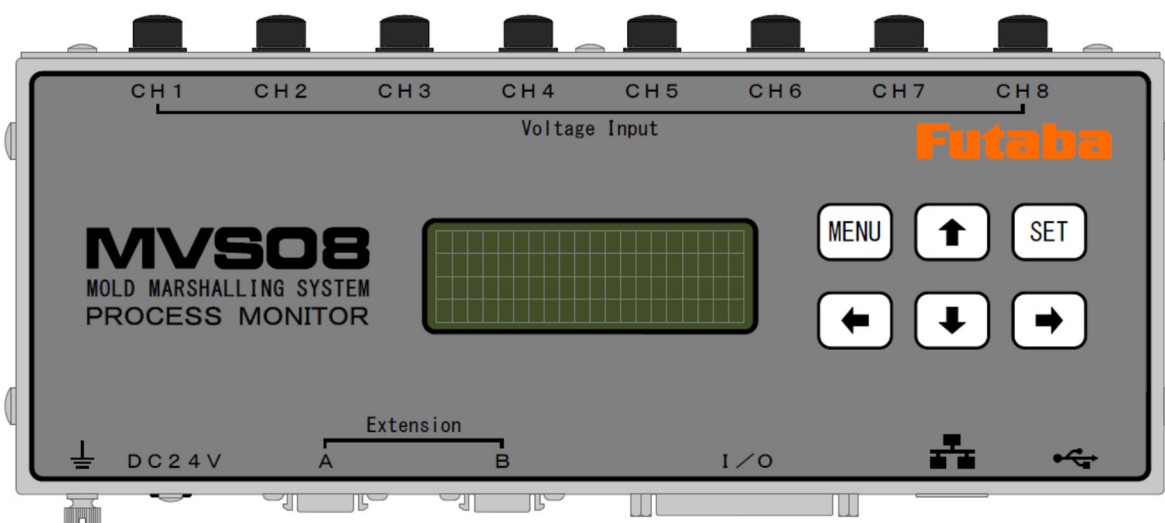
MVS08

Instruction Manual

Thank you for your purchasing a product of Futaba Corporation.

Please read this instruction manual carefully and patronize the product for many years to come.

Do not use the product in any way other than explained in this instruction manual.



Whole or part of this manual may not be copied or reproduced without the written permission of Futaba Corporation. This manual is a copyrighted work of Futaba Corporation and the copyright belongs to Futaba Corporation. The contents of this instruction manual may be changed without prior notice.

Contents

Safety Precautions		4. Basic Operation of Measurement Software	27
Preface	1	4-1 Starting and Exiting Software	27
Standard Accessories	1	4-2 Changing the Language	27
Handling Precautions	2	4-3 Names and Functions of Screen Components	28
System Configuration	4	4-4 Setting the Conditions	29
		4-4-1 Setting measurement conditions	29
1. Names & Major Functions of Components	5	4-4-2 Setting input for each CH	30
1-1 Front	5	4-4-3 Setting I/O signals	34
1-2 Front Surface	6	4-4-4 Setting alarm monitoring conditions	37
		4-5 Saving Settings As	41
2. Preparation	7	4-6 Saving Settings	41
2-1 Setting up Network Connections	7	4-7 Reading Setting from Amplifier	41
2-2 Installing PC Software	7		
2-2-1 Operating environment	7	5. Using the System	42
2-2-2 Installing the PC software	7	5-1 Selecting Measurement Mode	42
2-2-3 Checking the version	7	5-2 Selecting Setting File	42
2-3 Updating Software	8	5-3 Starting Measurement	43
2-3-1 Updating the PC software	8	5-4 Observing Waveforms	43
2-3-2 Updating the firmware	8		
2-4 Installing the System	13	6. Function Description	44
2-5 Connections in System	13	6-1 Displaying Template Waveforms	44
(1) Injection molding monitoring system "MVS08 set"	13	6-2 Overlaying Waveforms	45
(2) When connecting a resin pressure measuring system "MPS08 set"	14	6-3 Using the Cursor Functions	45
(3) When connecting a resin pressure measuring system "MPV04 set"	14	6-4 Waveform Display Settings	46
(4) When connecting an inline injection resin pressure measuring unit "MPS01A"	15	6-4-1 Enlarging waveforms	46
(5) When connecting a resin temperature pre-amplifier "UPI01", "EPT-001"	15	6-4-2 Moving the waveform position	46
(6) When connecting a mold surface temperature sensor "STF"	16	6-4-3 Displaying the entire waveforms	46
(7) When connecting other makers' measuring devices	16	6-4-4 Displaying waveforms in dual window mode	47
(8) When connecting MVS08 dedicated pre-amplifier UPP01, mold surface temperature pre-amplifier UPT01	16	6-4-5 Changing the color of waveforms	47
(9) When connecting additional MVS08 units	17	6-5 Other Display Settings	47
2-6 Connecting the I/O Signal	18	6-6 Saving Data	49
2-7 Connecting the Power Supply	21	6-6-1 Types of saved data	49
		6-6-2 Displaying storage space	50
3. Basic Operation of MVS08	23	6-6-3 Saving data to USB memory sticks	50
3-1 Turing Power ON/OFF	23	6-7 Administrator Settings	51
3-2 Operating MVS08 Main Unit	23		
3-2-1 Operating the key switches	23	7. Checking the Operation	53
3-2-2 Checking the LCD screen display	23	7-1 Checking the Communication between Amplifier and PC	53
3-2-3 Using MVS08 main unit standalone	26	7-2 Checking the I/O Signal	53
		7-3 Checking the Operation of Sensor	54
		7-3-1 Sensor calibration	54
		7-3-2 Quick sensor checking	54
		8. Specifications	55

Safety Precautions (Be sure to read before use)

■ Before Use

Before using the product, read this “Safety Precautions” and the instruction manual carefully.

After reading the manual, keep it in a safe place so that it can be used whenever needed.

When using the product, be sure to observe the following safety precautions.

Futaba Corporation assumes no liability for the injury caused by using the product contrary to these precautions.

■ This manual uses the following alert symbols for safe use of the product.



WARNING

Failure to observe the instructions with this symbol could result in death or serious personal injury.



CAUTION

Failure to observe the instructions with this symbol could result in injury or only damage to property.

■ General Precautions

- When starting product operation, make sure in advance that the functions of the product are normally working with normal performance.
- If the product fails, use adequate safety measures to prevent various types of damage.
- Note that we cannot guarantee the functionality and performance for use of the product not conforming to the specifications or any remodeled product.
- When using the product in combination with other equipment, evaluate it thoroughly because the functionality and performance may not be satisfactory depending on the use conditions and environment.

■ Precautions



WARNING

When installing the product or connecting cables, be sure to disconnect the power cable from the outlet in advance.
Failure to do so could result in electric shock or malfunction.



WARNING

Do not use a broken cable or a cable with a flow in the covering.
Doing so could result in fire, electric shock, or device damage or failure.



WARNING

Use the power to the AC adaptor within the range (100 to 240V) stipulated in the specifications. Using the power outside the range could result in fire or device damage or failure.



WARNING

Use the AC adaptor that comes with the product.
Using any other AC adaptor could result in device damage or failure.



CAUTION

Keep the sensor, amplifier, junction box, and junction cable away from water.
Failure to do so result in electric shock or device damage.

Preface

“Mold Marshalling System MVS08” is an injection molding monitoring system that allows you to display various information to “visualize the conditions inside the mold” such as the resin pressure, resin temperature and mold surface temperature on a PC.

You can also capture the information from the injection molding machine and other manufacturers’ measuring devices and combine all the information to build an ideal system that can measure, observe, monitor and record various molding conditions in real time.

Major features are as follows:

- A standard system can measure voltage up to eight channels concurrently. Connecting three units of the system enables 24-point measurements.
- We offers cable accessories that allows for an easy connection of resin pressure, resin temperature and mold surface temperature measuring systems.
- Waveforms and historical data of each shot is automatically saved in the PC. When the system is operating standalone with no PC connected, these data is automatically saved in the USB memory stick connected.
- Data is saved in CSV format and can be easily read with commercially available spreadsheet software.
- Seven alarm monitoring items can be set for each channel.
- When an alarm occurs, it is possible to output a signal to the robot to sort the defective products.
- Even the system running standalone without a PC enables alarm monitoring.
- The waveforms being measured can be overlaid on the waveforms saved in the past.

Please read this instruction manual carefully and use the product correctly.

If you have any questions, please contact our sales department.

Standard Accessories

- This equipment comes with the following standard accessories.

After unpacking the equipment, make sure that all accessories are included.

- Injection molding monitoring system “MVS08” main unit 1
- AC adaptor “ES0024007 N-MVS08” 1
(One ferrite core for noise suppression comes with the adaptor)
- Signal I/O cable (3 m) “WC10030 N-MVS08” 1
- LAN cable (2 m) “WCL0020” 1
- Software “PVS N-MVS08 for Windows” 1
(CD-ROM, the latest version at the time of shipment)
- Instruction Manual (This Manual) 1
- Installation Manual 1
- Warranty and Certificate of Registration 1

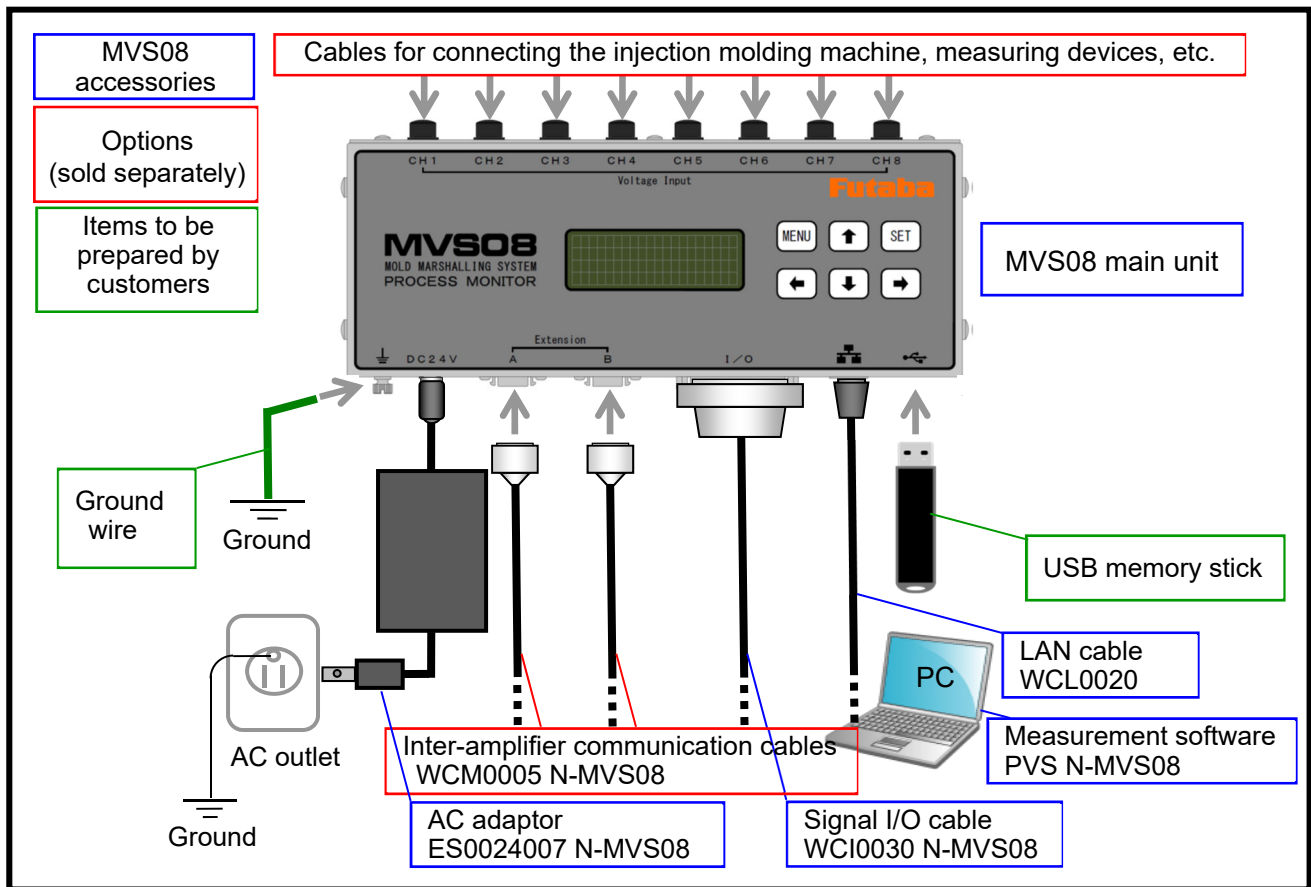
Handling Precautions

- Turn on the power to the injection molding monitoring system (hereinafter, referred to as the MVS08 main unit) after connecting between the systems. Be sure to connect the power cable of the MVS08 main unit to the AC outlet. Do not turn on/off the power supply by plugging/unplugging the AC adaptor into/from the jack. It could damage the main unit and the AC adaptor.
- When the power is once turned off, wait for at least 5 seconds before turning it on again. If the power is turned on within 5 seconds or turned on and off repeatedly, power failure may be caused by rush current generated at power on.
- Warm up the system before use, for about 30 minutes after power on.
- Before turning off the power to the MVS08 main unit, be sure to exist the measurement software. If the power is turned off with the software running, communication operation may not be terminated normally and an unexpected failure may occur.
- When the MVS08 is used standalone, disconnect the LAN cable only after exiting the measurement software and turning off the power to the MVS08 main unit. If the LAN cable is disconnected with the software running or with the MVS08 power on, communication operation may not be terminated normally and an unexpected failure may occur.
- When turning off the power after setting operation is performed, wait at least 3 seconds. The setting is stored in the no-volatile memory in the MVS08 main unit, but is not stored correctly if the power is turned off soon after the setting operation.
- This system stores the data measured by the MVS08 main unit in the storage device (such as a hard disk) of PC. To prevent the degradation of PC performance or unexpected failure, the system is designed to stop saving data when the amount of stored data exceeds a certain level. Move the data frequently.
- When performing measurement in maintenance mode, be sure to execute "offset". Without doing "offset", measurement cannot be performed correctly.
 - * When measurement is performed in monitor mode, "offset" is executed when the signal (IN1) is input from the molding machine or when the "SET" key on the main unit is pressed.
- Avoid using the system in an environment subject to remarkably high or low temperature. The allowable range of operating temperature is 0 to 50°C. If it is unavoidable to use the system at a place subject to direct sunlight or in a cold area, protect it from sunlight or keep it warm.
- Use the system in the relative humidity range from 35 to 85%. Using it out of the humidity range or in an environment subject to water splashes could result in performance deterioration or failure.
- Do not use the system in a dusty place. Performance degrades if the dust gets inside. Prevent dust from getting inside not only during operation but also during storage. Use the system in an environment in which PCs can be used.
- If the environment changes drastically, do not operate the system soon. Leave the system in the new operating environment to adapt it to the environment and then use it. If the ambient temperature or humidity is changed drastically due to movement, condensation may cause performance degradation and failure.
- Do not use the system in an environment subject to vibration or impact. Continuous vibration or large impact could cause performance degradation or failure.
- Do not use the system in strong electromagnetic fields. Use it in an environment in which PCs can be used. Using it in the vicinity of a radio, microwave oven, or electric furnace that generates a strong electromagnetic field could cause performance degradation, malfunction or failure.
- Do not use the system in locations with poor power supply conditions. Use it with a power supply at AC100 to 240V, 50/60 Hz, free from momentary power failure and noise.
- Do not pull connection cable. Connect each connection cable with a margin so that excessive force is not applied to the connection. Pulling the cable or applying excessive force to it could cause failure, measurement interruption or abnormal measurements.

System Configuration

(1) System configuration of the injection molding system “MVS08 set”

The following figure shows a basic configuration that measures resin behavior inside a mold such as resin pressure, resin temperature and mold surface temperature, etc. For the connection of each measuring device, refer to “Connections in System” on page 13.



As shown in the above figure, “MVS08” is structured to connect measuring devices with dedicated cables.

For the pressure measuring system, we offer “Pressure Pre-amplifier UPP01” that can be directly connected to the “MVS08”. We also offer cables for connecting “MPS08”, “MPV04”, and “MPS01A”.

For the resin temperature measuring system, we offer “Resin Temperature Pre-amplifier UPI01” that can be directly connected to the “MVS08”. We also offer cables for connecting “EPT001” and “Test probe ATPZ01 [simplified operation confirmation device for resin temperature sensor (EPSSZL, EPSSZT series)]”.

For the measurement of mold surface temperature, we offer “Mold Surface Temperature Pre-amplifier UPT01” that can be directly connected to the “MVS08”. We also offer cables for connecting “OMRON couple convertor (thermocouple convertor) K3FP-TS-UI”.

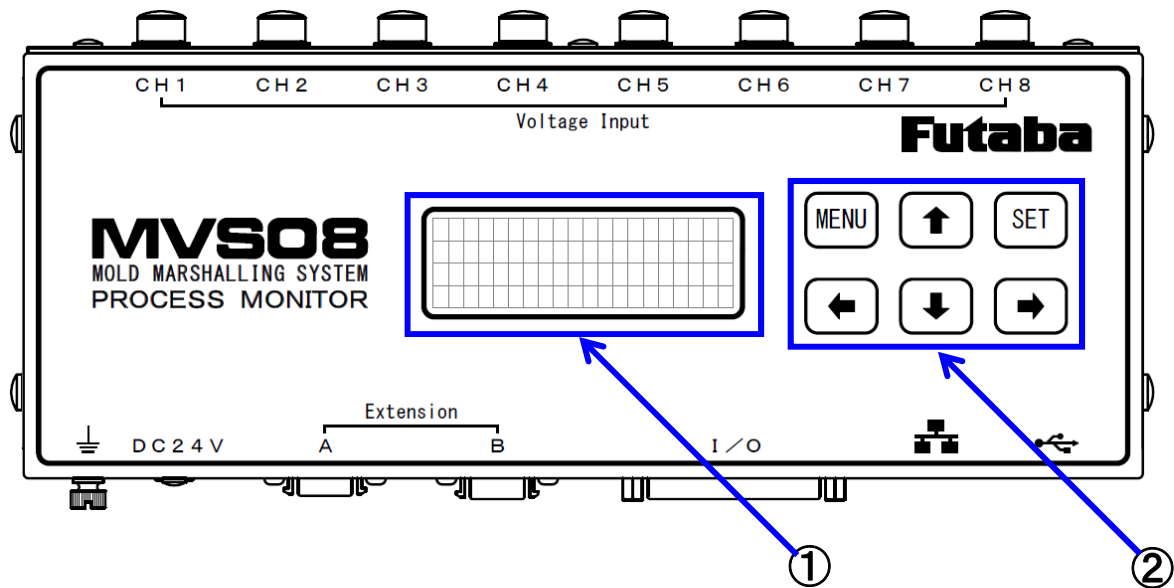
The main unit and PC exchange data via the LAN cable. The measurement software that comes with the system needs to be installed in advance in PC. Pressure waveform data and historical data are stored in the PC.

The “MVS08” can operate standalone. After the PC is connected and the set conditions are stored in the main unit, the monitoring function works even with the PC disconnected. Waveform data and historical data are stored in the USB memory stick connected.

Connect the system to the molding machine and peripheral control equipment using the signal I/O cables that comes with the system. Doing so enables automatic start of measurement, output of alarm signals, and clearing alarm signals.

1. Names and Major Functions of Components

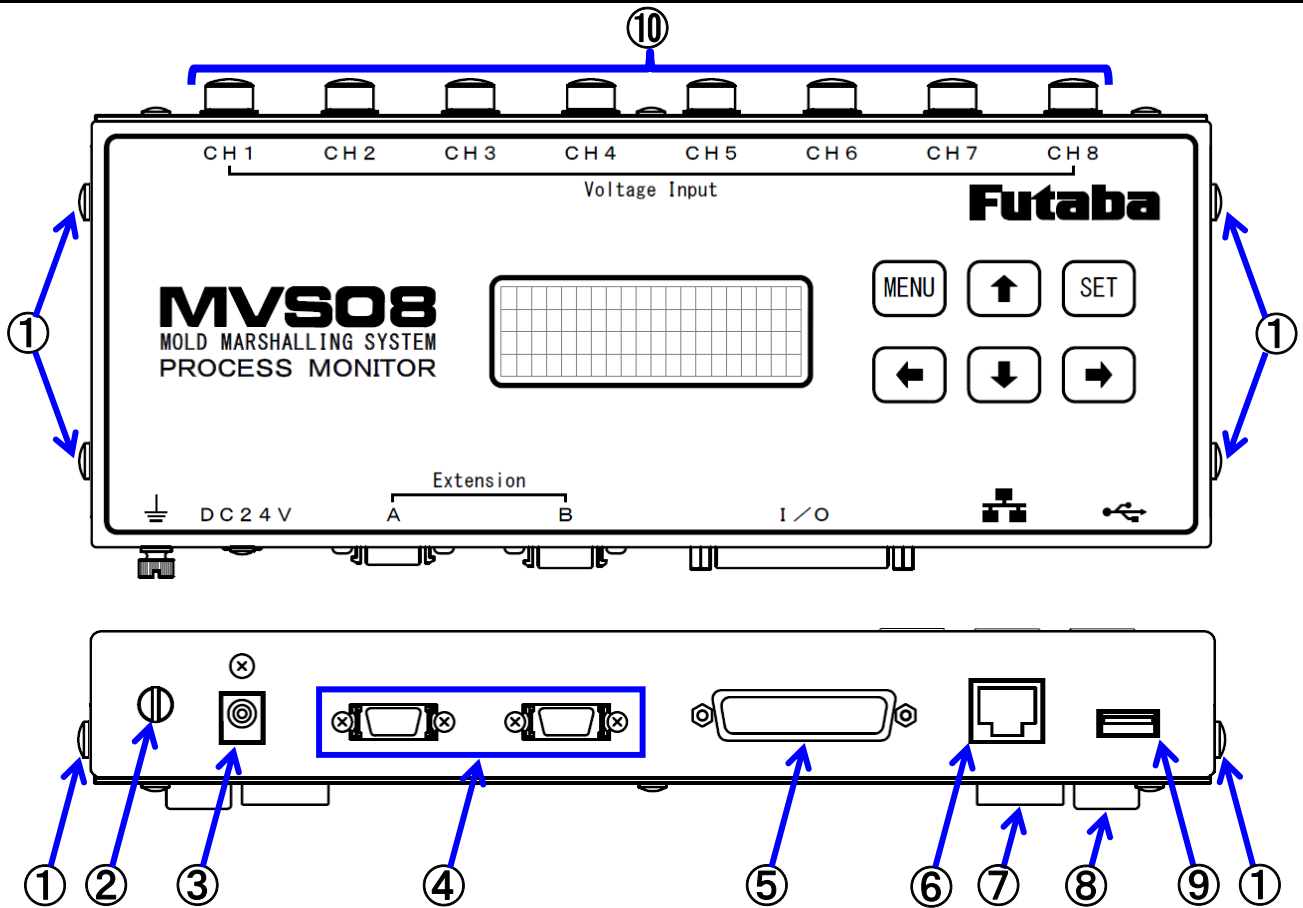
1-1 Front



① Display panel.....Displays the status of measurement, setting file name, shot counter, and set conditions, file name and setting status in the main unit, etc.
Refer to Section 3-2-2 “Checking the LCD screen display” on page 23.

② Operation keys “Menu”, “SET”, “←”, “→”, “↑”, “↓”

Key	Operation	Function
MENU	Single press	Switch the screen. Cancel Input mode.
	Long press	Repeat switching the screen (changes the screen after 2 seconds)
SET	Single press	Capture parameter values and release Input mode at the same time. Input a trigger signal manually.
←, →	Single press	Shift to Input mode. Move the cursor.
	Long press	Repeat moving the cursor.
↑, ↓	Single press	Switch the screen.
	Long press	Repeat incrementing/decrementing parameter values.



- ① **Bracket fixing bolt**.....Can be used in combination with optional brackets (ABMVS08) to fix the MVS08.
- ② **Grounding terminal**.....Terminal for ground.
- ③ **AC adaptor jack**.....Connects the AC adaptor.
- ④ **Inter-amplifier communication connector**.....Used for 9-point to 24-point measurements with additional MVS08 main units connected.
- ⑤ **I/O cable connector**Inputs a trigger signal and alarm clear signal, and outputs an alarm signal.
- ⑥ **LAN port**.....Connected to PC using LAN cable
- ⑦ **Mounting magnets**.....Magnets located at four places can be used to fix the main unit.
- ⑧ **Rubber feet**..... Prevent scratch when the main unit is fixed with the magnets.
- ⑨ **USB port** Connects a USB memory stick to save data when the main unit operates standalone without PC connected.
- ⑩ **Voltage input connector**..... A 0 to 10V voltage input for eight channel measurements. They can also be used to supply 24 VDC power to other devices connected or for trigger delivery.

2. Preparation

This section explains the preparation required before turning on the power.

2-1 Setting up the Network Connections

■ Make settings for communication between the MVS08 main unit and PC.

* For the network connection procedure, refer to the “Measurement Software (PVS) Installation Manual”.

2-2 Installing PC Software

2-2-1 Operating environment

■ Operating System

This software has been checked normal operation with the following operation systems.

Windows 7 (32bit), Windows 7 (64bit), Windows 8 (32bit), Windows 8 (64bit)

Windows 8.1 (32bit), Windows 8.1 (64bit), Windows 10 (32bit), Windows 10 (64bit)

For the operation of the measurement software for MVS08, .NET Framework4.0 or above is required.

■ Capability

Recommended specifications are as follows:

CPU: Corei5 or higher

Memory: 4GB or more memory

* As a rough guide, it may be a PC with 4GB or more memory released in 2009 or later.

2-2-2 Installing the PC software

* For the installation procedure, refer to the “Measurement Software Installation Manual”.

2-2-3 Checking the version

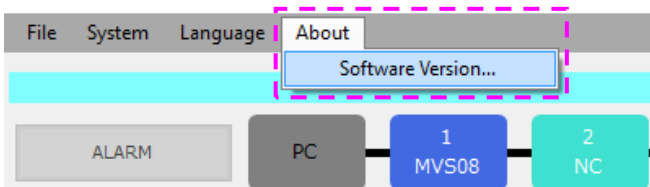
The version of the software currently used can be checked.

* The latest version and updated versions of the software can be downloaded from our HP.

Visit the URL below.

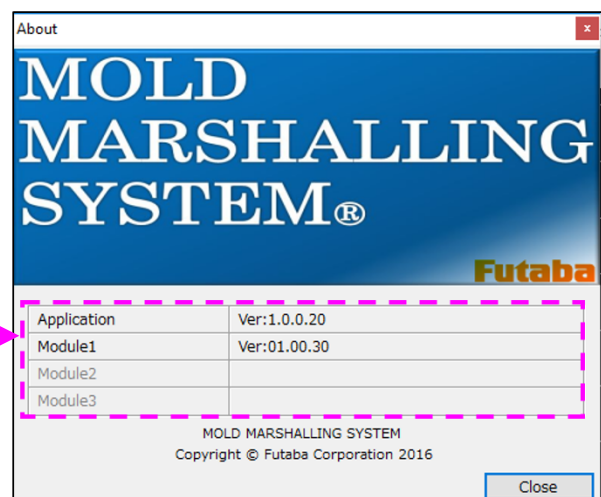
http://www.futaba.co.jp/precision/mold_marshall/software

From the main menu, select [About] → [About].



PC software version is displayed on the upper Application row whereas the main unit firmware version on the lower row.

When any additional MVS08 units (up to three units) are connected, their firmware versions are displayed on the Module 2 to 3 rows.



2-3 Updating Software

- This section describes how to update the PC software and main unit software (hereafter, referred to as firmware).

* For the acquisition of the latest software, contact the nearest Futaba sales office.

2-3-1 Updating PC software

Execute the installer file. It is no need to uninstall the old version software since it is overwritten with the new version.

* For details, refer to the “Measurement Software Installation Manual”.

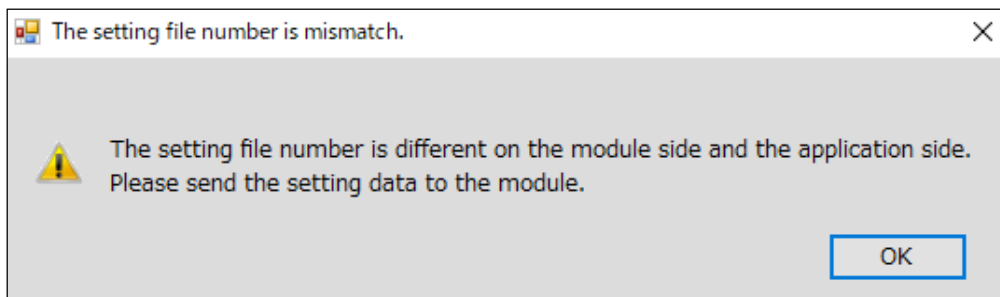
2-3-2 Updating the firmware

To update the firmware, it is necessary to turn off the Windows firewall.

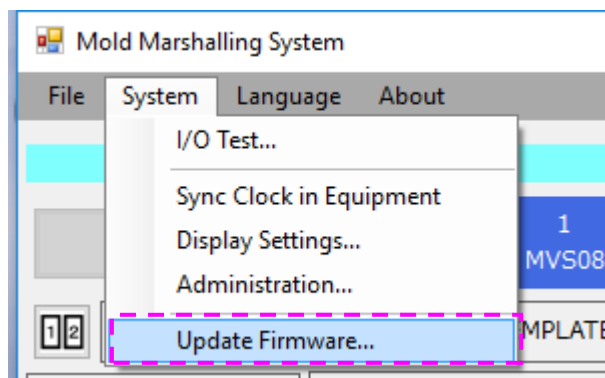
If the firmware update fails or you are logging in the PC under a user name without administrator authority required to change the setting, contact your PC administrator or network administrator.

Further, even if changing the firewall setting, the change may not be reflected to some antivirus software. If the firmware is not updated successfully even after following the steps described in this manual, consult your PC administrator or network administrator.

After the PC software is updated successfully, when the PC communicates with the MVS08, the following message appears to prompt you to update the firmware. Be sure to update the firmware. Failure to use a correct combination of software and firmware versions may result in a failure to obtain correct data.

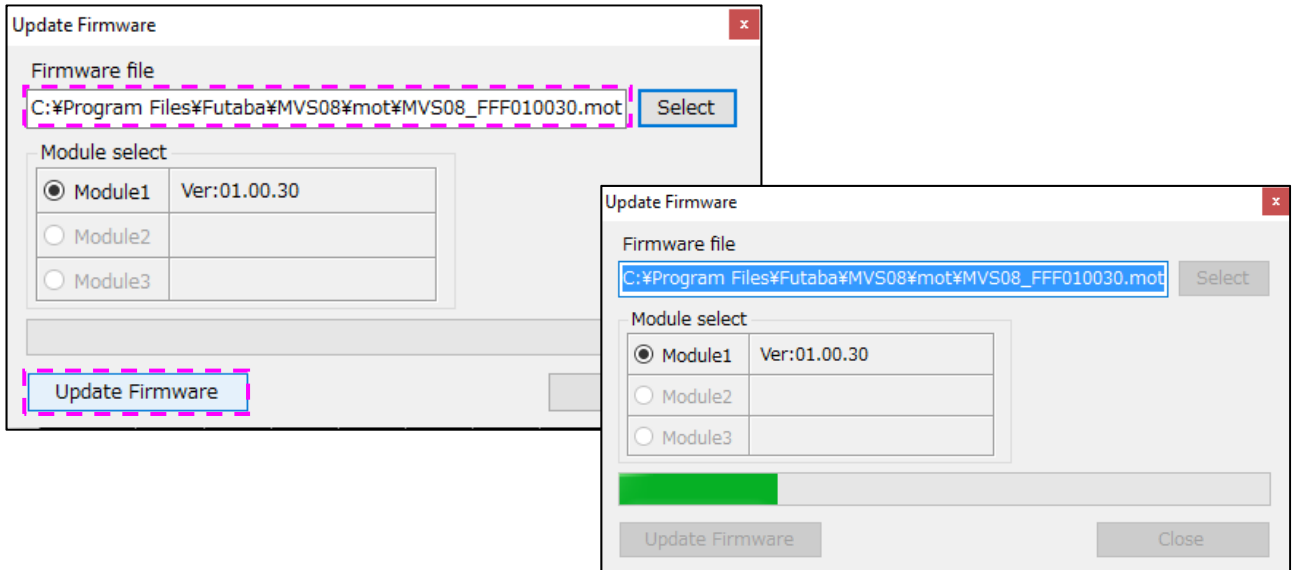


Step 1: Form the main menu, select “Update Firmware” from “System”.

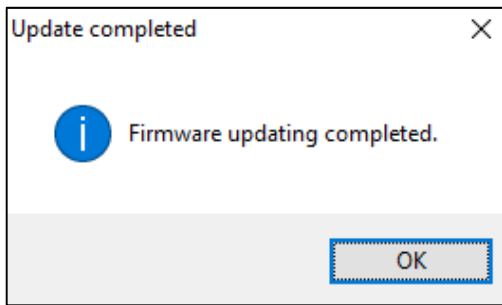


Step 2: The file specification screen appears. Select the file and click the “Update Firmware”.

The firmware update starts.



Step 3: If the firmware is updated successfully, the message shown below is displayed. Press OK to finish.



Step4: After the firmware is updated, the MVS08 restarts automatically.

If you want to initialize parameters, hold down the “MENU” and “SET” buttons at the same time for at least 5 seconds. Select “PARAMETER INIT”. At this time, you will be prompted to enter a password. The default password is “0000”. Enter the password and press the “SET” button to start the initialization. Parameters will return to the factory default values. Refer to Section 3-2-2 (2) ② on Page 25.

■ In the case of the failure of firmware updating

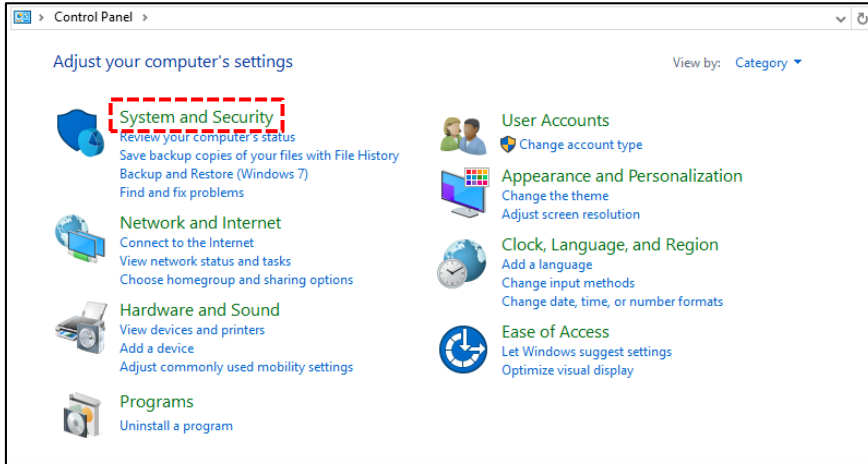
There is possibility to cause the failure of firmware updating when the firewall is working. In this case, you can perform the firmware updating by either method shown below.

- ① Turning off Windows firewall
- ② Turing off Firewall application filter for FTP client.

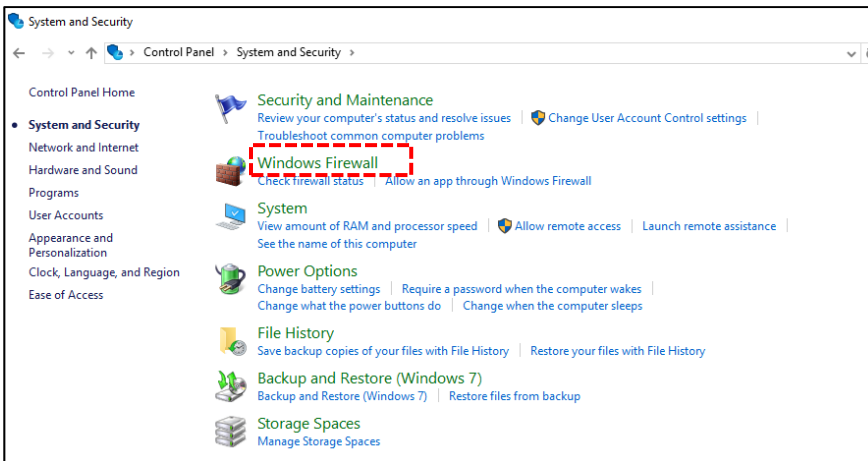
(1) Method of turning off Windows firewall

Step 1: Click the [Start] button and click [Control Panel] from the menu displayed.

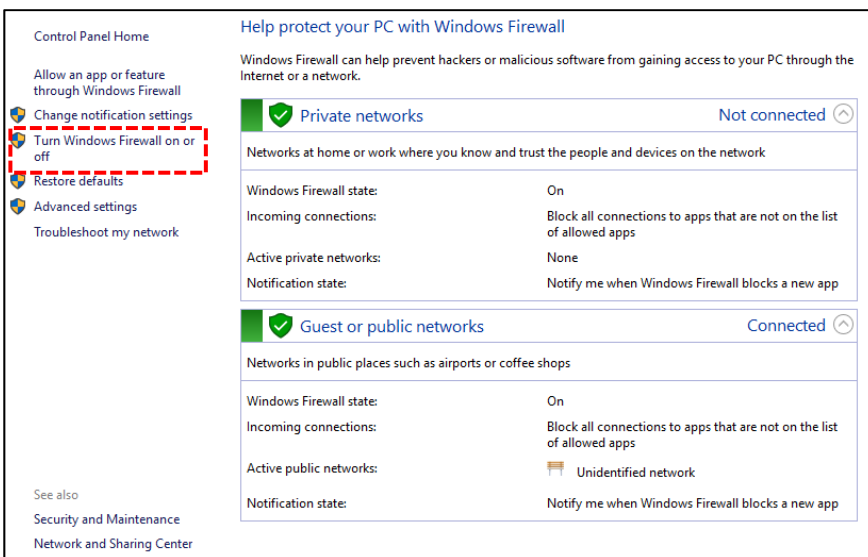
Step 2: Click [System and Security].



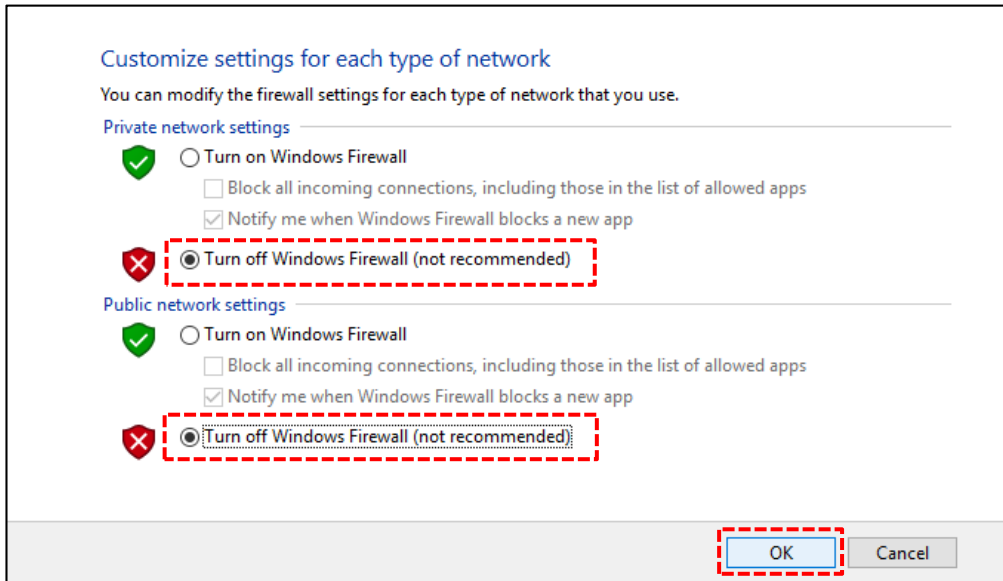
Step 3: Click [Windows firewall].



Step 4: Click [Turn Windows Firewall on or off].



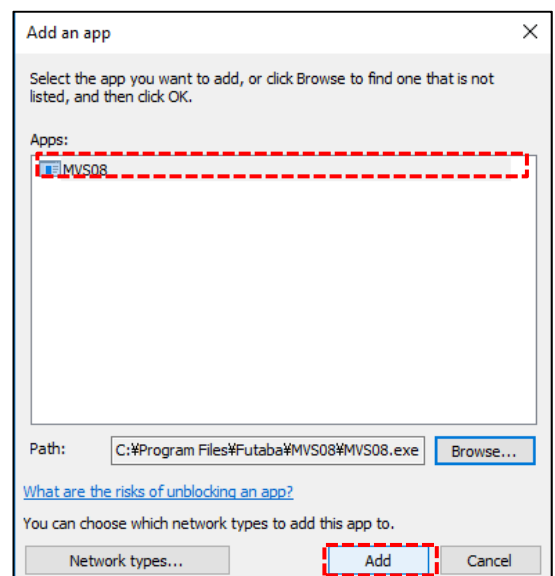
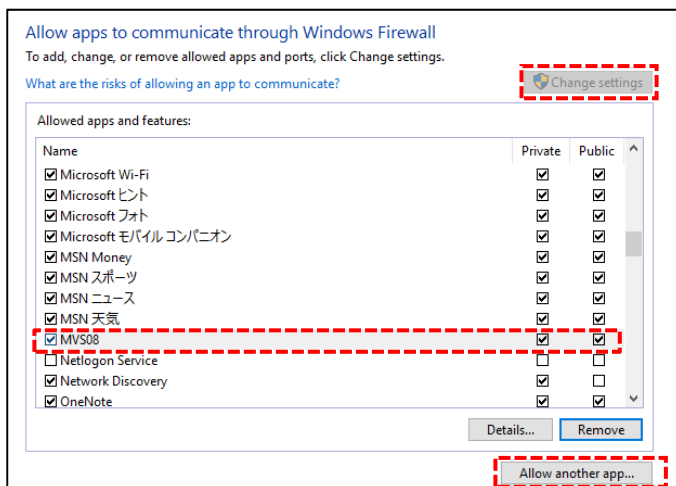
Step 5: Select [Turn off Windows Firewall (not recommended)] and click [OK].



Step 6: After completing the steps described in Section 2-3-2 “Updating the firmware” on Page 8, be sure to make the settings shown below.

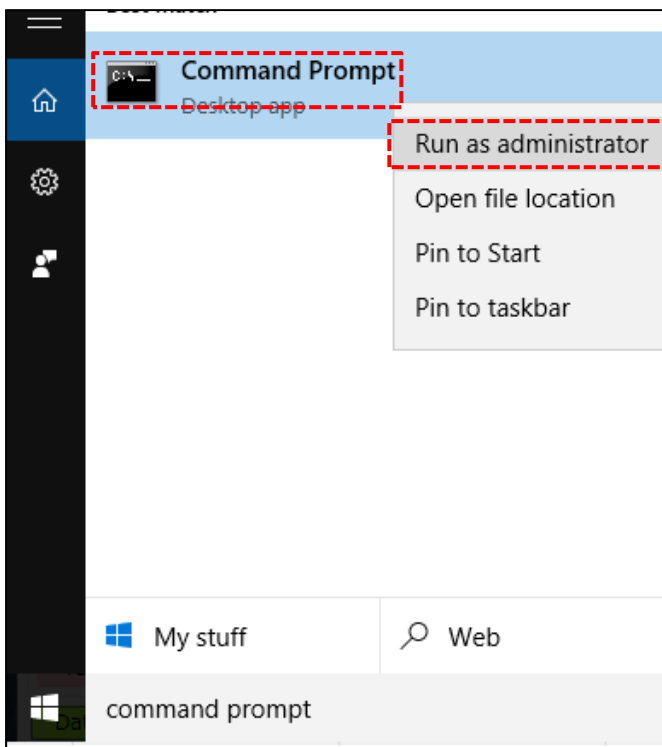
Click [Windows firewall], [Allow a program through Windows firewall]. Click [Allow another program (R)...], select “MVS08.exe” and click [Add].

Select the “MVS08.exe” displayed, press the “Change setting (N)” button, place a checkmark in the checkbox and then click [OK]. After making the setting, click [Allow a program through Windows firewall] once again, and confirm that the setting is reflected.

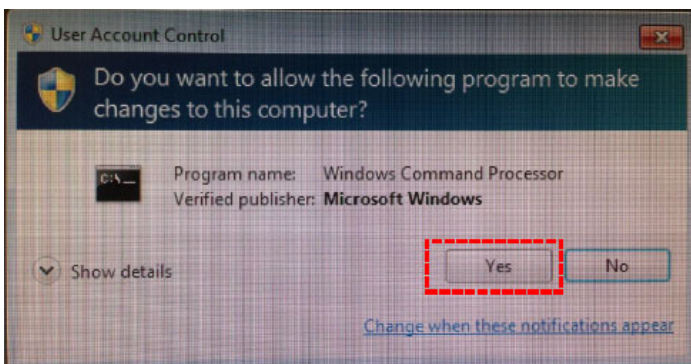


(2) Method of turning off Firewall application filter for FTP client

Step 1: Click the [Start] button and select [Accessories]. Right click [Command Prompt] and click [Run as administrator (A)].



Click [Yes] when User Account Control (UAC) screen shows.



Step 2: Execute the following command on the command prompt.

netsh advfirewall set global StatefulFTP disable

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.
C:\WINDOWS\system32>netsh advfirewall set global StatefulFTP disable
Ok.
C:\WINDOWS\system32>
```

2-4 Installing the System

Using the magnets attached on the back side of the MVS08 main unit or optional bolt-fixing brackets (part code: ABMVS08), install the MBS08 at a location where the display can be easily viewed. Allowable range of operating temperature is 0 to 50°C. Install other Futaba measuring devices according to respective instruction manuals provided at the time of purchase.

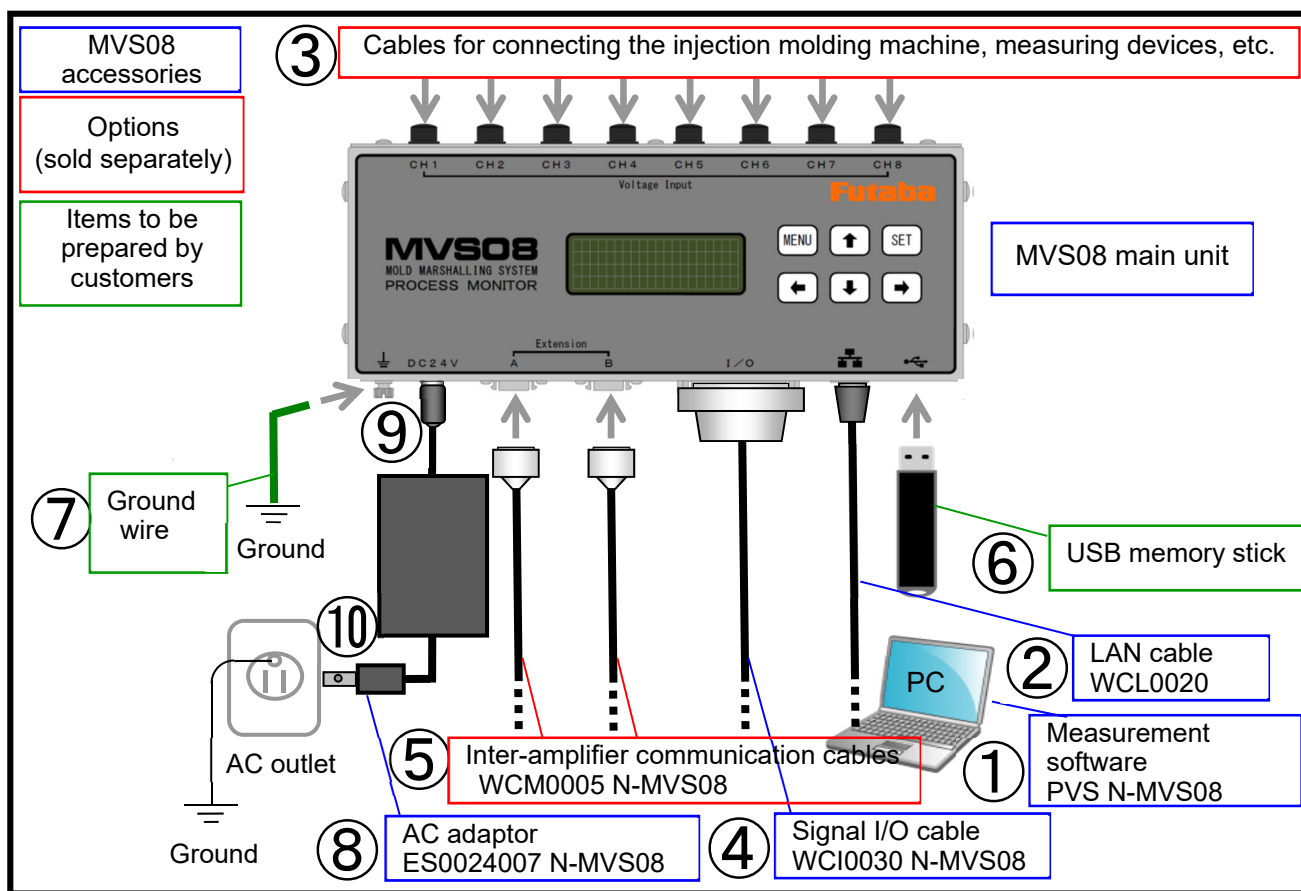
Install any other manufacturers' measuring devices and injection molding machine according to the manufacturers' instructions or instruction manuals.

2-5 Connections in System

(1) Injection molding monitoring system "MVS08 set"

Connect the components in order of the numbers shown in the following figure.

Connect the power supply ⑩ after completing the connections ① to ⑨.



① Install the measurement software. ② Connect the LAN cable.

Refer to Section 2 "Preparation" (Page 7) and the "PVS Installation Manual".

③ Connect the cables for connecting the injection molding machine, measuring devices, etc.

For the system configurations of respective types of measuring devices connected, refer to the following paragraphs (2) through (8).

④ Connect the signal I/O cable. Refer to Section 2-6 "Connecting the I/O Signal" on Page 18.

⑤ Connect the inter-amplifier communication cable.

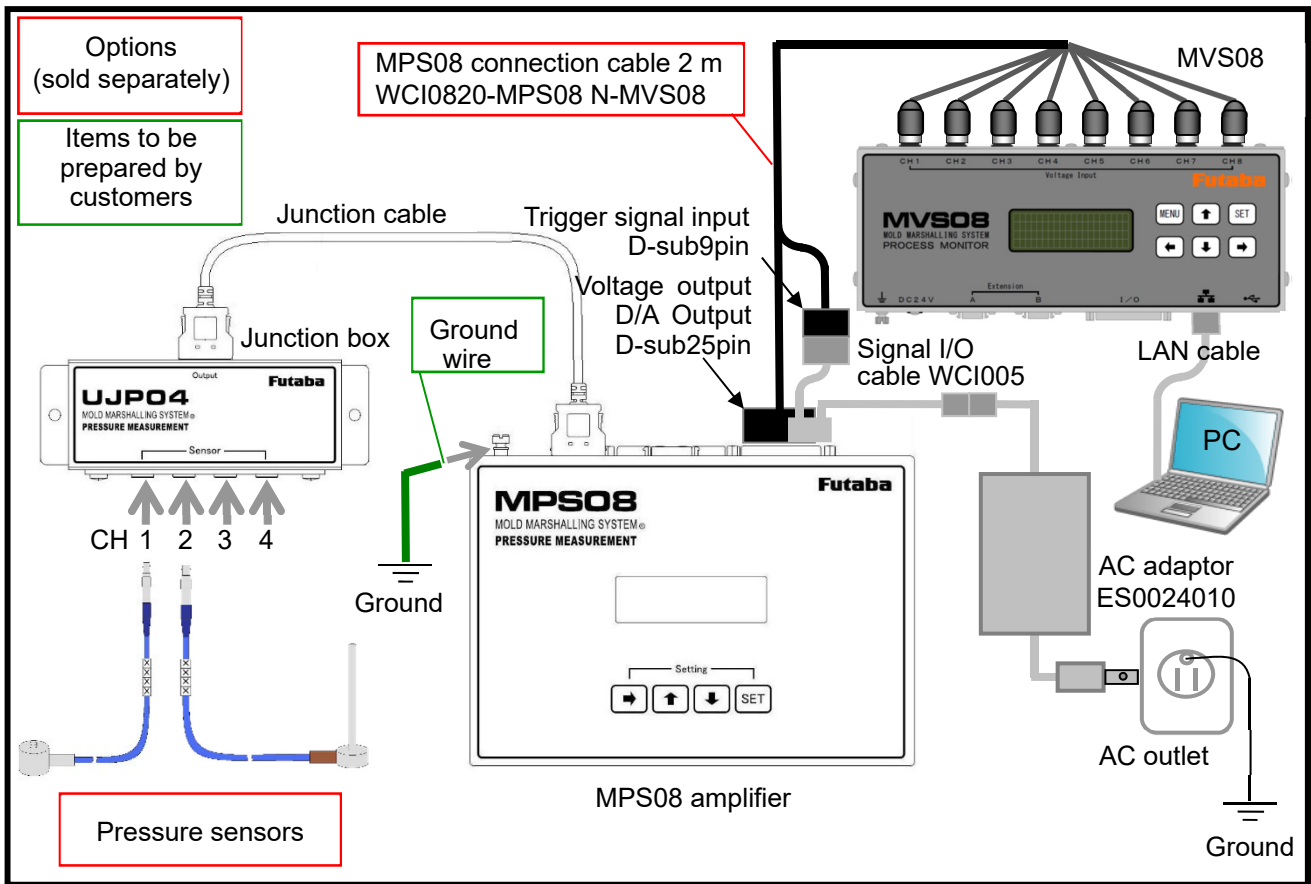
In the case of 9- to 24-point measurements, use multiple MVS08 units by connecting them. See paragraph (8).

⑥ Connect a USB memory stick, which saves measurement data only when no PC is connected.

⑦ Install a ground wire. Be sure to use the system by grounding it for safe operations.

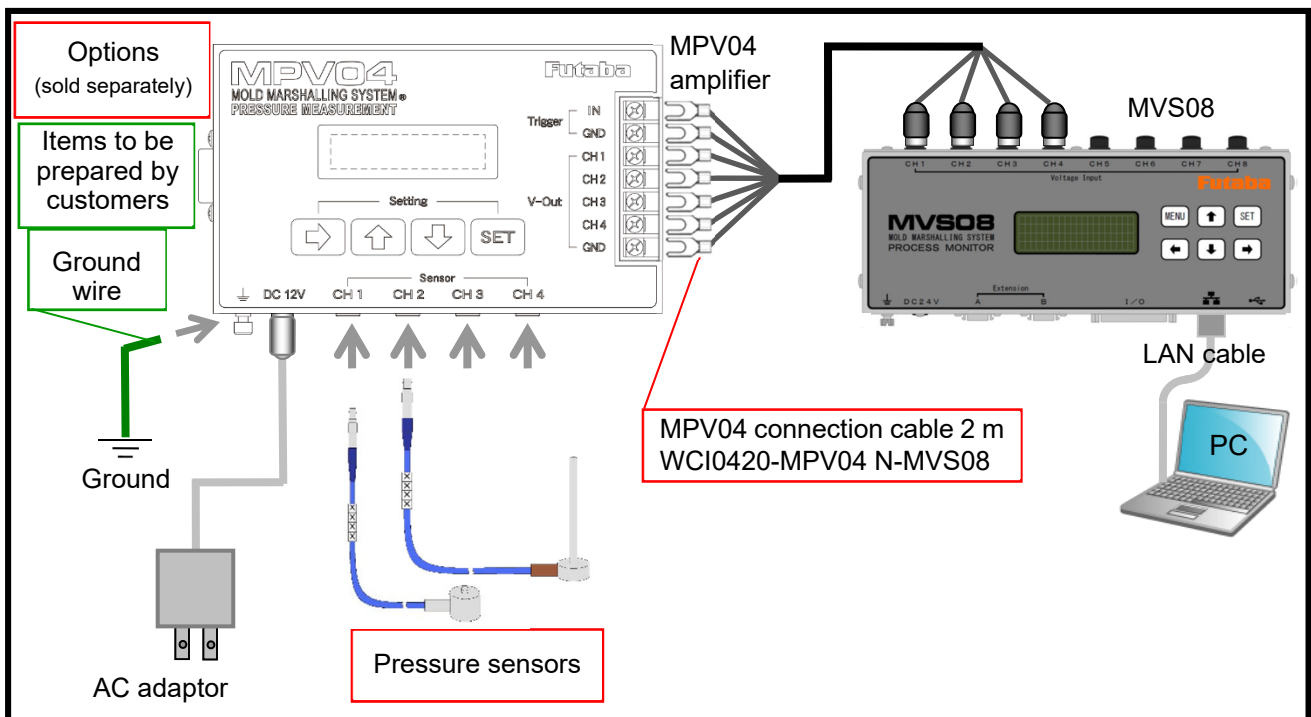
⑧ ⑨ ⑩ Connect the power supply. Refer to Section 2-7 "Connecting the Power Supply" on Page 21.

(2) When connecting a resin pressure measuring system “MPS08 set” ... For the connection of the MVS08 side, see paragraph (1) on Page 13.

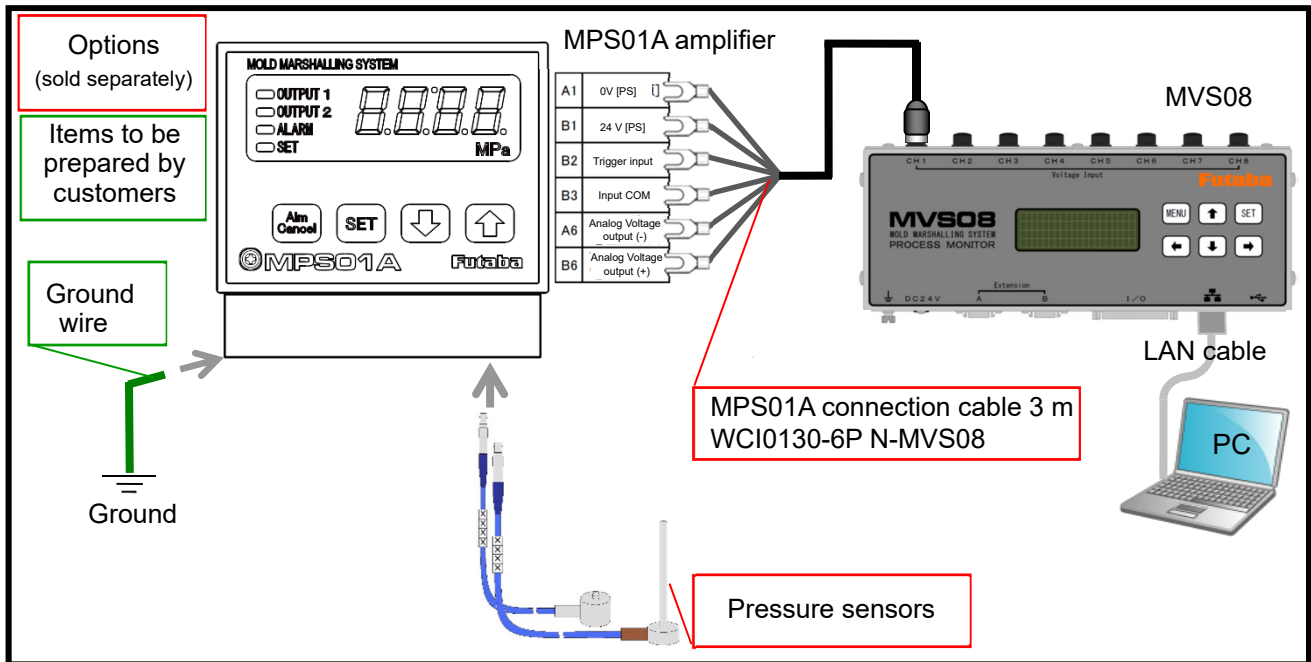


[Note] It is assumed that the MPS08 shown in this figure operates standalone. For PC-connected operation, a PC is required separately. The MPS08 can store measurement condition setting files. To change the measurement conditions, however, it needs to be connected to a PC.

(3) When connecting a resin pressure measuring system “MPV04 set” ... For the connection of the MVS08 side, see paragraph (1) on Page 13.

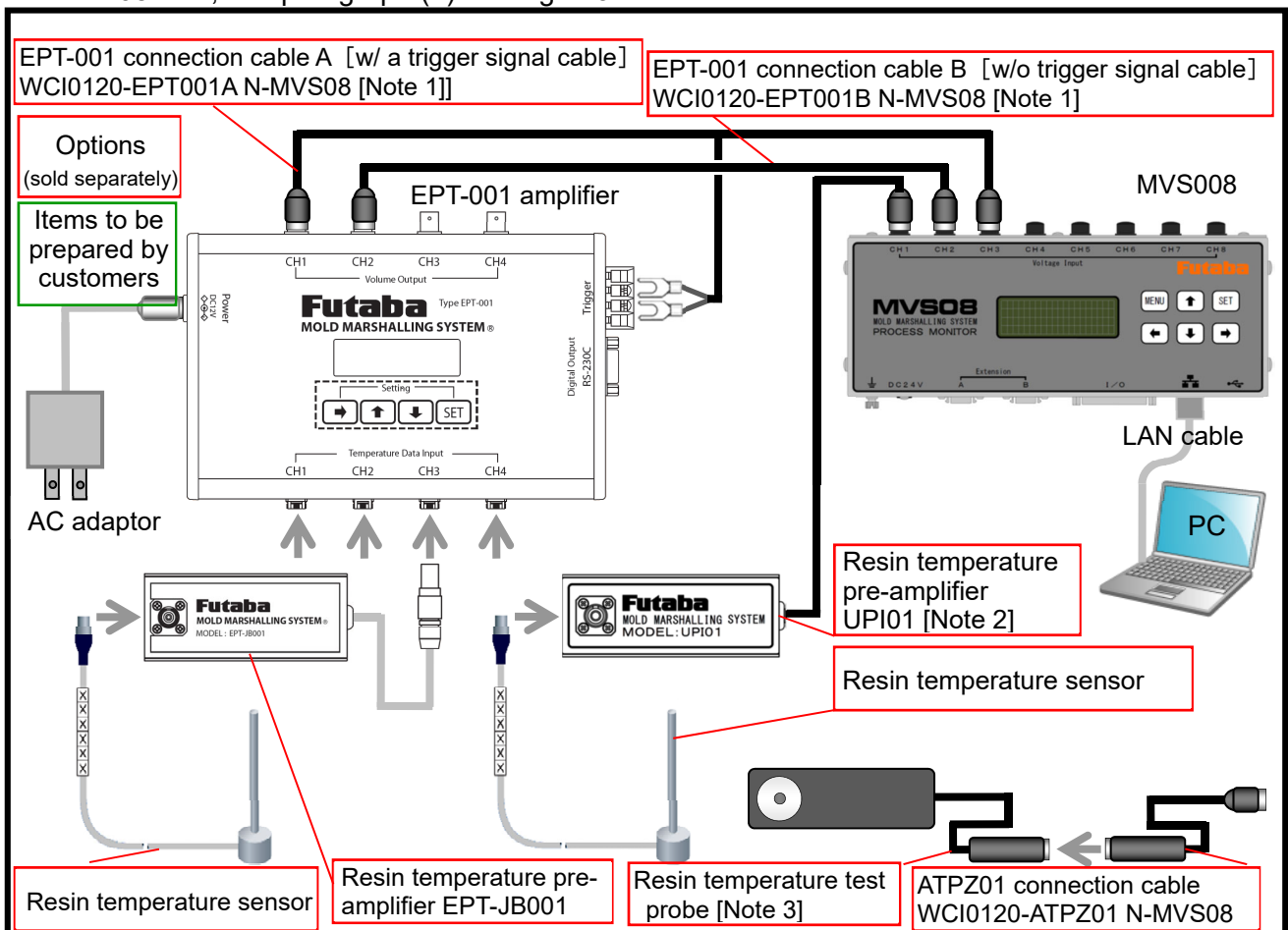


(4) When connecting a inline injection resin pressure measuring unit “MPS01A” … For the connection of the MVS08 side, see paragraph (1) on Page 13.



[Note] No power cable nor AC adaptor is required as power is supplied from MVS08 via MPS01A connection cable.

(5) When connecting a resin temperature pre-amplifier “UPI01”, resin temperature measuring system “EPT-001T”, and resin temperature sensor test probe “ATPZ01” … For the connection of the MVS08 side, see paragraph (1) on Page 13.

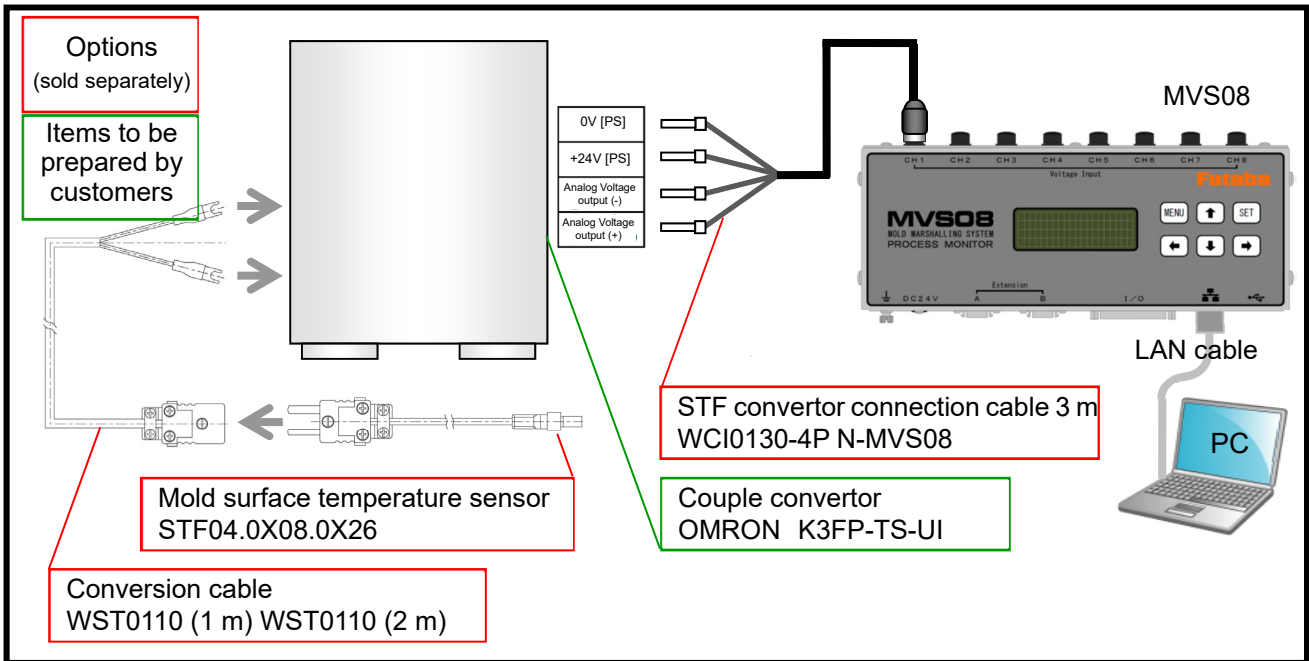


[Note 1] EPT-001 connection cable A is used for the connection of EPT-001 CH1. Trigger signals can be captured. EPT-001 cable B is used for the connection of EPT-001 CH2 to CH4. Only voltage signal can be captured.

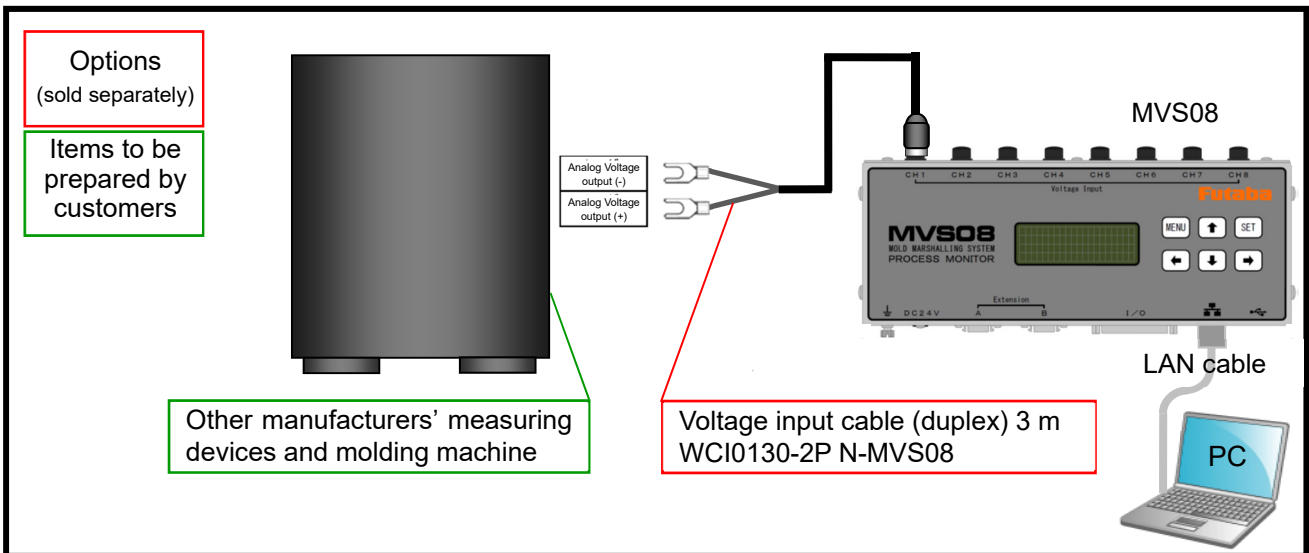
[Note 2] UPI01 can be directly connected to the MVS08. No amplifier (EPT-001, etc.) is required. One UPI01 is required for each resin temperature sensor.

[Note 3] Resin temperature sensor test probe (ATP01) is a simplified operation confirmation device for resin temperature sensors. Customers can check sensor failure on their own. ATPZ01 connection cable is used for the power supply from the MVS08.

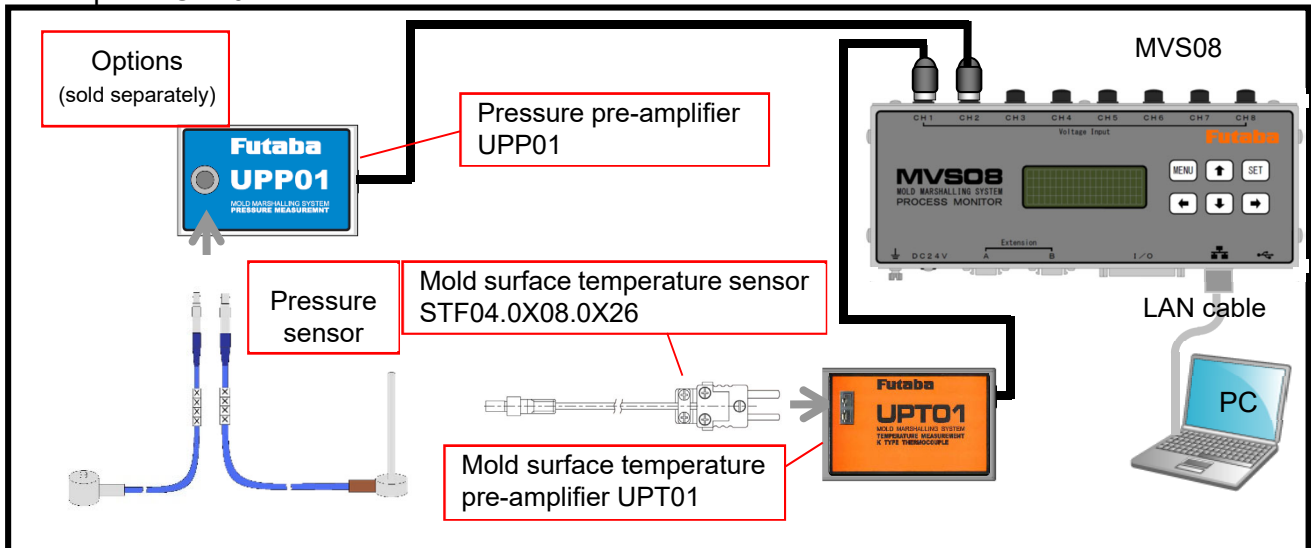
(6) When connecting a mold surface temperature sensor “STF” ... For the connection of the MVS08 side, see paragraph (1) on Page 13.



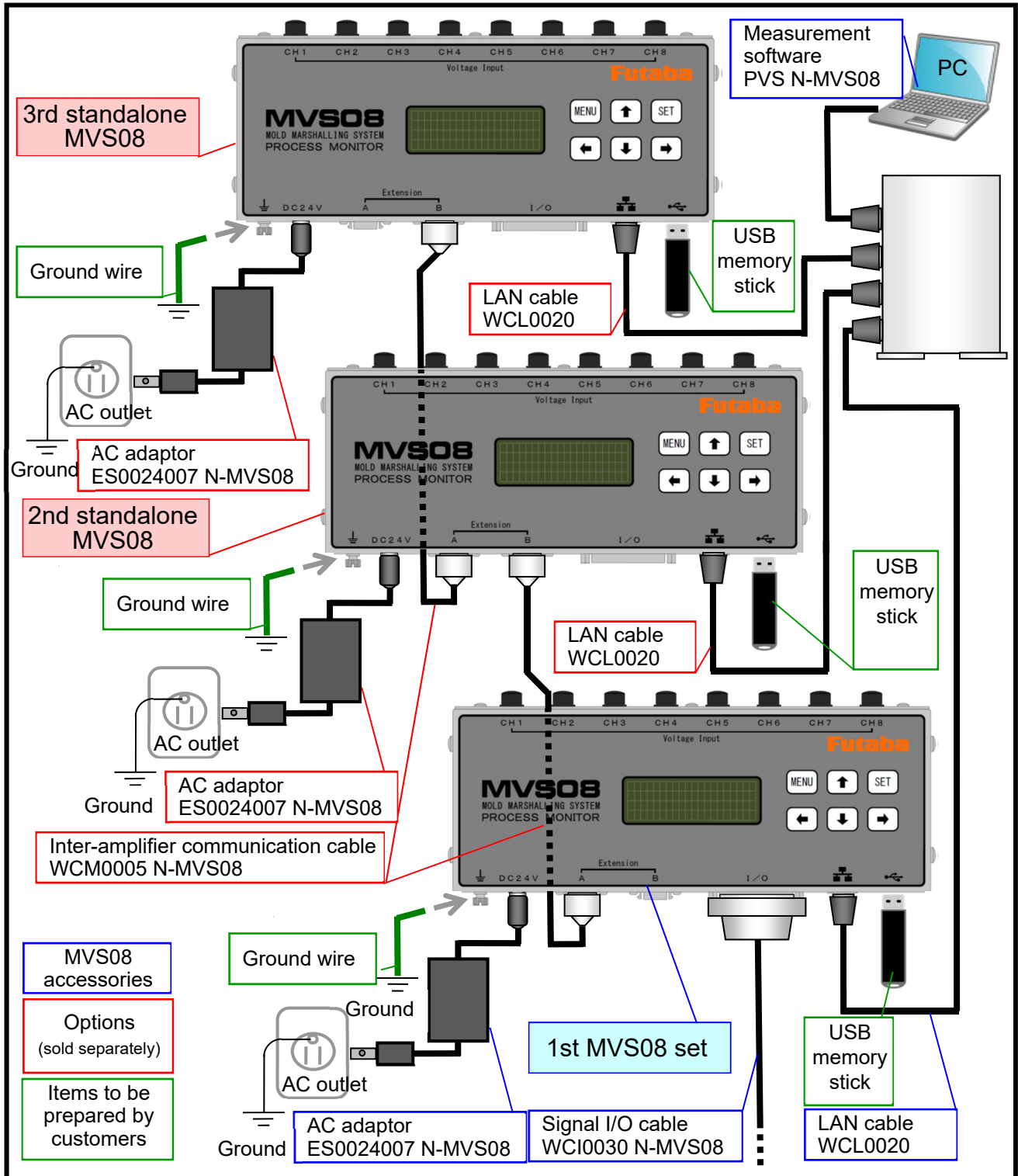
(7) When connecting other manufacturers' measuring devices and an injection molding machine, etc. ... For the connection of the MVS08 side, see paragraph (1) on Page 13.



(8) When connecting a MVS08 dedicated pre-amplifier UPP01, mold surface temperature pre-amplifier UPT01



(9) When connecting additional injection molding monitoring system “MVS08” units to a “MVS08 set”



<< What is the input signal? >>

The input signal means a signal input to the main unit from an external device such as a molding machine or ejector machine.

Trigger signal Required to start measurement. Upon input of the trigger signal, “offset” is performed. “Offset” is performed using the value entered in Section 4-4 “Setting the Conditions”. Input the trigger signal under the condition with no pressure loaded to the sensor. Unless there is any specific reason, connect the “mold closing complete signal”.

* It takes about 0.1 second for “offset”. If the injection start signal is used as a trigger signal, “offset” may not be finished in time and accordingly normal measurement may not be performed.

Clear alarm signal Connected to clear the alarm signal being output from the main unit. Connect the signal as needed.

* The alarm signal can be cleared automatically by specifying the time in the software setting (→Page 30 ⑦). If automatic clear at the specified time causes no problem, the connection of the Clear Alarm signal can be omitted.

<< What is the output signal? >>

The output signal means a signal output from the main unit to an external device such as a molding machine or ejector robot.

Alarm signal An alarm signal is output when the monitoring range defined by software is exceeded. This signal is used to check for defective products and control devices such as to stop the molding machine.

* Alarm monitoring can be set for eight channels individually but the alarm output signal is one for all channels.

■ The D-sub25pin connector of the signal I/O cable is shown below.


Input signal type and output signal type can be assigned to 10 channels of ports respectively. For assigning the signal types, refer to Section 4-4-3 “Setting I/O Signals” on Page 34.

* At least the trigger signal must be wired (Close Mold signal, etc.) to continuously monitor the waveforms in the mold.

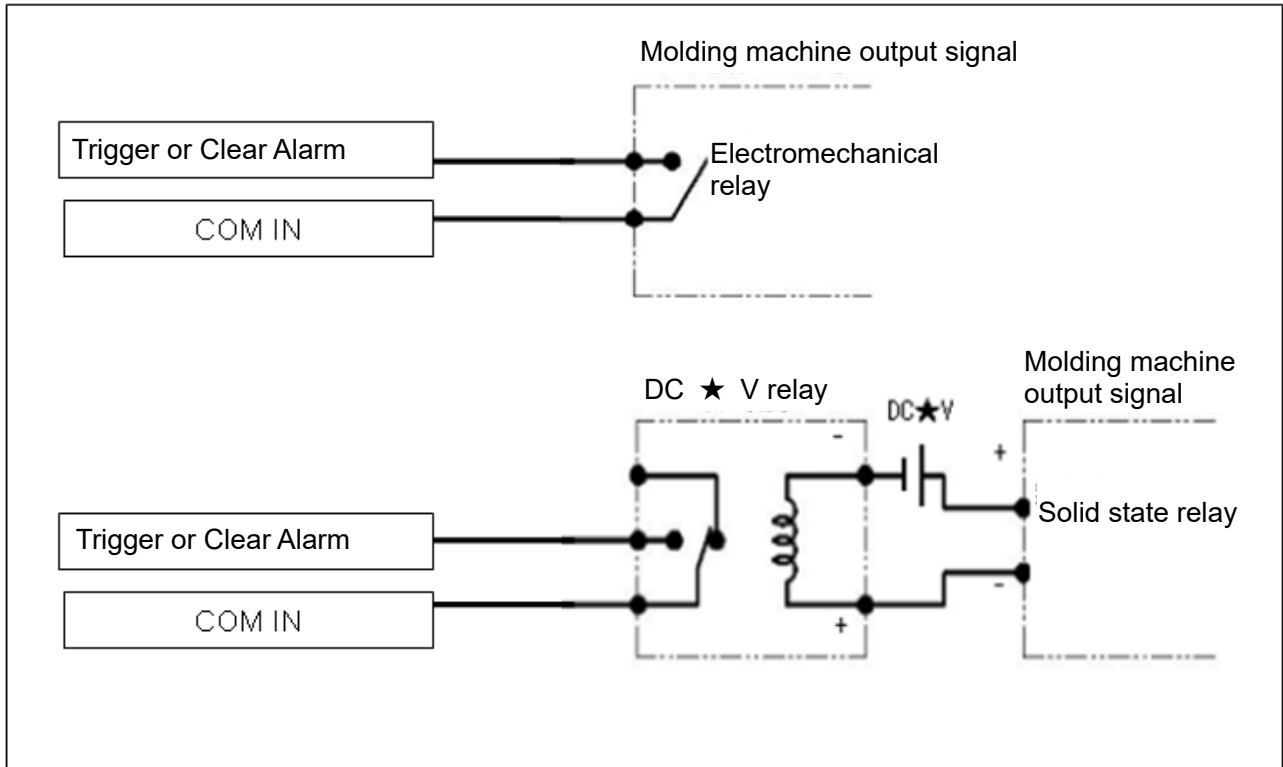
● D-sub25pin connector pin connections

Pin No.	Signal name	IN/OUT	Pin No.	Signal name	IN/OUT	Pin connection
1	Input port 1 [Default → Trigger]	IN	14	Output port 3	out	
2	Input port 2 [Default: Clear Alarm]	IN	15	Output port 4	out	
3	Input port 3	IN	16	Output port 5	out	
4	Input port 4	IN	17	Output port 6	out	
5	Input port 5	IN	18	Output port 7	out	
6	Input port 6	IN	19	Output port 8	out	
7	Input port 7	IN	20	Output port 9	out	
8	Input port 8	IN	21	Output port 10	out	
9	Input port 9	IN	22	Not connected	—	
10	Input port 10	IN	23	Not connected	—	
11	GND	COM	24	GND	COM	
12	Output port 1 [Default: Alarm]	OUT	25	Not connected	—	
13	Output port 2	OUT	—	—	—	

(1) Input signal circuit specifications (Trigger signal, Clear Alarm signal)

 Input the signal to the main unit via the electromechanical relay. Do not apply voltage.

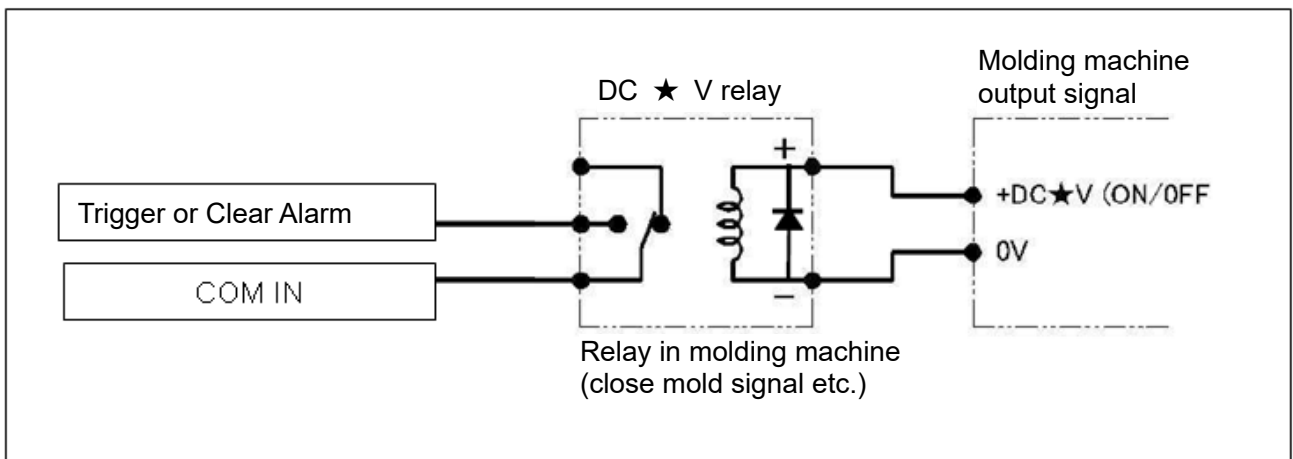
Example 1: When the output of the molding machine connected to the main unit is “relay output”
 Example of connection of input signal when the molding machine output signal is contact output.



Example 2: When the output of the molding machine connected to the main unit is “voltage output”
 Connect the signal by using a relay adaptable to the output voltage of the output signal from the molding machine.

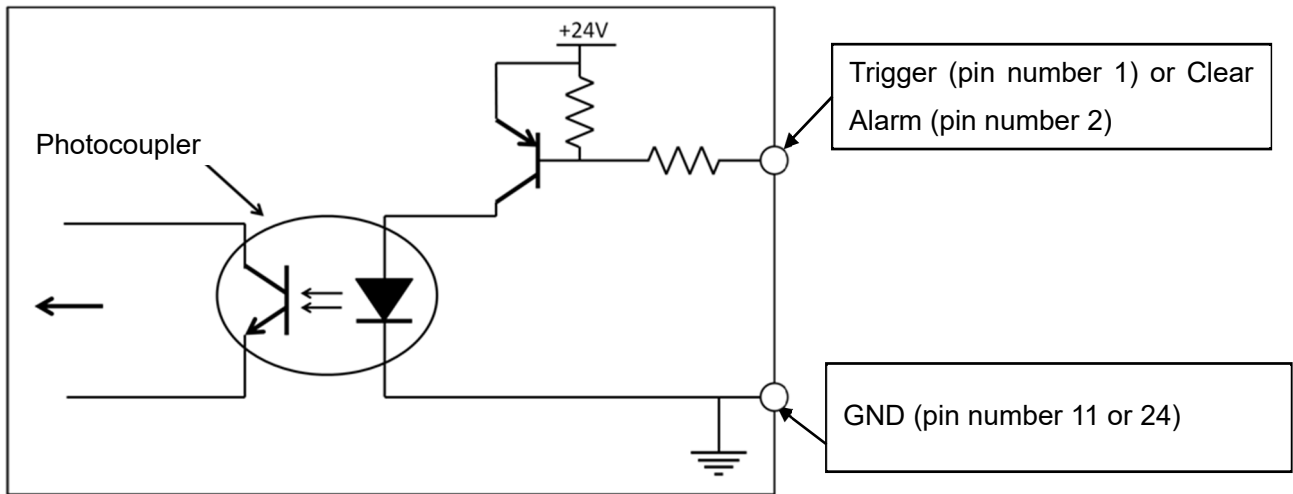
* When using an electromechanical relay, use a relay equipped with the coil surge absorption circuit.

Example of connection of input signal using a relay when the molding machine output signal is DC★V ON/OFF output.



■ Pin numbers of Trigger and Clear Alarm signals (display)

The setting of ports can be changed freely according to Section 4-4-3 “Setting the I/O signals” on Page 34. When connecting the signal, be careful to connect it to the port with the set number. After connecting the signal, check the operation of the signal according to Section 7-2 “Checking the I/O Signal” on Page 53.



Default pin numbers are shown in the figure.

Creating a short circuit between “Trigger” and “Trigger GND” ports inputs a trigger signal and starts the measurement.

Creating a short circuit between “Clear Alarm” and “Clear Alarm GND” ports clears the alarm signal output.

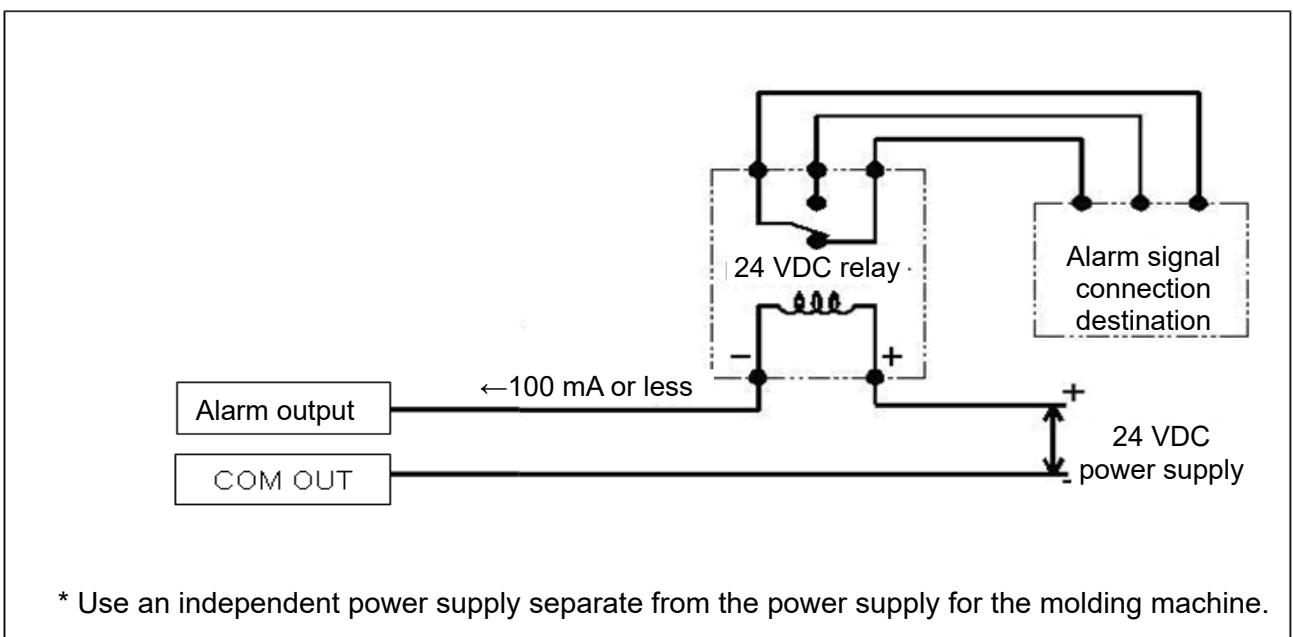
Alarm signal can also be cleared automatically after a specified time elapsed. When automatic clear is used, the connection of the Clear Alarm signal can be omitted. See Section 4-4-1 “Setting measurement conditions” on Page 29.

(2) Output signal circuit specifications (Alarm signal)

The alarm output from the main unit is up to 100 mA (30 V or less) in the NPN open collector. Use the power supply with the negative side connected to the ground.

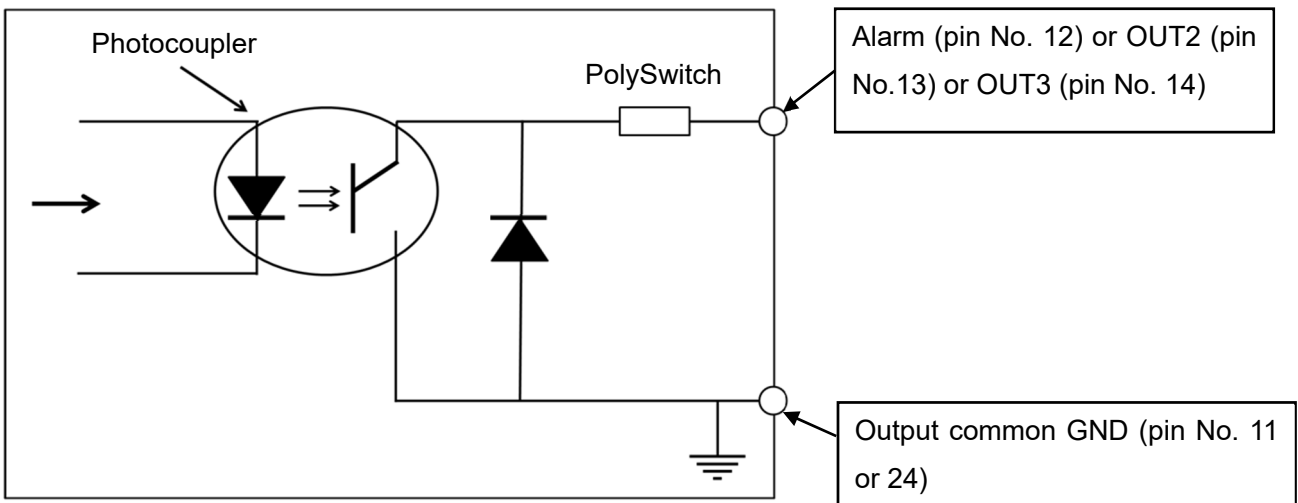
Example: When the output of the molding machine connected to the main unit is “relay output”

Example of connection of input signal when the molding machine output signal is contact output.



- Pin number of Alarm output signal (display)

The setting of ports can be changed freely according to Section 4-4-3 “Setting I/O signals” on Page 34. When connecting the signal, be careful to connect it to the port with the set number. After connecting the signal, check the operation of the signal according to Section 7-2 “Checking the I/O Signal” on Page 53.



Default pin numbers are shown in the figure.

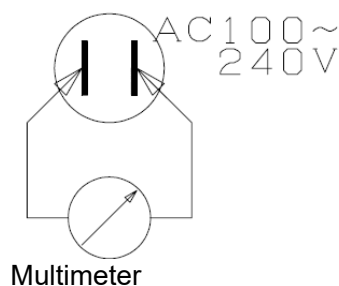
The alarm output, OUT2 and OUT3 are all same output circuit. The GND is common for all output signals. The alarm output is the NPN open collector output with a maximum capacity of 100mA (30 V or less).

2-7 Connecting the Power Supply

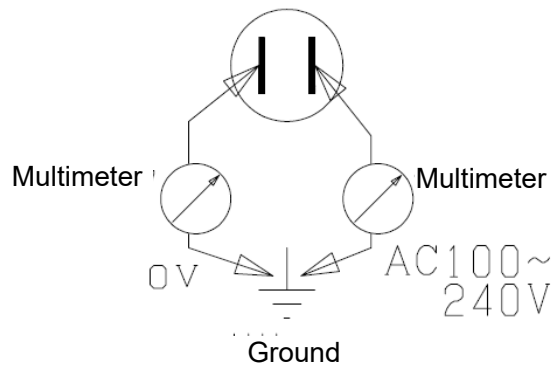
- Supply power to this equipment through the AC adaptor that comes with this equipment.
 - * **The main unit does not have a power switch. Never turn power on or off by plugging or unplugging the AC adaptor into or from the jack. It could damage not only the main unit and AC adaptor but also other devices connected.**
- Check the supply voltage before connecting the AC adaptor to the AC power source.

The operating voltage of the AC adaptor is AC100 to 240V.

 - * If the supply voltage is out of the above voltage range or each terminal voltage of the power source has higher potential than the supply voltage against the ground, never connect it to this equipment. It could cause failure or accidents.
- Check the supply voltage as follows.
 - ① Using a tester, measure the voltage between the terminals of the AC power outlet to make sure that it is AC100 to 240V.



- ② Using a multimeter, measure the voltage between each terminal of the AC power outlet and the ground to make sure that one is 0 V and the other is AC100 to 240V.



- ③ In the field where equipment that generates noise such as an induction motor or electric welder is used, the power condition is expected to be bad with much noise. Take measures against noise by using commercially available isolation transformer or noise cut transformer.
- Warm up the system for 30 minutes or more after power on. Insufficient warmup could make measurements unstable.

3. Basic Operation of MVS08

This section describes the basic operation of the MVS08.

3-1 Turning Power ON/OFF

■ Turing power ON

Turn on the power by referring to Section 2-7, “Connecting the Power Supply” on Page 21.

■ Turning power OFF

Disconnect the AC plug of the AC adapter from the AC outlet.

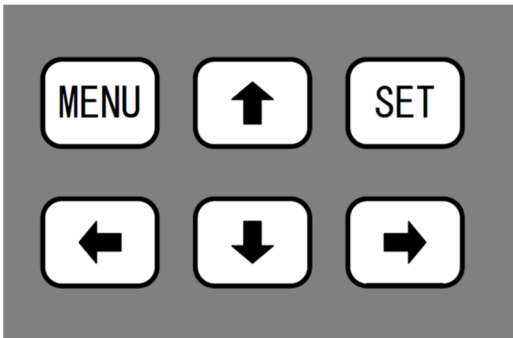
*** The main unit does not have a power switch. Never turn power on or off by plugging or unplugging the AC adaptor into or from the jack. It could damage not only the main unit and AC adapter but also other devices connected.**

3-2 Operating MVS08 Main Unit

3-2-1 Operating the key switches

■ Operate the keys on the MVS08 main unit as needed in the following cases.

- Checking or changing the conditions saved on the main unit (such as when using the MVS08 standalone)
- Starting measurement manually (pressing the SET key in monitor mode starts measurement)
- Checking measured values of each channel (such as when using the MVS08 standalone)

Layout	Key	Operation	Function
	MENU	Single press	Switch the screen Cancel Input mode.
		Long press	Undo switching the screen (changes the screen after 2 seconds)
	SET	Single press	Capture parameter values and release Input mode at the same time Input a trigger signal manually.
		←, →	Single press
	←, →	Long press	Undo moving the cursor.
	↑, ↓	Single press	Switch the screen. Shift to Input mode. Change the parameter.

3-2-2 Checking the LCD screen display

Turning on the power displays the following LCD screen (The figure below shows the default screen when shipped.)

F	U	T	A	B	A	C	O	R	P	O	R	A	T	I	O	N
M	O	L	D	M	A	R	S	H	A	L	L	I	N	G		
				S	Y	S	T	E	M							
		T	Y	P	E		M	V	S	0	8					
		V	E	R			0	1	.	0	0	.	2	8		

← MVS08 firmware version No.

M	E	A	S	:	S	T	O	P		M	O	D	E	:	T	R	G				
N	G	:	0	1	2	3	4	5	6	7	/	8	9	0	1	2	3	4	5		
S	e	t	t	i	n	g	s	0	1												

← Left 2nd row: measurement status (RUN/STOP)

← 1st row: communication status (“→” under comm., “!” when comm. is lost)

← Right 2nd row: measurement mode (TRG/MTRG/AUTO)

← 3rd row: alarm shot count/total shot count

← 4th row: MVS08 main unit No. ↔ Name of setting file

(1) Screen transition...Using the "MENU" button or "↑↓" buttons, select the screen.

Measurement status

M	E	A	S	:	S	T	O	P		M	O	D	E	:	T	R	G		→
N	G	:	0	1	2	3	4	5	6	7	/	8	9	0	1	2	3	4	5
M	O	D	U	L	E	1													

* As shown above, 2nd row: measurement status and mode, 3rd row: alarm shot count/total shot count

Measurement condition selection

S	E	N	S	E	R	S	E	T	F	I	L	E	N	A	M	E			
s	e	l	e	c	t	f	i	l	e		[→]	k	e	y			
0	1	:	S	e	t	t	i	n	g	s	0	1							

* Password is required for the selection. 4th row: name of the setting file selected.

Enter password

Measured voltage

1	:	0	1	.	2	3	4	V	5	:	0	7	.	8	9	0	V		
2	:	0	5	.	6	7	8	V	6	:	1	0	.	0	0	0	V		
3	:	0	9	.	0	1	2	V	7	:	0	1	.	2	3	4	V		
4	:	0	3	.	4	5	6	V	8	:	0	8	.	5	6	7	V		

* Measured values for CH1 through CH8 are displayed.

Measured values

1	:	1	2	3	.	4	M	P	a	5	:	4	3	2	.	1	°C		
2	:		1	2	.	3	M	P	a	6	:	3	2	1	.	0	°C		
3	:			1	.	2	M	P	a	7	:	1	2	3	4	m	m	/	s
4	:			0	.	1	M	P	a	8	:	1	2	3	4	5	p	s	i

* Conversion values for CH1 through CH8 are displayed. The number of digits is fixed.

Version

* 2nd row: type code, 3rd row: firmware version No., 4th row: date & time

SN, ID, IP, MAC

S	/	N		0	1	2	3	4	5	6	7			I	D	:	0	1		
I	P	:		1	9	2	.	1	6	8	.	2	.	1	4	0				
M	A	C	:																	
				4	0	-	D	8	-	5	5	-	1	A	-	0	C	-	0	0

* 1st row: serial No. & connection ID, 2nd row: IP address, 3rd to 4th rows: MAC address

IP address details

I	P	E	D	I	T	p	u	s	h		[→]	K	e	y			
I	D	:		1															
I	P	:		1	9	2	.	1	6	8	.			2	.	1	4	0	
P	C	:		1	9	2	.	1	6	8	.			2	.	2	0	0	

* 1st row: operation, 2nd row: connection No., 3rd row: IP address, 4th row: PC-side IP address

Back to measurement screen

(2) Details of each screen

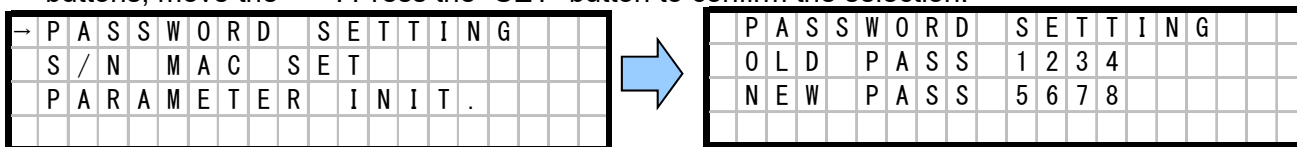
① Measurement condition selection

S	E	N	S	E	R	S	E	T	F	I	L	E	N	A	M	E
s	e	l	e	c	t	f	i	l	e	[→]	k	e	y	
0	1	:	S	e	t	t	i	n	g	s	0	1				

Displayed in	Description
2nd row	Pressing the “→” button moves to the password input screen.
4th row	Management No. (2 digits): name of the setting file The file name must be entered with up to 20 single-width alphanumeric characters with no extension. If the limit on the type and number of the characters is exceeded when the file name is saved, an error message is displayed.

【Note】 A password must be entered to change the setting file.

- a. To switch the screen to the password setting screen, long-press the “Menu” button and “SET” button at the same time (for more than 5 seconds) in normal operation condition. Using the “↑↓” buttons, move the “→”. Press the “SET” button to confirm the selection.



Displayed in	Description
2nd row	Old password input field
3rd row	New password input field
4th row	Pressing the “SET” button displays the confirmed change result. UPDATED PASSWORD PASSWORD IS INCORRECT

- b. A password is required when changing a managed parameter.

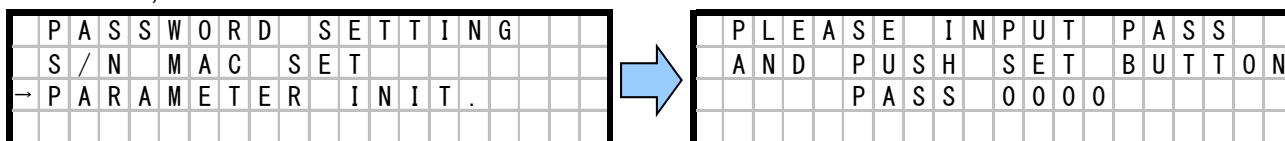
P	L	E	A	S	E	I	N	P	U	T	P	A	S	S	
A	N	D	P	U	S	H	S	E	T	B	U	T	T	O	N
			P	A	S	S	0	0	0	0					

Displayed in	Description
3rd row	New password input field
4th row	Pressing the “SET” button displays the confirmed change result. After the result is displayed, the screen goes back to the original screen. CHANGE THE SETTING INCORRECT

② Parameter Initialization

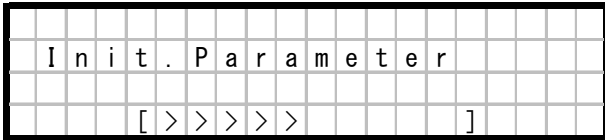
Restores the MVS08 settings to the factory default settings. Note that performing this operation will erase all the files saved in the unit.

- a. To switch the screen to the parameter initialization screen, long-press the “Menu” button and “SET” button at the same time (for more than 5 seconds) in normal operation condition. Using the “↑↓” buttons, move the “→”. Press the “SET” button to confirm the selection.

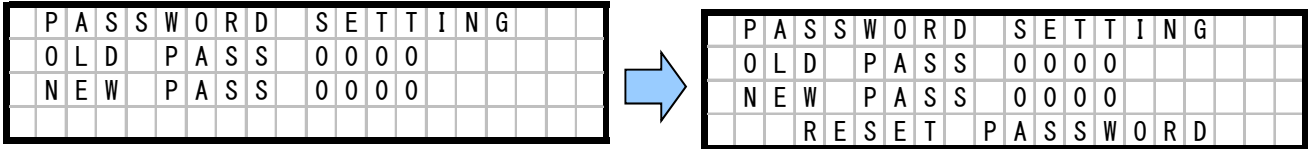


Displayed in	Description
2nd row	Operation
3rd row	Enter the password set in Step ① a. The default password is “0000”.

- b. Entering the password and pressing the “SET” button starts the initialization. After the initialization completes, the screen goes back to the measurement status screen.

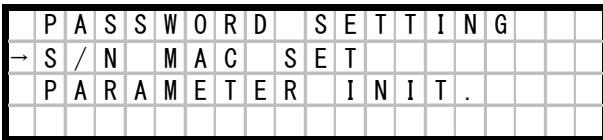


- c. If the password is forgotten, it can be restored to the factory default value “0000”. Follow the procedure in Step ① a to display the password setting screen. Long-press the “MENU” button for 10 seconds.



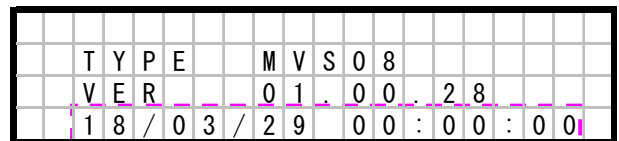
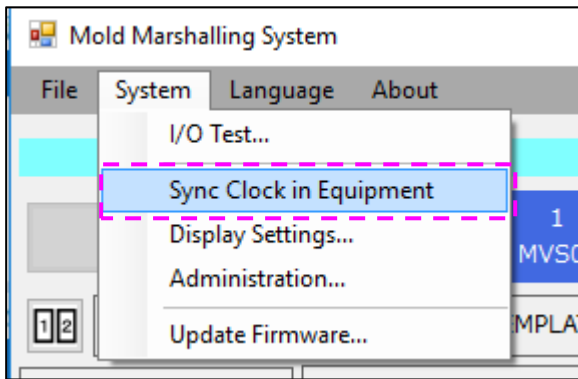
③ Other settings

Do not change other settings. Doing so could disable network connection.



④ Change the time (clock) on the MVS08

The date & time (clock) on the version display screen can be synchronized with the clock of the PC. From the main menu, select the “System”, and then select [Sync Equipment Clock].



The clock of measuring devices is also synchronized automatically when any measuring condition is overwritten.

3-2-3 Using MVS08 main unit standalone

The MVS08 can operate standalone. Once the set conditions are saved to the main unit by operating the connected PC, the monitor functions even after the PC is separated from the main unit.

- To do so, follow the procedure below.

Step 1: Connect a PC and make necessary settings. (Refer to Section 4-4 “Setting the Conditions” on Page 29)

Step 2: Save the set conditions into the main unit. (Refer to Sections 4-5 “Saving Settings As” and 4-6 “Saving Settings” on Page 41.)

Step 3: Exit the measurement software. (Refer to Section 4-1 “Starting and Exiting Software” on Page 27.)

Step 4: Turn off the power to the main unit. (Refer to Section 3-1 “Tuning Power ON/OFF” on Page 23.)

Step 5: Disconnect the LAN cable. Connect a USB memory stick.

Step 6: Turn on the power to the main unit. (Refer to Section 3-1 “Tuning Power ON/OFF” on Page 23.)

* If no PC is connected, a USB memory stick is required to save data.

4. Basic Operation of Measurement Software

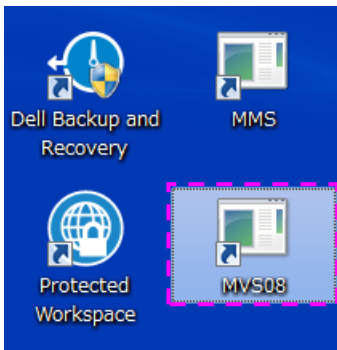
This section describes the basic operation of measurement software.

4-1 Starting and Exiting Software

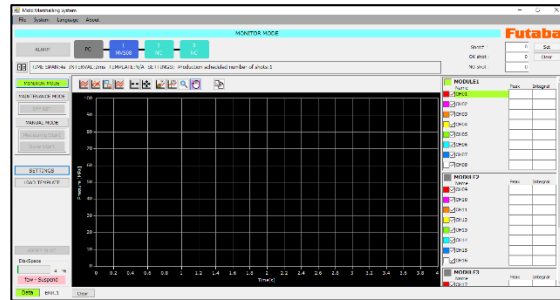
Starting software

Double-click the shortcut “MVS08” on the desktop.

* If the shortcut “MVS08” is not found, specify the “MVS08” executable file in “c:\Program Files\FUTABA\MVS08” and click “Create Shortcut” to create a shortcut.

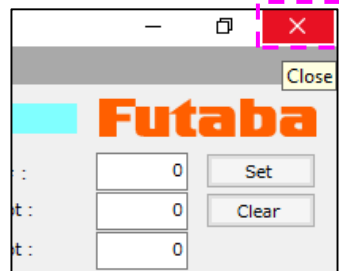
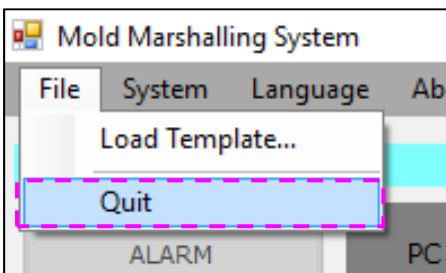


The main screen appears.

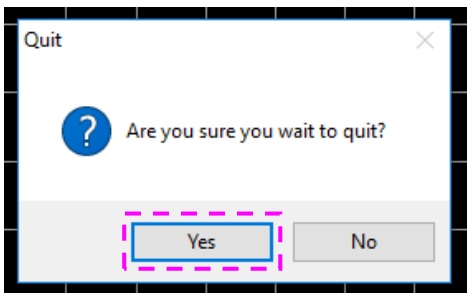


Exiting software

Select “Quit” from the main menu, or click the close button “x” on the upper right corner of the screen.

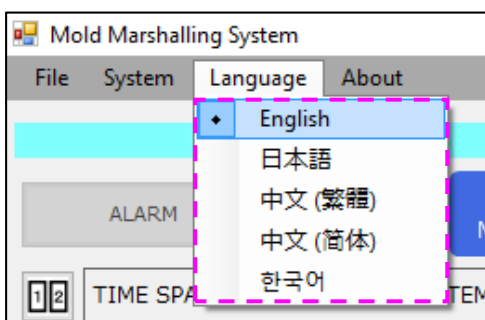


The following confirmation message is displayed. To exit, select “Yes”.



4-2 Changing the Language

The language can be changed by selecting “Language” from the main menu.



* English, Japanese, Traditional Chinese, Simplified Chinese, or Korean can be selected.

4-3 Names and Functions of Screen Components

This section explains the basic screen components and the operations that are often used.

■ Operation screen

When software starts up, the screen shown below appears. This screen is referred to as the operation screen.

Here, remember the concepts of individual screen components.

Operation mode switching button

- Monitor mode : Mainly used mode. If it causes no particular problem, use this mode for capturing accurate data and monitoring mass production.
- Maintenance mode : This mode is used for checking sensor behavior and communication between MVS08 and management PC. In this mode, the system only communicates and plots the values measured by the sensors.
- Manual mode : This mode is used when a trigger signal (mold closing complete signal from the molding machine, measurement start signal) cannot be captured but the measurement must be performed immediately. You can perform the measurement and save data manually by pressing the [Start Saving] button at the same timing with the mold closing complete signal from the molding machine.

Dual-window switching button

Switch between single-window and dual-window display.
"Right-left split screen"⇒
"up-down split screen"⇒Back

Menu bar

Execute commands
Displays the menu.

Toolbar

Provides buttons to execute commands.

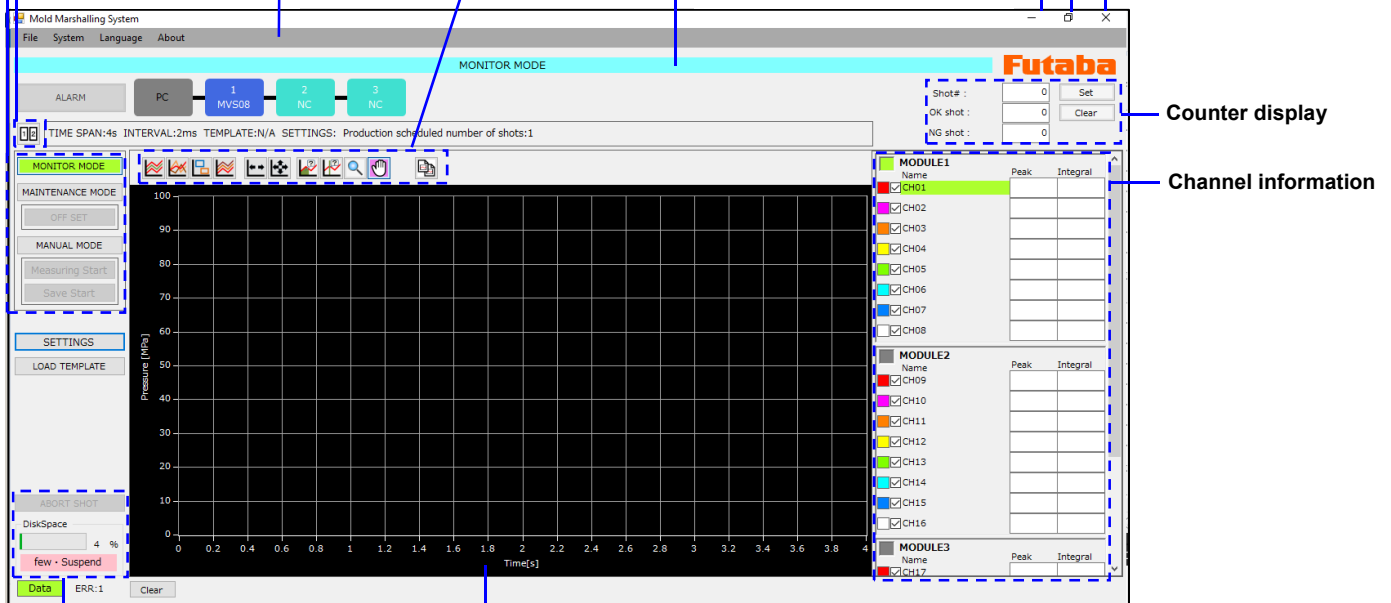
Measurement mode bar

Displays which mode is selected (monitor mode, maintenance mode or manual mode)

Minimize button

Maximize button

Close button



Free disk space

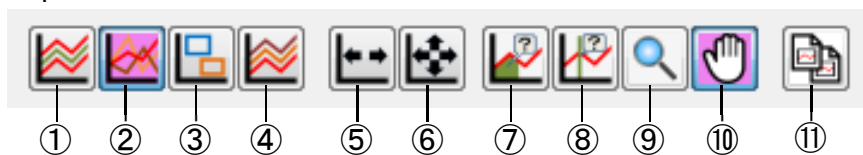
Displays the usage of data storage area.

Frame screen

Displays pressure waveforms being measured, template waveforms, and alarm monitoring frame.

■ Toolbar

The frequently used commands are provided as buttons. The functions of individual commands are explained below.



①	Show/hide monitoring waveform	Shows or hides the upper and lower limits of the waveforms when monitoring the entire area of the waveforms.
②	Show/hide template waveform	Shows or hides the Template waveforms read into the frame screen.
③	Show/hide monitoring frame	Shows or hides the alarm monitoring frame that has been set.
④	Show/hide overlay	Shows or hides waveform overlay every shot.
⑤	Zoom out Horizontally to Full Scale	After enlarging the view, zooms out only in the time axis direction.
⑥	Zoom out to Full Scale	Zooms out along both the time axis and measured value axis (according to the measurement conditions).
⑦	Integral cursor tool	Displays the integral of the measured value (area) at the cursor position.
⑧	Cursor tool	Displays the measured value at the cursor position.
⑨	Zoom	Enlarges the specified view. Selecting a channel name on the right side of the measurement screen enlarges only the measurement type that is

		set for the CH selected.
⑩	Hand tool	Drags and moves the enlarged view.
⑪	Save image data	Saves the frame screen.

4-4 Setting the Conditions

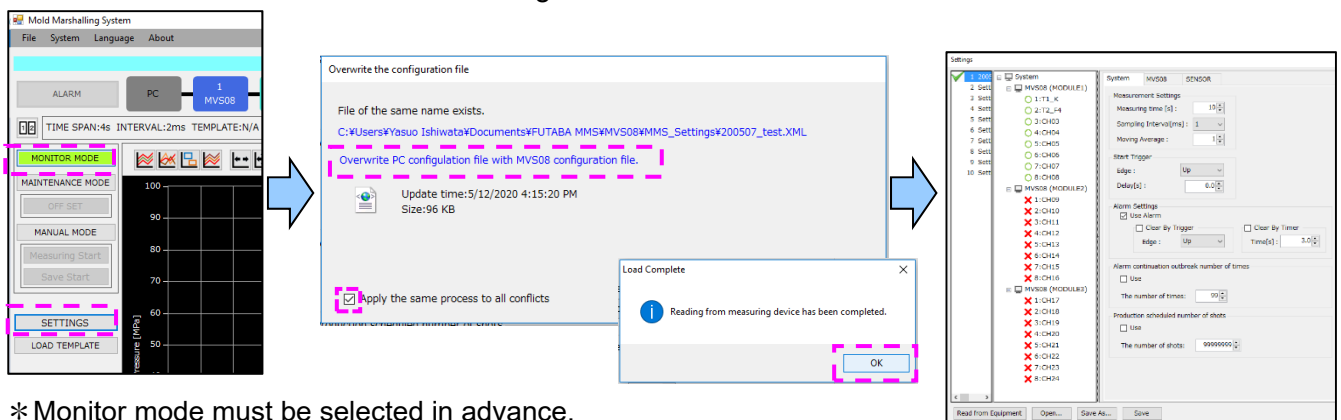
Here, set the conditions under which data is retrieved. The conditions once set are saved to the setting file, so the same conditions are automatically set when the setting file is read next and after.

■ Set “measurement condition”, “sensor sensitivity”, and “alarm monitoring condition” sequentially in this order.

* “Measurement conditions” and sensor sensitivity” must be set. Set “alarm monitoring condition” as needed.

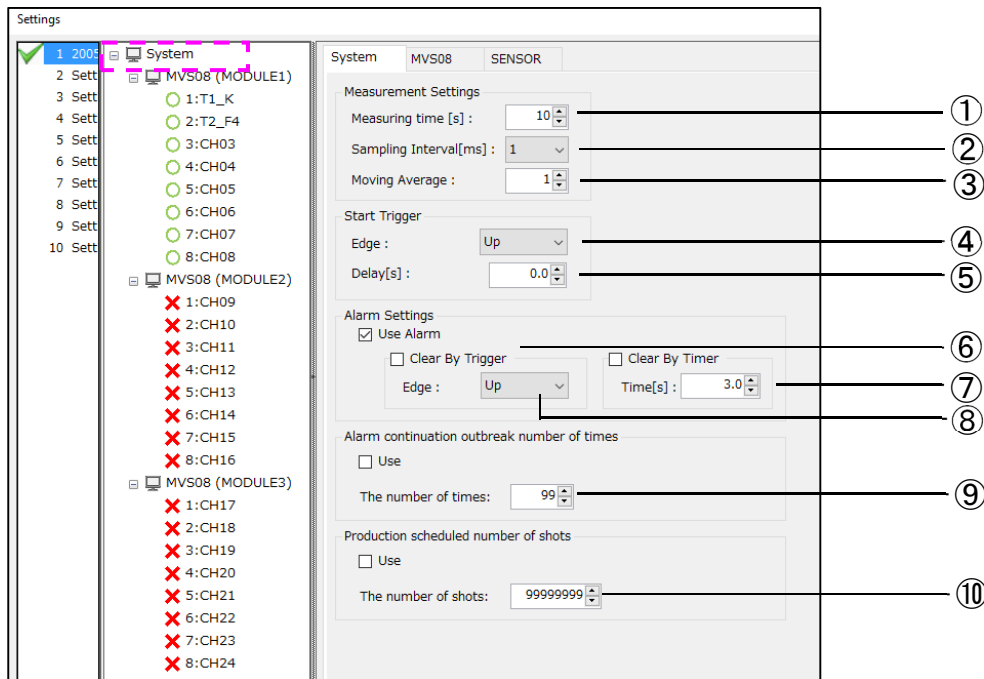
4-4-1 Setting measurement conditions

■ Click the “SETTINGS” button. ■ Select “Copy and replace” checkbox. Click “OK” to open the measurement condition setting screen.



* Monitor mode must be selected in advance.

Make settings related to measurement.

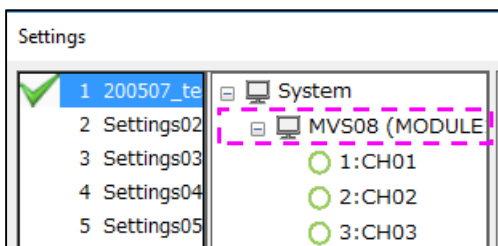


①	Measurement time	Data collected from up to 120,000 data points can be saved. Up to 120 seconds can be set for 1 msec sampling, and up to 1,200 seconds can be set for 10 msec sampling. Set a shorter time than the molding cycle time.
②	Sampling interval	Select one from among 1ms, 5ms, 10ms, 50ms, 100ms and 1000ms.

③	Moving average	Set the number of values to be averaged when outputting the moving average of measured values.
④	Trigger start	Select according to the specifications of the signal input from the molding machine. When the mold close complete signal is connected, select "Up" edge. The Up (rising) edge is detected when a signal is input after a short-circuit is created between the pin set for trigger input and the GND pin.
⑤	Trigger delay setting	Measurement starts the lapse of the specified time after input of the trigger signal. When the mold close complete signal is connected, set 0 second.
⑥	Alarm setting	Select the check box to enable the output of an alarm signal.
⑦	Clear alarm setting by timer	The alarm signal is automatically cleared in the specified time after output of the alarm signal.
⑧	Clear alarm setting by trigger	Used when the alarm signal is to be cleared by the external trigger signal. Set according to the output signal of the connection destination.
⑨	Number of times of continuous alarm occurrence	Outputs a stop signal when a specified number of times of alarms occur. When this signal is used, "Stop signal" and "Specified number of times of continuous alarms occurred" signal types need to be assigned to output ports.
⑩	Planned number of shorts for production	Outputs a signal when a specified number of shots (number of OK shots) is reached. When this signal is used, "control signal" and "production completes" signal types need to be assigned to output ports.

4-4-2 Setting input for each channel

- Following the setting of measurement conditions, perform CH settings. Click the inside of the dotted frame shown in the figure below.



The following setting screen appears.

	Enabled	Measuring subject	Measuring Unit	Normal Trigger enable	Normal Trigger offset	Normal Trigger offset value	TriggerA enable	TriggerA offset	TriggerA value
① CH1	<input checked="" type="checkbox"/>	pressure	MPa	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>	0
CH2	<input checked="" type="checkbox"/>	pressure	MPa	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>	0
CH3	<input checked="" type="checkbox"/>	pressure	MPa	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>	0
CH4	<input checked="" type="checkbox"/>	Pressure MPV	MPa	<input type="checkbox"/>	<input type="checkbox"/>	n	<input type="checkbox"/>	<input type="checkbox"/>	n

Channel setting (②)

Enabled Measuring subject: pressure (③) Measuring: MPa

Normal Trigger (④): Enabled Offset value: 0.000 (⑦) Sensor Sensitivity: 1 4000 A (⑧)

TriggerA (⑤): Enabled Offset value: 0.000 Upper Limit: 10.000 V 200.000 MPa

TriggerB (⑥): Enabled Offset value: 0.000 Lower Limit: 0.000 V 0.000 MPa

Shape Setting (⑨): Shape: --- Diameter[mm]: 1.00 Long[mm]: 1.00 Wide[mm]: 1.00 Area[mm2]: 1.00

JPI01 Setting (⑧): Sensitivity: EE Mold Temperature: 40 Input value: 40 Measured value: 1 Measurement CH: 1

Channel Name (⑫): CH01

Reflect

(1) The setting results are listed on the top (use the slide bar to move in the horizontal direction.)

System MVS08 SENSOR

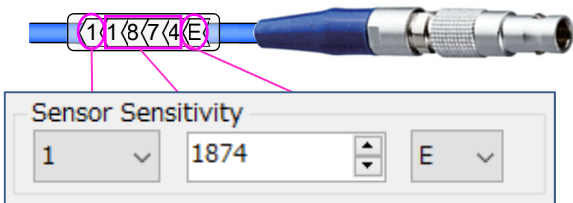
Module Name : MODULE1

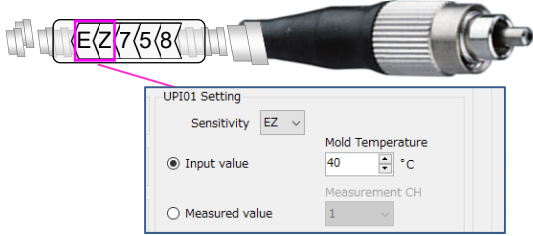
SENSOR I/O signal

MVS08 setting list

	Sensor sensitivity type	Sensor sensitivity number	Sensor sensitivity symbol	UPI01 Sensitivity classification	UPI01 Mold temperature	UPI01 input value / measured value choice	UPI01 Measurement CH	Shape	Diameter
CH1	1	1234	A	EE	40	Input value	1	Round	1
▶ CH2	1	1235	B	EE	40	Input value	1	Round	1
CH3	1	4000	A	EE	40	Input value	1	---	1
CH4	1	4000	A	FF	40	Input value	1	Rectangle	1

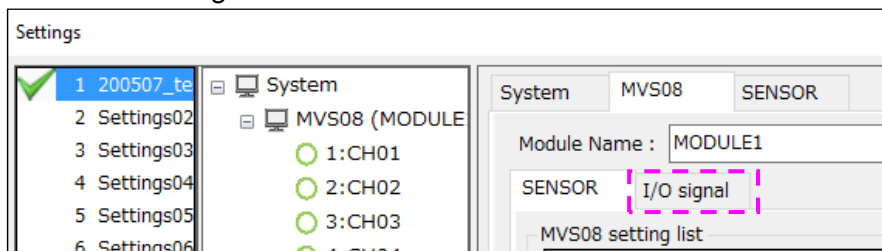
(2) Set the following for each CH

① MVS08 setting list	Click any of CH1 to CH24 to select the channel to be input. The setting results of ② through ⑫ are displayed for each CH on the list for confirmation. The hidden items can be confirmed by moving the slider on the bottom.																					
② CH condition settings	Check “Enable” checkbox for the channel to be measured. Unchecking the checkbox makes the unit unable to display waveforms even with sensors connected. If “Reflect” is checked, the settings of CH1 will be reflected.																					
③ Measurement type	<p>Select the type of measurements, unit, and unit conversion.</p> <p>[Note] Pressure MPV04 Sensitivity input: MPV04...Select this when sensitivity has been input in the MPV04 amplifier. Pressure MPV04 Sensitivity input: PC software...Select this when sensitivity is input with MVS08’s PC software. <u>Use this option with the sensitivity classification for all the CHs on the MVS04 side set to 15000A.</u> Pressure MPS08 Sensitivity input: MPS08 ...Select this when sensitivity has been input in the MPS08 amplifier. Pressure MPS08 Sensitivity input: PC software...Select this when sensitivity is input with MVS08’s PC software. <u>Use this option with the sensitivity classification for all the CHs on the MPS08 side set to 15000A.</u> Temperature EPT-001...Select this when sensitivity has been input in the EPT-001 amplifier.</p> <table border="1" data-bbox="400 864 1393 1384"> <thead> <tr> <th>Measurement type</th> <th>Unit</th> <th>Unit conversion</th> </tr> </thead> <tbody> <tr> <td>Pressure Pressure MPV04 Sensitivity input: MPV04 Pressure MPV04 Sensitivity input: PC software Pressure MPS08 Sensitivity input: MPS08 Pressure MPS08 Sensitivity input: PC software</td> <td>MPa kg/cm² psi bar</td> <td>MPa kg/cm² psi bar</td> </tr> <tr> <td>Temperature Temperature UPI01 Sensitivity input: PC software Temperature EPT-001</td> <td>°C °F K</td> <td>°C °F K</td> </tr> <tr> <td>Position</td> <td>mm inch</td> <td>mm inch</td> </tr> <tr> <td>Load</td> <td>kgf N lbf</td> <td>kgf N lbf</td> </tr> <tr> <td>Velocity</td> <td>mm/s</td> <td>mm/s</td> </tr> <tr> <td>Flow rate</td> <td>L/min</td> <td>L/min</td> </tr> </tbody> </table>	Measurement type	Unit	Unit conversion	Pressure Pressure MPV04 Sensitivity input: MPV04 Pressure MPV04 Sensitivity input: PC software Pressure MPS08 Sensitivity input: MPS08 Pressure MPS08 Sensitivity input: PC software	MPa kg/cm ² psi bar	MPa kg/cm ² psi bar	Temperature Temperature UPI01 Sensitivity input: PC software Temperature EPT-001	°C °F K	°C °F K	Position	mm inch	mm inch	Load	kgf N lbf	kgf N lbf	Velocity	mm/s	mm/s	Flow rate	L/min	L/min
Measurement type	Unit	Unit conversion																				
Pressure Pressure MPV04 Sensitivity input: MPV04 Pressure MPV04 Sensitivity input: PC software Pressure MPS08 Sensitivity input: MPS08 Pressure MPS08 Sensitivity input: PC software	MPa kg/cm ² psi bar	MPa kg/cm ² psi bar																				
Temperature Temperature UPI01 Sensitivity input: PC software Temperature EPT-001	°C °F K	°C °F K																				
Position	mm inch	mm inch																				
Load	kgf N lbf	kgf N lbf																				
Velocity	mm/s	mm/s																				
Flow rate	L/min	L/min																				
④ Normal Trigger	Input a trigger from the molding machine. Check “Enable” checkbox to set this option.																					
⑤ Trigger A side	Input an A side trigger signal from the rotary molding machine. Check “Enable” checkbox to set this option.																					
⑥ Trigger B side	Input a B side trigger from the rotary molding machine. Check “Enable” checkbox to set this option.																					
⑦ Sensor sensitivity classification	<p>In the case of selecting the following for measurement type, input <i>the sensor sensitivity classification</i>.</p> <p><i>Pressure</i> Pressure MPV04, sensitivity input: PC software ※ Pressure MPS08, sensitivity input: PC software ※</p>  <p>※When inputting sensor sensitivity classification on the PC software side, use this option with the all the sensitivity classification for all the CHs on the MPV04 or MPS08 side set to 15000A. However, the measurement carried out under this method has a disadvantage of poor resolution. Therefore, it is recommended to set the sensitivity classification on the MPV04 or MPS08 side, and then select “Pressure” and use 0 to 10V as 0 to 200MPa here.</p>																					

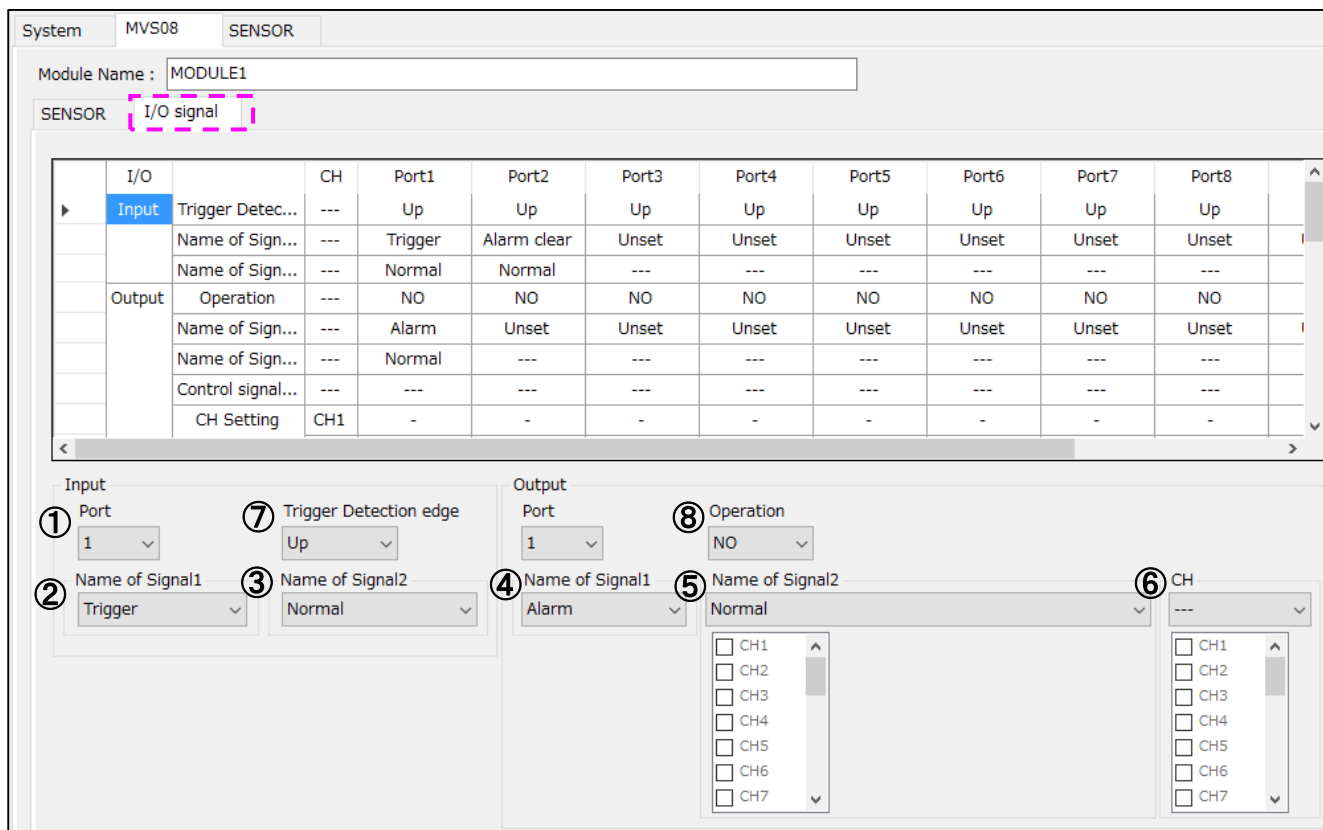
<p>⑧ UPI01 settings</p>	<p>In the case of selecting the following for measurement type, input the resin temperature sensor, and the mold temperature.</p> <p>Temperature Temperature UPI01, Sensitivity input: PC software</p> <p>Input the sensitivity classification</p>  <p>When measurement is performed by the mold surface temperature in another CH, the measured values by the sensor can be used as mold temperature (here, “another CH” is regarded as in the same MVS08.) In this case, select “Measured value” and then select the measurement CH to which the mold surface temperature sensor is connected.</p>
<p>⑨ Shape of pressure receiving surface</p>	<p>In the case of selecting the following for measurement type, inputs the shape of the pressure receiving surface of the pressure sensor.</p> <p>Pressure Pressure MPV04 Sensitivity input: PC software Pressure MPS08 Sensitivity input: PC software</p>
<p>⑩ Upper limit</p>	<p>In the case of selecting the following for measurement type, inputs the values measured when the upper limit of voltage is output from the measuring device. Pressure, position, load, velocity, flow rate [Examples] 200MPa is input when the upper limit of 10V is output. 500°C is input when the upper limit of 5V is input.</p>
<p>⑪ Lower limit</p>	<p>In the case of selecting the following for measurement type, input the values measured when the lower limit of voltage is output from the measuring device. Pressure, position, load, velocity, flow rate [Examples] 20MPa is input when the lower limit of 1V is output. 100°C is input when the lower limit of 1V is output.</p>
<p>⑫ Channel name</p>	<p>Input the channel name as necessary. The name will be displayed in the Channel name filed on the right of the measurement screen.</p>

4-4-3 Setting I/O signals

■ Following the setting of input, perform I/O signal settings. Click the inside of the dotted frame (tab) shown in the figure below.



(1) The setting screen shown below appears.



Both input signal and output signal can be allocated to any port up to 10 ports.

Select a port in “Port” field (①) to set an input signal and an output signal. Selecting a channel in “CH” field (⑥) to specify the channel for which to output the alarm. Selecting multiple “CH” checkboxes makes the alarm common to the channels.

Be sure to perform a measurement with “Trigger” input.

For input signal, either Up (rising) edge or Down (falling) edge can be selected in “Detection edge” (⑦) field.

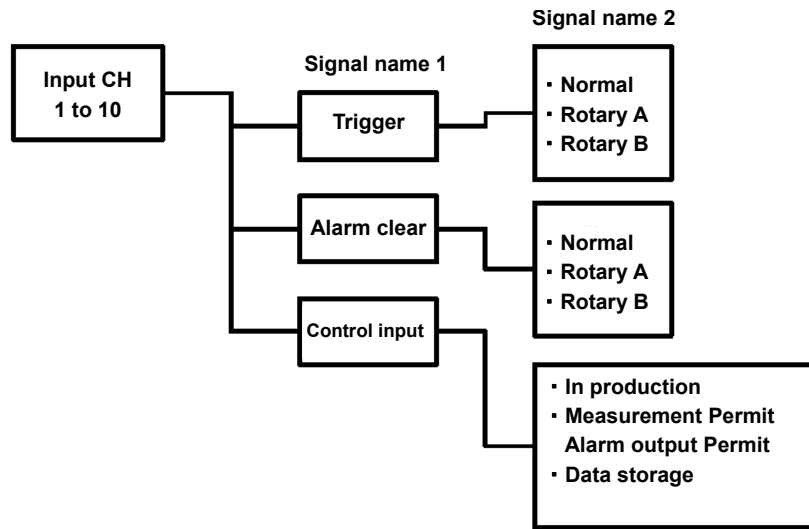
For output signal, either NO (Normal open contact) or NC (Normal closed contact) operation can be selected in “Operation” field (⑧).

Input signal		Output signal	
② Signal name 1	③ Signal name 2	④ Signal name 1	⑤ Signal name 2
Trigger	Normal	Alarm	Normal
Trigger	Rotary A side	Alarm	Rotary A side
Trigger	Rotary B side	Alarm	Rotary B side
Clear alarm	Normal	Alarm	CH can be selected (to specify the channel for which to output the alarm signal individually).
Clear alarm	Rotary A side	Stop signal	Specified number of times of continuous alarms occurred
Clear alarm	Rotary B side	Normal signal	System normal

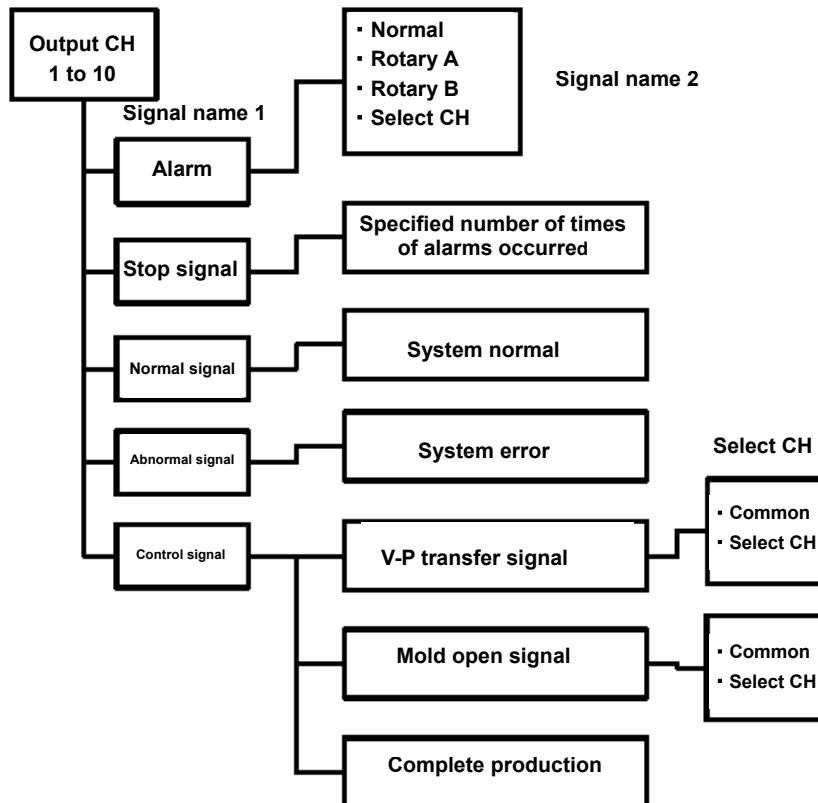
Control input	In production	System error	System error
Control input	Measurement permit	Abnormal signal	V-P transfer signal (output immediately when a measured value exceeds the threshold), common
Control input	Data storage	Control signal	V-P transfer signal (output immediately when a measured value exceeds the threshold), CH1 - CH24
		Control signal	Mold open signal (output immediately when any measured value falls below the threshold), OR
		Control signal	Mold open signal (output immediately when all the measured values fall below the threshold) AND
		Control signal	Mold open signal (output immediately when a measured value falls below the threshold), CH1 - CH24
		Control signal	Complete production

● Input signal selection hierarchy

Input



Output



● D-sub25pin connector pin connection

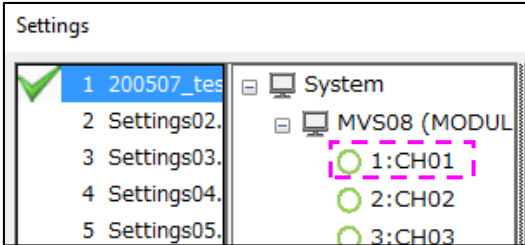
Pin No.	Signal name	IN/OUT	Pin No.	Signal name	IN/OUT	Pin connection
1	Input port 1 [Default → Trigger]	IN	14	Output port 3	OUT	<p style="text-align: center;">Plug side (male)</p>
2	Input port 2 [Default: Clear alarm]	IN	15	Output port 4	OUT	
3	Input port 3	IN	16	Output port 5	OUT	
4	Input port 4	IN	17	Output port 6	OUT	
5	Input port 5	IN	18	Output port 7	OUT	
6	Input port 6	IN	19	Output port 8	OUT	
7	Input port 7	IN	20	Output port 9	OUT	
8	Input port 8	IN	21	Output port 10	OUT	
9	Input port 9	IN	22	Not connected	—	
10	Input port 10	IN	23	Not connected	—	
11	GND	COM	24	GND	COM	
12	Output port 1 [Default: alarm]	OUT	25	Not connected	—	
13	Output port 2	OUT	—	—	—	

4-4-4 Setting alarm monitoring conditions

Perform alarm setting as needed. If alarm setting is not required or only measurement is performed, save the settings after setting the measurement conditions and the sensitivity of the sensors. After the settings are saved, the operation screen is restored.

* For saving the settings, refer to Sections 4-5 “Saving Settings As” on Page 41, and 4-6 “Saving Settings” on Page 41.

■ When performing alarm setting following the setting of “Sensor sensitivity”, click the inside of the dotted frame in the following figure.



The figure on the left shows an example of alarm setting for channel 1.

■ The setting screen appears. The following figure shows the screen displaying Template waveforms.

* Reading the Template waveforms in advance in the frame screen displays the Template waveforms also in the alarm setting screen and makes it easy to set alarm conditions.

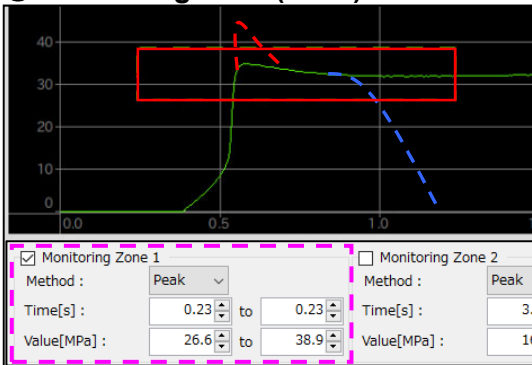
* For reading Template waveforms, refer to Section 6-1 “Displaying Template Waveforms” on Page 44.

The screenshot shows the 'SENSOR' settings for 'MVS08' and 'CH01'. At the top, it shows 'Status: Enabled', 'Channel Name: CH01', and 'Sensor Sensitivity: 14000A'. Below is a graph of 'Pressure [MPa]' vs 'Time[s]' with a toolbar. A pink arrow points from a callout box to the toolbar. The callout box contains the text: 'Alarm conditions can be easily set using the monitoring range edit tools.' Below the graph are two sections for 'Monitoring setting1' and 'Monitoring setting2'. The first section includes checkboxes for 'Monitoring Zone 1', 'Monitoring Zone 2', and 'Point Monitoring', with various time and value ranges. The second section includes checkboxes for 'Time to Peak Monitoring', 'Integral Monitoring', 'Eject Monitoring', 'Integral to Peak Monitoring', and 'V-P Transfer', also with time and value ranges. Numbered callouts (1-13) point to specific input fields. A 'Reflect' button is at the bottom right.

①	Monitoring zone 1	Monitors whether the maximum value in the set range of the monitoring time is within the set range. (Judgment: Peak) Monitors whether all measured values in the set range of monitoring time are within the set range. (Judgment: Area)
②	Monitoring zone 2	Same as above (two monitoring zones can be set for the same CH).
③	Point monitoring (Monitor after t seconds)	Monitors whether the measured values in the elapsed time set are within the set range.
④	Time-to-peak monitoring	Monitors whether the maximum measured value (peak value) in the set period is within the set range of the monitoring time.
⑤	Integral monitoring	Monitors whether the entire waveform area (an area surrounded by waveforms and time axis) is within the set range of integral values.
⑥	Ejection monitoring	Monitors whether all measured values in the set range of the monitoring time are within the set range. Same as Monitoring zone (Judgment: Area).
⑦	Integral to peak monitoring	Monitors whether the integral value up to the maximum value (peak value) in the set period is within the set range of integral values.
⑧	V-P transfer	Outputs a control signal at the moment when the measured value reached the set value (MPa) within the set period.
⑨	Rising time	Outputs a control signal at the moment when the measured value raised to the set value (MPa) within the set period.
⑩	Falling time	Outputs a control signal at the moment when the measured value fell to the set value (MPa) within the set period.
⑪	Average	Calculates the average (MPa) of all values measured during the measurement time and monitors whether the average is within the upper and lower limits set.
⑫	Section Average (Interval average)	Specifies the start and end of the measurement time and monitors whether the average of the measured value (MPa) for the period is within the upper and lower limits set.
⑬	Section integral (Interval integral)	Specifies the start and end of the integral value calculation time and monitors whether the integral of the measured values (MPa) for the period is within the upper and lower limits set.

■ Supplement to alarm monitoring settings

① Monitoring zone (Peak)

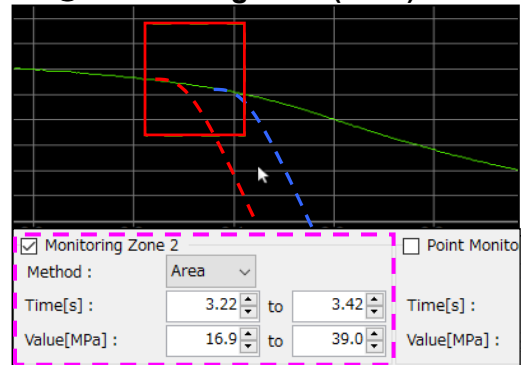


<Peak judgment>

Blue dotted waveform: OK

Red dotted waveform: Alarm

② Monitoring zone (Area)

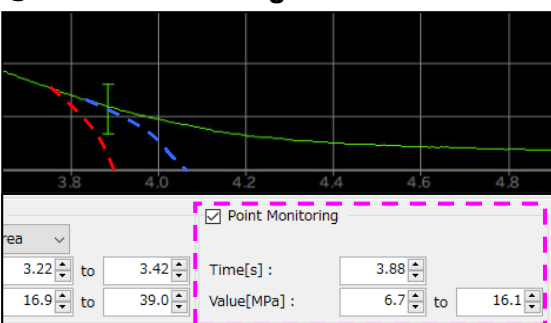


<Area judgment>

Blue dotted waveform: OK

Red dotted waveform: Alarm

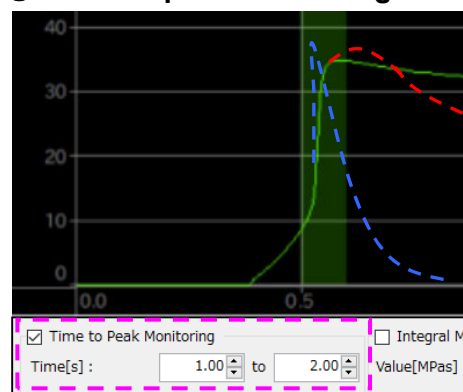
③ Point monitoring



Blue dotted waveform: OK

Red dotted waveform: Alarm

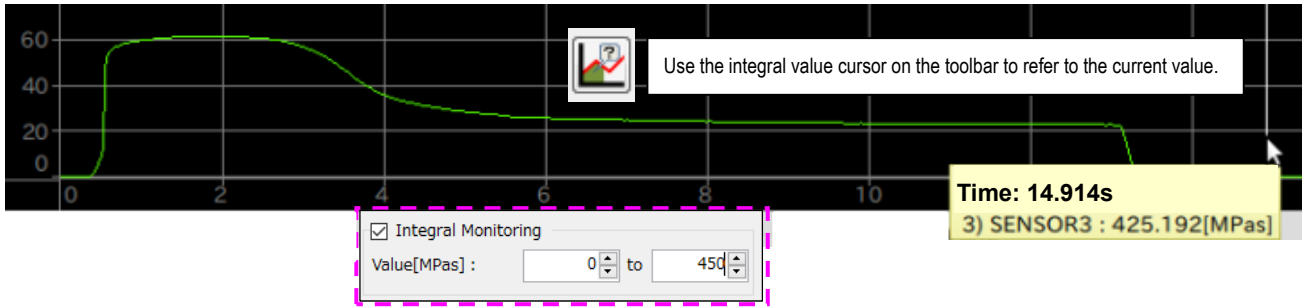
④ Time-to-peak monitoring



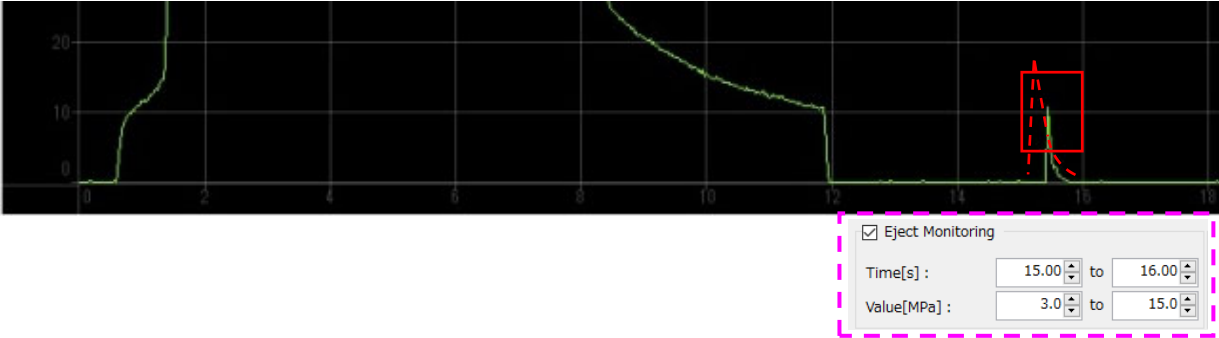
Blue dotted waveform: OK

Red dotted waveform: Alarm

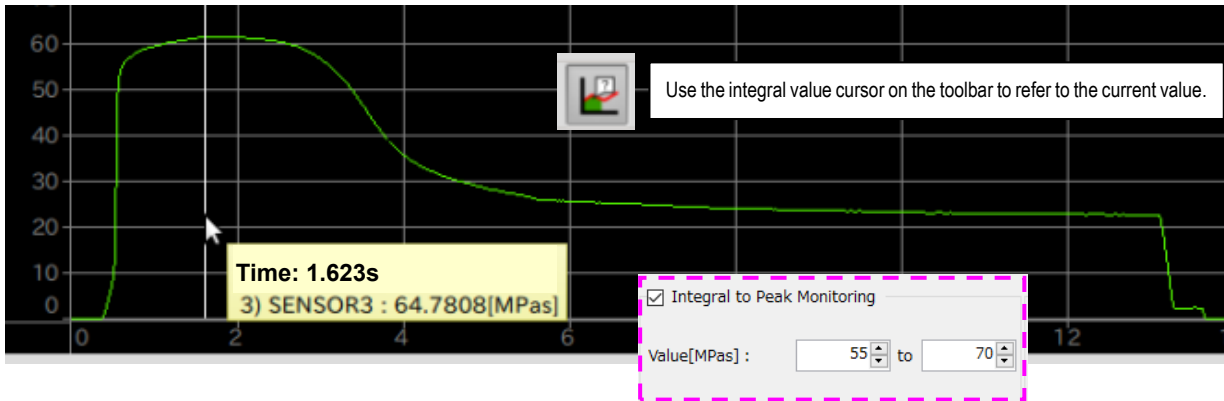
⑤ Integral monitoring



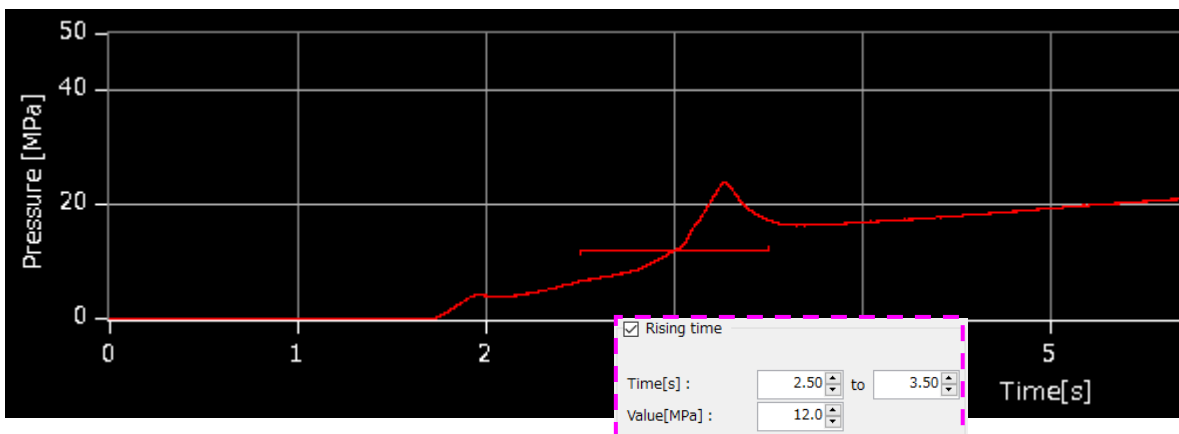
⑥ Ejection monitoring



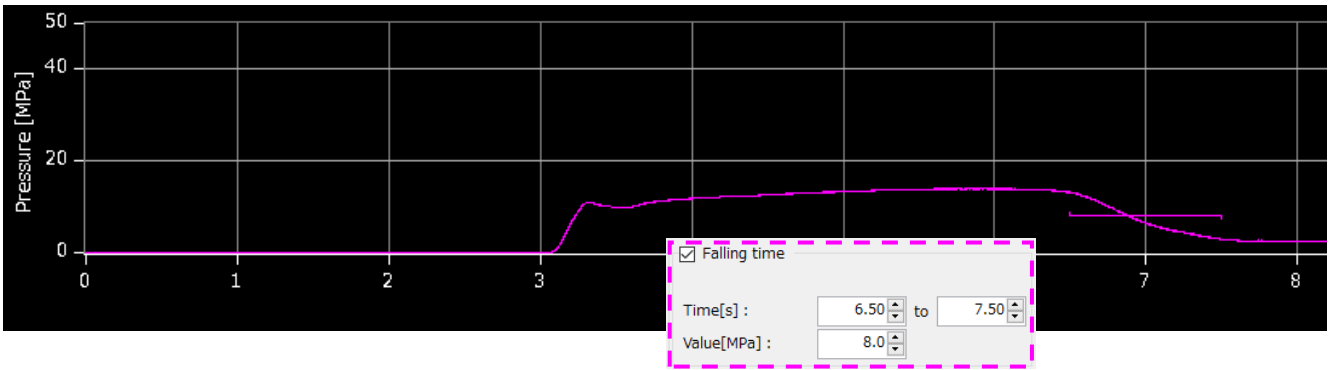
⑦ Integral to peak monitoring



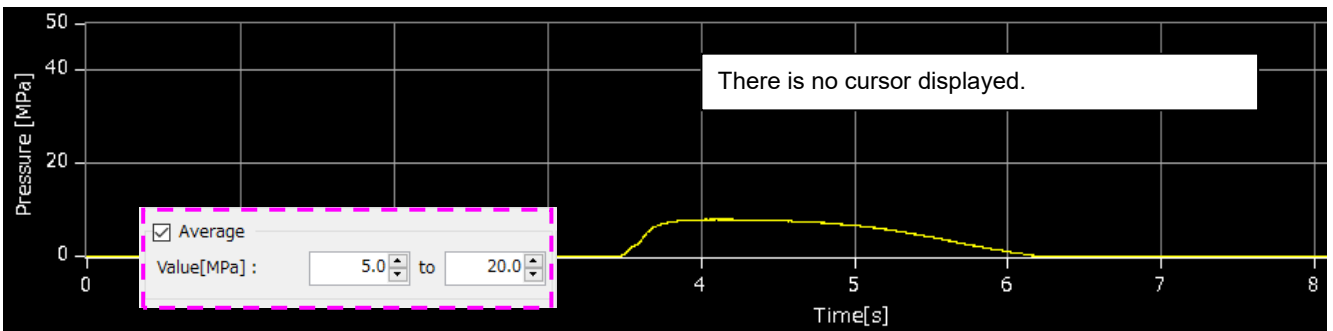
⑨ Rising time



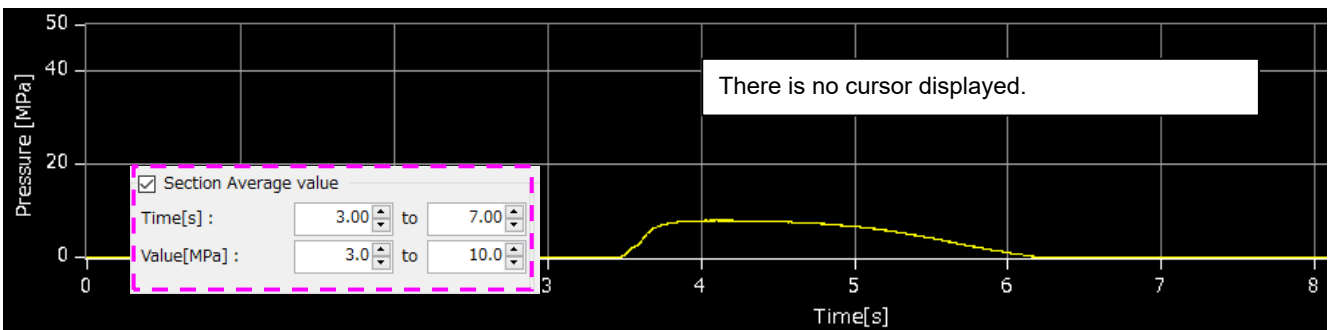
⑩ Falling time



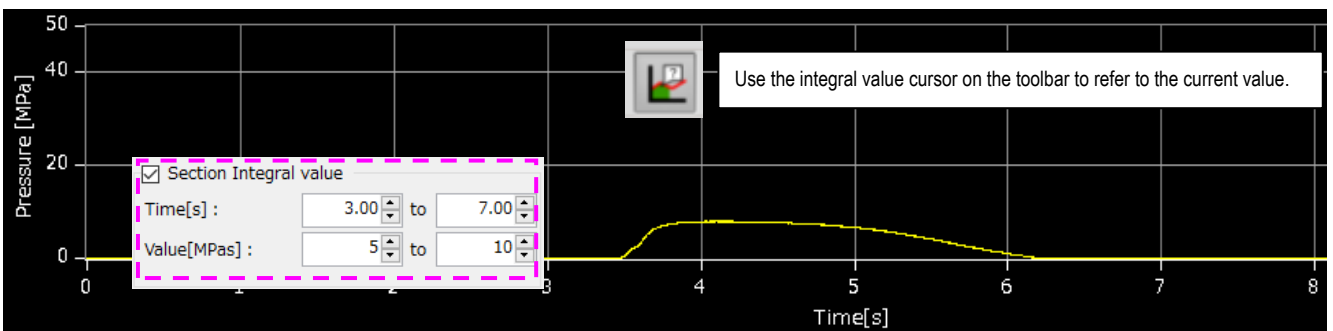
⑪ Average



⑬ Section average (Interval average)



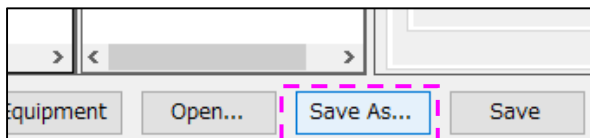
⑭ Section integral (Interval integral)



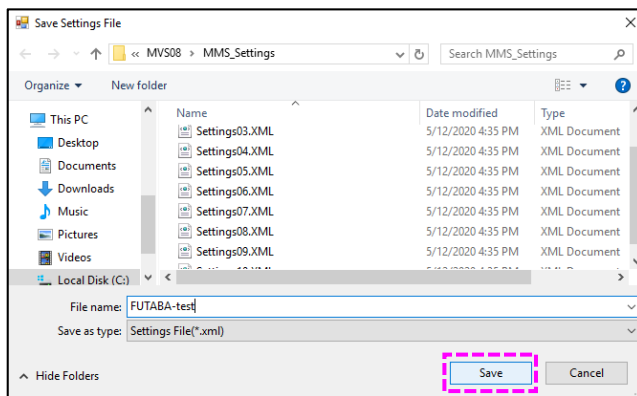
4-5 Saving Settings As

After completion of setting the measurement conditions, sensitivity of sensors, and alarm monitoring conditions, save the new settings. To save the settings by assigning a name as a new file, and replace the current setting file stored in the amplifier, press the “Save As” button.

- Press the “Save As” button.



- The file name input window appears. Enter a file name with up to 20 single-width alphanumeric characters (can contain symbols but no file extension) and press “Save”. The screen automatically returns to the operation screen.



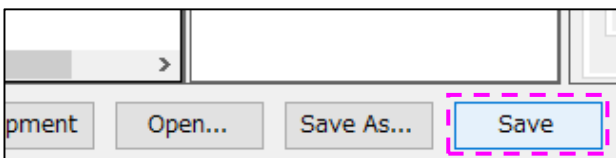
The setting file selected on the amplifier is replaced with the newly saved one.
The newly saved setting file is also saved to PC simultaneously.

- * **The setting file storage destination can be changed using “Administrator Setting” in the main menu.**

4-6 Saving Settings

To overwrite the setting file selected on the amplifier, press “Save”.

- Press the “Save” button. The screen returns to the operation screen automatically.

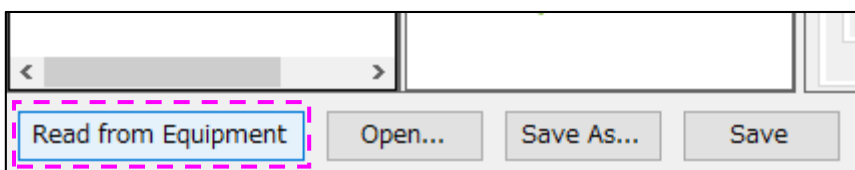


The contents of the setting file selected on the amplifier are updated.
At the same time, the setting file with the same name stored in the PC is also updated.

4-7 Reading Settings from Amplifier

The set conditions stored in the amplifier can be read and checked.

- Press “Read from Equipment”. The setting data in the amplifier is displayed.



5. Using the System

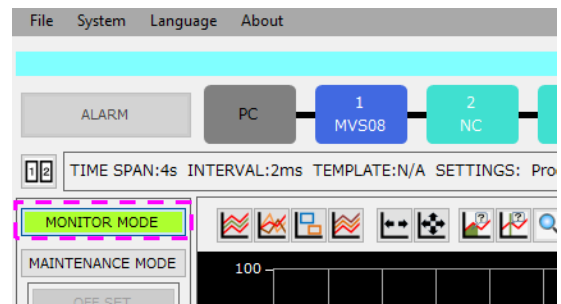
Previous operation have finished the necessary preparation. Now, the user can run the system and observe the waveforms representing in-mold conditions.

5-1 Selecting Measurement Mode

This software has three measurement modes: monitor mode, maintenance mode and manual mode. This section explains the observation of waveforms in monitor mode which is used for normal operation.

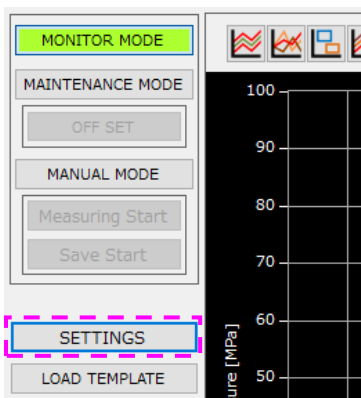
- * For the observation of waveforms in maintenance mode, refer to Section 7-3-2 “Quick sensor checking” on Page 54.
- * Manual mode is an emergency mode which allow you to perform a measurement and save data sequentially in order by pressing the “Start Measurement” or “Start Saving” button at the same timing with the mold closing complete signal from the molding machine.

- Press the “MONITOR MODE” button.
The system is waiting for a trigger signal (measurement start signal) from the molding machine.



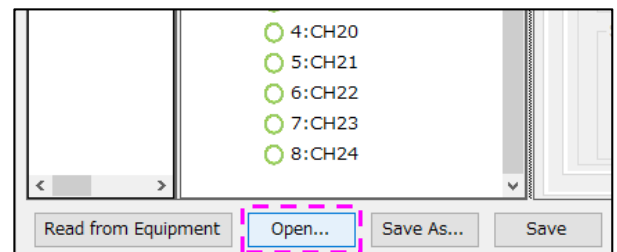
5-2 Selecting Setting File

- Press the “SETTINGS” button.

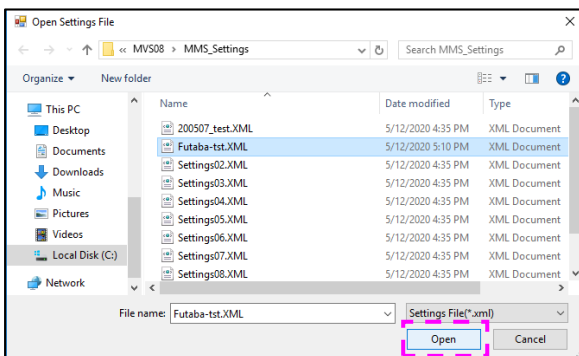


- Press the “Open...” button.

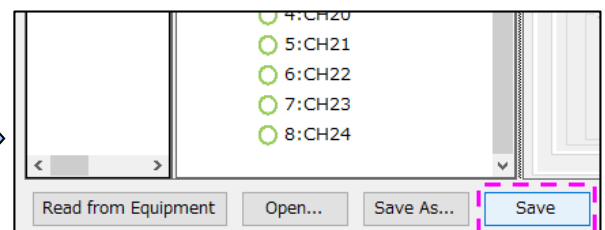
* It is located at the lower left of the setting screen.



- Select the file and press the “Save” button.



- Press “Save”.



The setting file is saved in the amplifier.

The conditions in the selected settings file are displayed.

- * At shipment, the default setting file (Default_Setting.xml) is stored in the amplifier and PC.
- * For creating and saving the “setting file, refer to Section 4-4 “Setting the Conditions” on Page 29.

5-3 Starting Measurement

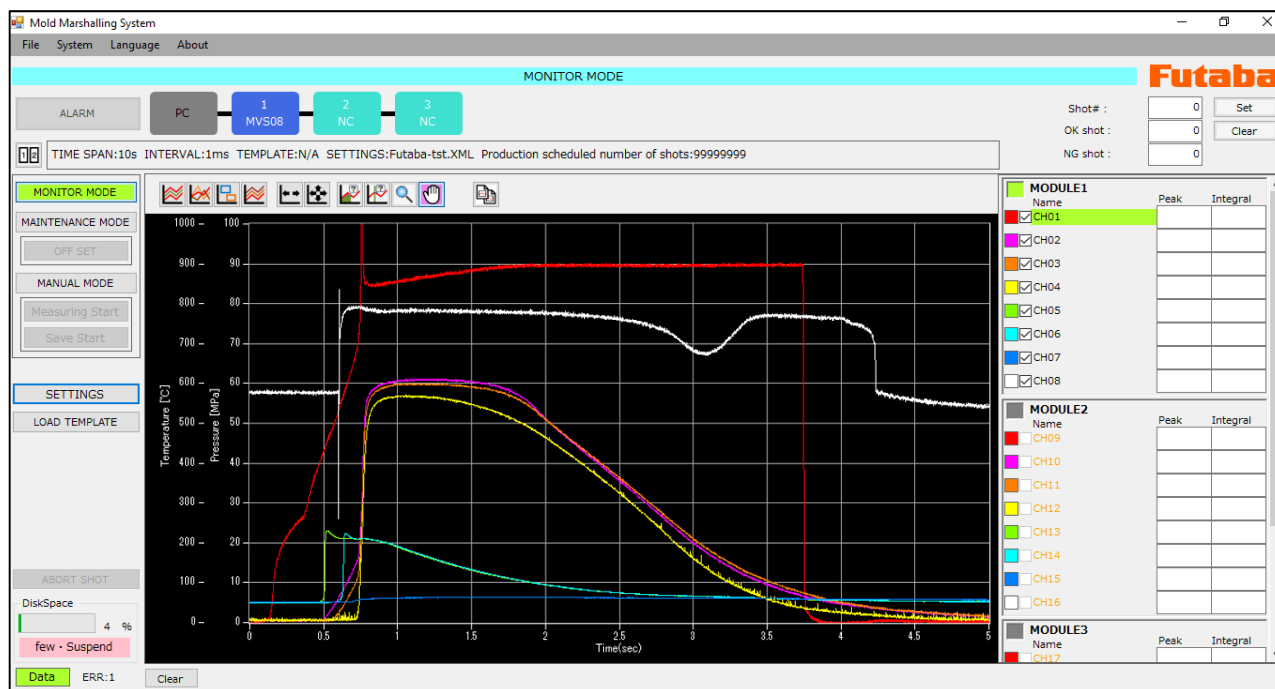
Now, the system is completely ready to observe waveforms.

■ Measurement of pressure waveforms begins when a trigger signal (measurement start signal) is input from the molding machine.

* A trigger signal can also be input manually by pressing the SET key of the amplifier. However, it is hard to press the SET key every time according to the operation of the molding machine. Consider this manual operation as an emergency response.

5-4 Observing Waveforms

■ When molding is started, pressure waveforms are displayed.



* If waveforms are not displayed, check the following.

- ① Has resin reached the sensor?
→ Check the molded products and the sensor mounting position.
- ② Is a checkmark is placed in the checkbox for the channel to be displayed?
→ Confirm that the checkmark is placed in the checkbox on the left of the channel name in the channel information display area (on the right of the operation screen).
- ③ Is the system connected correctly?
(Sensor, junction box, junction cable, amplifier, power supply, LAN, trigger signal)
→ Check the connections again by referring to Section 2-5 "Connections in System" on Page 13.
- ④ Is the network settings correct?
→ Check the network settings again by referring to Section 2-1 "Setting up the Network Connections" on Page 7.
- ⑤ Isn't the sensor damaged?
→ Open- or short-circuit can be checked easily using a multimeter connection cable for pressure sensors (sold separately) or a resin temperature sensor test probe (sold separately).

6. Function Description

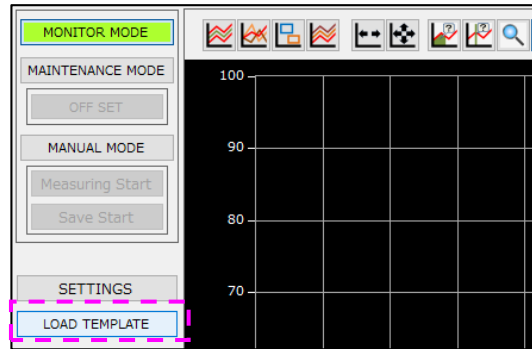
This section explains specific functions and advanced operation.

6-1 Displaying Template Waveforms

■ Pressure waveforms stored in the past can be displayed in the frame screen.

Overlaying the Template waveforms on the waveforms being measured makes it possible to visually check “pressure transition at molding condition adjustment”, “pressure variation during mass production” and “pressure change when the molding conditions are changed”.

■ Press the “LOAD TEMPLATE” button.



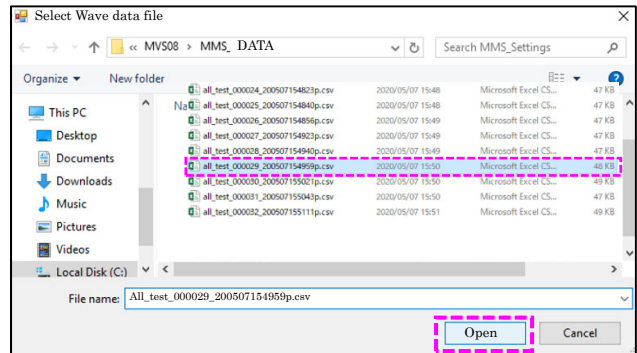
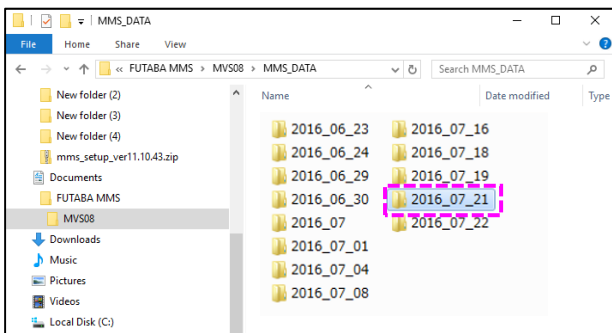
■ The file name selection screen appears.

Select a file from the folder displayed with the date, and press “Open”.

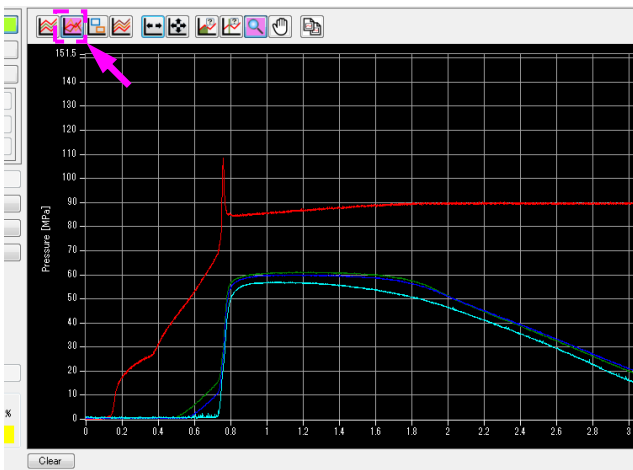
* Template waveform files are stored in the following location.

“C:¥Users¥log-in user name¥Documents¥FUTABA_MMS¥MVS08¥MMS_DATA¥year-month-date folder”

* Each Template waveform file is automatically stored with a name consisting of a shot number, date, and time.



■ The Template waveform is displayed on the frame screen.



* If the Template waveform is not displayed, check whether the “Show/Hide Template Waveform” button on the toolbar is set to “Hide”.

* The density of the display color of the Template waveform can be adjusted by selecting [System] → [Display Settings] → [Opacity of Template Waveform] from the main menu. (→ Page 47 ④).

6-2 Overlaying Waveforms

■ The waveform can be overlaid up to 99 times.

* The overlay count can be set by selecting [System] → [Display Settings] → [Overlay]. (→ Page 47 ②)

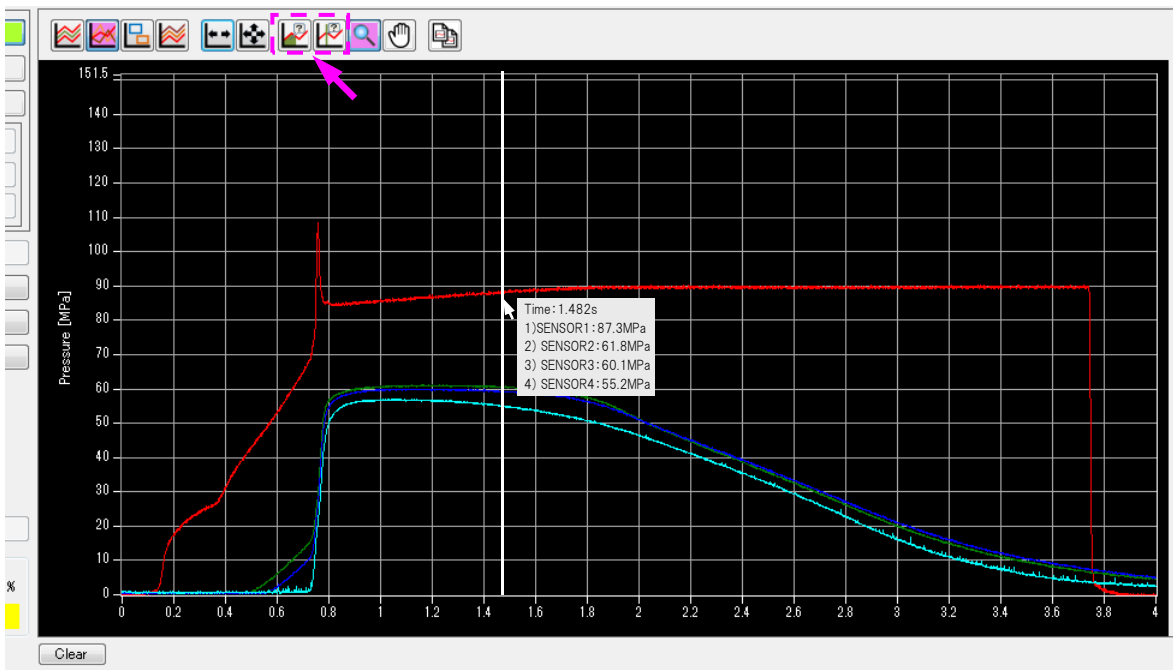


* If the overlay waveforms are not displayed, check whether the “Show/Hide Overlay” button on the toolbar is set to “Hide”.

6-3 Using the Cursor Functions

■ Pressure values or pressure integral values can be displayed by placing the cursor on the waveform being measured.

To do so, use “Cursor Tool” and “Integral Cursor Tool” on the toolbar.

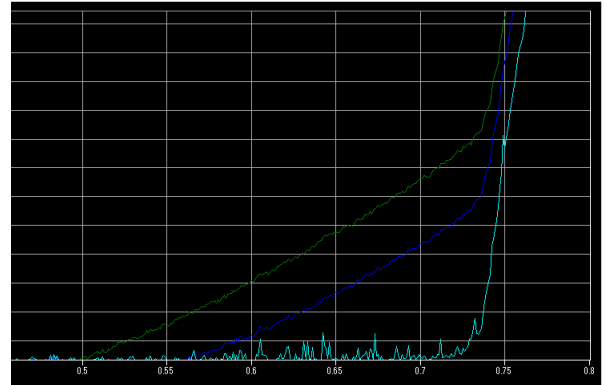
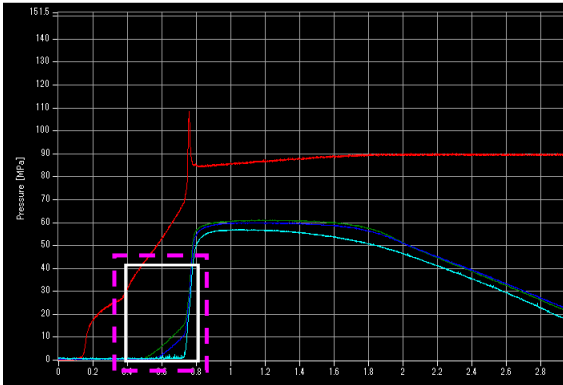


* The above figure shows the cursor displayed when “Cursor Tool” is used.

6-4 Waveform Display Settings

6-4-1 Enlarging waveforms (zoom)

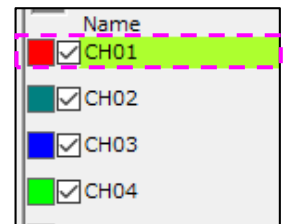
■ Using the “Zoom” button on the toolbar, select the part to enlarge.



* Select (■) the “Channel name” to enlarge.

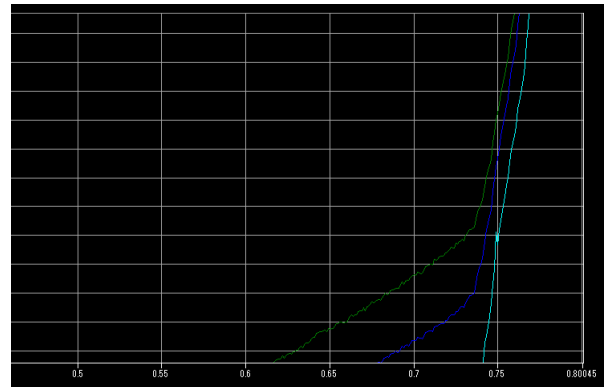
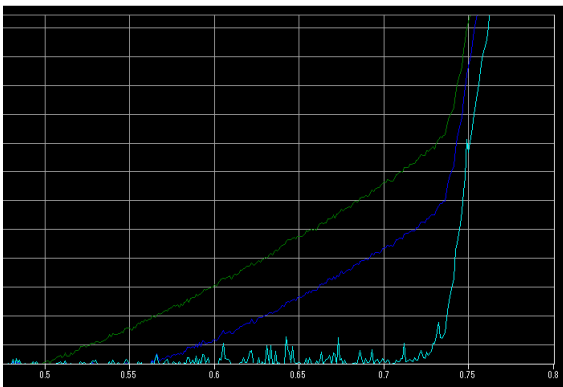
Enclose the start point to the end point of the part to be enlarged, and release the mouse button.

The selected measurement type is enlarged. For example, only pressure waveform can be enlarged.



6-4-2 Moving the waveform position

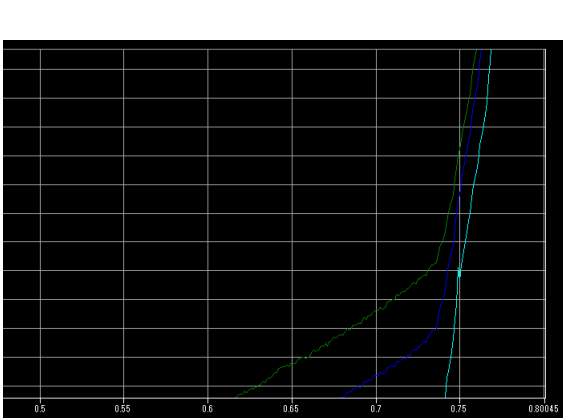
■ A position in the enlarged part can be moved by using the “Hand” button on the toolbar.



* Mouse operation: Drag the position to be moved to the target position and then release the mouse button.

6-4-3 Displaying the entire waveforms (zoom out)

■ The entire waveform display can be restored by using the “Zoom out to Full Scale” button.






* The full scale of the pressure display can be set by selecting [System] → [Display Settings] → [Full Scale] from the main menu.

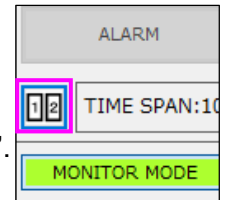
* To zoom out in only the direction of time axis, press the [Zoom Out Horizontally to Full Scale] button.
(→ Page 28 ⑤)

6-4-4 Displaying waveforms in dual window mode

■ Using the “Dual Window” button on the measurement screen, waveforms can be split into two windows and displayed for comparison.

Press  to display “left-right split screen” and  to display up-down split screen”.

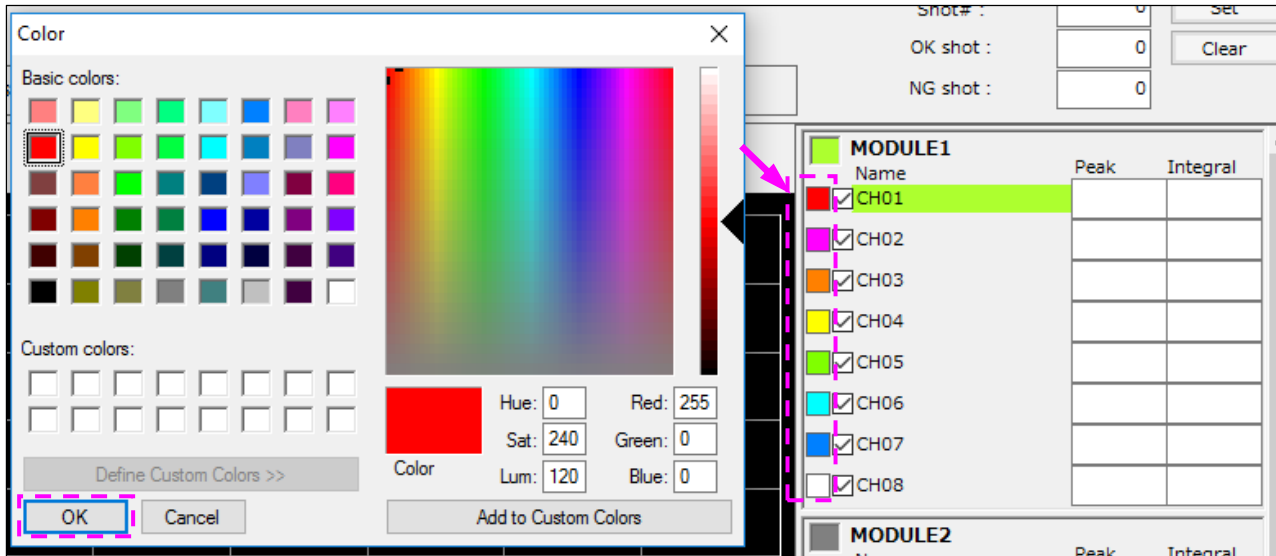
Press  to return to the previous screen.



6-4-5 Changing the color of waveforms

■ Click the color box in the channel information display area.

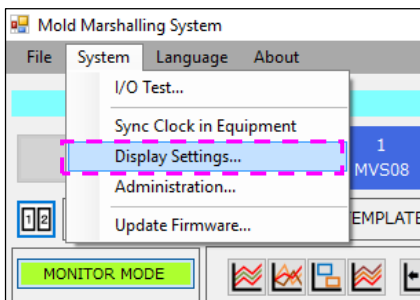
Select desirable drawing color and click [OK].



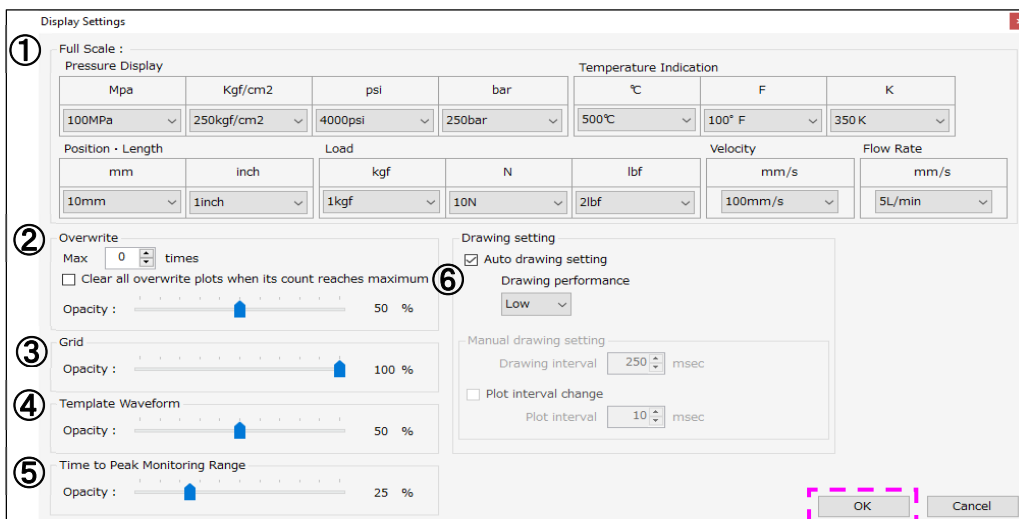
6-5 Other Display Settings

This section explains the other settings related to display.

■ From the main menu, select [System] → [Display Settings].



■ The “Display Settings” screen is displayed. Set necessary items and click [OK].




①	Full Scale	<p>Set the full scale (vertical axis) for each unit to adjust waveforms so that it can be easily viewed.</p> <p>Pressure display MPa :25 MPa, 50 MPa, 100 MPa, 200 MPa, 400 MPa Kgf/cm² :250 Kgf/cm², 500 Kgf/cm², 1000 Kgf/cm², 2000 Kgf/cm², 4000 Kgf/cm² psi :4000 psi, 8000 psi, 16000 psi, 32000 psi, 64000psi bar :250 bar, 500 bar, 1000 bar, 2000 bar, 4000 bar</p> <p>Temperature display °C :100 °C, 200 °C, 250 °C, 350 °C, 500 °C, 1000 °C °F :100 °F, 200 °F, 400 °F, 1000 °F, 2000 °F K :350 K, 700 K, 1400 K, 3500 K, 7000 K</p> <p>Position & length mm :10 mm, 100 mm, 1000 mm inch :1 inch, 5 inch, 50 inch</p> <p>Load kgf :1 kgf, 5 kgf, 10 kgf, 50 kgf, 100 kgf, 500 kgf, 1000 kgf, 5000 kgf N :10 N, 50 N, 100 N, 500 N, 1000 N, 5000 N, 10000 N, 50000 N lbf :2 lbf, 10 lbf, 20 lbf, 100 lbf, 200 lbf, 1000 lbf, 2000 lbf, 10000 lbf</p> <p>Velocity mm/s :100 mm/s, 200 mm/s, 500 mm/s, 1000 mm/s</p> <p>Flow rate L/min :5 L/min, 10 L/min, 25 L/min, 50 L/min</p>
②	Overlay	<ul style="list-style-type: none"> • The maximum number of times of the overlay is input with a value. (0 to 99 times) • If this checkbox is checked, when the maximum number is reached, all overlaid waveforms are erased. If it is unchecked, overlaid waveforms are erased in order from the old one. • Opacity is displayed as a percent (%). As the value is increased, overlaid waveforms are displayed darker.
③	Grid	Opacity of the vertical and horizontal graduation lines (grid) is displayed as a percent (%).
④	Template waveform	Opacity is displayed as a percent (%). As the value is increased, overlaid waveforms are displayed darker.
⑤	Time to Peak Monitoring range	Opacity is displayed as a percent (%). As the value is increased, the monitoring range is displayed darker.
⑥	Plot settings	Auto Plot Settings can be selected. Plot Performance “High, medium, low” can be set. Plot space can be changed.

6-6 Saving Data

6-6-1 Types of saved data

This software can save setting files, waveform data and numerical data.

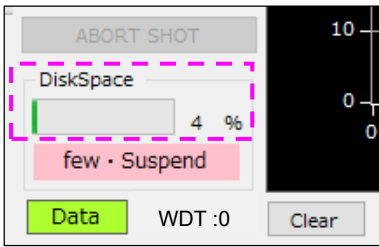
Data type	Item	Extension	Storage destination folder (Default) In the case of Windows7	Remarks																												
Setting file	Condition settings	.xml	C:\Users\login user name\Documents\FUTABA MMS\MVS08\MMS_Settings	<ul style="list-style-type: none"> A setting file contains conditions that are set to perform measurement and monitoring. Select one from the relevant folder in PC and save it in the MVS08 main unit to use. 																												
Waveform data	Pressure waveform	.csv	C:\Users\login user name\Documents\FUTABA MMS\MVS08\MMS_DATA\yyyy_mm_dd	<ul style="list-style-type: none"> Saved for each shot number. Can be read as Template waveform data into the MVS08 software. Can be read to spreadsheet software to edit data. 																												
Numerical data (monitoring item)	<ul style="list-style-type: none"> Date & time saved (Time) Time to peak (Time at Peak) Trigger interval (Interval) Measured value after t seconds (Value at point) Shot number (Shot) Ejection pressure value (Peak over eject) Alarm judgment result (Result) Integral value (Integral) Peak value (Peak) Integral to Peak (Integral to peak) VP transfer time (Vp_Time) Rising time (Rising_Time) Falling time (Falling_Time) Average value (Average) Interval average (Average at section) Interval integral (Integral at section) 	.csv	C:\Users\login user name\Documents\FUTABA MMS\MVS08\MMS_DATA\yyyy_mm	<ul style="list-style-type: none"> Saved by date. Can be read to spreadsheet software to edit data. Alarms detected with regard to the respective monitoring items are recorded using the respective codes listed in the following table. <table border="1"> <thead> <tr> <th>Code</th> <th>Monitoring item</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>No alarm</td> </tr> <tr> <td>Z1</td> <td>Monitoring frame 1</td> </tr> <tr> <td>Z2</td> <td>Monitoring frame 2</td> </tr> <tr> <td>PT</td> <td>Time at peak</td> </tr> <tr> <td>T</td> <td>Time at point</td> </tr> <tr> <td>I</td> <td>Integral</td> </tr> <tr> <td>PI</td> <td>Integral to peak</td> </tr> <tr> <td>EJ</td> <td>Peak over eject</td> </tr> <tr> <td>U</td> <td>Rising Time</td> </tr> <tr> <td>D</td> <td>Falling Time</td> </tr> <tr> <td>A</td> <td>Average</td> </tr> <tr> <td>AS</td> <td>Average at section</td> </tr> <tr> <td>IS</td> <td>Integral at section</td> </tr> </tbody> </table>	Code	Monitoring item	None	No alarm	Z1	Monitoring frame 1	Z2	Monitoring frame 2	PT	Time at peak	T	Time at point	I	Integral	PI	Integral to peak	EJ	Peak over eject	U	Rising Time	D	Falling Time	A	Average	AS	Average at section	IS	Integral at section
Code	Monitoring item																															
None	No alarm																															
Z1	Monitoring frame 1																															
Z2	Monitoring frame 2																															
PT	Time at peak																															
T	Time at point																															
I	Integral																															
PI	Integral to peak																															
EJ	Peak over eject																															
U	Rising Time																															
D	Falling Time																															
A	Average																															
AS	Average at section																															
IS	Integral at section																															
Screen data	Buttons in the toolbar 	.png	C:\Users\login user name\Documents\FUTABA MMS\MVS08\MMS_DATA\yyyy_mm_dd\Image	<ul style="list-style-type: none"> Setting file name is reflected. The screen (on which the "Save image data" button is pressed) is saved. 																												

Data is saved to the respective pre-specified folders.

* For setting storage destination folders, refer to Section 6-7 "Administrator Settings" on Page 51.

6-6-2 Displaying storage space

Data is saved to the respective pre-specified folders.



Free space	Status display	Operation
50% to 100%	OK	Continues to save data
10% to 50%	Low	Continues to save data
Less than 10%	Few · suspended	Suspend saving data (both waveforms and logs)

* Software automatically calculates and displays the amount of free space to save data. The user is requested to move data frequently before “Low” is displayed.

6-6-3 Saving data to USB memory sticks

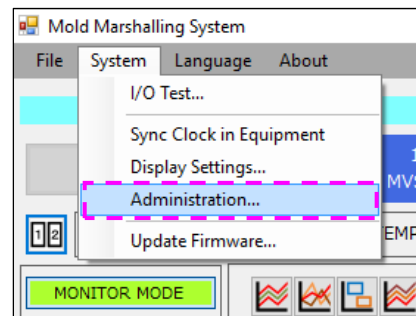
When the MVS08 operates standalone, data can be saved to a USB memory stick connected.

Data type	Item	Extension	Storage destination folder	Remarks																												
Waveform data	Pressure waveform	.csv	(USB memory)¥yyyyymmdd	<ul style="list-style-type: none"> • Saved for each shot number • File name ALhmmss.CSV • Cannot be read as Template waveform data into the MVS08 software. • Can be read to spreadsheet software to edit data. 																												
Numerical data (monitoring item)	<ul style="list-style-type: none"> • Date & time saved (Time) • Time to peak (Time at Peak) • Trigger interval (Interval) • Measured value after t seconds (Value at point) • Shot number (Shot) • Ejection pressure value (Peak over eject) • Alarm judgment result (Result) • Integral value (Integral) • Peak value (Peak) • Integral to Peak (Integral to peak) • VP transfer time (Vp_Time) • Rising time (Rising_Time) • Falling time (Falling_Time) • Average value (Average) • Interval average (Average at section) • Interval integral (Integral at section) 	.csv	(USB memory)¥yyyyymm	<ul style="list-style-type: none"> • Saved by date. • Filename LGyymmdd.CSV • Can be read to spreadsheet software to edit data. • Alarms detected with regard to the respective monitoring items are recoded using the respective codes listed in the following table <table border="1"> <thead> <tr> <th>Code</th> <th>Monitoring item</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>No alarm</td> </tr> <tr> <td>Z1</td> <td>Monitoring frame 1</td> </tr> <tr> <td>Z2</td> <td>Monitoring frame 2</td> </tr> <tr> <td>PT</td> <td>Time at peak</td> </tr> <tr> <td>T</td> <td>Time at point</td> </tr> <tr> <td>I</td> <td>Integral</td> </tr> <tr> <td>PI</td> <td>Integral to peak</td> </tr> <tr> <td>EJ</td> <td>Peak over eject</td> </tr> <tr> <td>U</td> <td>Rising Time</td> </tr> <tr> <td>D</td> <td>Falling Time</td> </tr> <tr> <td>A</td> <td>Average</td> </tr> <tr> <td>AS</td> <td>Average at section</td> </tr> <tr> <td>IS</td> <td>Integral at section</td> </tr> </tbody> </table>	Code	Monitoring item	None	No alarm	Z1	Monitoring frame 1	Z2	Monitoring frame 2	PT	Time at peak	T	Time at point	I	Integral	PI	Integral to peak	EJ	Peak over eject	U	Rising Time	D	Falling Time	A	Average	AS	Average at section	IS	Integral at section
Code	Monitoring item																															
None	No alarm																															
Z1	Monitoring frame 1																															
Z2	Monitoring frame 2																															
PT	Time at peak																															
T	Time at point																															
I	Integral																															
PI	Integral to peak																															
EJ	Peak over eject																															
U	Rising Time																															
D	Falling Time																															
A	Average																															
AS	Average at section																															
IS	Integral at section																															

6-7 Administrator Settings


From the main menu, select [System] → [Administration].
The Administration screen is displayed.

In the administration menu, it is possible to set the IP address of the MVS08 and storage locations (paths) of measured data and setting files.



No.	Field name	Function
①	Measuring Equipment	<ul style="list-style-type: none"> Set the IP address of MVS08. The set IP address will be valid after rebooting the application. If additional MVS08 units are connected to make 9 to 24 point measurements, set MODULE2 and 3 as well.
②	Data	<ul style="list-style-type: none"> Set the path for saving measured data. The set path will be valid after rebooting the application. Default settings are as follows. <In the case of Windows 7, Windows 8> C:¥Users¥login use name¥Documents¥FUTABA MMS¥MVS08¥MMS_DATA Rotation time: Set the start time at which you want the system to begin creating a folder and log file.
③	Settings	<ul style="list-style-type: none"> Set the path for saving setting data in the MVS08 main unit. The set path will be valid after rebooting the application. Default settings are as follows. <In the case of Windows 7, Windows 8> C:¥Users¥login use name¥Documents¥FUTABA MMS¥MVS08¥MMS_Settings
④	Saved data Type	<ul style="list-style-type: none"> Data to be stored can be selected from among Logs (peak file), Alarm waveforms (data measured when an alarm occurred), All waveforms (measured data). By default, all the checkboxes for Logs, Alarm waveforms, and All waveforms are turned ON. If Alarm waveforms and All waveforms are turn ON, both are stored.

Continued from the previous page

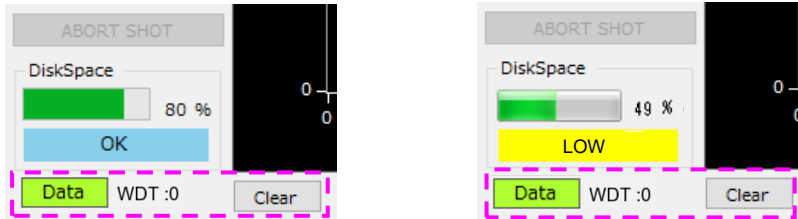
No.	Field name	Function
⑤	OK	<ul style="list-style-type: none">• Save the changes and show the following message. Click [OK] and then application will exit. 
⑥	Cancel	<ul style="list-style-type: none">• Cancel the change to the setting to exit the Administrator Setting.

7. Checking the Operation

This section explains how to check whether the system runs normally.

7-1 Checking the Communication between Amplifier and PC

The amplifier communicates with the PC through LAN connection. Whether the communication is implemented normally can be checked with the color of **Data** mark at the lower left of the operation window. (Green: Normal, Red: Faulty)



* [WDT :] indicates the number of times of self-recovery performed when communication was suspended. Clicking the **Clear** button clears the count to 0.

7-2 Checking the I/O Signal

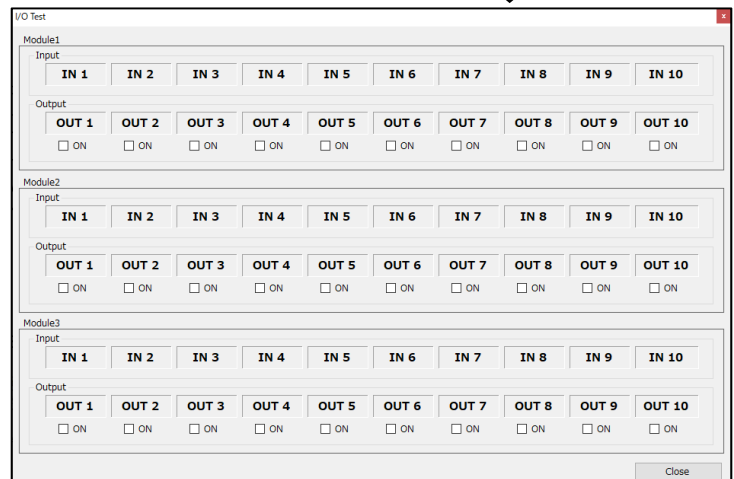
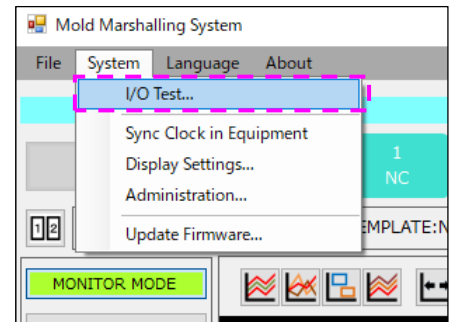
Check whether the connected I/O signal works normally.

■ From the main menu, select [System] → [I/O Test...] to run an IO test.

■ Assigning I/O signals

Input signal type and output signal type can be assigned to 10 channels of ports respectively.

For assigning the signal types, refer to Section 4-4-3 “Setting I/O Signals” on Page 34.



■ Checking the operation of input signal

Input a signal (trigger signal or clear alarm signal). If it is input normally, the name of the port assigned for the signal illuminates in green.

■ Checking the operation of output signal

Check the “ON” checkbox. The signal name illuminates in green and an alarm signal is forcibly output. Check whether the signal operates normally at the output signal connection destination.

7-3 Checking the Operation of Sensor

7-3-1 Sensor calibration

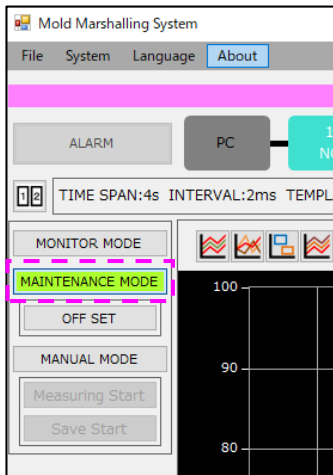
If there is any sign of a suspected faulty condition in a sensor such as “waveforms are not displayed” or “the measured value is too low (or too high)”, it is recommended to calibrate the sensor. Sensor calibration is available for a fee.

Please contact Marketing & Sales Center (written on the back cover).

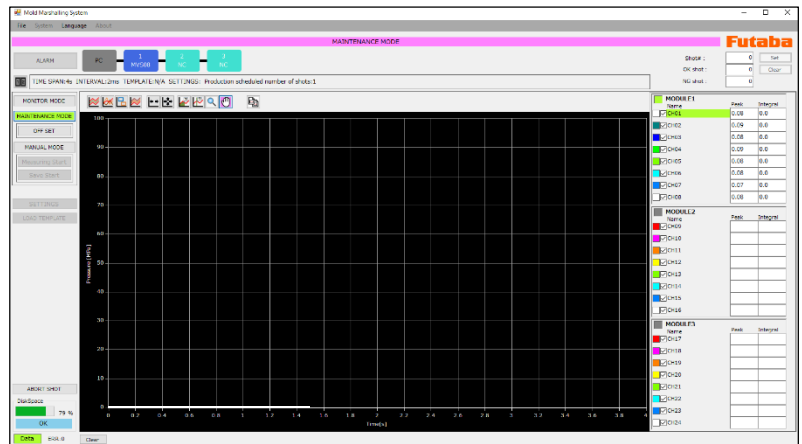
7-3-2 Quick sensor checking

Follow the procedure below to simply check the operation of a sensor.

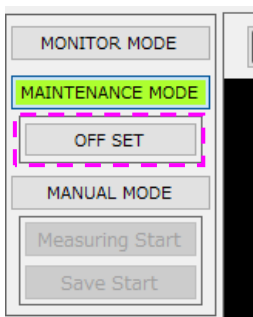
■ Select “MAINTENANCE MODE”.



■ Measurement starts.



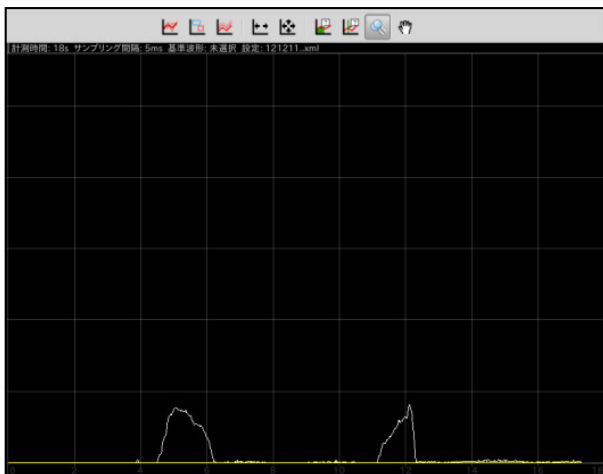
■ Press the “OFFSET” button.



* The output of the sensor is forcibly reset (the output of a resin temperature sensor will be a temperature of the mold).

When pressing “Offset”, make sure that no force (load) is applied to the sensor.

■ To check a pressure sensor, press the tip of the sensor to check whether waveforms are displayed. To check a resin temperature sensor, shine a light on the tip of the sensor to check whether waveforms are displayed. (This is only a simple test to check whether the sensor works.)



* When applying a load to the tip of the sensor, use a soft object, etc. so as not to damage the sensor or mold (scratches, corrosion, etc.).

* When applying a load to the tip of the sensor, never apply a load exceeding the ratings or a shock load. It could damage the sensor.

* Perform a simple check of sensor operation at the customer's own risk.

8. Specifications

■ List of specifications>

<Injection molding monitoring system MVS08>

Product name	MVS08A-S (set product)	
Number of measurement points	8 points (max. 24 points: when 3 units are connected)	
Compatible sensors	Resin pressure: SSB series, SSE series (measuring amplifier is sold separately) Resin temperature: EPSSZL series, EPSSZT series (pre-amplifier is sold separately) Mold surface temperature: STF series (a commercially available signal convertor is required) Others: 0 to 10V output measuring device	
Measurement range	0 to 10V (withstanding voltage: damaged by an input voltage of 17V for approx. 160ms)	
Accuracy	±0.25% F.S. (voltage)	
Input impedance	20kΩ	
Displayed unit	Pressure: MPa, kg/cm ² , psi, bar	Load: kgf, N, lbf
	Temperature: °C, °F, K	Velocity: mm/s
	Position: mm, inch	Flow rate: L/min
Sampling period	1ms/5ms/10ms/50ms/100ms/500ms/1000ms	
Sampling time (120,000 points)	When sampling period is 1ms: up to 120s When sampling period is 5ms: up to 600s When sampling period is 10ms: up to 1200s When sampling period is 50ms: up to 6000s When sampling period is 100ms: up to 12000s When sampling period is 500ms: up to 60000s When sampling period is 1000ms: up to 120000s	
Resolution (representative examples)	Pressure: 0.1MPa, Temperature: 1 °C (16 bit AD convertor)	
Control input	10 channels: Non-voltage contact input	
Control output	10 channels: NPN open collector	
Saving method of measurement data	When connected to PC	The data is saved to PC memory connected (including the data of measurement conditions and alarm conditions)
	When operates standalone	The data is saved to a USB memory connected.
Power specification	Power supply	DC24V (dedicated AC adaptor, input AC100 to 240V, 50Hz/60Hz)
	Maximum power consumption	50W
Environment resistance	Operating ambient temperature	0 to +50°C
	Operating ambient humidity	35 to 85%RH (No condensation)
Weight	Approx. 1,100g	
Accessories	Injection molding monitoring system main unit (1 unit), measurement software (CD-R), LAN cable (2 m), AC adaptor (3.2 m), signal I/O cable (3 m)	

Recommended operating environment for PC for measurement PC for measurement is not supplied with this system	OS: Windows7(32bit•64bit) Windows8(32bit•64bit)、Windows8.1 (32bit•64bit) Windows10(32bit•64bit) .NET Framework4.0 or higher is required Processor: Intel CPU Corei5 or above Required memory: 4GB or more Others: Ethernet port must be available.
---	--

<LAN cable>

Product name	WCL0020
Standard	CAT 7
Overall length	2 m
Operating temperature range	0 to +40°C
Weight	Approx. 90g

<Signal I/O cable>

Product name	WCI0030 N-MVS08
Overall length	3 m
Operating temperature range	0 to +40°C
Weight	Approx. 350g

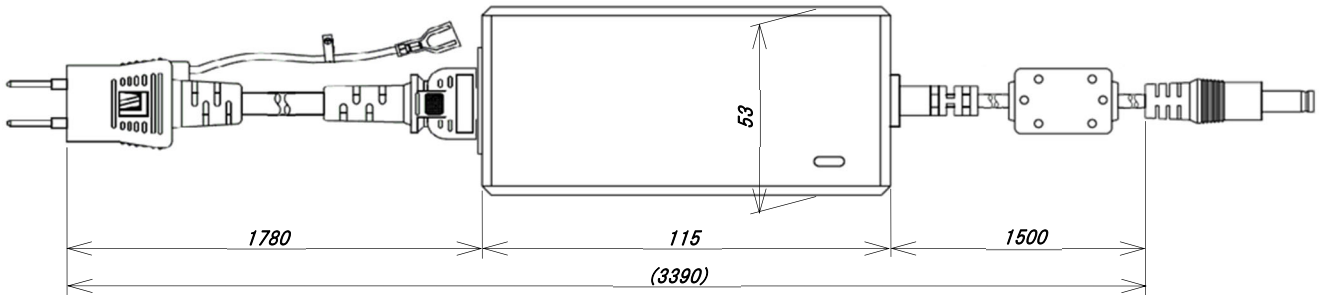
<AC adaptor

Product name	ES0024007 N-MVS08
Overall length	3.2 m
External dimensions (main unit)	115×53×38 [mm]
DC24V output plug	φ5.5×φ2.1×9.5mm (straight type), center plus
Operating temperature range	0 to +40°C
Power specifications	Input: AC100 to 240V max. 1.4A, Output: DC24V max. 2.71A
Weight	About 510g

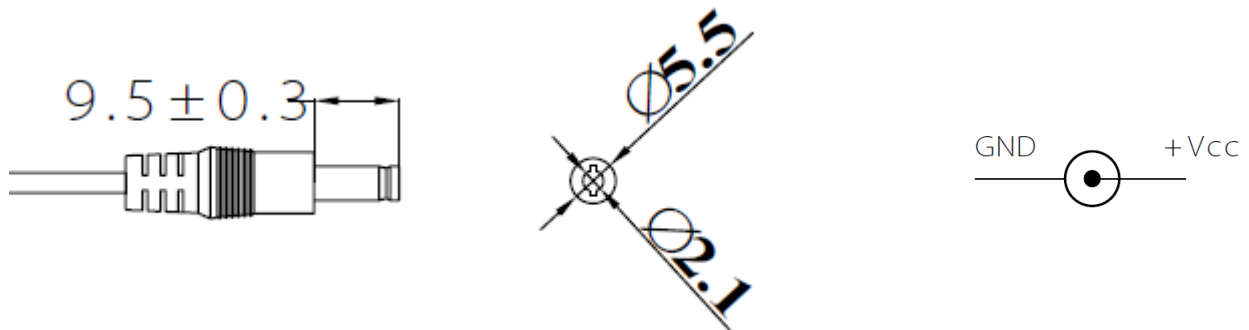
■ Outline drawing [Unit: mm]

<AC adaptor>

ES0024007 N-MVS08

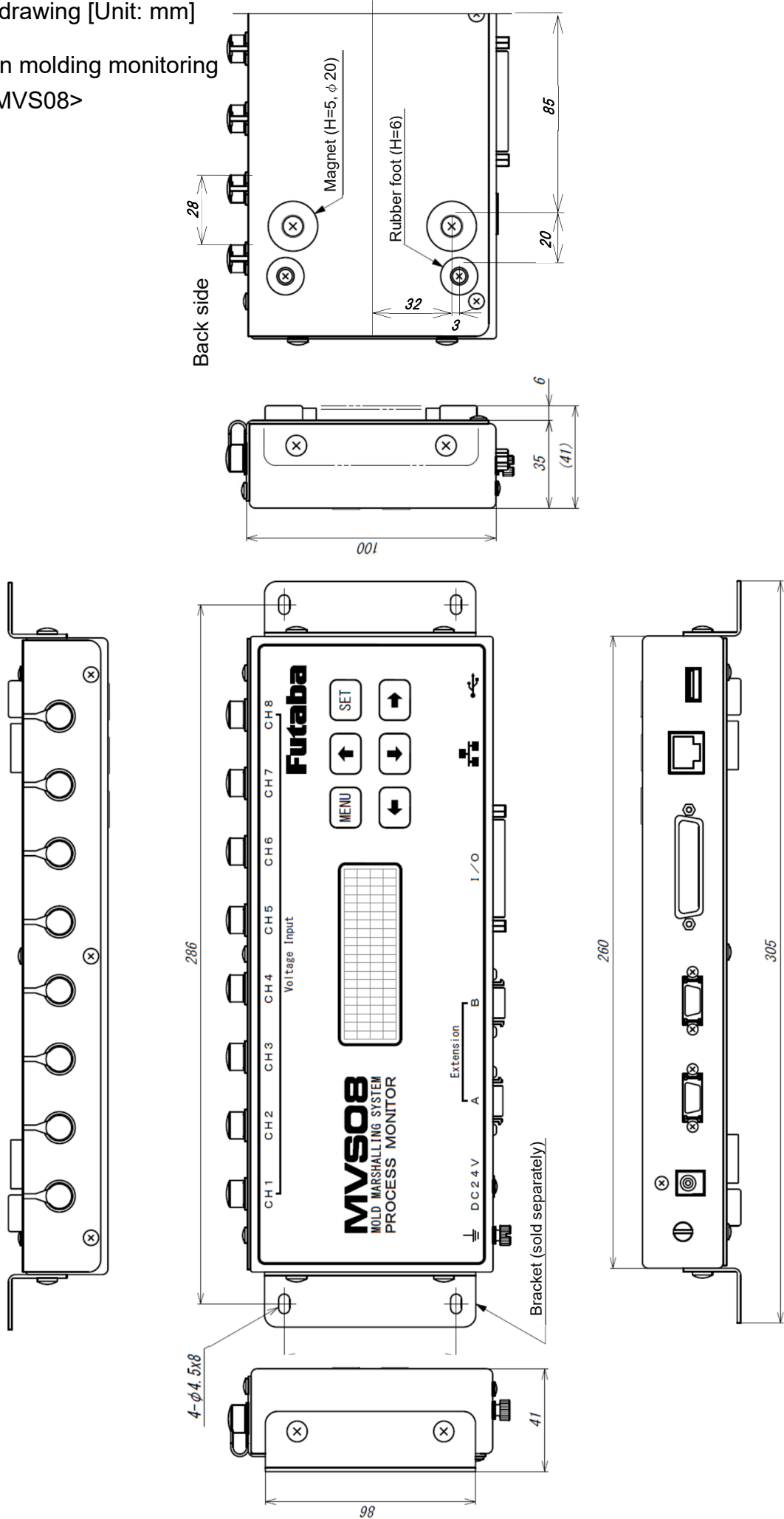


<Shape of DC plug>



■ Outline drawing [Unit: mm]

<Injection molding monitoring system MVS08>



Futaba Corporation

http://www.futaba.co.jp/precision/mold_marshall/index

Marketing & Sales Center, Machinery & Tooling

1080 Yabutsuka, Chosei-mura, Chosei, Chiba Prefecture 299-4395, Japan TEL.0475-30-0809 (M.P) FAX.0475-30-0818

The specifications may be changed for improvement without prior notice.

MVS08-1807W-A1J