

# **YS1310 Indicator with Alarm Operation Guide**



IM 01B08D02-01EN

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# User Registration Request

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The following are related manuals:

YS1310 Indicator with Alarm
User's Manual (Electronic version)
Chapter 1 Input/Output and Auxiliary Function
Chapter 2 Display and Security Functions
Chapter 3 Adjusting Direct Inputs (Temperature/Resistance/ Frequency)
Chapter 4 Processing during Power Failures
Chapter 5 Maintenance
Chapter 6 Specifications
YS1000 Series Communication Interface
User's Manual (Electronic version)
Chapter 1 Overview
Chapter 2 Setting Communication Functions
Chapter 3 Description of RS-485 Communication (Optional Code: /A31)
Chapter 4 Description of Ethernet Communication (Modbus/TCP) (Optional Code: /A34)
Chapter 5 Description of DCS-LCS Communication (Optional Code: /A32)
Chapter 6 Functions and Application of YS1500/YS1700 D-registers
Chapter 7 Functions and Application of YS1310/YS1350/YS1360 D-registers
Appendix ASCII Code Table

YSS1000 Setting Software for YS1000 Series/YS1700
Programmable Function
User's Manual (Electronic version)
Chapter 1 Overview
Chapter 2 YSS1000 Operation Guide
Chapter 3 User Program Creation Guide
Chapter 4 Operation of Computation and Control Programs
Chapter 5 Basic Usage of Control Modules
Chapter 6 Applied Usage of Control Modules
Chapter 7 Operations and Application of Computation Module (Instructions)
Chapter 8 Using Peer-to-peer Communication
Chapter 9 Maintenance
Chapter 10 Sample Program
Chapter 11 Worksheets / Program Sheets / Parameter Sheets
Chapter 12 List of Text Program Instructions

YS1000 Series Replacement Manual (Electronic version)
Chapter 1 Overview
Chapter 2 Replacement with YS100-compatible Type
Chapter 3 Replacement with YS80 Internal Unit-compatible Type and EBS, I, EK, or HOMAC-compatible Type
Chapter 4 Replacement with YS80-compatible Type
Chapter 5 Replacement with 100 Line-compatible Type

## Foreword

Thank you for purchasing the YS1000 series single-loop controller (hereinafter referred to as "YS1000").

This manual describes the basic functions and operation methods of the YS1310. Please read through this user's manual carefully before using the product.

Note that the manuals for the YS1310 comprise the following five documents:

### •Printed manual

Manual Name	Manual Number
YS1310 Operation Guide	IM 01B08D02-01EN
This manual describes the basic operation methods.	
Precautions on the Use of the YS1000 Series	IM 01B08B02-91EN
This manual is always delivered even if 'without manuals' was selected.	

### •Electronic manuals

Manual Name	Manual Number
YS1310 Operation Guide	IM 01B08D02-01EN
This is identical to the printed manual.	
YS1310 User's Manual	IM 01B08D02-02EN
This manual describes the detailed functions and setting items. It does not contain the communication functions.	
YS1000 Series Communication Interface User's Manual	IM 01B08J02-01EN
This manual describes how to use YS1000 in Ethernet, serial, and DCS-LCS communications. (DCS-LCS communication is not available for YS1310.)	
YSS1000 Setting Software/YS1700 Programmable Function User's Manual	IM 01B08K02-02EN
This manual describes how to use YSS1000 and YS1700's programmable function.	
YS1000 Series Replacement Manual	IM 01B08H02-01EN
This manual describes the compatibility of installation and wiring with YS100, YS80, EBS, I, EK, HOMAC, and 100 line.	
Precautions on the Use of the YS1000 Series	IM 01B08B02-91EN
This manual is always delivered even if 'without manuals' was selected.	
User's manuals for YS1000 are available on the following web site: <a href="http://www.yokogawa.com/ns/ys/im/">www.yokogawa.com/ns/ys/im/</a>	
You need Adobe Acrobat Reader (but the latest version is recommended) installed on the computer in order to open and read the manuals.	
The printed versions of the electronic manuals are available for purchase. Contact your nearest YOKOGAWA dealer for details.	

### • General Specifications

General Specification Name	GS Number
YS1310 Indicator with Alarm	GS01B08D02-01EN

\* The last two characters of the manual number and general specification number indicate the language in which the manual is written.

## Notice

- The contents of this manual are subject to change without notice as a result of continuing improvements to the instrument's performance and functions.
- Every effort has been made to ensure accuracy in the preparation of this manual. Should any errors or omissions come to your attention, however, please inform YOKOGAWA Electric's sales office or sales representative.
- Under no circumstances may the contents of this manual, in part or in whole, be transcribed or copied without our permission.

## Trademarks

- Our product names or brand names mentioned in this manual are the trademarks or registered trademarks of YOKOGAWA Electric Corporation (hereinafter referred to as YOKOGAWA).
- Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Adobe, Acrobat, and Postscript are either registered trademarks or trademarks of Adobe Systems Incorporated.
- We do not use the TM or ® mark to indicate these trademarks or registered trademarks in this user's manual.
- All other product names mentioned in this user's manual are trademarks or registered trademarks of their respective companies.

## Authorised Representative in the EEA and the Importer into the EU/EEA Market

The Authorised Representative for this product in the EEA and the importer for this product into the EU/EEA market via Yokogawa sale channel is:

Yokogawa Europe B.V.

Euroweg 2, 3825 HD Amersfoort, The Netherlands

## Importer for This Product into the Great Britain Market

In relation to UKCA marking, the importer for this product into the Great Britain market via the YOKOGAWA sales channel is:

Yokogawa United Kingdom Limited

Stuart Road Manor Park Runcorn, WA7 1TR, United Kingdom

## Revisions

1st Edition: June 2014

6th Edition: Dec. 2022

2nd Edition: May 2015

3rd Edition: Mar. 2016

4th Edition: Mar. 2018

5th Edition: Aug. 2020

## Safety Precautions

The following contents are for the suffix codes "-10□" and "-12□."

This instrument is a product of Installation Category II of IEC/EN 61010-1, IEC/EN 61010-2-201 and IEC/EN 61010-2-030 Safety Standards and Class A (use in commercial and industrial areas) of EN 61326-1, EN 55011 (EMC Standards) (use a ferrite core and an arrester to comply with the standards).



### CAUTION

This instrument is a class A product (use in commercial and industrial areas). In a domestic environment this product may cause radio interference in which case the user needs to take adequate measures.

This instrument is designed to be used within the scope of Measurement Category O (other) and is dedicated for indoor use.

\* Measurement Category O (other)

For measurements performed on circuits not directly connected to MAINS.

To use the instrument properly and safely, observe the safety precautions described in this user's manual when operating it. Use of the instrument in a manner not prescribed herein may compromise protection features inherent in the device. We assume no liability for or warranty on a fault caused by users' failure to observe these instructions.

This instrument is an FM Non-incendive or CSA Non-incendive Standard certified product.

FM nonincendive: Class 3600:2011  
Class 3611:2004  
Class 3810:2005

Locations: Class I, Division 2, Groups A,B,C and D  
Temperature Code: T4

CSA nonincendive: C22. 2 No. 213-M1987  
CAN/CSA-C22.2 No. 0-10  
CAN/CSA-C22.2 No. 0.4-04


Locations: Class I, Division 2, Groups A,B,C and D  
Temperature Code: T4

#### ■ Notes on the User's Manual


- This user's manual should be readily accessible to the end users so it can be referred to easily. It should be kept in a safe place.
- Read the information contained in this manual thoroughly before operating the product.
- The purpose of this user's manual is not to warrant that the product is well suited to any particular purpose, but rather to describe the functional details of the product.

#### ■ Safety, Protection, and Modification of the Product

The following symbols are used in the product and user's manuals to indicate safety precautions:

 **"Handle with Care" (This symbol is attached to the part(s) of the product to indicate that the user's manual should be referred to in order to protect the operator and the instrument from harm.)**

 **Protective grounding terminal**

 **Functional grounding terminal (Do not use this terminal as a protective grounding terminal.)**

 **Alternating current**

 **Direct current**

- In order to protect the system controlled by this product and the product itself, and to ensure safe operation, observe the safety precautions described in this user's manual. Use of the instrument in a manner not prescribed herein may compromise the product's functions and the protection features inherent in the device.

We assume no liability for safety, or responsibility for the product's quality, performance or functionality should users fail to observe these instructions when operating the product.

- Installation of protection and/or safety circuits with respect to a lightning protector; protective equipment for the system controlled by the product and the product itself; foolproof or failsafe design of a process or line using the system controlled by the product or the product itself; and/or the design and installation of other protective and safety circuits are to be appropriately implemented as the customer deems necessary.
- Be sure to use the spare parts approved by YOKOGAWA when replacing parts or consumables.
- This product is not designed or manufactured to be used in critical applications that directly affect or threaten human lives. Such applications include nuclear power equipment, devices using radioactivity, railway facilities, aviation equipment, air navigation facilities, aviation facilities, and medical equipment. If so used, it is the user's responsibility to include in the system additional equipment and devices that ensure personnel safety.
- Modification of the product is strictly prohibited.

### WARNING

#### • Power Supply

Ensure that the instrument's supply voltage matches the voltage of the power supply before turning ON the power.

#### • Protective Grounding

To prevent electric shock, always confirm that protective grounding is connected before turning ON the instrument's power supply.

#### • Necessity of Protective Grounding

Do not cut off the internal or external protective grounding wire or disconnect the wiring of the protective grounding terminal. Doing so renders the protective functions of the instrument invalid and poses a potential shock hazard.

#### • Defects in Protective Functions

If protective functions such as grounding are suspected to be defective, do not operate the instrument. Ensure that all protective functions are in working order before operating the instrument.

#### • Do Not Use in an Explosive Atmosphere

Do not operate the instrument in locations with combustible or explosive gases or steam. Operation in such environments constitutes an extreme safety hazard. Use of the instrument in environments with high concentrations of corrosive gas (H<sub>2</sub>S, SO<sub>x</sub>, etc.) for extended periods of time may cause a failure.

#### • Do Not Remove Internal Unit

The internal unit should not be removed by anyone other than YOKOGAWA's service personnel. There are dangerous high voltage parts inside.

#### • External Connection

Ensure that protective grounding is connected before connecting the instrument to the device under measurement or to an external control circuit.

#### • Damage to the Protective Construction

Operation of the instrument in a manner not specified in this user's manual may damage its protective construction.

#### ■ Warning and Disclaimer

- YOKOGAWA makes no warranties regarding the product except those stated in the WARRANTY that is provided separately.
- The product is provided on an "as is" basis. YOKOGAWA assumes no liability to any person or entity for any loss or damage, direct or indirect, arising from the use of the product or from any unpredictable defect of the product.

#### ■ Notes on Software

- YOKOGAWA makes no warranties, either expressed or implied, with respect to the software's merchantability or suitability for any particular purpose, except as specified in the terms of the separately provided warranty.
- This software may be used on one specific machine only.
- To use the software on another machine, the software must be purchased again separately.
- It is strictly prohibited to reproduce the product except for backup purposes.
- Store the software CD-ROM (the original medium) in a safe place.
- All reverse-engineering operations, such as reverse compilation or the reverse assembly of the product are strictly prohibited.
- No part of the product's software may be transferred, converted, or sublet for use by any third party, without prior written consent from YOKOGAWA.

### Handling Precautions for the Main Unit

- The instrument comprises many plastic components. To clean it, wipe it with a soft, dry cloth. Do not use organic solvents such as benzene or thinner for cleaning, as discoloration or deformation may result.
- Keep electrically charged objects away from the signal terminals. Not doing so may cause the instrument to fail.
- Do not apply volatile chemicals to the display area, operation keys, etc. Do not leave the instrument in contact with rubber or PVC products for extended periods. Doing so may result in failure.
- If the equipment emits smoke or abnormal smells or makes unusual noises, turn OFF the instrument's power switch immediately and unplug the device. In such an event, contact your sales representative.

#### Regarding the LCD

A small number of missing or steady-on LCD pixels and minor variations in brightness uniformity is a normal display characteristic and not a malfunction.

### Protection of Environment

#### Waste Electrical and Electronic Equipment (WEEE)

Applicable models: YS1310-10x, -12x

However, except the option /A08.



(Only valid in the EEA for EU WEEE Directive and in the UK for UK WEEE Regulation)

This product complies with the WEEE marking requirement. This marking indicates that you must not discard this electrical/electronic product in domestic household waste. When disposing of products in the EEA or UK, contact your local Yokogawa office in the EEA or UK respectively.

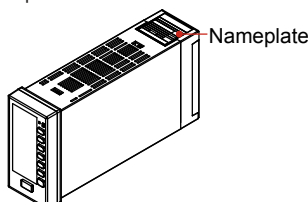
## Checking the Contents of the Package

Unpack the box and check the contents before using the product. If the product is different from that which you have ordered, if any parts or accessories are missing, or if the product appears to be damaged, contact your sales representative.

### YS1310 Main Unit

The YS1310 main unit has a nameplate affixed to the top of the terminals.

Check the model and suffix codes inscribed on the nameplate to confirm that the product received is that which was ordered.



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### No. (Instrument number)

When contacting your sales representative, inform them of this number too.

### Model and Suffix Codes

Model	Suffix Code	Optional Code	Remarks
YS1310			Indicator with Alarm
Use	-1		Always "-1"
Type	0		Basic type
	2		Compatible type for YS100 (with YS100 case)
	3		Compatible type for YS80 internal unit/compatible type for EBS, I, EK, and HOMAC (*1)
	4		Compatible type for YS80 (compatible size for YS80 with YS100 terminal)
	5		Compatible type for pneumatic 100 line (with YS100 terminal) (*2)
Power supply	0		100 V AC, 24 V DC common power
	1		220 V AC power
Direct input (*3)	/A01		mV input
	/A02		Thermocouple input
	/A03		RTD input
	/A04		Potentiometer input
	/A05		Isolator
	/A06		Two-wire transmitter input (isolated)
	/A07		Two-wire transmitter input (non-isolated)
	/A08		Frequency input (*8)
	/DF		Direct input with Fahrenheit temperature range function (*4)
Communication	/A31		RS-485 communication (PC-link, Modbus, and YS protocol, communication) (*5)
	/A34		Ethernet communication (Modbus/TCP) (*6)
Certification	/FM		FM nonincendive approved (FM Class I, Div 2) (*7)
	/CSA		CSA nonincendive approved (CSA Class I, Div 2) (*7)

\*1 This type can be connected to the YS80 housing (model SHUP). (The EK/HOMAC-compatible housing (SHUP-420) and EBS/I series-compatible housing (SHUP-100) are sold separately.)

\*2 The 100 line-compatible housing (model YS006) is sold separately.

\*3 Direct input options can be combined only with suffix codes "-12□," "-14□," or "-15□." Selection of multiple options is not possible.

\*4 Optional code /DF can be combined only with optional code /A02 or /A03.

\*5 A combination with suffix code "-13□" is not possible.

\*6 Optional code /A34 can be specified only for suffix codes "-10□."

\*7 This option can be combined only with suffix codes "-10□."

\*8 When option code /A08 is specified, the conformity to CE marking is excluded.

For the installation and wiring of YS1310-12□, -13□, -14□, or -15□, see the YS1000 Series Replacement Manual.

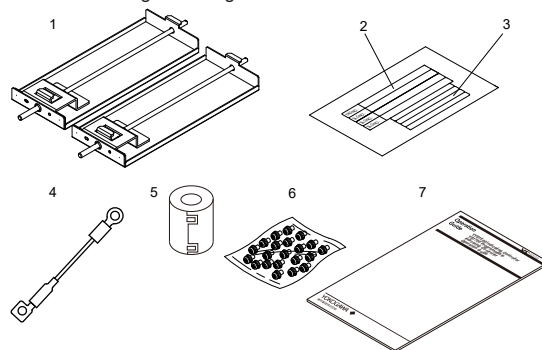
## Customized Product

/S#, /Z: Customized product; details in FX1-XJYS1700.xxx\*

\* Contact your supplier in case your instrument has option /S# (where '#' is a number), and you are not in the possession of FX1-XJYS1700.xxx. (where "xxx" is a unique document number and option /S# or /Z is identified by the cover page of that document.)

## Accessories

The product is provided with the following accessories according to the model and suffix codes (see the table below). Check that none of them are missing or damaged.



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No.	Item Name	Part Number/Model	Q'ty	Remarks
1	Metal clamps	L4041RA	2	For YS1310-10□
		E9760RJ	2	For YS1310-12□
		E9760RN	2	For YS1310-12□
		E9760RJ	1	For YS1310-14□
		E9760RP	1	For YS1310-14□
2	Tag plate seals	—	4	50 × 3.5 mm
3	Range entry seals	—	4	34 × 2 mm
4	RJC sensor	L3501RA	1	Supplied with products with optional code /A02. (*1)
5	Ferrite core	A1179MN	1	For direct input cable (Supplied with products with optional code /A0□.)
6	M4 screw with spring washer	Y9408JH	42	For YS1310-10□
7	YS1310 Operation Guide	—	1	This user's manual, A4 size

\*1: For the RJC mounting, see the chapter "Installation and Wiring" in this manual or the YS1000 Series Replacement Manual.



### Accessories (sold separately)

The following lists accessories that are sold separately. When ordered, check that none of them are missing or damaged. To inquire about the accessories or about how to place an order, contact your sales representative.

No.	Item Name	Model	Sales Unit	Remarks
1	120 $\Omega$ terminating resistor (*1)	YS020	1	For RS-485 communication
2	250 $\Omega$ shunt resistor	YS021	1	For a built-in 24 V transmitter power supply

- \*1 The instrument has a built-in terminating resistor, which can be selected for use by setting the relevant parameter. If a terminating resistor is used in another device at the termination of the same communication system, an external terminating resistor needs to be provided to match the terminating resistance of the YS1310's built-in terminating resistor.

### Symbols Used in This Manual



This symbol is used on the instrument. It indicates the possibility of injury to the user or damage to the instrument, and signifies that the user must refer to the user's manual for special instructions. The same symbol is used in the user's manual on pages that the user needs to refer to, together with the term "WARNING" or "CAUTION."

#### WARNING

Calls attention to actions or conditions that could cause serious or fatal injury to the user, and indicates precautions that should be taken to prevent such occurrences.

#### CAUTION

Calls attention to actions or conditions that could cause injury to the user or damage to the instrument or property and indicates precautions that should be taken to prevent such occurrences.

#### Note

Identifies important information required to operate the instrument.



Indicates related operations or explanations for the user's reference.



Indicates a character string displayed on the display.

#### Setting Display

Indicates a setting display and describes the keystrokes required to display the relevant setting display.

Perform the operations in chronological order. This section describes the procedure under the assumption that these steps are being taken for the first time. There are cases where not all of the steps are required, depending on the required operation.

#### Setting Details

Provides the descriptions of settings.

#### Description

Describes restrictions, etc. regarding a relevant operation.

### About an Electronic Manual

User's manuals for YS1000 are available on the following web site:  
[www.yokogawa.com/ns/ys/im/](http://www.yokogawa.com/ns/ys/im/)

You need Adobe Acrobat Reader (but the latest version is recommended) installed on the computer in order to open and read the manuals.

### QR Code

The product has a QR Code pasted for efficient plant maintenance work and asset information management. It enables confirming the specifications of purchased products and user's manuals.

For more details, please refer to the following URL.

<https://www.yokogawa.com/qr-code>

QR Code is a registered trademark of DENSO WAVE INCORPORATED.

# Introduction to Functions

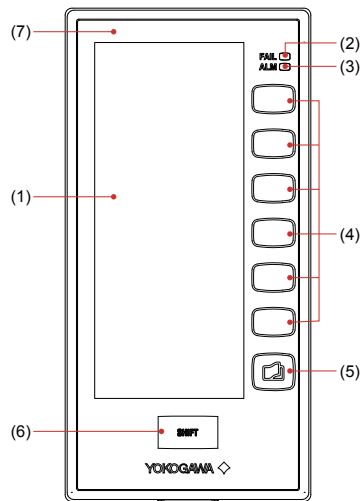
The YS1310 Indicator with Alarm is an indicator with alarm of two inputs. It can display two loops simultaneously.

## Features

- Color LCD display  
The monitoring and operation display is provided in color, and input and output values, various constants, and incorporated functions can be set freely using key switches on the front panel. The monitoring displays include LOOP Display, TREND Display, ALARM Display, and METER Display which provides information in much the same way as analog meters.
- Failsafe function  
Two CPUs are configured to provide displays even if one of the CPUs becomes faulty.
- AC/DC-common power supply with wide operating voltage range  
The instrument can be powered by either AC (100 V AC) or DC (24 V DC).
- The front panel is dust- and water-proof (conforming to IP54).
- Abundant communication functions  
The instrument can incorporate Ethernet (Modbus/TCP) communication and serial communication (Modbus, PC-link, and YS protocol).

# Part Names

## Front Panel Part Names



- (1) Color LCD display: 120 × 320 dots
- (2) FAIL lamp (LED: red)
- (3) ALM lamp (LED: yellow)
- (4) Software-key operation key.
- (5) Page key
- (6) SHIFT key
- (7) TAG label (recommended position to attach label)

► For the functions of each part: see "Monitoring and Control of Regular Operations (Operation Display)" in this manual.

Figure 2.1

## Swinging the Front Panel Up and Down

### Swinging up the front panel

1. Press upwards in the center of the bottom of the front panel. You can draw the front panel toward you until you feel a slight resistance and the movement of the front panel will stop.  
(You can swing up the front panel more smoothly if hold the top and bottom of the front panel.)
2. Swing the front panel up and out from that position.

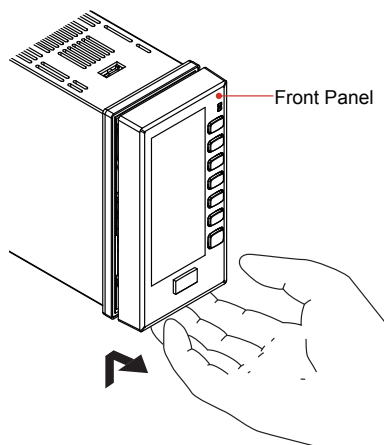


Figure 2.2

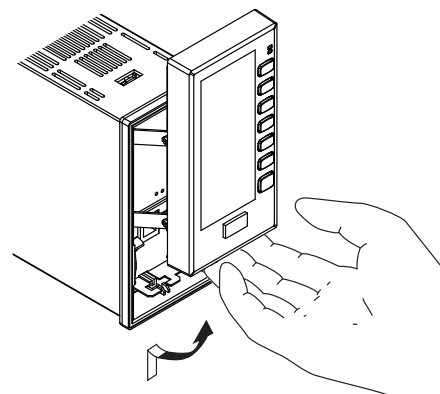


Figure 2.3

### Swinging down the front panel

Push down on the center of the top of the front panel. When you feel a slight sense of resistance, stop pushing. Slide it forward from that position. It will click into place, indicating that it is locked.

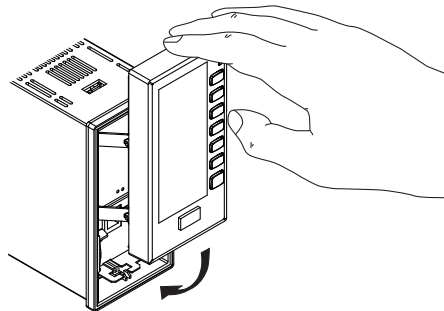


Figure 2.4

## Part Names of the Internal Panel Seen with the Front Panel Swung up

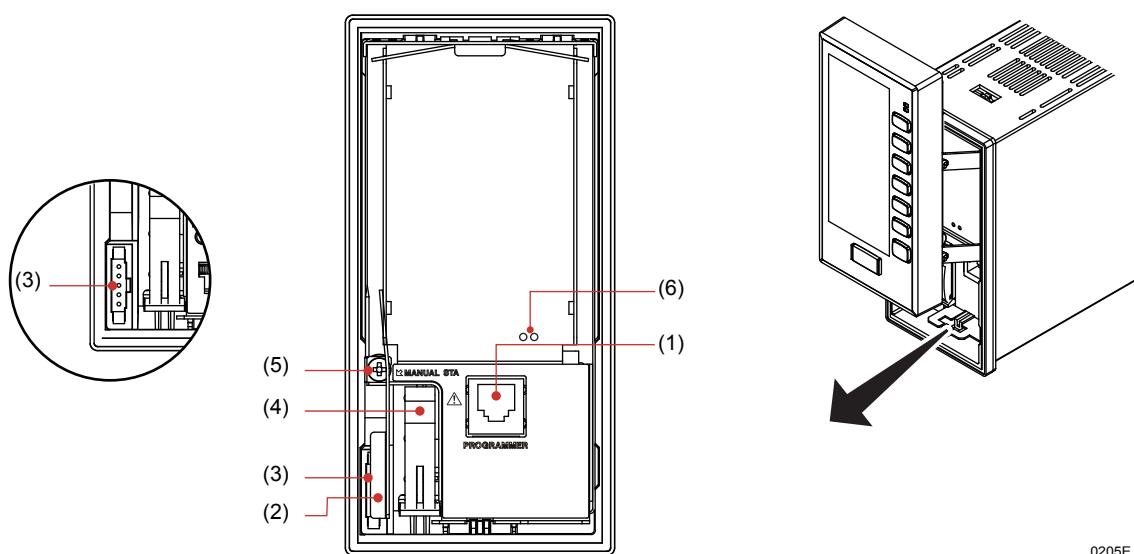


Figure 2.5

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- (1) Connector for connection to a PC (PROGRAMMER)

This is a communication cable connector for downloading, uploading, or monitoring parameters set using the YSS1000 Setting Software.

- [YSS1000: YSS1000 Setting Software/YS1700 Programmable Function User's Manual](#)

- (2) Metal lever: Not used in YS1310.

- (3) Connector for YS110 standby manual station: Not used in YS1310. Do not connect anything to this connector

- (4) Internal unit release lever

- (5) An internal unit fixing screw

- (6) LED and switch for repair

Contact us for repair.



### WARNING

Do not remove the internal unit from the instrument case. Contact YOKOGAWA's sales office or sales representative when removing the internal unit, as safety standard inspection is required.



### WARNING

#### Explosion hazard.

Do not remove or insert the internal unit in explosive atmospheres.

### CAUTION

Products with optional code /FM or /CSA cannot satisfy the explosion protection standards if the internal unit is removed.

# YS1310 Operating Procedure

When using the instrument for the first time, proceed according to the following sequence:

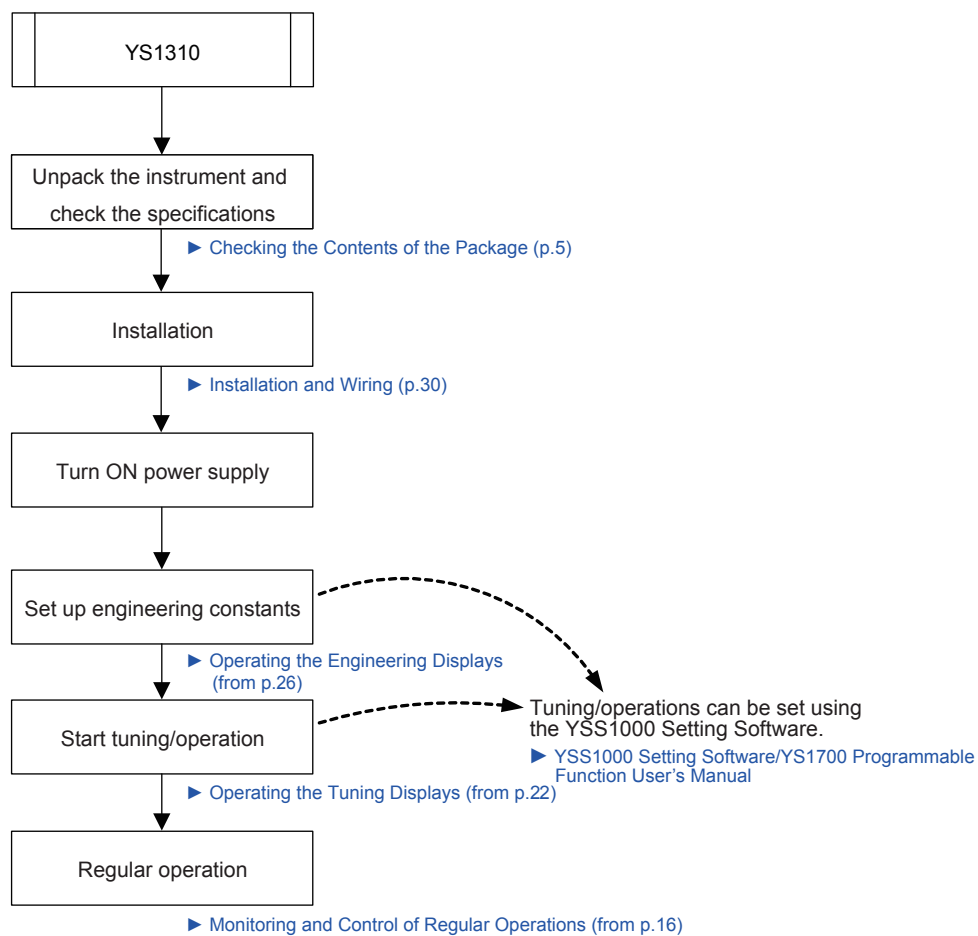


Figure 3.1

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# Basic Operations

## Overview of Display Switching and Operation Keys

The YS1000 has the following three display groups:

### (1) Operation Display Group

This group has a **TREND Display** that displays PV trend, **ALARM Display** that displays detailed alarm information, **DUAL Display** that displays two loops' information simultaneously (operations performed on a loop basis), and **METER Display** that displays PV on a meter scale using a pointer.

### (2) Tuning Display Group

This group has a display for setting and displaying parameters, and a display for monitoring input/output signals.

### (3) Engineering Display Group

This group has a display for setting up functions as an indicator with alarm, a display for setting input specifications and a password setting display.

## Selecting a Display

The flow of display selecting operations is as follows:

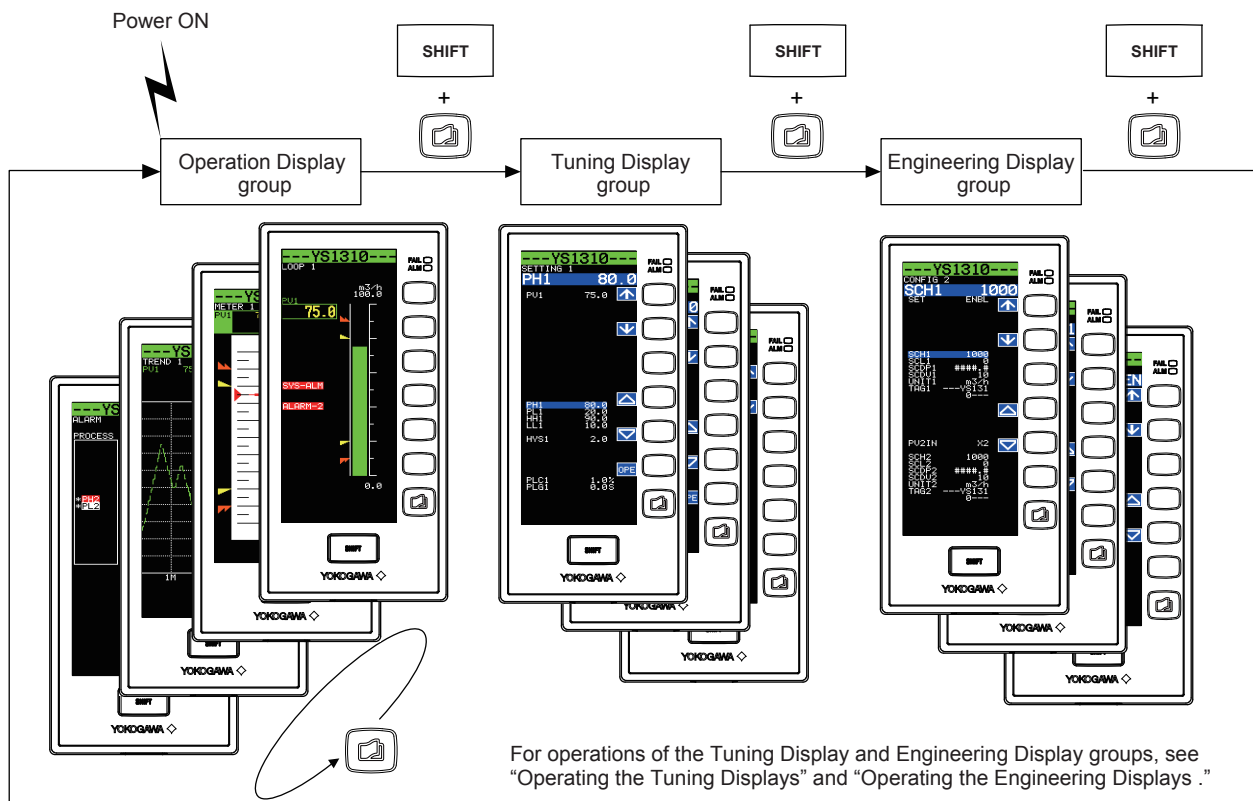


Figure 4.1

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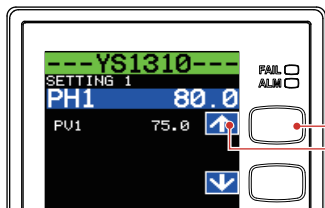
1. When the instrument's power is turned ON, the Operation Display appears.
2. Each time the Page key (□) is pressed with the SHIFT key (SHIFT) held down, the display is switched. The display changes in the order of Operation Display, Tuning Menu Display, and Engineering Menu Display, after which the Operation Display reappears.

## Note

Operation of the SHIFT key + Page key (a two key keystroke) implies that you should press the Page key with the SHIFT key held down. Doing so in the opposite order does not switch the display.

### Software keys

Software keys are keys displayed on the LCD. The functions of the software keys are assigned to the operation keys on the right of the display.




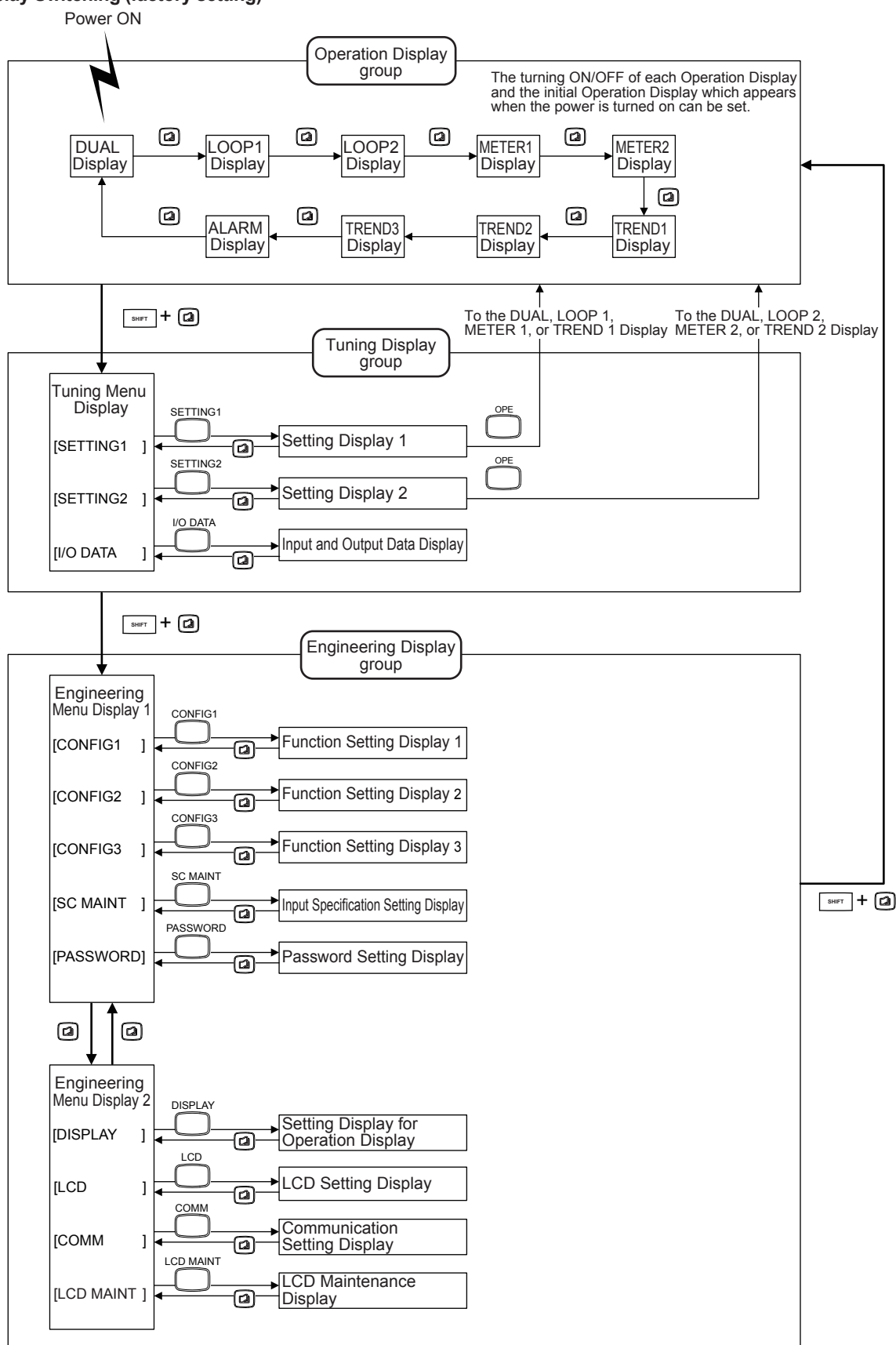
In the figure at the left, the  (UP) software key is assigned to the operation key on the right side.

Figure 4.2

0402E.ai

## Display Switching (factory setting)



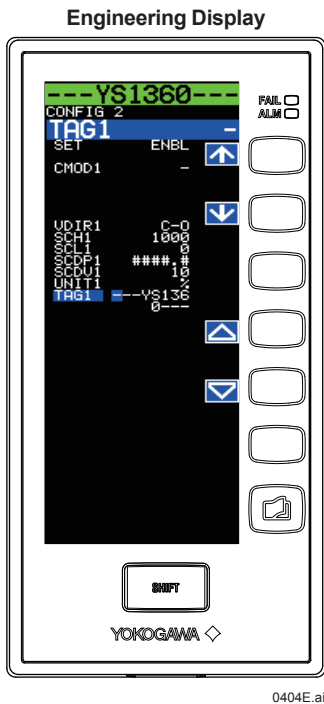
0403E.ai

Figure 4.3



# Registering a Tag

## Setting Display



Operation Display > **SHIFT** + **[F4]** keys (to the Tuning Menu Display) > **SHIFT** + **[F4]** keys (to the Engineering Menu Display) > **[CONFIG2]** software key (Configuration Display 2)

### Setpoint changing procedure (example of setting a tag):

- (1) Press the **[↓]** software key to select and zoom in on **[SET INHB]**.
- (2) Press the **[△]** software key to change to **[SET ENBL]**.
- (3) Press the **[↓]** software key to select and zoom in on tag number 1 **[TAG1]**.
- (4) Press the **[↓]** or **[↑]** software key to move the cursor over the position where the tag is registered.
- (5) Press the **[△]** or **[▽]** software key to change the character (setting is made on a character basis).
- (6) Repeat steps (4) and (5) to register the tag.  
(To erase a character, enter a space.)
- (7) Press the Page key to return to the Engineering Menu Display.
- (8) Press the **SHIFT** + Page keys to return to the Operation Display.

This completes the setting procedure.

## Setting Details

Parameters	Names	Setting Range	Factory Default
<b>TAG1, TAG2</b>	Tag number	12 digits of alphanumeric characters	---YS1310---

## Description

The TAG2 parameter is used in the loop 2.  
The tag is displayed in the top line of the LCD.  
The settable ASCII codes are as shown below:

Space	!	"	#	\$	%	&	'	(	)	*	+	,	-
.	/	0	1	2	3	4	5	6	7	8	9	:	=
>	?	@	A	B	C	D	E	F	G	H	I	J	K
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
¥	]	^	_	`	a	b	c	d	e	f	g	h	i
k	l	m	n	o	p	q	r	s	t	u	v	w	x
z	{		}	~									y

---

## Memo

# Monitoring and Control of Regular Operations (Operation Display)

## Monitoring and Operating the LOOP Display

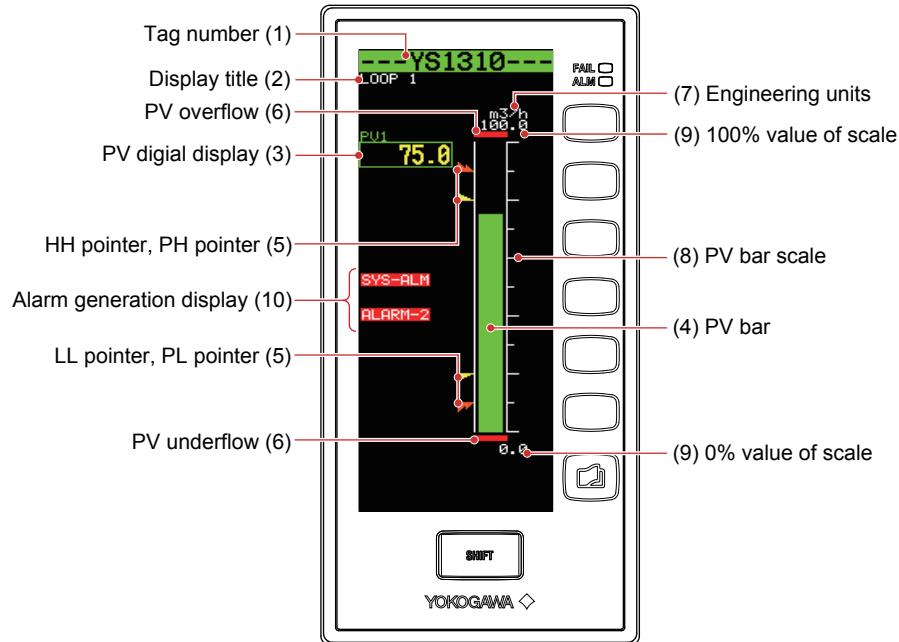


Figure 5.1

0501E.ai

Table 5.7

No. in Figure	Name	Description
(1)	Tag number	A tag number combining alphanumeric characters and symbols having a maximum of 12 digits is displayed on a loop basis.
(2)	Display title	The title of the display being shown is indicated.
(3)	PV digital display	A PV value is displayed in engineering units in a digital value of five significant digits (seven digits including a sign and decimal point).
(4)	PV bar	A PV value is displayed in a bar. The bar display is in 200 dots at full scale (100%) and increases/decreases on a dot (0.5%) basis.
(5)	PH, PL, HH, and LL pointers	PH values (high limit alarm setpoints for PV) and PL values (low limit alarm setpoints for PV) are indicated with triangular pointers, while HH values (high-high limit alarm setpoints for PV) and LL values (low-low limit alarm setpoints for PV) are indicated with pointers which are overlapped pairs of triangles. Pointers are clipped and displayed at 0% if PV values are below 0%, or displayed at 100% if they exceed 100%.
(6)	PV underflow and PV overflow	A PV underflow is displayed if a PV value is below 0%, while a PV overflow is displayed if it exceeds 100%.
(7)	Engineering units	Engineering units (UNIT) are displayed in a maximum of seven digits.
(8)	PV bar scale	The PV bar scale is displayed divided into a maximum of 10 segments (10% segments).
(9)	0% value of scale, 100% value of scale	0% value of scale (SCL) and 100% value of scale (SCH) are displayed in engineering units in a digital value of five significant digits (seven digits including a sign and decimal point).
(10)	Alarm generation display,	Alarm statuses are displayed in abbreviations. <a href="#">See Tables 5.2.</a>

Table 5.2 Meaning of Display Abbreviations

Symbol	Meaning
SYS-ALM	A system alarm occurred.
STC-ALM	An STC alarm occurred.
ALARM-1	A loop 1 process alarm occurred.

## Monitoring and Operating the METER Display

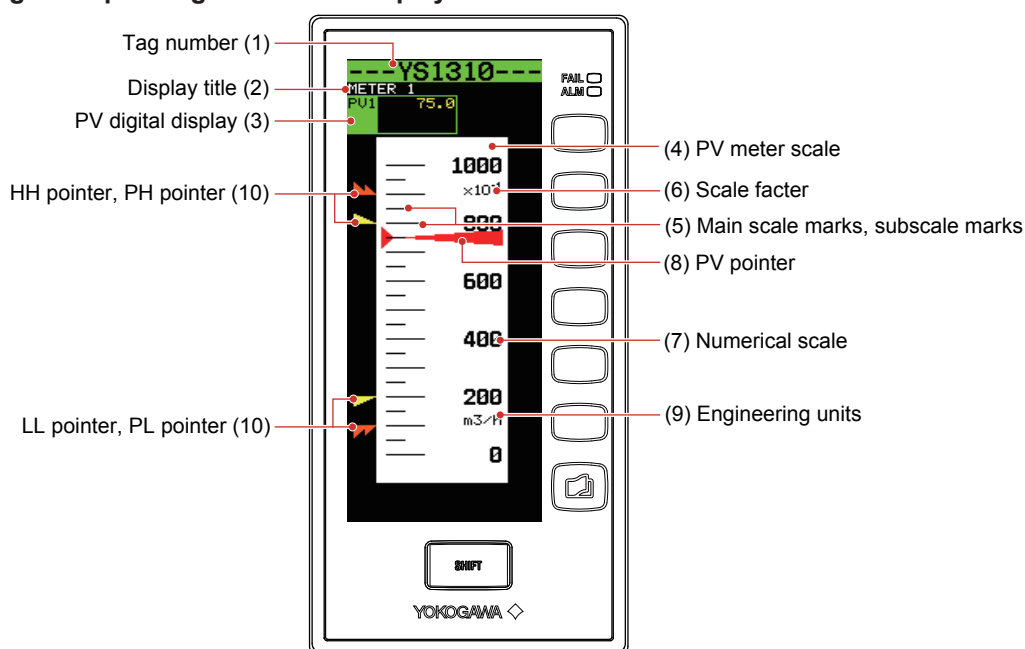


Figure 5.2

0502E.ai

Table 5.3

No. in Figure	Name	Description
(1)	Tag number	As on the LOOP Display, a tag number appears here.
(2)	Display title	The title of the display being shown is indicated.
(3)	PV digital display	PV digital value is displayed here.
(4)	PV meter scale	The PV meter scale displays main scale and subscale marks, a numerical scale, a scale factor, and engineering units.
(5)	Main scale marks, subscale marks	The main scale marks and subscale marks are determined by setting the variables to the 0% value of scale (SCL) and to the 100% value of scale (SCH), which causes the scale to be automatically divided into divisions based on those values.
(6)	Scale factor	The scale range is clearly represented in the range of the number of numerical scale digits using the power of 10 ( $\times 10^n$ ). It is possible to set the value of the power, however it can also be automatically determined from the 0% value of scale (SCL) and 100% value of scale (SCH).
(7)	Numerical scale	The numerical scale is automatically determined from the 0% value of scale (SCL) and 100% value of scale (SCH), and is displayed centered and to the right of the main scale marks. The number of digits to be displayed is three (or four digits if there is no decimal point).
(8)	PV pointer	A PV value is indicated by two pointers (at the left and right sides of the scale). The pointer display moves up and down with a resolution of 0.5%.
(9)	Engineering units	Engineering units (UNIT) are displayed in a maximum of seven digits.
(10)	PH, PL, HH, and LL pointers	PH values (high limit alarm setpoints for PV) and PL values (low limit alarm setpoints for PV) are indicated with triangular pointers, while HH values (high-high limit alarm setpoints for PV) and LL values (low-low limit alarm setpoints for PV) are indicated with pointers which are overlapped pairs of triangles.

## Monitoring and Operating the TREND Display

The TREND Display provides trend displays of PV in addition to the LOOP Display functions.

The TREND 1 Display can provide trend displays of PV1; the TREND 2 Display can provide those of PV2; and the TREND 3 Display can show those of any four data selected from PV1, PV2, X1, X2. TREND Display also enables display data to be turned ON/OFF.

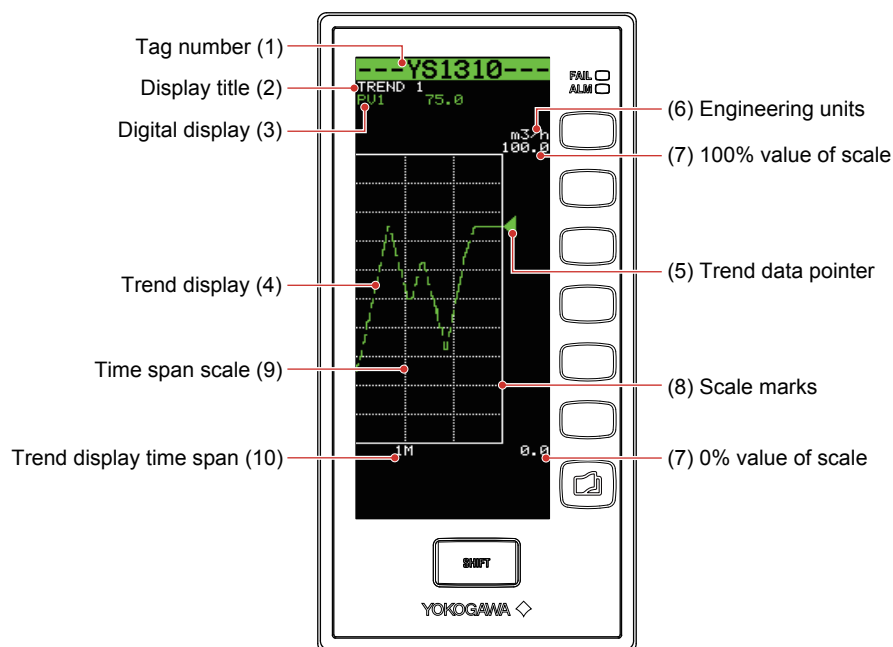


Figure 5.3

0503E.ai

Table 5.4

No. in Figure	Name	Description
(1)	Tag number	A tag number combining alphanumeric characters and symbols having a maximum of 12 digits is displayed on a loop basis. For TREND 3 Display, the tag number of the loop 1 is indicated.
(2)	Display title	The title of the display being shown is indicated.
(3)	Digital display	PV digital value is displayed. For TREND 3 Display, data selections 1 to 4 are indicated.
(4)	Trend display	The time span of the set trend display is divided into 60 partitions, and PV value in the period of one time partition are displayed with the smallest and largest values of selected data in the vertical line of one element. Trend display is clipped and displayed at 0% if a relevant value is below 0% or at 100% if it exceeds 100%.
(5)	Trend data pointers	PV value and selected data are indicated with triangular pointers. The pointer display moves up and down with a resolution of 0.5%.
(6)	Engineering units	Engineering units (UNIT) are displayed in a maximum of seven digits.
(7)	0% value of scale, 100% value of scale	The 0% value of scale (SCL) and the 100% value of scale (SCH) of PV are displayed on a loop basis in digital values of five significant digits (seven digits including a sign and decimal point).
(8)	Scale marks	A scale divided into a maximum of 10 divisions (10% segments) is displayed. Moreover, horizontal lines corresponding to the scale marks are indicated in dotted lines.
(9)	Time span scale	The time span scale (a vertical line) is displayed by a dotted line at the 60-line positions. If the scale marks are divided into 4 divisions or more, the time span scale is also displayed at the 30-line positions.
(10)	Trend display time span	The trend display time span setpoint is displayed. The trend display span is 90 lines, but it represents the time span for 60 lines. Trend display is provided such that the 0-line position is the current time, while the 90-line position is the maximum past time. Changing the trend display time span causes data that has been displayed up to that time to be cleared.

## Monitoring and Operating the ALARM Display

The ALARM Display collectively indicates detailed information when alarm(s) occurs. It allows the user to acknowledge unacknowledged alarms and events.

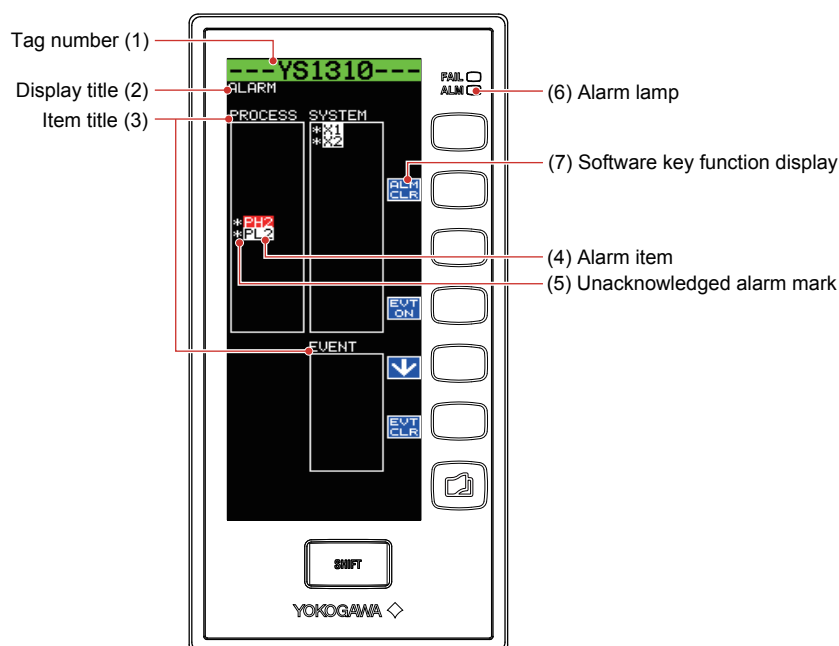


Figure 5.4

0504E.ai

Table 5.5

Table 3.3

No. in Figure	Name	Description																				
(1)	Tag number	The tag number of the loop 1 is displayed.																				
(2)	Display title	The title of the display being shown is indicated.																				
(3)	Item title	<p>Alarms and events that have occurred or been generated are displayed on a type basis. They are classified into the following four types:</p> <table><tr><th>Display</th><th>Description</th></tr><tr><td>[PROCESS]</td><td>Process alarms</td></tr><tr><td>[SYSTEM]</td><td>System alarms</td></tr><tr><td>[EVENT]</td><td>Event display</td></tr></table>	Display	Description	[PROCESS]	Process alarms	[SYSTEM]	System alarms	[EVENT]	Event display												
Display	Description																					
[PROCESS]	Process alarms																					
[SYSTEM]	System alarms																					
[EVENT]	Event display																					
(4)	Alarm item	<p>There are two types of display formats for alarm items as follow: Red backlit display of items: An alarm(s) is currently being generated Normal display of items: Indicates that an alarm(s) was generated in the past, but the situation has now recovered ► For causes of alarms that have occurred and actions to be taken: see “Troubleshooting” in this manual.</p> <p>The alarm items to be displayed are as follows: Process Alarms</p> <table><tr><th>Display</th><th>Description</th><th>Display</th><th>Description</th></tr><tr><td>[PH1]</td><td>PV1 high limit alarm</td><td>[PH2]</td><td>PV2 high limit alarm</td></tr><tr><td>[PL1]</td><td>PV1 low limit alarm</td><td>[PL2]</td><td>PV2 low limit alarm</td></tr><tr><td>[HH1]</td><td>PV1 high-high limit alarm</td><td>[HH2]</td><td>PV2 high-high limit alarm</td></tr><tr><td>[LL1]</td><td>PV1 low-low limit alarm</td><td>[LL2]</td><td>PV2 low-low limit alarm</td></tr></table>	Display	Description	Display	Description	[PH1]	PV1 high limit alarm	[PH2]	PV2 high limit alarm	[PL1]	PV1 low limit alarm	[PL2]	PV2 low limit alarm	[HH1]	PV1 high-high limit alarm	[HH2]	PV2 high-high limit alarm	[LL1]	PV1 low-low limit alarm	[LL2]	PV2 low-low limit alarm
Display	Description	Display	Description																			
[PH1]	PV1 high limit alarm	[PH2]	PV2 high limit alarm																			
[PL1]	PV1 low limit alarm	[PL2]	PV2 low limit alarm																			
[HH1]	PV1 high-high limit alarm	[HH2]	PV2 high-high limit alarm																			
[LL1]	PV1 low-low limit alarm	[LL2]	PV2 low-low limit alarm																			

Table 5.6

No. in Figure	Name	Description	
(4)	Alarm item	System Alarms	
		Display	Description
		[X1] to [X2]	Input overrange Register names X1 to X2 that have been allocated to each input terminal are displayed.
		[COMM]	RS-485 communications error
		[ETHER]	Ethernet communication error
		[DATA]	YSS1000 writing incomplete
		[CALR]	Adjustment inspection error
		Event indication	
		Display	Description
	[EVENT1] to [EVENT5]	User-set events 1 to 5	
(5)	Unacknowledged alarm marks	For unacknowledged alarms, [*] is indicated in front of alarm items.	
(6)	Alarm lamp	Lights up if a process alarm, or system alarm occurs.	
(7)	Software key function display	The [ALM CLR] key, [EVT ON] key, [↓] key, and [EVT CLR] key functions are assigned to the relevant operation keys at the right of the display. ▶ For operation: see the following “Operating the ALARM Display.”	

### Operating the ALARM Display

The following operations can be conducted on the ALARM Display:

- (1) Acknowledgement of unacknowledged alarms/events
- (2) Re-display of event indication

#### • Acknowledging unacknowledged alarms/events

The Alarm [ALM CLR] software key is used to acknowledge that an alarm has occurred. When this key is pressed, the “\*” mark that indicates that the alarm concerned has not yet been acknowledged, and that indicates currently not occurring alarms will be erased, implying that the alarm(s) has been acknowledged.

The Event [EVT CLR] software key is used to acknowledge an event. When this key is pressed, the “\*” mark that indicates that the event concerned has not yet been acknowledged, and that indicates events currently not generated will be erased, implying that the event(s) has been acknowledged.

#### • Re-displaying event indication

Browse through the event lines using the [↓] software key to select an event you wish to see (displayed in blue) and then press the [EVT ON] software key. This causes the event to be re-displayed.

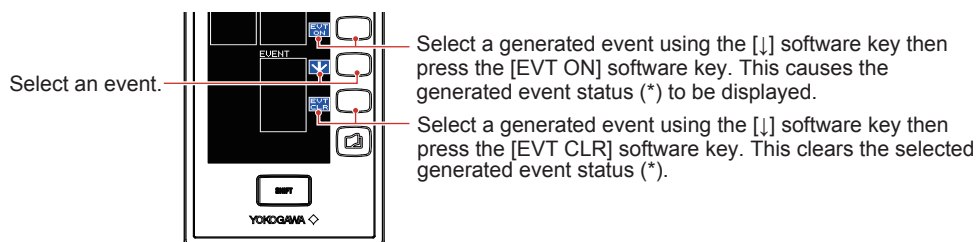


Figure 5.5

0505E.ai

## Monitoring and Operating the DUAL Display

The DUAL Display displays loop 1 and loop 2 information simultaneously. Two tag numbers are displayed at the upper part of the display. For PV-related information, loop 1 PV information is displayed in the left part of the display; loop 2 PV information is displayed in the right part.

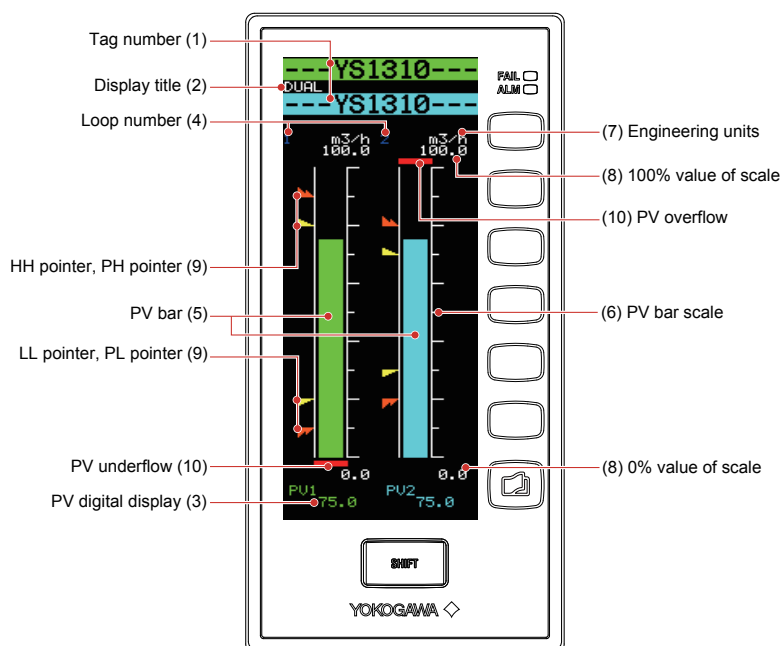


Figure 5.6

0506E.ai

Table 5.7

No. in Figure	Name	Description
(1)	Tag number	Two tag numbers are displayed. The top one shows a loop 1 tag number; the bottom one indicates a loop 2 tag number.
(2)	Display title	The title of the display being shown is indicated.
(3)	PV digital display	The PV values are digitally displayed at the bottom part of the display. The left one shows loop 1 PV; the right one indicates loop 2 PV.
(4)	Loop number	Loop numbers "1" (left) and "2" (right) are displayed.
(5)	PV bar	PV1 (left) and PV2 (right) are displayed in bars. The bar display is in 200 dots at full scale (100%) and increases or decreases on a dot (0.5%) basis.
(6)	PV bar scale	The PV bar scale is displayed divided into a maximum of 10 divisions (10% segments).
(7)	Engineering units	Engineering unit 1 (left) and engineering unit 2 (right) are displayed in a maximum of seven digits.
(8)	0% value of scale, 100% value of scale	SCL1, SCH1 (left), SCL2, and SCH2 (right) are displayed in engineering units in digital values of five significant digits (seven digits including a sign and decimal point).
(9)	PH, PL, HH, and LL pointers	PH values (high limit alarm setpoints for PV) and PL values (low limit alarm setpoints for PV) are indicated with triangular pointers, while HH values (high-high limit alarm setpoints for PV) and LL values (low-low limit alarm setpoints for PV) are indicated with pointers which are overlapped pairs of triangles.
(10)	PV underflow, PV overflow	PV underflow (PV1 at the left, PV2 at the right) is displayed if a PV value is below 0%, while PV overflow (PV1 at the left, PV2 at the right) is displayed if it exceeds 100%.



# Operating the Tuning Displays

There are displays for setting and displaying parameters and a display for monitoring input/output signals. To set tuning parameters, proceed according to the setting examples below, and refer to “Overview of Display Switching and Operation Keys” and “List of Parameters”.

- ▶ For displaying and setting parameters: see “List of Parameters” in this manual.
- ▶ For a description of tuning parameter functions: see YS1310 Indicator with Alarm User's Manual.

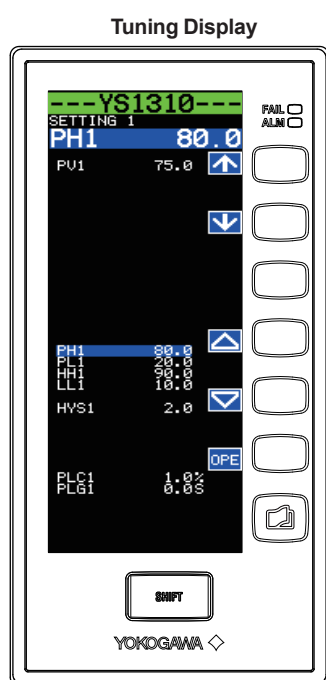
## Note

YS1310 has a password function as a security function. If the password has been set up, enter it and then change parameters.

- ▶ For setting and canceling passwords: see 2.2.1, Inhibiting/Enabling Parameter Change, in the YS1310 Indicator with Alarm User's Manual.

## Setting Alarms

### Setting Display



0603E.ai

Operation Display > **SHIFT** + **[A]** keys (to the Tuning Menu Display) > **[SETTING1]** software key (Setting Display 1) or **[SETTING2]** software key (Setting Display 2)

**Setpoint changing procedure** (example of changing high limit alarm setpoint for PV1)

- (1) Press the **[↓]** software key to select and zoom in on high limit alarm setpoint for PV1 [PH1 106.3].
- (2) Press the **[△]** or **[▽]** software key to change the setpoint. Holding it down accelerates the value increase/decrease speed.
- (3) Press the Page key to return to the Tuning Menu Display.
- (4) Press the **SHIFT** + Page keys twice to return to the Operation Display.

This completes the setting procedure.

### Setting Details

Parameters	Names	Setting Range	Factory Default
PH1, PH2	High limit alarm setpoint for PV	Engineering units equivalent to -6.3 to 106.3% (*1)	106.3
PL1, PL2	Low limit alarm setpoint for PV	Engineering units equivalent to -6.3 to 106.3% (*1)	-6.3
HH1, HH2	High-high limit alarm setpoint for PV	Engineering units equivalent to -6.3 to 106.3% (*1)	106.3
LL1, LL2	Low-low limit alarm setpoint for PV	Engineering units equivalent to -6.3 to 106.3% (*1)	-6.3
HYS1, HYS2	Alarm hysteresis	Engineering units equivalent to 0.0 to 20.0% (*1)	2.0

\*1 Engineering unit set using the engineering parameters SCH1, SCL1, and SCDP1 (or SCH2, SCL2, and SCDP2).

## Description

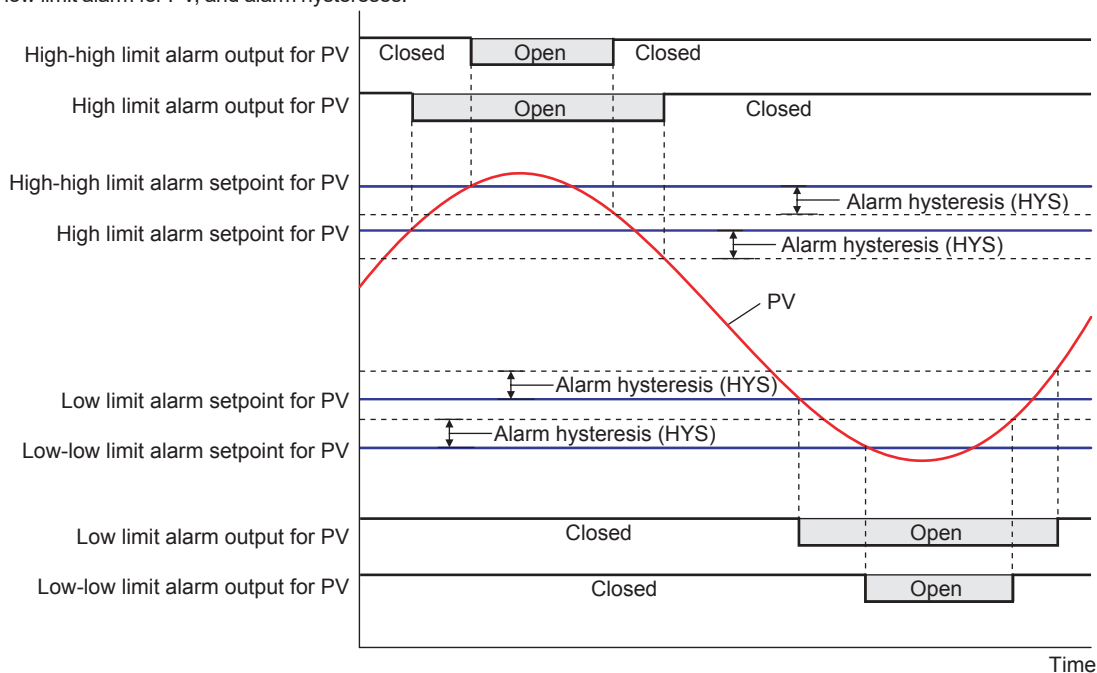
The PH2, PL2, HH2, and LL2, parameters are used in the loop 2.

If the high limit alarm setpoint for PV and the high-high limit alarm setpoint for PV are set to the maximum values, no alarm is generated.

If the low limit alarm setpoint for PV and the low-low limit alarm setpoint for PV are set to the minimum values, no alarm is generated.

Alarm hysteresis HYS1 acts on PH1, PL1, HH1, and LL1 collectively, while alarm hysteresis HYS2 acts on PH2, PL2, HH2, and LL2 collectively.

The following figure shows an example of actions of the high limit alarm for PV, high-high limit alarm for PV, low limit alarm for PV, low-low limit alarm for PV, and alarm hystereses.

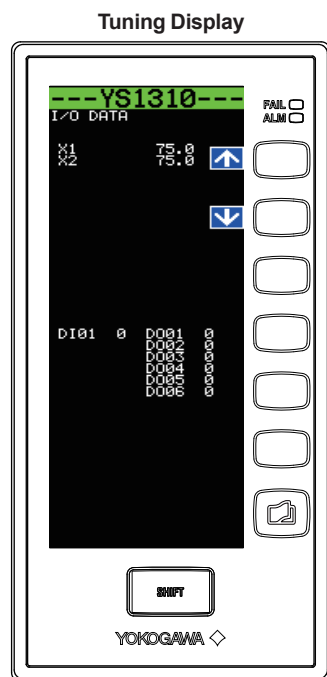


For an example in the figure above, the contact type is such that the contact opens if an event occurs (factory default).

0604E.ai

## Confirming Input and Output Data

### Setting Display



0605E.ai

Operation Display > **SHIFT** + **[I/O DATA]** keys (to the Tuning Menu Display) > **[I/O DATA]** software key (Input and Output Data Display)

The input and output values of each terminal can be displayed.

- (1) Press the **[↓]** software key to select and zoom in on parameter.
- (2) Press the Page key to return to the Tuning Menu Display.
- (3) Press the **SHIFT** + Page keys twice to return to the Operation Display.

This completes the operation.

### Setting Details

Parameters	Name
X1	Analog input 1
X2	Analog input 2
DO01	Alarm output 1
DO02	Alarm output 2
DO03	Alarm output 3
DO04	Alarm output 4
DO05	Alarm output 5
DO06 or DI01	Alarm output 6 or LCD backlight auto-off timer

Intentionally blank

# Operating the Engineering Displays

There is a display for setting up functions as a indicator with alarm, the Input Specification Setting Display, and the Password Setting Display. To set engineering parameter, proceed according to the setting examples below, and refer to the "Overview of Display Switching and Operation Keys" and "List of Parameters."

- ▶ For displaying and setting parameters: see "List of Parameters" in this manual.
- ▶ For a description of engineering parameter functions: see YS1310 Indicator with Alarm User's Manual.

## CAUTION

There is a SET parameter in the engineering parameters to prevent accidental changes to settings. Unless this parameter setting is changed from INHB (setting inhibited) to ENBL (setting enabled), parameters on the same display cannot be changed. Be aware that changing the setting to ENBL causes YS1310's input/output to be changed.

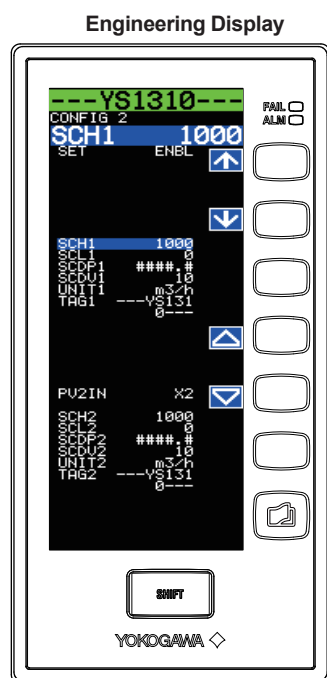
## Note

YS1310 has a password function as a security function. If the password has been set up, enter it and then change parameters.

- ▶ For setting and canceling passwords: see 2.2.1, Inhibiting/Enabling Parameter Change, in the YS1310 Indicator with Alarm User's Manual.

## Setting the Scale and Decimal Point Position for Process Variables

### Setting Display



0703E.ai

Operation Display > [SHIFT] + [F1] keys (to the Tuning Menu Display) > [SHIFT] + [F1] keys (to the Engineering Menu Display) > [CONFIG2] software key (Configuration Display 2)

**Setpoint changing procedure** (example of changing scale):

- (1) Press the [↓] software key to select and zoom in on [SET INHB].
- (2) Press the [△] software key to change to [SET ENBL].
- (3) Press the [↓] software key to select and zoom in on the 100% value of scale 1 [SCH1 1000].
- (4) Press the [△] or [▽] software key to change the setpoint. Holding it down accelerates the value increase/decrease speed.
- (5) Press the [↓] software key to select and zoom in on the 0% value of scale 1 [SCL1 0].
- (6) Press the [△] or [▽] software key to change the setpoint. Holding it down accelerates the value increase/decrease speed.
- (7) Press the [↓] software key to select and zoom in on decimal point position 1 [SCDP1 #####.#].
- (8) Press the [△] or [▽] software key to change the setpoint.
- (9) Press the Page key to return to the Engineering Menu Display.
- (10) Press the SHIFT + Page keys to return to the Operation Display.

Change the loop 2 in the same way as above as necessary.  
This completes the setting procedure.

### Setting Details

Parameters	Names	Setting Range	Factory Default
SCH1, SCH2	100% value of scale	-80000 to 80000	1000
SCL1, SCL2	0% value of scale	-80000 to 80000	0
SCDP1, SCDP2	Decimal point position	#####.##,###.##,###.##,###.##,###.##	#####.##

### Description

The SCH2, SCL2, and SCDP2 parameters are used in the loop 2.

The figure below shows an example of setting the 100% value of scale to 1000, the 0% value of scale to 0, and the decimal point position to one decimal place (####.#). Process variables are displayed on the scale that is set here.

Note: If a wide scale span (100% to 0% value of scale) is specified, the value less than 0.1% of PV may fluctuate.

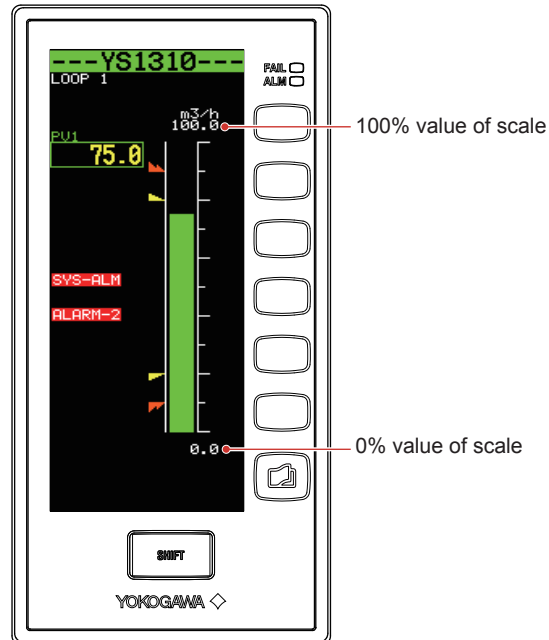
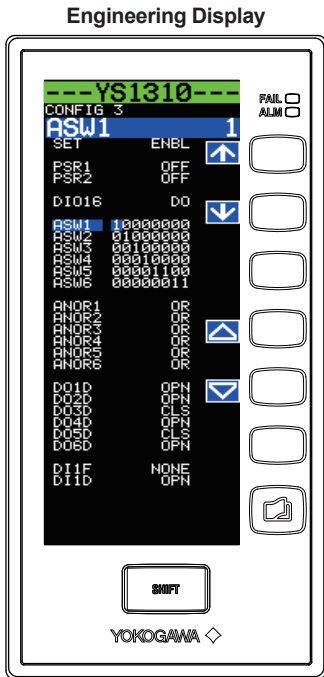


Figure 7.1

0701E.ai

# Setting the Alarm Output Combination

## Setting Display



0702E.ai

Operation Display > **[SHIFT]** + **[F3]** keys (to the Tuning Menu Display) > **[SHIFT]** + **[F3]** keys (to the Engineering Menu Display) > **[CONFIG3]** software key (Configuration Display 3)

**Setpoint changing procedure** (example of changing alarm assigning HH1 and LL1 to ASW3)

- (1) Press the **[↓]** software key to select and zoom in on **[SET INHB]**.
- (2) Press the **[△]** software key to change to **[SET ENBL]**.
- (3) Press the **[↓]** software key to select and zoom in on the alarm output connection **[ASW3 00100000]**.
- (4) Press the **[△]** or **[▽]** software key to change the setpoint **[00110000]**. (setting is made on a character basis).
- (5) Press the Page key to return to the Engineering Menu Display.
- (6) Press the **SHIFT** + Page keys to return to the Operation Display.

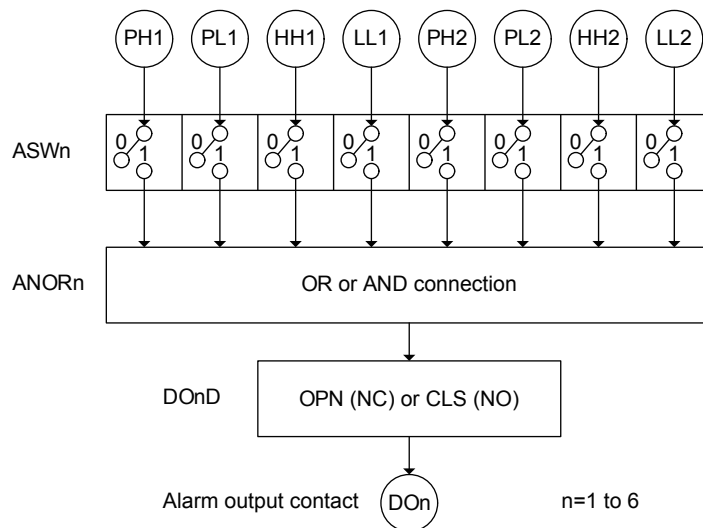
This completes the setting procedure.

## Setting Details

Parameters	Names	Setting Range	Factory Default
ASW1 to ASW6	Alarm output connection	00000000 to 11111111	See page 43
ANOR1 to ANOR6	Alarm AND/OR selection	AND, OR	OR
DO1D to DO6D	Alarm contact type	OPN, CLS	OPN

### Description

Six alarm outputs are available (if DIO1 is not used). Each of these six output points can be assigned alarm detection (high limit, low limit, high-high limit, and low-low limit). If multiple alarm detections are assigned to one alarm output, AND or OR connection can be set. The direction of contact action at occurrence of alarm can be set as open or closed in the event of an alarm.



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**ASWn:** There are eight digits where "0" or "1" is set, which correspond to PH1, PL1, HH1, LL1, PH2, PL2, HH2, and LL2 from the left.

"0" means no alarm output, while "1" denotes that alarm output is provided.

To output PL1, set these digits to "01000000". To output PH1 and PL1, set them to "11000000".

If multiple alarm detections are assigned to one alarm output, the ANORn parameter is additionally used.

**ANORn:** If multiple alarm detections have been set to ASWn, set AND or OR connection using this parameter. (If only one alarm detection is set to ASWn, it is not necessary to set ANORn.)

**DOnD:** Sets the direction of contact action in the event of alarm output.

OPN: Open if an alarm occurs (NC: Normally closed)

CLS: Closed if an alarm occurs (NO: Normally open)



# Installation and Wiring

For the following, see the YS1000 Series Replacement Manual.

- Installation and wiring for YS1310-12□, -13□, -14□, and -15□
- Connection of the RJC sensor provided with the product with optional code /A02

## Installation Location



### WARNING

For products with optional code /FM or /CSA:

- 1) Devices must be installed by professionally trained personnel.
- 2) In case of option code /FM, install devices according to NEC (National Electrical Code: ANSI/NFPA-70).  
In case of option code /CSA, all wiring shall comply with Canadian Electrical Code Part I and local electrical codes.

The instrument should be installed in indoor locations meeting the following conditions:

- **Instrumented panel**  
This instrument is designed to be mounted in an instrumented panel. Mount the instrument in a location where its terminals will not inadvertently be touched.
- **Well ventilated locations**  
Mount the instrument in well ventilated locations to prevent the instrument's internal temperature from rising. To mount multiple indicating controllers, see the external dimensions/panel cutout dimensions which follow. If mounting other instruments adjacent to the instrument, comply with these panel cutout dimensions to provide sufficient clearance between the instruments.
- **Locations with little mechanical vibration**  
Install the instrument in a location subject to little mechanical vibration.
- **Horizontal location**  
Mount the instrument horizontally and ensure that it is level, with no inclination to the right or left.

### Note

If the instrument is moved from a location with low temperature and low humidity to a place with high temperature and high humidity, or if the temperature changes rapidly, condensation will result. Moreover, in the case of thermocouple inputs, measurement errors will result. To avoid such a situation, leave the instrument in the new environment under ambient conditions for more than 1 hour prior to using it.

Do not mount the instrument in the following locations:

- **Outdoors**
- **Locations subject to direct sunlight or close to a heater**  
Install the instrument in a location with stable temperatures that remain close to an average temperature of 23°C. Do not mount it in locations subject to direct sunlight or close to a heater. Doing so adversely affects the internal unit.
- **Locations with substantial amounts of oily fumes, steam, dust, or corrosive gases**  
The presence of oily fumes, steam, dust, or corrosive gases adversely affects the instrument. Do not mount the instrument in locations subject to any of these substances.
- **Areas near electromagnetic field generating sources**  
Do not place magnets or tools that generate magnetism near the instrument. If the instrument is used in locations close to a strong electromagnetic field generating source, the magnetic field may cause measurement errors.
- **Locations where the display is difficult to see**  
The instrument uses an LCD for the display unit, and this can be difficult to see from extremely oblique angles. Mount the instrument in a location where it can be seen as much as possible from the front.
- **Areas close to flammable articles**  
Absolutely do not place the instrument directly on flammable surfaces. If such a circumstance is unavoidable and the instrument must be placed close to a flammable item, provide a shield for it made of 1.43 mm thick plated steel or 1.6 mm thick unplated steel with a space of at least 150 mm between it and the instrument on the top, bottom and sides.
- **Areas subject to being splashed with water**

## Mounting Method

### Mounting the Instrument Main Unit

Provide an instrumented panel steel sheet of 2.3 to 25 mm thickness.

#### (1) For mounting single unit

1. Using a screwdriver, loosen the screws of the two provided metal clamps in advance.
2. Insert the main unit of the instrument from the front side of the instrumented panel.
3. Install one of the metal clamps on top of the main unit and tighten the screw into the rear face of the panel. Repeat the procedure with the second clamp at the bottom of the unit.

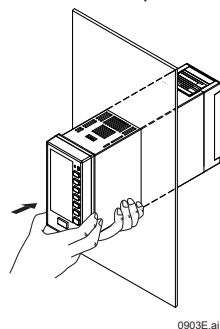


Figure 8.1

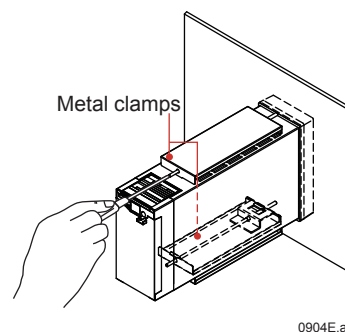


Figure 8.2

To remove the instrument from the panel, reverse the above procedure.

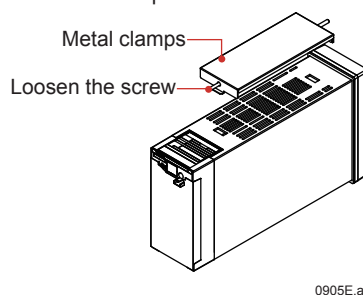


Figure 8.3

- Tighten the screws with appropriate tightening torque within 0.3 - 0.6N•m. Otherwise it may cause the case deformation or the bracket damage.
- Ensure that neither tools nor foreign matter enter the inside of the instrument through the holes for fitting the metal clamps.
- Mounting attitude: Up to 75 degrees above the horizontal. No downward tilting allowed.

#### (2) For mounting units side-by-side

1. According to the arrangement order, mount the other main units side by side in the panel, keeping them in close contact with each other.
2. Mount the individual controllers as above in item (1).

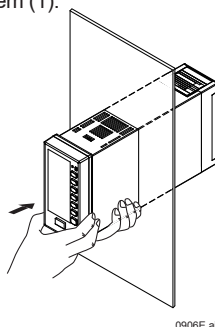
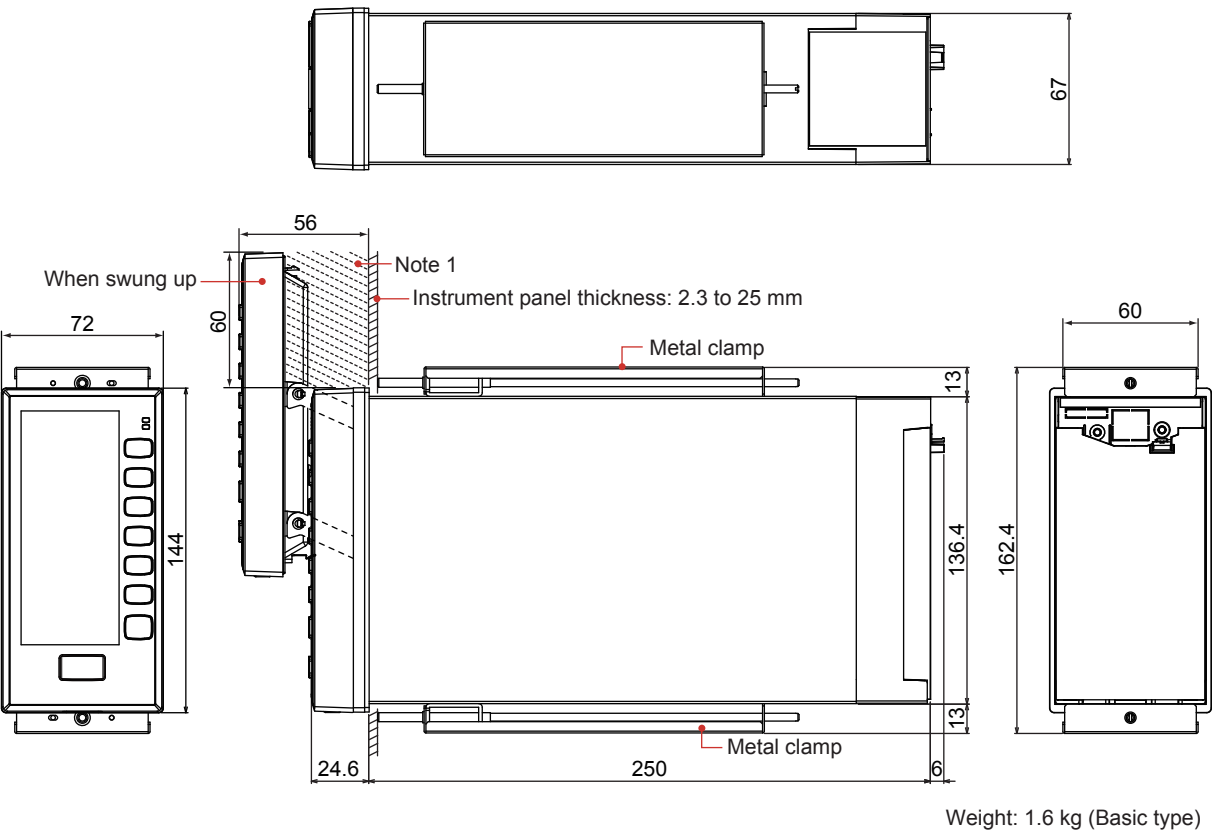


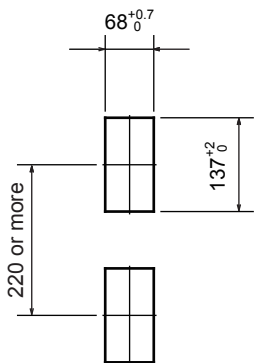
Figure 8.4

External Dimensions/Panel Cutout Dimensions

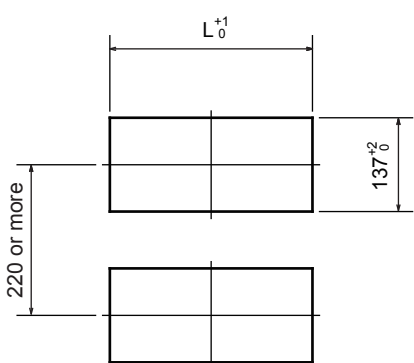


Panel Cutout Dimensions

For single mounting:



For side-by-side mounting:



Panel Cutout Width for Side-by-side Mounting

Number of instruments to be mounted	L(mm)
2	140
3	212
4	284
5	356
6	428
7	500
8	572
9	644
10	716
11	788
12	860
13	932
14	1004

Trigonometry

Unit: mm

General tolerance =  $\pm(\text{value of tolerance class IT18 based on JIS B 0401-1998}) / 2$

Note 1: If a nameplate, etc. is installed within 60 mm above the instrument, the thickness of the nameplate, etc. must be 30 mm or less from the panel surface.

Note 2: To ensure good air ventilation, allow space of 100 mm or more at the top and bottom of the panel.

Figure 8.5

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## Wiring

### Wiring Precautions



#### WARNING

- 1) Be sure to turn OFF the power supply before wiring to avoid an electric shock.  
Use a tester or similar device to ensure that no power is being supplied to a cable to be connected.
- 2) As a safety measure, always install a circuit breaker (an IEC 60947-compatible product, 5 A, 100 V or 220 V AC) in an easily accessible location near the instrument. Moreover, provide indication that the switch is a device for turning off the power to the instrument.
- 3) Wiring work must be carried out by a person with basic electrical knowledge and practical experience.
- 4) For the wiring cable, the temperature rating is 60 °C or more.



#### WARNING

For products with optional code /FM or /CSA:

- 1) Devices must be wired by professionally trained personnel.
- 2) In case of option code /FM, install devices according to NEC (National Electrical Code: ANSI/NFPA-70).  
In case of option code /CSA, all wiring shall comply with Canadian Electrical Code Part I and local electrical codes.

#### CAUTION

- 1) Provide electricity from a single-phase power supply. If the power is noisy, install an isolation transformer on the primary side, and use a line filter (recommended product: ZAC2205-00U, TDK) on the secondary side. When measures against noise are taken, do not install the primary and secondary power cables close to each other.
- 2) For thermocouple inputs, wire the thermocouple using shielded compensating lead wire. Moreover, for RTD input, use shielded wires with low conducting resistance and no resistance difference between the three wires.
- 3) If there is a risk of external lightning surges, use a lightning arrester, etc.
- 4) Tightening condition for terminal screws for power supply terminals and signal terminals is tightening torque 1.2 N•m.  
When using an electric screwdriver, it is necessary to use it at a rotation speed of 200 rpm or less. Please do not use a high-speed electric driver such as 1000rpm. An excessive load will be applied to the terminal screws and terminal fittings, leading to a damage.

#### Note

Please wire from the central terminals.

#### Note

When using the "M4 screw with washer", replace the terminal screws to "M4 screw with washer" included. For power supply, grounding and signal wiring cables, crimp terminals and fasten with "M4 screws with washers".

# Terminal Diagrams of YS1310

Note: Do not use unassigned terminals as relay terminals.

If the terminals concerned are used as digital output, an external power supply is required.  
 ▶ For digital output wiring: see "Wiring for Digital Input/Output and FAIL Output" described later.

(Optional code /A34)

**Ethernet Communication**

10BASE-T/100BASE-TX  
RJ45 connector

Number of connection: 2

Baud rate LED (left side)		Contents
Color/state	Yellow/Lit	100 Mbps
Unit		10 Mbps
Link/Active LED (right side)		Contents
Color/state	Green/Lit	Link
Green/Blink		Active
Unit		Link fail

## Digital Inputs and Outputs

DO1	Alarm output 1	
	<Factory default> High limit alarm output for PV 1	
DO2	Alarm output 2	
	<Factory default> Low limit alarm output for PV 1	
DO3	Alarm output 3	
	<Factory default> High-high limit alarm output for PV 1	
DO4	Alarm output 4	
	<Factory default> Low-low limit alarm output for PV 1	
DO5	Alarm output 5	
	<Factory default> OR output of high limit alarm output for PV 2 and low limit alarm output for PV 2	
DO6	For use as alarm output 6 (Factory default)	
	<Factory default> OR output of High-high limit alarm output for PV 2 and Low-low limit alarm output for PV 2	
DI1	For use as LCD backlight off	<p>With voltage</p>
		<Factory default> Used as DO6; it does not function.

## Analog Inputs

Measurement input1	
X1	
	Voltage input (1-5 V DC)
Measurement input2	
X2	
	Voltage input (1-5 V DC)

(For optional code /A0□)

**Direct Input Signal Output**

▶ For direct input connection: see "Direct Input Wiring" described later.

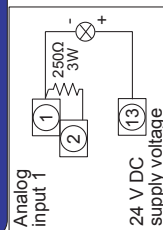
**FAIL Output**

ON in normal condition

FAIL output requires external power supply.

▶ For FAIL output wiring: see "Wiring for Digital Input/Output and FAIL Output" described later.

## Connection of Transmitter Supply Power



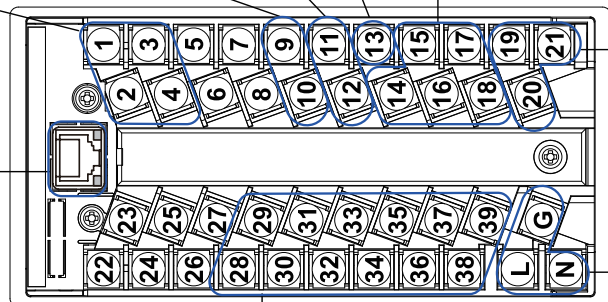
The figure above shows an example of the wiring for analog input 1. Analog input 2 can also be connected in the same way.

▶ For connecting two transmitters: see "Transmitter Supply Power Wiring" described later.

## RS-485 Communication

(Optional code /A31)

14	SG
15	SDA(-)
16	SDB(+)
17	RDA(-)
18	RDB(+)



Digital input hardware specifications:  
When voltage is present For no voltage  
ON: -0.5 to 1 V DC ON: resistance of 200  $\Omega$  or less 30 V DC  
OFF: 4.5 to 30 V DC OFF: resistance of 100 k $\Omega$  or more 200 mA or less (resistive load)  
Input contact rating: 5 V DC, 20 mA or more

### Power Supply

Supply voltage (AC)	Supply voltage (DC)
<p>Supply voltage (AC): 100 to 120 V AC (<math>\pm 10\%</math>), 50/60 Hz (<math>\pm 3</math> Hz) (100 V AC, 24 V DC common power)</p> <p>Supply voltage (DC): 24 to 120 V DC (<math>\pm 10\%</math>) (100 V AC, 24 V DC common power)</p>	<p>Supply voltage (DC): 135 to 190 V DC (<math>\pm 10\%</math>) (220 V AC power)</p>

DC power supply can be connected without polarity.

### (Optional specifications)

► For direct input connection: see "Direct Input Wiring" described later.

### Direct Input Terminals

mV input (optional code /A01) Isolator (optional code /A05)	Thermocouple input (optional code /A02)	RTD input (optional code /A03)
<p>mV input (A01) or 1-5V DC (A05)</p>	<p>TC Input</p>	<p>RTD input</p>
<p>Match the wiring resistances of terminals 19 and 20 with each other.</p>	<p>Mount the RJC at the terminal 21 side.</p>	<p>Match the wiring resistances of terminals 19 and 21 with each other.</p>
Potentiometer input (optional code /A04)	Two-wire transmitter input (optional code /A06, /A07)	Two-wire transmitter input (optional code /A06, /A07)
<p>Potentiometer input</p>	<p>Two-wire transmitter input</p>	<p>Two-wire transmitter input</p>
<p>Match the wiring resistances of terminals 19 and 20 with each other.</p>	<p>Supply voltage required</p>	<p>Case of 4 to 20 mA input signal not requiring supply power</p>
Frequency input (optional code /A08)		
<p>Two-wire type (voltage, contact)</p>	<p>Power feed type, two-wired</p>	<p>Power feed type, three-wired</p>

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Figure 8.6

### Transmitter Supply Power Wiring

If the YS1310 is connected to a two-wire transmitter, it is recommended that the field signal be isolated to limit the effects of short circuiting or ground fault incidents within a narrow range. (Use an external distributor.)

However, for economical connection to a two-wire transmitter, the YS1310 is equipped with non-isolated power terminals for transmitters (25 to 25.5 V DC).

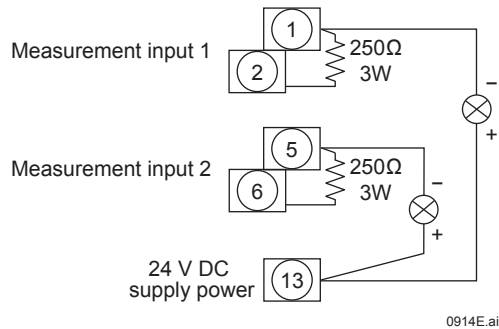


Figure 8.7

#### Supply current

When optional specification direct input (/A0□) is provided: 25 to 25.5 V DC, 30 mA

When no optional specification direct input (/A0□) is provided: 25 to 25.5 V DC, 60 mA (two two-wire transmitters can be connected)

### Wiring for Digital Input/Output and FAIL Output



#### WARNING

For products with optional code /FM or /CSA:

Install explosion-proof wiring defined in the relevant country for the following signal wiring.

- The digital output cable must be wired from the non-hazardous area by using Class I, Division 2 wiring dedicated in potentially explosive atmospheres such as a threaded metal conduit. In addition, it is necessary to be wired not to apply stress at the end of the cable.

External no-voltage and voltage contacts for digital inputs should be provided so that the rated value is obtained. Attention must be paid to excessive conductor resistance and in-conductor voltage drop.

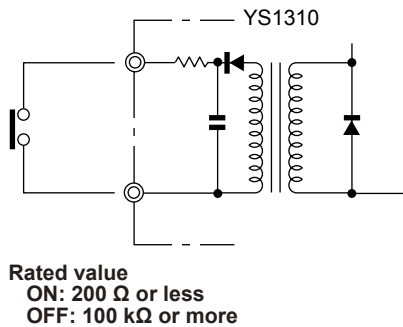


Figure 8.8 Connection of Digital Input (No-voltage Contact)

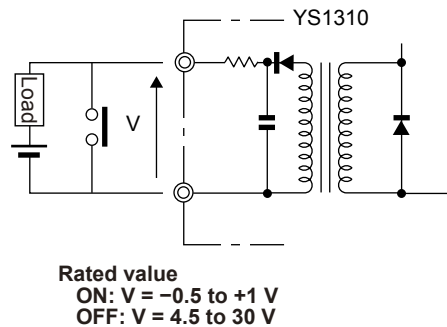


Figure 8.9 Connection of Digital Input (Voltage Contact)

When driving an external device using contact outputs such as alarm output, status output, and FAIL output, install wiring paying attention to the following:

#### CAUTION

- Do not connect loads exceeding the contact rating.
- To drive equipment incorporating inductance components such as relays, always connect a protective diode (surge absorber) in parallel with the load.
- To connect a power supply for driving a load, the power supply's polarity must be matched with that of the contact output. Connecting it in reverse may result in failure.
- An AC load cannot be directly opened or closed using contact output. In this case, provide a repeating relay, etc.

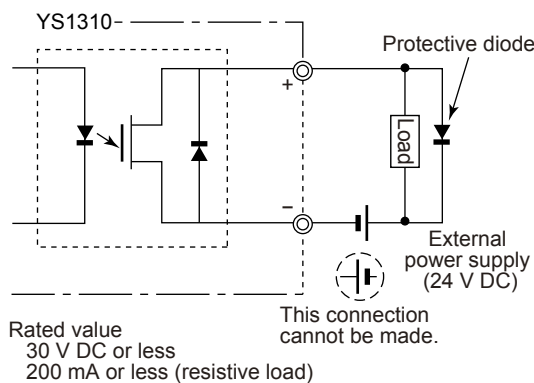


Figure 8.10 Connection Using Digital Output

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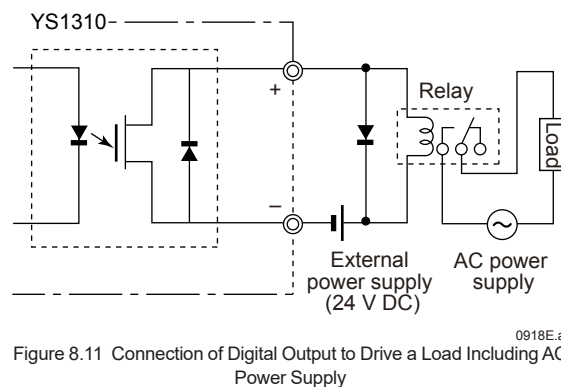


Figure 8.11 Connection of Digital Output to Drive a Load Including AC Power Supply

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### Direct Input Wiring (Optional Code /A0□)

Direct input terminals allow the connection of one of the following: mV voltage, thermocouple, RTD, potentiometer, isolator, two-wire transmitter, or a pulse signal.

A sensor signal is connected to the direct input terminals, converted into a 1–5 V signal by a signal converter circuit, and then output to the direct input signal output terminals. Connect this signal to the terminals you wish to input to using external wiring.

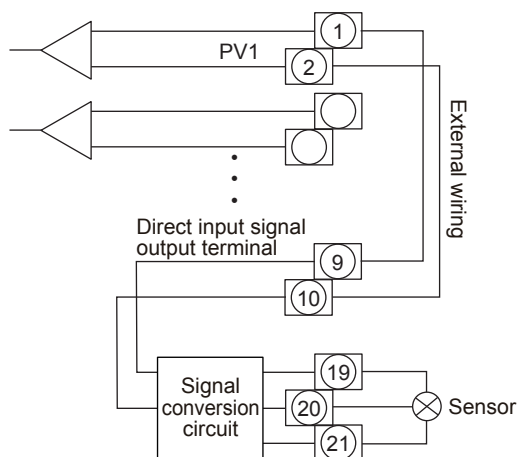
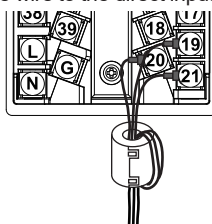


Figure 8.12

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A ferrite core is included when the optional code /A0□ is specified.

Be sure to use the ferrite core when connecting to the wire to the direct input terminals.



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### CAUTION

If there is any risk of a surge due to lightning discharge, an arrester should be connected to the direct input signal line. YOKOGAWA AR series is recommended for the arrester.



### Wiring for the Serial Communication Interface (Optional Code /A31)

To perform Modbus communication, PC-link communication or YS protocol communication, connect the wires as shown below. If the instrument is located at the end of the wiring, turn ON the terminating resistor. The terminating resistance (internal) can be set using the RS-485 communication terminating resistor ON/OFF (TRMR) engineering parameter.

#### Note

Even if the terminating resistance is being ON, it will be OFF when the power supply of the instrument is turned off.

► For details of communication parameter setting and communication functions: see YS1000 Series Communication Interface User's Manual

#### Four-wire connection

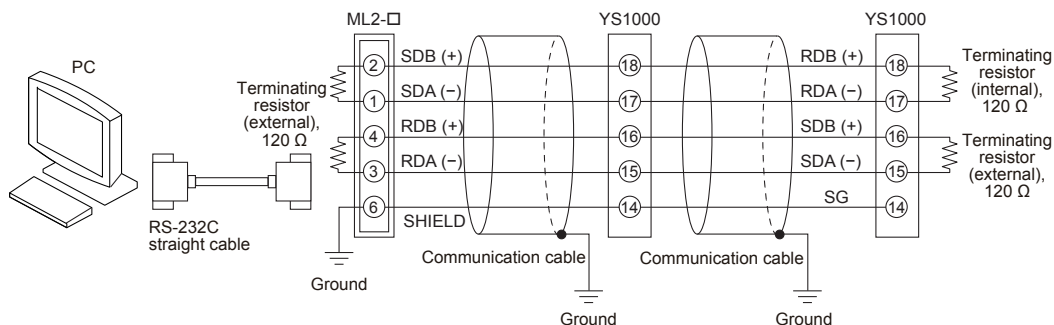


Figure 8.13

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#### Two-wire connection

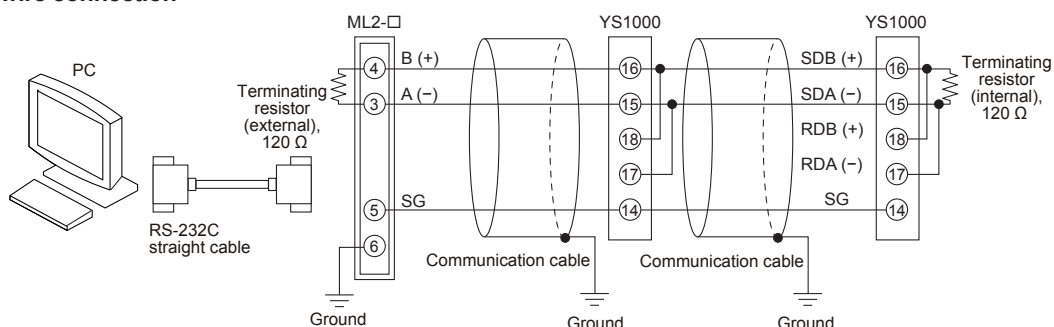


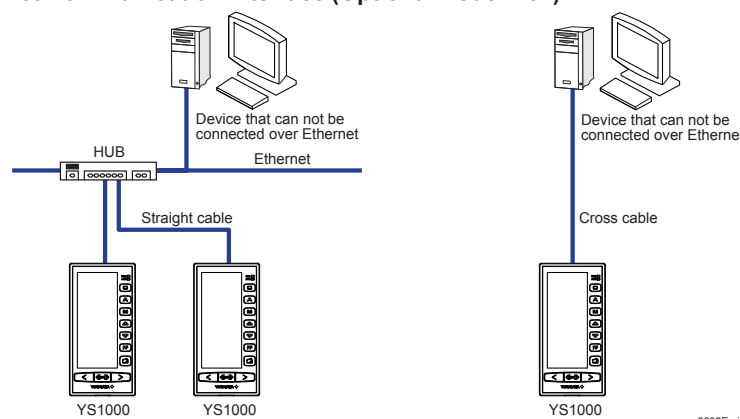
Figure 8.14

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#### Note

ML2-□ is a YOKOGAWA converter. RS-232C/RS-485 converters other than these devices can also be used. In such a case, check the electric specifications of each converter, etc. before using them.

### Wiring for the Ethernet Communication Interface (Optional Code /A34)



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#### CAUTION

If there is any risk of a surge due to lightning discharge, an arrester for Ethernet (100BASE-TX/10 BASE-T) should be connected.

## Wiring for Power Supply and Grounding

### Power supply wiring



#### WARNING

Be sure to turn OFF the power supply before wiring. Use a tester or similar device to ensure that no power is being supplied to a cable to be connected.

Install the power cable keeping a distance of more than 1 cm from other signal wires.

The power cable is required to meet the IEC standards concerned or the requirements of the area in which the instrument is being installed.

For the power cable, the temperature rating is 60 °C or more.

For products with optional code /FM or /CSA:

- When devices are installed in a hazardous area in Class I, Division 2, wire a power supply cable from a non-hazardous area by explosion-proof wiring (including metal conduit wiring).
- In case of option code /FM, install devices according to NEC (National Electrical Code: ANSI/NFPA-70).

In case of option code /CSA, all wiring shall comply with Canadian Electrical Code Part I and local electrical codes.

### Ground wiring



#### WARNING

The YS1310 should always be grounded to protect the operator and maintenance personnel from electric shock and to prevent the effects of external noise. Ground wiring should be grounded to Ground (minimum resistance).

For the ground cable, the temperature rating is 60 °C or more.



#### WARNING

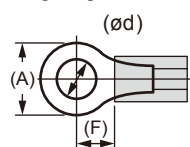
After completion of power cable wiring and ground wiring, always install the terminal cover to the instrument.

### Note

If there are multiple YS1310s on the same panel and individual grounding cannot be provided, determine the location of a grounding bus lead-in at one location and use and connect grounding cables of 2 mm<sup>2</sup> or more from each YS1310 to the grounding bus.

### Crimping terminal recommendations

Ring tongue terminal



Applicable terminals	Applicable wire mm <sup>2</sup> (AWG#)	ød (mm)	A (mm)	F (mm)	Applicable cable
M4	1.04-2.63 (16-14)	4.4 max.	7.0 max.	7.8 max.	Grounding cable
	0.25-1.65 (22-16)	4.4 max	6.6 max	6.7 max	Power supply cable Signal cable

Recommended tightening torque: 1.2 N•m

Applicable wire size: Grounding cable 2 mm<sup>2</sup> or more, Power supply cable 1.25mm<sup>2</sup> or more

### Installing the Terminal Cover

After completing the wiring, be sure to install the terminal cover to the instrument for safety and dust proofing.

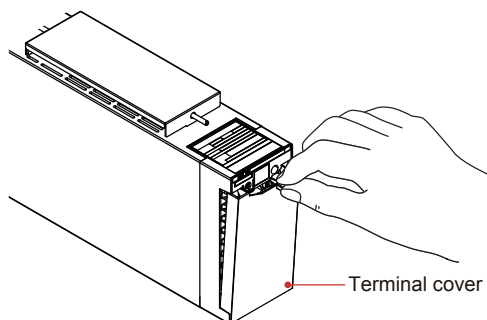


Figure 8.15

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# Troubleshooting

## How to Take Actions if the ALM Lamp or FAIL Lamp Lights up

In detecting an abnormality, YS1310 lights up the lamps (FAIL, ALM) at the upper part of the instrument's front panel.

- FAIL lamp (red): Lights up if a major failure occurs in which the indicator cannot operate.
- ALM lamp (yellow): Lights up if a minor abnormality occurs in which the indicator can still continue to operate.

### Actions to be Taken if the ALM Lamp Lights Up

- If the ALM lamp lights up, the alarm item can be checked on the ALARM Display.
- Alarm types include, process alarms, and system alarms.
- A process alarm that has occurred prior to a power failure will be stored in the memory and will be re-displayed upon a HOT start. (Even if the power supply is turned off while in the condition that an alarm occurred in the ALM lamp lights up again at HOT start. In this case, set the instrument once to COLD start and turn ON the power supply. This will clear the alarm indication.)

Table 9.1 List of Causes of Alarm Occurrence

Type	Alarm Display	Description	Cause of Alarm Occurrence and Diagnosis	Actions and Others
System alarm	X1, X2	Input overrange	Input value is less than -6.3% or greater than +106.3%.	Check wiring and instruments connected.
	COMM	RS-485 communication error	Framing parity error Buffer overflow Character-to-character timeout Error detection (checksum, CRC, LRC)	Check communication connection (wiring and communication conditions).
	ETHER	Ethernet communication error	No response from Ethernet communication device	Press the [ALM CLR] software key to confirm the ETHER alarm. If the above operation is repeated many times, it is judged as a failure.
	CALR	Adjustment inspection error		Contact YOKOGAWA's sales office or sales representative.
Process alarm	PH1, PH2	High limit alarm for PV	Process abnormality PV1 or PV2 is at or above the high limit alarm setpoint.	Recover the process to normal conditions.
	PL1, PL2	Low limit alarm for PV	Process abnormality PV1 or PV2 is at or below the low limit alarm setpoint.	
	HH1, HH2	High-high limit alarm for PV	Process abnormality PV1 or PV2 is at or above the high-high limit alarm setpoint.	
	LL1, LL2	Low-low limit alarm for PV	Process abnormality PV1 or PV2 is at or below the low-low limit alarm setpoint.	

### Actions to be Taken in the Event of the FAIL Lamp Lighting Up

If the FAIL lamp lights up, the FAIL Display appears. (If both the main processor (MCU) and display processor (DCU) fail or if the gate array (GA) is faulty, the FAIL lamp does not light up.)

Table 9.2 List of Causes of Failure

FAIL Display	Description	Processing (Action to be Taken in the Event of Abnormality)	
None	Main clock stopped or both the main processor and display processor are defective.	Computation stopped	<ul style="list-style-type: none"> <li>• FAIL contact open</li> <li>• Output HOLD (DO1 to DO6)</li> <li>• Communication (RS-485, or Ethernet) stopped</li> </ul>
SCLK	Sub-clock stopped		
MCU	Main processor (MCU) faulty		
DCU	Display processor (DCU) faulty		
A/D	A/D converter faulty		
D/A	D/A converter faulty		
RAM	MCU-RAM faulty		
ROM	MCU-ROM faulty		
FRAM	FRAM faulty		
FLASH	Flash memory faulty		
OPT	Communication abnormal		
SYS	System data abnormal		
EMPFR	FRAM data non-initialized, FRAM data lost		
EMPFL	Flash data non-initialized, Flash data lost		

### Displays and Operation in the Event of FAIL

YS1310 has an independent computation circuit (main processor, MCU), a display operation circuit (display processor, DCU).

If the computation circuit fails, computation stops, and outputs (DO1 to DO6) are changed to held status. The communication function also stops. In this case, the FAIL Display is shown by the display operation circuit. This circuit measures and displays analog input data (X1). The display cannot be switched.

If the display operation circuit fails, both normal display and operation are disabled, thereby causing computation to be stopped and outputs (DO1 to DO6) to change to held status. The communication function also stops. In this case, the FAIL Display is shown by the computation circuit. This circuit measures and displays analog input data (X1). The display cannot be switched.

### Display Provided in the Event of FAIL

If both the main processor (MCU) and display processor (DCU) fail or if the gate array (GA) is faulty, no display is provided.

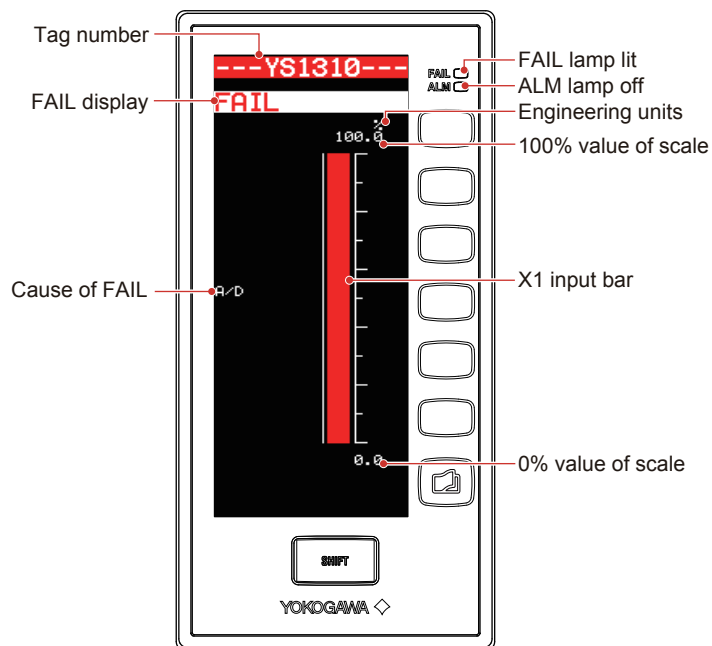


Figure 9.1

1002E.ai

Table 9.3

Item Names in Figure	Description
X1 input bar	1 to 5 V DC of analog input (X1) is displayed in a range of 0 to 100%.
Cause of FAIL	The cause of failure is displayed. If there are multiple failures, multiple causes of failures are displayed. No indication is displayed if the cause of failure is unknown.
FAIL and ALM lamps	FAIL lamp lights up and the ALM lamp is off
Tag number	The tag number shown immediately before FAIL was displayed.
Scale	0 to 100% unconditionally. Divisions are used that were indicated immediately before FAIL was displayed.
PH, PL, HH, and LL pointers	Not displayed
PV digital display	Not displayed
Key entry	All invalid with the exception of the MV operation keys (<, SHIFT, >)

### Recovery Operations after Power Failures

If a power failure occurs that exceeds the power holdup time, the instrument enters power failure status. Operation after a power failure differs depending on the power failure time and on the start mode (START) engineering parameters that have been set. The following action occurs with the factory default values.

► For operation after power failure: see Chapter 4, Processing during Power Failures, in the YS1310 Indicator with Alarm User's Manual.

- Momentary power interruption of less than 2 seconds /Power failure of 2 seconds or more  
The instrument continues to operate the same as it had prior to the momentary power interruption.

# List of Parameters

## Understanding the List of Parameters

Parameter: Symbol displayed on YS1310's LCD  
Name: Parameter name

Setting and Display Range: Range settable on YS1310

Unit: Parameter unit. An oblique line represents that there is no unit.

Factory Default Value: Factory default values

Display and Setting Conditions for Controller Mode: R: Display only, R/W: Display and setting available, N/A: No display

For more information about each parameter, see the [YS1310 Indicator with Alarm User's Manual](#).

## &lt;Tuning Parameters&gt;

## Setting Display 1 (SETTING1)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
PV1	Process variable 1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1)	Engineering unit	Undefined	R	
PH1	High limit alarm setpoint for PV1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 2)	Engineering unit	106.3	R/W	
PL1	Low limit alarm setpoint for PV1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 3)	Engineering unit	-6.3	R/W	
HH1	High-high limit alarm setpoint for PV1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 2)	Engineering unit	106.3	R/W	
LL1	Low-low limit alarm setpoint for PV1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 3)	Engineering unit	-6.3	R/W	
HYS1	Alarm hysteresis 1	Equivalent to 0.0 to 20.0% in the engineering unit (Note 1) (Note 6)	Engineering unit	2.0	R/W	
PLC1	Square root extraction low cutoff setpoint for PV1	0.0 to 100.0	%	1.0	R/W	
PLG1	First order lag time constant for PV1	0.0 to 800.0	s (second)	0.0	R/W	

Note 1: The engineering units set with the Engineering parameters, SCH1, SCL1, and SCDP1.

Note 2: Alarm will not occur if set at a maximum value.

Note 3: Alarm will not occur if set at a minimum value.

## Setting Display 2 (SETTING2)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
PV2	Process variable 2	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1)	Engineering unit	Undefined	R	
PH2	High limit alarm setpoint for PV2	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 2)	Engineering unit	106.3	R/W	
PL2	Low limit alarm setpoint for PV2	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 3)	Engineering unit	-6.3	R/W	
HH2	High-high limit alarm setpoint for PV2	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 2)	Engineering unit	106.3	R/W	
LL2	Low-low limit alarm setpoint for PV2	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 3)	Engineering unit	-6.3	R/W	
HYS2	Alarm hysteresis 2	Equivalent to 0.0 to 20.0% in the engineering unit (Note 1) (Note 6)	Engineering unit	2.0	R/W	
PLC2	Square root extraction low cutoff setpoint for PV2	0.0 to 100.0	%	1.0	R/W	
PLG2	First order lag time constant of PV2	0.0 to 800.0	s (second)	0.0	R/W	

Note 1: The engineering units set with the Engineering parameters, SCH2, SCL2, and SCDP2.

Note 2: Alarm will not occur if set at a maximum value.

Note 3: Alarm will not occur if set at a minimum value.

## Input and Output Data Display (I/O Data)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
X1	Analog input 1	-25.0 to 125.0	%	-25.0	R	
X2	Analog input 2		%	-25.0	R	
DI01	Digital input 1 (Note 1)	0, 1		0	R	
DO01	Alarm output 1	0, 1		0	R	
DO02	Alarm output 2			0	R	
DO03	Alarm output 3			0	R	
DO04	Alarm output 4			0	R	
DO05	Alarm output 5			0	R	
DO06	Alarm output 6			0	R	

Note 1 When DO06 is not used, DI01 is effective. When DI01 is not used, DO06 is effective. Digital input and output can be selected and using the DI1/DO6 specification DIO16 engineering parameter.

## &lt;Engineering Parameters&gt;

## Configuration Display 1 (CONFIG1)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	
CTL	Action mode display	ALMSTN		ALMSTN	R	
START	Start mode	AUT: HOT start COLD: Power failure duration<2 sec.; HOT Start, Power failure duration≥2 sec.; COLD start		COLD	R/W	
FDSP	Power-on initial display	LOOP1: LOOP 1 Display, LOOP2: LOOP 2 Display, MTR1: METER 1 Display, MTR2: METER 2 Display, TRND1: TREND1 Display, TRND2: TREND2 Display, TRND3: TREND 3 Display, ALARM: ALARM Display, DUAL: DUAL Display		LOOP1	R/W	
LOOP1	LOOP 1 Display ON/OFF	OFF, ON (Note 2)		ON	R/W	
LOOP2	LOOP 2 Display ON/OFF			ON	R/W	
MTR1	METER 1 Display ON/OFF			ON	R/W	
MTR2	METER 2 Display ON/OFF			ON	R/W	
TRND1	TREND 1 Display ON/OFF			ON	R/W	
TRND2	TREND 2 Display ON/OFF			ON	R/W	
TRND3	TREND 3 Display ON/OFF			ON	R/W	
ALARM	ALARM Display ON/OFF			ON	R/W	
DUAL	DUAL Display ON/OFF			ON	R/W	
REV	System revision number	Alphanumeric characters 8 digits (Style number and Revision number of the product)		Sx.xx	R	
MCU	Main CPU version number	Main CPU version number		Rx.xx.xx	R	
DCU	Display CPU version number	Display CPU version number		Rx.xx.xx	R	
PARA	MCU parameter version number	MCU parameter version number		Rx.xx.xx	R	

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and alarm output will be kept.

Note 2: DUAL is always displayed even if you set "OFF" for all lines. When you do not use TRND3, set it to "OFF".

## Configuration Display 2 (CONFIG2)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	
SCH1	100% value of scale 1	-80000 to 80000		1000	R/W	
SCL1	0% value of scale 1	-80000 to 80000		0	R/W	
SCDP1	Decimal point position 1	#####.###.###.###.###.###.###		#####.##	R/W	
SCDV1	Scale division 1	1, 2, 4, 5, 7, 10, 14, 20		10	R/W	
UNIT1	Engineering unit 1	Alphanumeric character 7 digits		%	R/W	
TAG1	Tag number 1	Alphanumeric character 12 digits		---YS1310---	R/W	
PV2IN	PV2 input specification	-: None, X2: PV2 is used.		X2	R/W	
SCH2	100% value of scale 2	-80000 to 80000		1000	R/W	
SCL2	0% value of scale 2	-80000 to 80000		0	R/W	
SCDP2	Decimal point position 2	#####.###.###.###.###.###.###		#####.##	R/W	
SCDV2	Scale division 2	1, 2, 4, 5, 7, 10, 14, 20		10	R/W	
UNIT2	Engineering unit 2	Alphanumeric character 7 digits		%	R/W	
TAG2	Tag number 2	Alphanumeric character 12 digits		---YS1310---	R/W	

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and alarm output will be kept.



## Configuration Display 3 (CONFIG3)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	
PSR1	Square root extraction for PV1	OFF, ON		OFF	R/W	
PSR2	Square root extraction for PV2			OFF	R/W	
DIO16	DI1/DO6 Specification	DI, DO		DO	R/W	
ASW1	Alarm 1 output connection	00000000 to 11111111 ▶: p.29		10000000	R/W	
ASW2	Alarm 2 output connection			01000000	R/W	
ASW3	Alarm 3 output connection			00100000	R/W	
ASW4	Alarm 4 output connection			00010000	R/W	
ASW5	Alarm 5 output connection			00001100	R/W	
ASW6	Alarm 6 output connection			00000011	R/W	
ANOR1	Alarm 1 AND/OR selection	OR, AND		OR	R/W	
ANOR2	Alarm 2 AND/OR selection			OR	R/W	
ANOR3	Alarm 3 AND/OR selection			OR	R/W	
ANOR4	Alarm 4 AND/OR selection			OR	R/W	
ANOR5	Alarm 5 AND/OR selection			OR	R/W	
ANOR6	Alarm 6 AND/OR selection			OR	R/W	
DO1D	Alarm 1 contact type	OPN: When the alarm occurs, the contact is open CLS: When the alarm occurs, the contact is closed		OPN	R/W	
DO2D	Alarm 2 contact type			OPN	R/W	
DO3D	Alarm 3 contact type			OPN	R/W	
DO4D	Alarm 4 contact type			OPN	R/W	
DO5D	Alarm 5 contact type			OPN	R/W	
DO6D	Alarm 6 contact type			OPN	R/W	
DI1F	DI1 function selection	NONE: No function LCD-OFF: LCD backlight auto-off TR-EVT.C: All event elimination		LCD-OFF	R/W	
DI1D	DI1 contact type	OPN: Function is available when the contact is open CLS: Function is available when the contact is closed		OPN	R/W	

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and alarm output will be kept.

## Input Specification Setting Display (SC MAINT)

See Chapter 3, Adjusting of Direct Inputs (Temperature/Resistance/Frequency), in the YS1310 Indicator with Alarm User's Manual.

## Password Setting Display (PASSWORD)

See 2.2.1, Inhibiting/Enabling Parameter Change, in the YS1310 Indicator with Alarm User's Manual.

## Setting Display for Operation Display (DISPLAY)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	
LP1C	LOOP 1 color selection	GREEN, AQUA, PINK, ORANGE		GREEN	R/W	
LP2C	LOOP 2 color selection			AQUA	R/W	
BKCL	Background color selection	BLACK, WHITE, BLUE		BLACK	R/W	
MTMG1	10-exponential scale factor for METER 1 Display	AUTO, 10 <sup>-5</sup> , 10 <sup>-4</sup> , 10 <sup>-3</sup> , 10 <sup>-2</sup> , 10 <sup>-1</sup> , 10 <sup>0</sup> , 10 <sup>1</sup> , 10 <sup>2</sup> , 10 <sup>3</sup> , 10 <sup>4</sup> , 10 <sup>5</sup>		AUTO	R/W	
MTMG2	10-exponential scale factor for METER 2 Display			AUTO	R/W	
TR1PV	PV1 trend ON/OFF for TREND 1 Display	OFF, ON		ON	R/W	
TR2PV	PV2 trend ON/OFF for TREND 2 Display			ON	R/W	
TRDS1	Data selection 1 for TREND 3 Display	OFF: None, PV1: Process variable 1, PV2: Process variable 2, X1: Analog input 1, X2: Analog input 2		PV1	R/W	
TRDS2	Data selection 2 for TREND 3 Display			PV2	R/W	
TRDS3	Data selection 3 for TREND 3 Display			OFF	R/W	
TRDS4	Data selection 4 for TREND 3 Display			OFF	R/W	
TRDT1	TREND 1 Display time span	1M: 1min., 5M: 5min., 10M: 10min., 30M: 30min., 1H: 1hour, 5H: 5hours, 10H: 10hours, 30H: 30hours		1M	R/W	
TRDT2	TREND 2 Display time span			1M	R/W	
TRDT3	TREND 3 Display time span			1M	R/W	
TR3DV	Scale division for TREND3 Display	1, 2, 4, 5, 7, 10, 14, 20		10	R/W	
ACTD1	Active color display selection 1	OFF: None, PH1: High limit alarm setpoint for PV1, PL1: Low limit alarm setpoint for PV1, HH1: High-high limit alarm setpoint for PV1, LL1: Low-low limit alarm setpoint for PV1 1-ALM: Logical OR of all loop 1 alarms		OFF	R/W	
ACTD2	Active color display selection 2	OFF: None, PH2: High limit alarm setpoint for PV2, PL2: Low limit alarm setpoint for PV2, HH2: High-high limit alarm setpoint for PV2, LL2: Low-low limit alarm setpoint for PV2 2-ALM: Logical OR of all loop 2 alarms		OFF	R/W	
TAGAL	Color inversion of tag number	OFF, ON		OFF	R/W	

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and alarm output will be kept.

## List of Parameters

### LCD Setting Display (LCD)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	
ECO	LCD backlight auto-off timer	OFF: Timer function OFF, ON: Timer function ON (Off timer: 30 min)		OFF	R/W	
BRT	LCD brightness adjustment	0 to 5		1	R/W	

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and alarm output will be kept.

### Communication Setting Display (COMM)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	
COMM	Communication selection	-, RS-485		No option:- /A31:RS-485	R	
COMWR	Enable/Disable writing via RS-485 communication (Note 2)	INHB: Setting impossible ENBL: Setting possible		ENBL	R/W	
DREG1	RS-485 communication D register setting for High/Low level (Note 2)	H-L: High-Low, L-H: Low-High		H-L	R/W	
PSL	RS-485 Protocol selection (Note 2)	PCL: PC-link communication, PCLSUM: PC-link communication (with checksum), MODASC: Modbus communication (ASCII), MODRTU: Modbus communication (RTU), YS: YS protocol		MODRTU	R/W	
ADRS	RS-485 communication address (Note 2)	1 to 99		1	R/W	
STBIT	RS-485 stop bit (Note 2)	1 bit, 2 bit		1 bit	R/W	
PAR	RS-485 parity (Note 2)	NONE, ODD, EVEN		EVEN	R/W	
DLEN	RS-485 data length (Note 2)	7 bit, 8 bit		8 bit	R/W	
BPS	RS-485 baud rate (Note 2)	1200, 2400, 4800, 9600, 19200, 38400 (bps)		38400	R/W	
TRMR	RS-485 communication terminating resistor ON/OFF (Note 2)	OFF, ON		OFF	R/W	
ETRWR	Enable/Disable writing via Ethernet communication (Note 3)	INHB: Setting impossible ENBL: Setting possible (Note1)		ENBL	R/W	
DREG2	Ethernet Communication D register setting for High/Low level (Note 3)	H-L: High-Low, L-H: Low-High		H-L	R/W	
ECTO	Ethernet communication timeout period	4 to 60	s	60	R/W	
IPAD1	IP address 1 (Note 3)	0 to 255		192	R/W	
IPAD2	IP address 2 (Note 3)			168	R/W	
IPAD3	IP address 3 (Note 3)			1	R/W	
IPAD4	IP address 4 (Note 3)			1	R/W	
SM1	Subnet mask 1 (Note 3)	0 to 255		255	R/W	
SM2	Subnet mask 2 (Note 3)			255	R/W	
SM3	Subnet mask 3 (Note 3)			255	R/W	
SM4	Subnet mask 4 (Note 3)			0	R/W	
DG1	Default gateway1 (Note 3)	0 to 255		0	R/W	
DG2	Default gateway2 (Note 3)			0	R/W	
DG3	Default gateway3 (Note 3)			0	R/W	
DG4	Default gateway4 (Note 3)			0	R/W	
PORT	Port number (Note 3)	502, 1024 to 65535		502	R/W	
ESW	Ethernet setting switch (Note 3)	-, ENTRY		-	R/W	

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and alarm output will be kept.

Note 2: Available for the option /A31.

Note 3: Available for the option /A34.

## LCD Maintenance Setting Display (LCD MAINT)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions for Controller Mode	User Settings
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	
PWDOR	These parameters are for maintenance. If maintenance is required, contact your nearest YOKOGAWA dealer.					
KEYST						

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and alarm output will be kept.



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■ Written by	Yokogawa Electric Corporation
■ Published by	Yokogawa Electric Corporation
	2-9-32 Nakacho, Musashino-shi, Tokyo 180-8750, JAPAN

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## **YOKOGAWA ELECTRIC CORPORATION**

### **Headquarters**

9-32, Nakacho, 2-chome, Musashino-shi, Tokyo, 180-8750 JAPAN  
Phone : 81-422-52-5555

### **Branch Sales Offices**

Osaka, Nagoya, Kurashiki, Hiroshima, Fukuoka, Kitakyusyu

---

## **YOKOGAWA CORPORATION OF AMERICA**

### **Head Office**

12530 West Airport Blvd, Sugar Land, Texas 77478, USA  
Phone : 1-281-340-3800 Fax : 1-281-340-3838

### **Georgia Office**

2 Dart Road, Newnan, Georgia 30265, USA  
Phone : 1-800-888-6400 Fax : 1-770-254-0928

## **YOKOGAWA AMERICA DO SUL LTDA.**

Alameda Xingu 850 Barueri CEP 06455-030-Barueri-SP/ BRAZIL  
Phone : 55-11-3513-1300 Fax : 55-11-5681-2400

## **YOKOGAWA EUROPE SOLUTIONS B. V.**

Euroweg 2, 3825 HD Amersfoort, THE NETHERLANDS  
Phone : 31-88-4641000 Fax : 31-88-4641111

## **YOKOGAWA ELECTRIC CIS LTD.**

1, Samarskaya street, business center Novion, Moscow, Russia, 129110, RUSSIA  
Phone : 7-495-737-7868 Fax : 7-495-737-7869

## **YOKOGAWA CHINA CO., LTD.**

Room 1801, Tower B, THE PLACE, No.100 Zunyi Road, Changning District,  
Shanghai, CHINA  
Phone : 86-21-62396262 Fax : 86-21-54051011

## **YOKOGAWA ELECTRIC KOREA CO., LTD.**

(Yokogawa B/D, Yangpyeong-dong 4-Ga), 21, Seonyu-ro 45-gil, Yeongdeungpo-gu,  
Seoul, 07209, KOREA  
Phone : 82-2-2628-6000 Fax : 82-2-2628-6400

## **YOKOGAWA ENGINEERING ASIA PTE. LTD.**

5 Bedok South Road, Singapore 469270, SINGAPORE  
Phone : 65-6241-9933 Fax : 65-6444-6252

## **YOKOGAWA INDIA LTD.**

Plot No.96, Electronic City Complex, Hosur Road, Bangalore - 560 100, INDIA  
Phone : 91-80-4158-6000 Fax : 91-80-2852-1442

## **YOKOGAWA AUSTRALIA PTY. LTD.**

Level 3, 66 Waterloo Road, Macquarie Park NSW 2113, AUSTRALIA  
Phone : 61-2-8870-1100 Fax : 61-2-8870-1111

## **YOKOGAWA MIDDLE EAST & AFRICA B.S.C.(C)**

P.O. Box 10070, Manama, Building 577, Road 2516, Busaiteen 225, Muharraq,  
Kingdom of BAHRAIN  
Phone : 973-17358100 Fax : 973-17336100