

**Model SALD (Style S)
mV and Temperature Alarm Unit**

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General Specifications

Introduction

This manual describes the functions and operations of the SALD mV and Temperature Alarm Unit.

• Intended Readers

This manual is intended for personnel in charge:

- Installation and wiring
- Instrumentation and setup of the function
- Operation and monitoring of the controller
- Maintenance of equipment

• Related Documents

The following documents all relate to the SALD mV and Temperature Alarm Unit. Read them as necessary. The codes enclosed in parentheses are the document numbers.

| Manual Title | Manual No. | Description |
|---|------------------|--|
| Rack-Mounted Instruments | IM 1B4F2-01E | Describes mounting and wiring for the YS80 rack-mounted instruments. |
| Model VJ77 PC-based Parameters Setting Tool | IM 77J01J77-01E | Describes operation for the VJ77 parameters setting tool.. |
| Model JHT200 Handy Terminal | IM 77J50H01-01EN | Describes operation of JHT200. |

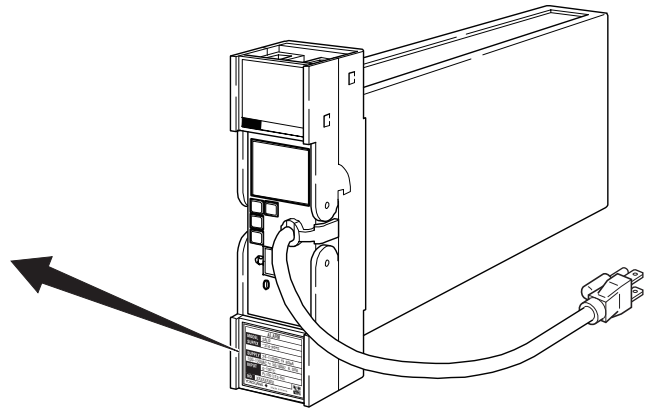
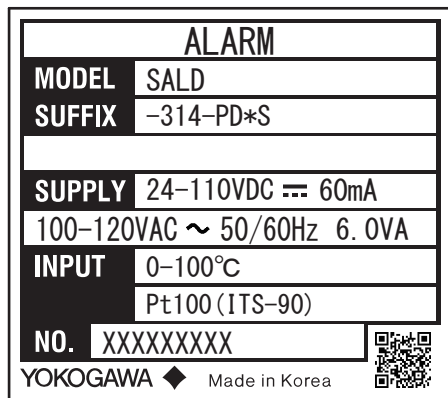
1.1 Inspection

The SALD mV and temperature alarm unit is shipped only after stringent inspection at the factory. Visually inspect the product upon delivery to make sure it is not damaged in any way.

Store the box and inner packing material of the package in a safe place / they may be needed if there is a problem with the product and it needs to be sent back for repair.

Check of Model and Suffix Codes

The model and suffix codes are indicated on the Name plate attached to the front cover of the instrument. Crosscheck this information with the model and suffix codes of Section 2.2 to ensure that the product is as specified in the order.



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Figure 1-1 Name plate for Thermocouple Input (Description example)

Confirmation of the Package Contents

Check the package contents against the list below. If anything is missing or damaged, immediately contact the sales office from which you purchased the product or your nearest Yokogawa representative.

- SALD mV and Temperature Alarm Unit 1
- Alarm Label (Parts No.: L4040JA) 1
- Precautions on the Use of the YS80 Series 1

Downloadable Electronic Manuals

You can download the latest manuals from the following website:

To view the User's Manuals, use Adobe Acrobat Reader of Adobe Systems Incorporated.



<http://www.yokogawa.com/ns/ys/>

1.2 Documentation Conventions

This manual uses the following notational conventions

Symbols

The following symbols are used in this manual.

| Markings | |
|---|---|
|  WARNING | Indicates that operating the hardware or software in a particular manner may damage it or result in a system failure. |
|  CAUTION | Draws attention to information that is essential for understanding the operation and/or features of the product. |
| <i>Note</i> | Gives additional information to complement the present topic and/or describe terms specific to this document. |
| ► | Gives reference locations for further information on the topic. |

Description of Displays

Some of the representations of product displays shown in this manual may be exaggerated, simplified, or partially omitted for reasons of convenience when explaining them.

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.

1.3 Notice






This Instruction Manual

- This manual should be passed on to the end user. Keep at least one extra copy of the manual in a safe place.
- Read this manual carefully to gain a thorough understanding of how to operate this product before you start using it.
- This manual is intended to describe the functions of this product. Yokogawa Electric Corporation (hereinafter simply referred to as Yokogawa) does not guarantee that these functions are suited to the particular purpose of the user.
- Under absolutely no circumstances may the contents of this manual, in part or in whole, be transcribed or copied without permission.
- The contents of this manual are subject to change without prior notice.
- 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 contact your nearest Yokogawa representative or sales office.

Protection, Safety, and Prohibition against Unauthorized Modification

- The following safety symbols are used on the product and in this manual.

Markings

| | |
|---|--|
|  | If this symbol is indicated on the product, the operator should refer to the explanation given in the instruction manual in order to avoid personal injury or death to either themselves or other personnel, and/or damage to the instrument. The manual describes that the operator should exercise special care to avoid shock or other dangers that may result in injury or loss of life. |
|  | Protective ground terminal: This symbol indicates that the terminal must be connected to ground prior to operating the equipment. |
|  | Function ground terminal: This symbol indicates that the terminal must be connected to ground prior to operating the equipment. |
|  | AC voltage: This symbol indicates that AC voltage is present. |
|  | DC voltage: This symbol indicates that DC voltage is present. |

- In order to protect the product and the system controlled by it against damage and ensure its safe use, make certain that all of the instructions and precautions relating to safety contained in this document are strictly adhered to. Yokogawa does not guarantee safety if products are not handled according to these instructions.
- If protection/safety circuits are to be used for the product or the system controlled by it, they should be externally installed on the product.
- Do not turn off the power of the product during adjustment and parameter setting.
- Be sure to confirm the parameters referring to "5.4 Parameter List" before installing the product in a system or plant. After confirming them, install the product in a system or plant and turn on the power.
- When you replace the parts or consumables of the product, only use those specified by Yokogawa.
- If the product is to be used in systems with special requirements for human safety, such as nuclear power and radiation related equipment, railway facilities, aircraft facilities, and medical devices, please consult with your sales representative.
- Do not modify the product.

Force Majeure

- Yokogawa does not make any warranties regarding the product except those mentioned in the WARRANTY that is provided separately.
- Yokogawa assumes no liability to any party for any loss or damage, direct or indirect, caused by the use or any unpredictable defect of the product.

1.4 Compatibility with Previous Models

■ Compatibility with style A

- Operation and settings differ from previous model (styles A). Please read this document carefully before operating the product.
- Before installing this product in a system or plant, you must check the jumper settings and parameters described in chapter 5, "Settings." After checking settings and parameters, install the product in the system or plant, and then turn ON the power.

■ Compatibility with style R

- Operation and settings are the same as for the previous model (style R). Please read this document carefully before operating the product. However, if the temperature unit of the previous model (Style R) is set to "deg F", the option code /FCAL is required for the new model (Style S).
- Before installing this product in a system or plant, you must check the jumper settings and parameters described in chapter 5, "Settings." After checking settings and parameters, install the product in the system or plant, and then turn ON the power.

General

The SALD mV and temperature alarm unit receives a mV DC, thermocouple or RTD (resistance temperature detector) input directly, compares this input with an alarm set point, and outputs an alarm contact signal. The input has one or two absolute-alarm outputs. Direct or reverse alarm action can be selected for each of the alarm output set points. The front panel is provided with an alarm LED indicator lamp for confirming alarm relay action (when relay is energized).

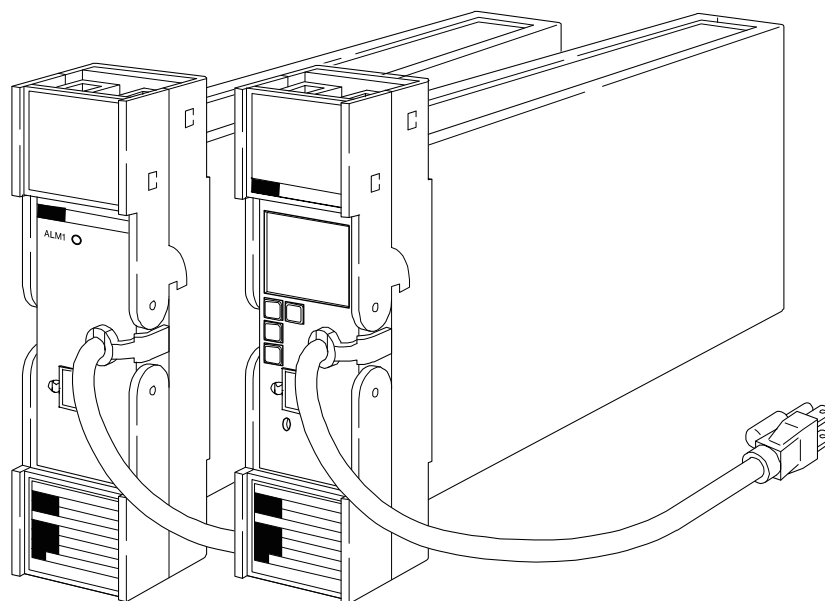
A PC (VJ77) or the JHT200 Handy Terminal*1 is used for setting the SALD parameters. On the SALD model with display setter (SALD-x04), input indication (engineering unit) can be displayed and alarm set points can be displayed / set on the front panel.

With the VJ77 Parameter Setting Tool you can do the following:

- Read/write all parameters at once
- Save read parameters to a file
- Copy parameters to other devices of the same model and suffix code (only with style code R or S).

*1: The modular jack conversion adapter (E9786WH) is required for connecting a PC (VJ77) or the JHT200 Handy Terminal to the mV and Temperature Alarm Setter.

The 5 pin-connector type communication cable (F9182EE) and modular jack conversion adapter (E9786WH) is required for connecting the BT200 BRAIN Terminal of YOKOGAWA ELECTRIC Corporation.



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Figure 2-1 External View

2.1 Standard Specifications

Please see the General Specifications (GS 01B04K02-02E) at the end of this manual.

2.2 Model and Suffix Codes

| Model | Suffix Codes | Optional Suffix Codes | Description |
|-------------------------------------|--|---|--|
| SALD | | | mV and Temperature Alarm Unit |
| Input Signal | -1 -2 -3 -7 | | mV input Thermocouple input RTD input Universal input (mV, TC, RTD input) |
| Alarm | 1 2 | | 1 input, 1 setpoint absolute alarm 1 input, 2 setpoints absolute alarm |
| Display Setter | 0 4 | | Not provided Provided |
| Selectable Combination Suffix Codes | -MV -TK -TT -TJ -TE -TB -TR -TS | | mV DC Type K (ITS90, JIS C1602) Type T (ITS90, JIS C1602) Type J (ITS90, JIS C1602) Type E (ITS90, JIS C1602) Type B (ITS90, JIS C1602) Type R (ITS90, JIS C1602) Type S (ITS90, JIS C1602) |
| Auxiliary Codes | -PA -PB -PD -UN | | JPt100 (JIS'89) Pt50 (JIS'81) Pt100 (ITS-90, JIS C1604) Universal input (mV, TC, RTD input) |
| Style Code | | *S | Style S |
| Option Codes (*1)(*2)(*3) | | /NHR /FBP /LOCK /WSW /REK /TB /A2TB /A2ER /FCAL | Without rack case Power supply fuse bypass Power supply plug with lock With spring washer Mount to same line with EK series rack With power supply terminal 220V version with power supply terminal 220V version with power supply plug Fahrenheit range |

*1: /LOCK, /REK, /TB, /A2TB, and /A2ER cannot be specified together.

*2: /FBP, /A2TB, and /A2ER cannot be specified together.

*3: When setting the temperature unit with "deg F", specify the option code /FCAL.

2.3 Measurement Range and Accuracy Warranty

| Input Type | | Measuring Range | Measuring Range (K) | Measuring Range (°F) (*6) | Input Accuracy |
|-------------------------|-----------------|---------------------|---------------------|------------------------------|--|
| mV DC Input | | 0 to 100 mVDC | | | ±0.5% of measuring range (*1) |
| Thermocouple Input (*3) | Type K | -270.0 to 1372.0 °C | 0.0 to 1640.0 K | -450.0 to 2500.0 °F | ±0.5% (*1) of measuring range + reference junction compensation error (*2) |
| | Type T | -270.0 to 400.0 °C | 0.0 to 670.0 K | -450.0 to 750.0 °F | |
| | Type J | -210.0 to 1200.0 °C | 80.0 to 1470.0 K | -340.0 to 2300.0 °F | |
| | Type E | -270.0 to 1000.0 °C | 0.0 to 1270.0 K | -450.0 to 1830.0 °F | |
| | Type B | 50.0 to 1820.0 °C | 330.0 to 2090.0 K | 130.0 to 3300.0 °F | |
| | Type R | -50.0 to 1768.0 °C | 230.0 to 2040.0 K | -50.0 to 3210.0 °F | |
| | Type S | -50.0 to 1768.0 °C | 230.0 to 2040.0 K | -50.0 to 3210.0 °F | |
| | Type N (*5) | -270.0 to 1300.0 °C | 0.0 to 1570.0 K | -450.0 to 2400.0 °F | |
| | Type W3 (*5) | 0 to 2315 °C | 280 to 2580 K | 32 to 4190 °F | |
| | Type W5 (*5) | 0 to 2315 °C | 280 to 2580 K | 32 to 4190 °F | |
| RTD (*4) | JPt100 | -200.0 to 510.0 °C | 80.0 to 780.0 K | -320.0 to 940.0 °F | ±0.5% of measuring range |
| | Pt50 | -200.0 to 649.0 °C | 80.0 to 920.0 K | -320.0 to 1200.0 °F | |
| | Pt100 (ITS-90) | -200.0 to 850.0 °C | 80.0 to 1120.0 K | -320.0 to 1560.0 °F | |
| | Pt100 (IPTS-68) | -200.0 to 660.0 °C | 80.0 to 930.0 K | -320.0 to 1210.0 °F | |

*1: The accuracy is ±2.5% for a temperature range below -200 °C.

The accuracy is ±2.5% for a temperature range below 600 °C.

*2: Reference junction compensation error:

Above 0 °C: ±0.5% (except for TypeR, TypeS)
±1% (for TypeR, TypeS)

Below 0 °C: Multiply accuracy for temperatures over 0 °C by K, where

$K = (\text{Thermocouple output change/°C near 0°C}) / (\text{Thermocouple output change/°C at measurement temperature})$

*3: Thermocouple JIS C 1602, IEC 60584-1 (ITS-90)

TypeK, T, E, J, R, S, B, N, W3(Note 1), W5(Note 2)

Note 1: ASTM E988 Standard: W97Re3-W75Re25

(tungsten97% rhenium3%-tungsten75% rhenium25%)

Note 2: ASTM E988 Standard: W95Re5-W74Re26

(tungsten95% rhenium5%-tungsten74% rhenium26%)

*4: RTD JIS C 1604, IEC 60751 (ITS-90) Pt100

JIS C 1604: 1989, DIN (IPTS-68) Pt100

JIS C 1604: 1989, JPt100

JIS C 1604: 1981, Pt50 JIS C 1604

*5: For SALD-7 type only

*6: Measuring range (°F) is displayed when the option /FCAL is specified.

2.4 Accessories

Alarm Label: 1 sheet

Installation

For details of the installation procedure and wiring precautions, refer to the instruction manual “Installation of Rack-Mounted Instruments” (IM 1B4F2-01E).

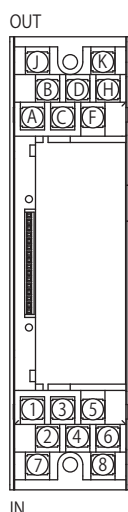
3.1 External Wiring

- (1) All cable ends must be furnished with crimp-on type solderless lugs (for 4mm screws).
- (2) Draw out the internal unit from the rack case.
- (3) Connect the cables to the correct terminals referring to Figure 3-1.
- (4) Return the internal unit into the rack case after completing the wiring.
- (5) Always return the terminal block cover to its original position after completing the wiring.



The terminal block cover cannot be returned to its original position if the internal unit is not installed correctly inside in the rack case. Securely return the terminal block cover because it also functions as lock for the internal unit.

Terminal arrangement



| Terminal Designation | Description |
|----------------------|-------------|
| A | NC |
| B | COM |
| C | |
| D | |
| F | NC |
| H | COM |
| J | NO |
| K | NO |

Do not connect to the output terminal when the terminal is not in use.

*1: For SALD-724 only.

| Terminal Designation | Description |
|----------------------|-----------------------------------|
| 1 | + Input 1 |
| 2 | - Input 1 |
| 3 | |
| 4 | |
| 5 | |
| ⑥ | (RJC block installation terminal) |
| 7 | |
| 8 | |

For SALD-7□□, the connection depends on the selected sensor type (mV DC, thermocouple or RTD).

Figure 3-1 Terminal Layout and Terminal Wiring

3.2 Example of Alarm Wiring

The SALD mV and temperature alarm unit provides various types of alarms depending on the setting of the alarm action or the method of connecting the alarm output terminals. Thus, the necessary wiring should be made with reference to the following two examples:

3.2.1 High-limit and High-high-limit Alarms

Set the direct action (DIRECT) for the alarm actions of both alarms 1 and 2. Then wire the terminals as illustrated in Figure 3-2.

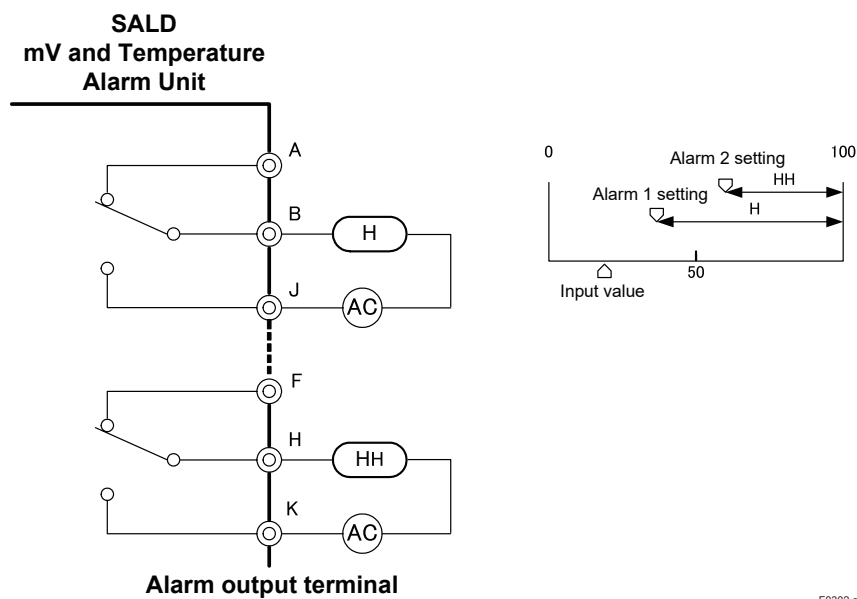


Figure 3-2 External Wiring - Example 1

3.2.2 Three-position Alarm

Set the reverse action (REVERSE) for the alarm action of alarm 1, and the direct action (DIRECT) for the alarm action of alarm 2. Then wire the terminals as illustrated in Figure 3-3.

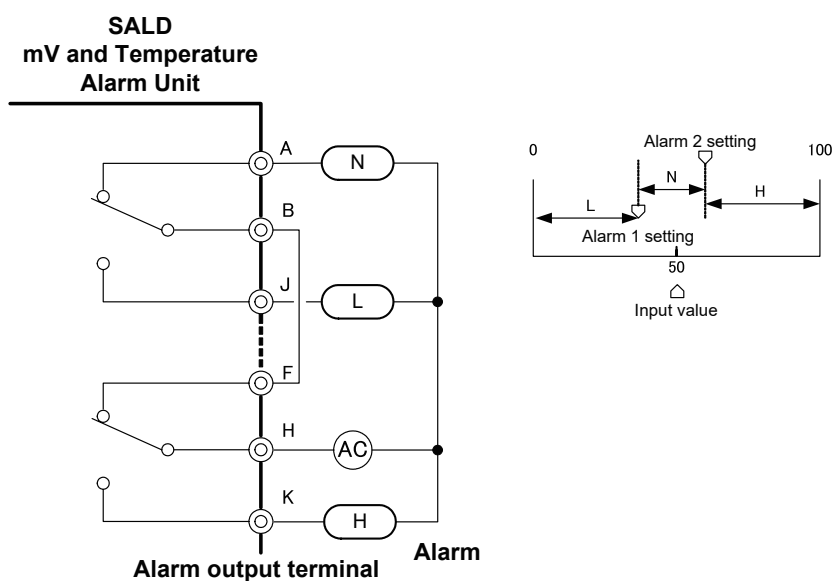


Figure 3-3 External Wiring - Example 2

■ Applicable Cables

(1) Signal circuit wiring

- Cross-sectional area of the cable conductor: 0.5 to 0.75 mm²
- Examples of applicable cables: Single core PVC insulated flexible cable (VSF) stranded wires (JIS C 3306); heat-resistant vinyl-insulated cable (UL style 1007)

(2) Alarm circuit wiring

- Cross-sectional area of the cable conductor: 0.5 to 1.25 mm²
- Examples of applicable cables: 600 V PVC insulated cable (IV) stranded wires (JIS C 3307); PVC insulated cable for electric appliances (KIV) stranded wires (JIS C 3316); heat-resistant vinyl-insulated cable (UL style 1007)

(3) Power supply wiring

- Cross-sectional area of the cable conductor: 1.25 to 2.00 mm²
- Examples of applicable cables: 600 V PVC insulated cable (IV) stranded wires (JIS C 3307)

4.1 Principle of Operation

Input signals are converted to digital data by the A/D conversion circuit. The resulting digital data is processed by the microcomputer, and the alarm relay is then energized/de-energized by alarm calculation processing (comparison, etc.).

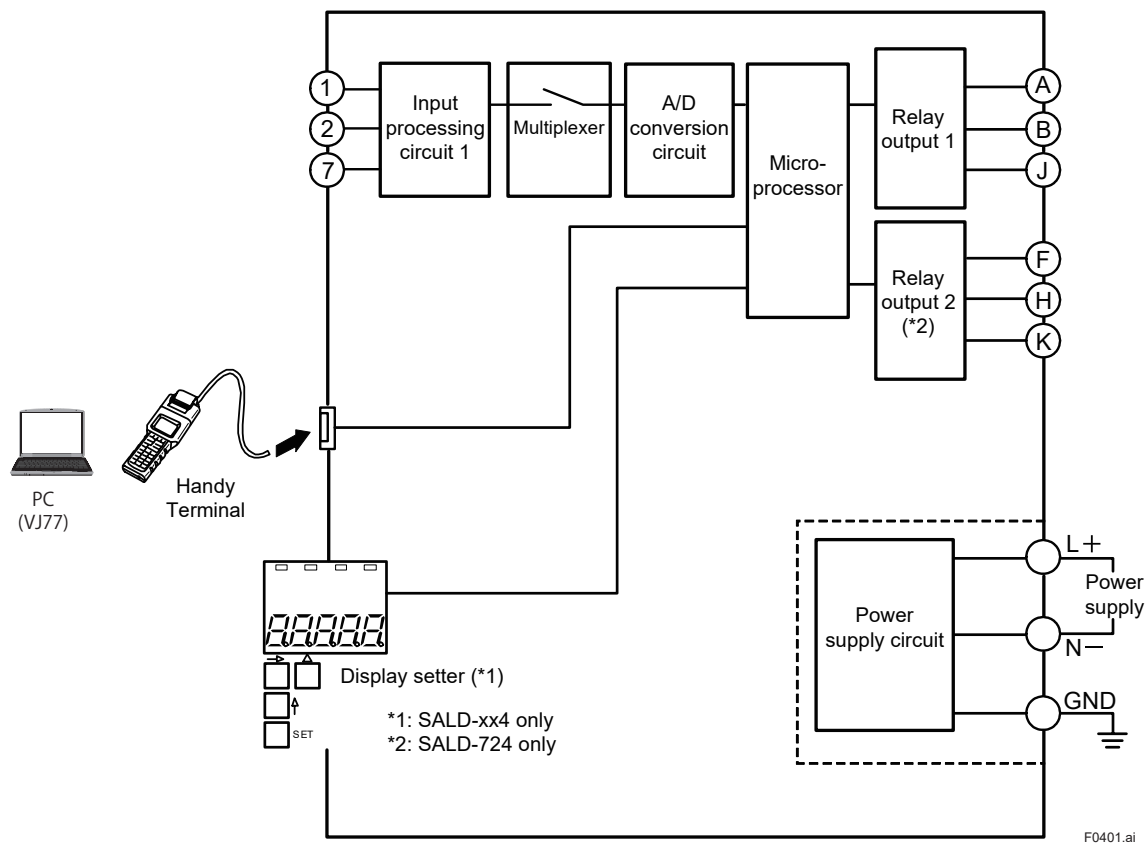
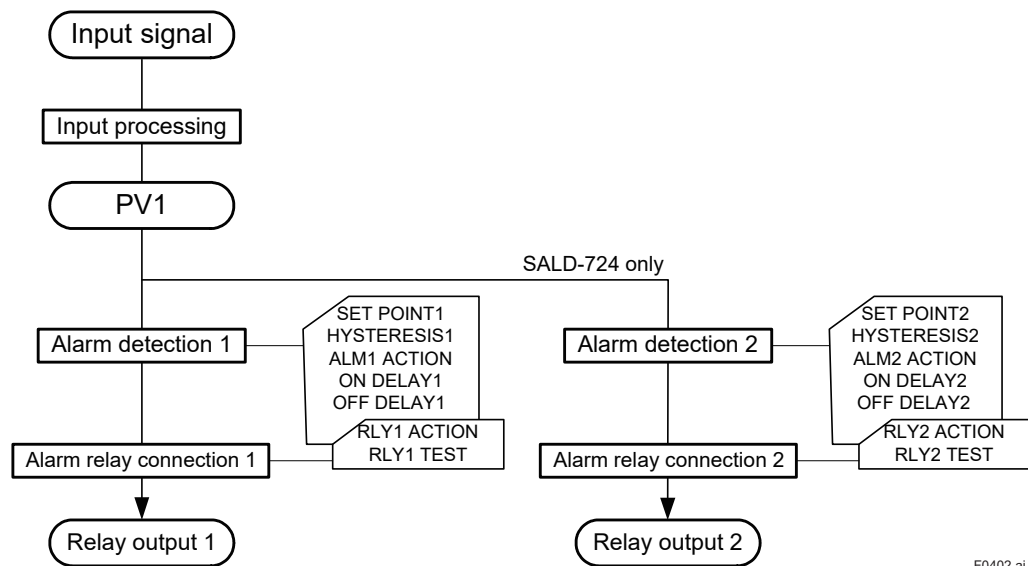


Figure 4-1 Hardware Function Block Diagram

4.2 Description of Functions

The following describes the functions of the SALD.



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Figure 4-2 Software Function Block Diagram

The alphabet codes in the figure are the names of BRAIN communication parameters.

4.2.1 Input Processing Functions

The following process is performed for each input.

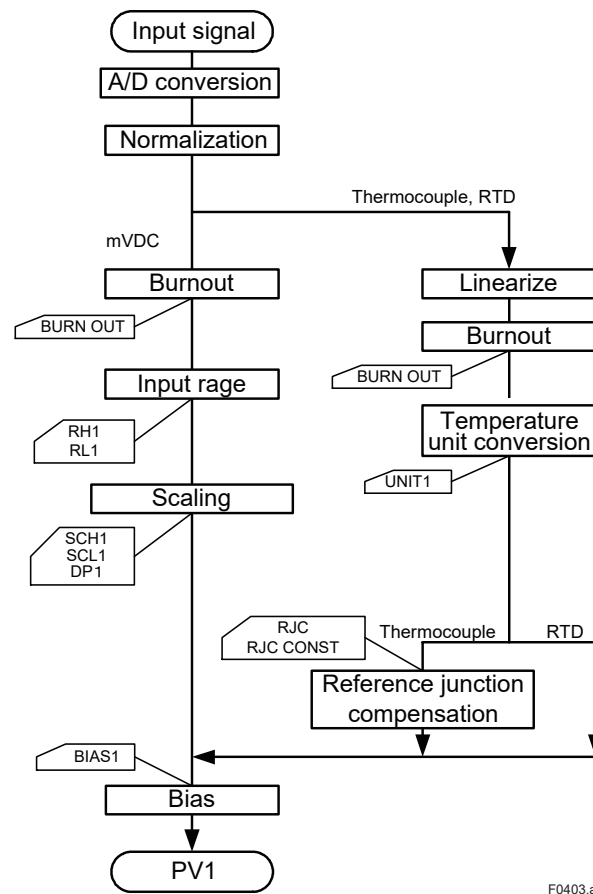


Figure 4-3 Input Processing Function Block Diagram

The alphabet codes in the figure are the names of BRAIN communication parameters.

• Explanation of Input processing block

- A/D conversion: Performs A/D conversion on input signals.
- Normalization: Calculates the value required for each of input.
- Burnout: SALD-xx0: Action (UP/DOWN/OFF) can be set by parameter. SALD-xx4: Action (UP/DOWN/OFF) can be set using setting jumper on the main board.
- Temperature unit conversion: When input signal is thermocouple or RTD, temperature unit (°C or K) can be set.
- Input range: When input signal is mV DC, input range can be set (See Scaling below.)
- Scaling: When input signal is mV DC, scaling is possible for the range set at input range. The value after scaling (or, when the bias function is used, the value obtained by adding bias to this value) becomes PV1.

■ Setting of INPUT1 L_RNG, INPUT1 H_RNG, SCH1, SCL1 and DP1

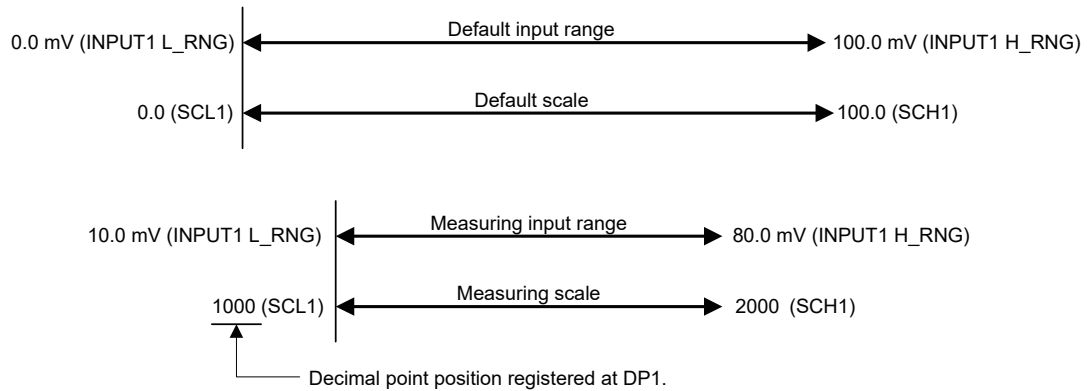
(Default: 0.0 to 100.0)

<Setting Method>

The following is the example when measuring range of 10.0 to 80.0 mV is scaled to 1000 to 2000.

- (1) Set the measuring input range at the parameters INPUT1 H_RNG and INPUT1 L_RNG.
(Example: INPUT1 L_RNG=10.0, INPUT1 H_RNG=80.0)
- (2) Set the input decimal point position matched to the unit system actually in use at DP1.
(Example: DP1="#####", DP1=0)
- (3) Set the measuring scale range at the parameters SCH1 and SCL1.
(Example: SCL1=1000, SCH1=2000)

(Example)



- Bias:
A bias value (BIAS1) can be added to scaling values.
This allows error to be compensated when there is an error between the input value and the indicated value.
Bias can be set within the range $\pm 10\%$ $[(SCH1 - SCL1) \times 0.1]$ of the scaling width.
- PV1:
The value obtained by adding bias to the scaling value.
Displayed on the display setter on the front pane. (SALD-xx4 only)

4.2.2 Alarm Processing Function

SET POINT_n (SP_n) can also be set using display setter on the front panel.

• Explanation of Alarm detection block

The following "n" indicates "1" or "2".

- Alarm detection n: Performs alarm detection.
- ALM_n ACTION: Alarm action
 - DirectThe alarm state is entered when the input value is at the preset alarm value or higher.
 - Reverse.....The alarm state is entered when the input value is at the preset alarm value or lower.
- SET POINT_n: Alarm set point
- HYSTERESIS_n: Alarm hysteresis (See figure 4-4.)
- ON DELAY_n: Alarm ON delay
 - Sets the dead time until the alarm turns ON.
 - An alarm state is entered when the input value is in the alarm range for the duration set at ON DELAY_n.
 - If input returns to the normal range before the time set at ON DELAY_n is reached, the alarm does not turn ON.
- OFF DELAY_n: Alarm OFF delay
 - Sets the dead time until the alarm turns OFF.
 - A normal state is entered when the input value is in the normal range for the duration set at OFF DELAY_n.
 - If input returns to the alarm range before the time set at OFF DELAY_n is reached, the alarm does not turn OFF.



- **For ON DELAY/OFF DELAY, if you change the time during a delay, cancel the delay operation, and restart operation with the set delay time.**
- The alarm function does not work for about 3 seconds after power ON.

• Relay output block

- RLY_n ACTION: Alarm relay action
 - De-energized at normal operation..... The relay is energized when the alarm detection result is an alarm state. (Factoryshipped setting)
 - Energized at normal operation The relay is energized when the alarm detection result is a normal state.
- RLY_n TEST: Relay action test
 - This function is for testing relay action.
 - Relays can be turned ON/OFF without influencing the currently alarm detection result.

Direction of alarm relay action: De-energized at normal operation (Factory-shipped settings)

| ALM _n | Direction of alarm action | Input value < Set point | Set point < Input value |
|------------------|---------------------------|---------------------------|---------------------------|
| DIR | Direct (high-limit alarm) | Output relay de-energized | Output relay energized |
| RVS | Reverse (low-limit alarm) | Output relay energized | Output relay de-energized |

Direction of alarm relay action: Energized at normal operation

| ALM _n | Direction of alarm action | Input value < Set point | Set point < Input value |
|------------------|---------------------------|---------------------------|---------------------------|
| DIR | Direct (high-limit alarm) | Output relay energized | Output relay de-energized |
| RVS | Reverse (low-limit alarm) | Output relay de-energized | Output relay energized |

4.3 Example of Alarm Function Setting

This section describes the alarm function setting showing the example using the alarm function parameters.

4.3.1 Condition of Alarm Function

Set the following conditions.

(1) Condition for Alarm 1

The alarm is output when the status where the input value is 80°C or more continues for 1 second or more.

The alarm is released when the status where the input value is 70°C or less continues for 2 seconds or more.

(2) Condition for Alarm 2

The alarm is output when the input value is 15°C or less.

The alarm is released when the input value is 20°C or more.

4.3.2 Parameters of Alarm Function

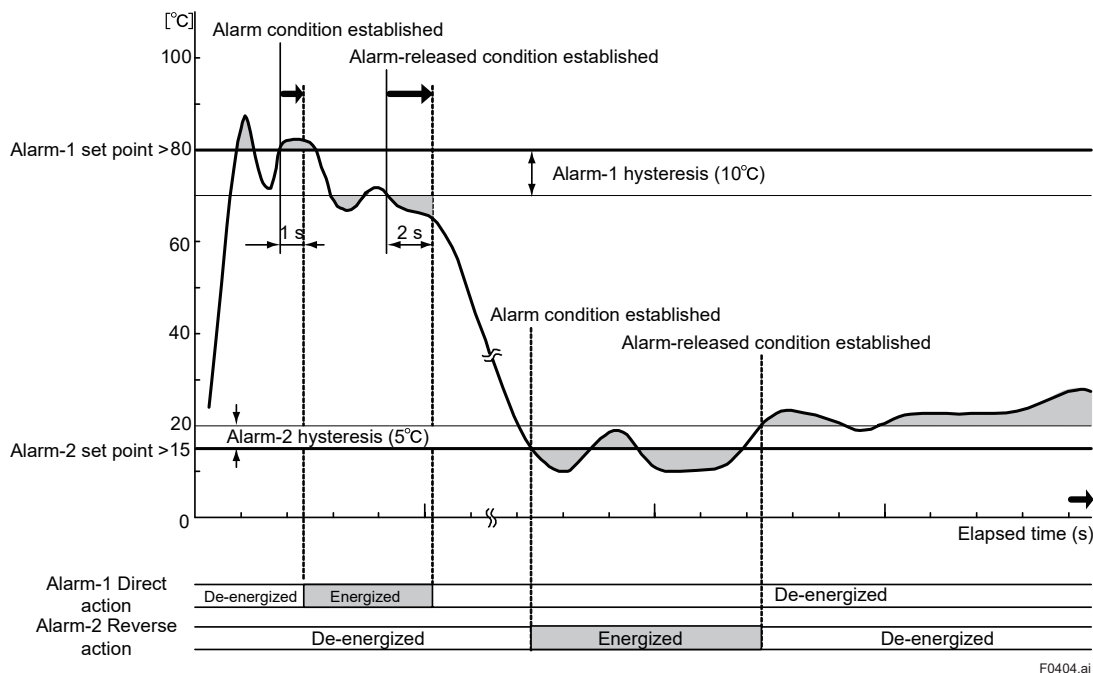
The table below shows the parameters the condition of alarm function described in 4.3.1 is placed to.

Table 4-1 Table of Parameter Setting Example

| Item | Alarm 1 | | Alarm 2 | |
|---------------------------|------------------|-----------|------------------|-----------|
| | Parameter | Set point | Parameter | Set point |
| Alarm set point | E01: SET POINT1 | 80 °C | E02: SET POINT2 | 15 °C |
| Direction of alarm action | E07: ALM1 ACTION | DIRECT | E08: ALM2 ACTION | REVERSE |
| Alarm hysteresis | E09: HYSTERESIS1 | 10 °C | E10: HYSTERESIS2 | 5 °C |
| Alarm ON delay | E15: ON DELAY1 | 1 s | E16: ON DELAY2 | 0 s |
| Alarm OFF delay | E17: OFF DELAY1 | 2 s | E18: OFF DELAY2 | 0 s |

4.3.3 Operating Condition of Alarm Function

Refer to the following figure for operating condition of alarm 1 and alarm 2.



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Setting

■ Items to Confirm before Start of Operation

Before you start operation, inspect and confirm the following items:

- (1) Draw out the internal unit from the rack case, and make sure that the specified fuses are properly mounted in the fuse holders at the rear of the internal unit.
- (2) When inserting the internal unit into the rack case, firmly connect the multi-pin connectors for connecting the internal unit and the case.
- (3) Make sure that power plugs are properly connected to the power outlet.
- (4) Make sure that external wiring to the terminal block is properly connected.



Refer to Section 7.1, “Action in Fault Condition” for how to detect device error by alarm output.

5.1 Names of Components

The following shows the names of SALD components.

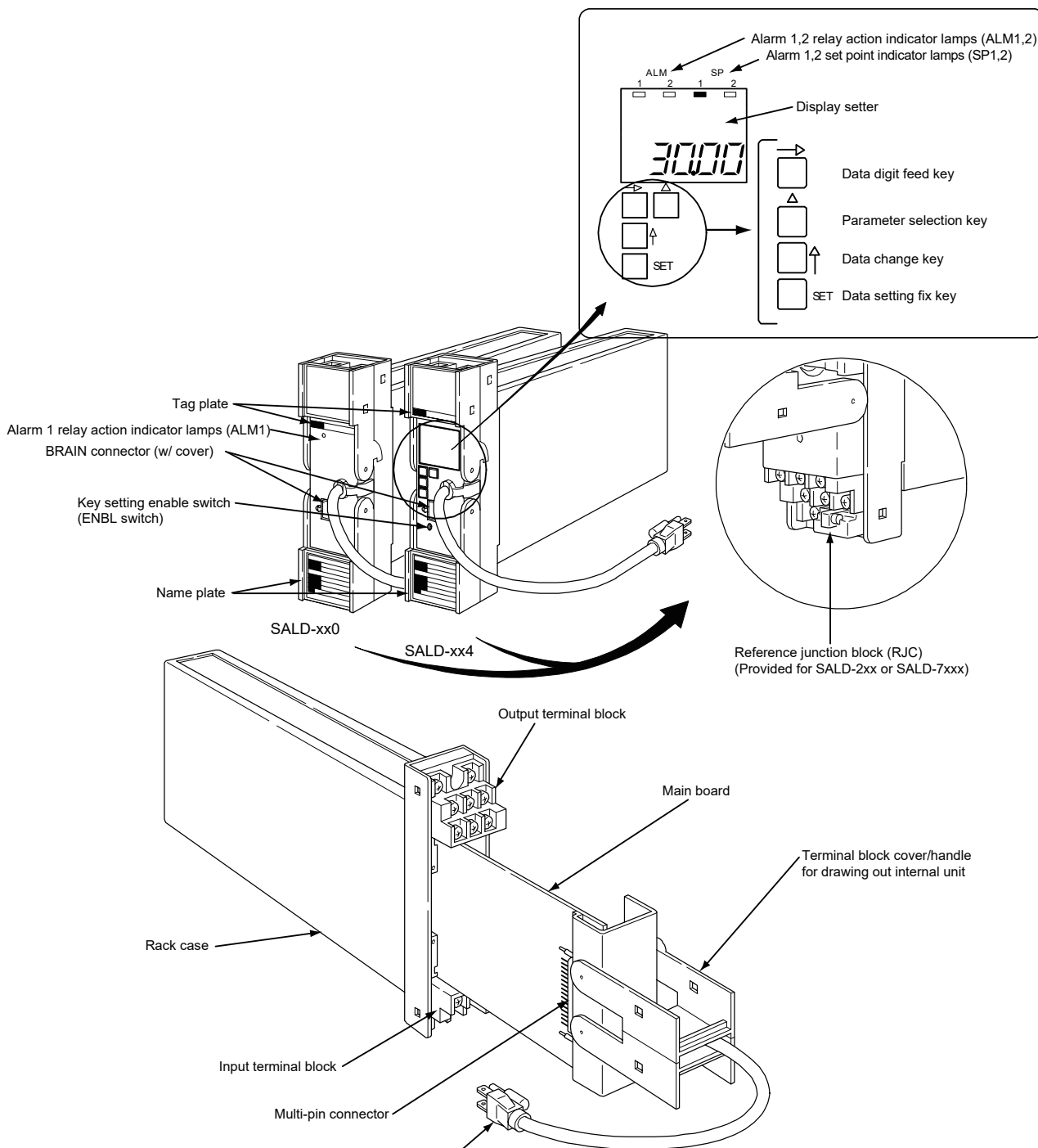


Figure 5-1 Names of Components

5.2 Setting Jumper

The SALD is provided with the following jumpers.

| Jumper Code | Jumper Name | SALD-xx0 | SALD-xx4 |
|----------------|---|---------------|-----------|
| RJC | RJC (reference junction compensation) jumper | Not available | Available |
| W.P. | Parameter Write Protect jumper | Available | Available |
| BURN OUT(UP) | Burnout action setting jumper | Not available | Available |
| BURN OUT(DOWN) | | | |
| ALM1 | Alarm 1 action setting jumper | Not available | Available |
| ALM2 | Alarm 2 action setting jumper (SALD-724 only) | Not available | Available |

- **Parameter Write Protect jumper**
When this jumper is set to ON, changing of parameters by the key switches and a PC (VJ77) or the Handy Terminal is disabled. "LOC" will be displayed on the display setter if the "→" switch is pressed with the SP1 or SP2 parameter displayed on the display setter. To cancel the "LOC" display and return to the previous display, press any key.
- **RJC (reference junction compensation) jumper**
Setting is required only for thermocouple input.
When set to ON, the reference junction compensation action is activated.
- **Alarm action setting jumper**
This jumper is for setting the direction of alarm action.
The table below shows the relationship between direction of alarm action and direction of relay action.

Direction of alarm relay action: De-energized at normal operation (Factory-shipped settings)

| ALMn | Direction of alarm action | Input value < Set point | Set point < Input value |
|------|---------------------------|---------------------------|---------------------------|
| DIR | Direct (high-limit alarm) | Output relay de-energized | Output relay energized |
| RVS | Reverse (low-limit alarm) | Output relay energized | Output relay de-energized |

Direction of alarm relay action: Energized at normal operation

| ALMn | Direction of alarm action | Input value < Set point | Set point < Input value |
|------|---------------------------|---------------------------|---------------------------|
| DIR | Direct (high-limit alarm) | Output relay energized | Output relay de-energized |
| RVS | Reverse (low-limit alarm) | Output relay de-energized | Output relay energized |

Factory-shipped settings : ALM1 DIR, ALM2 RVS

- **Burnout action setting jumper**

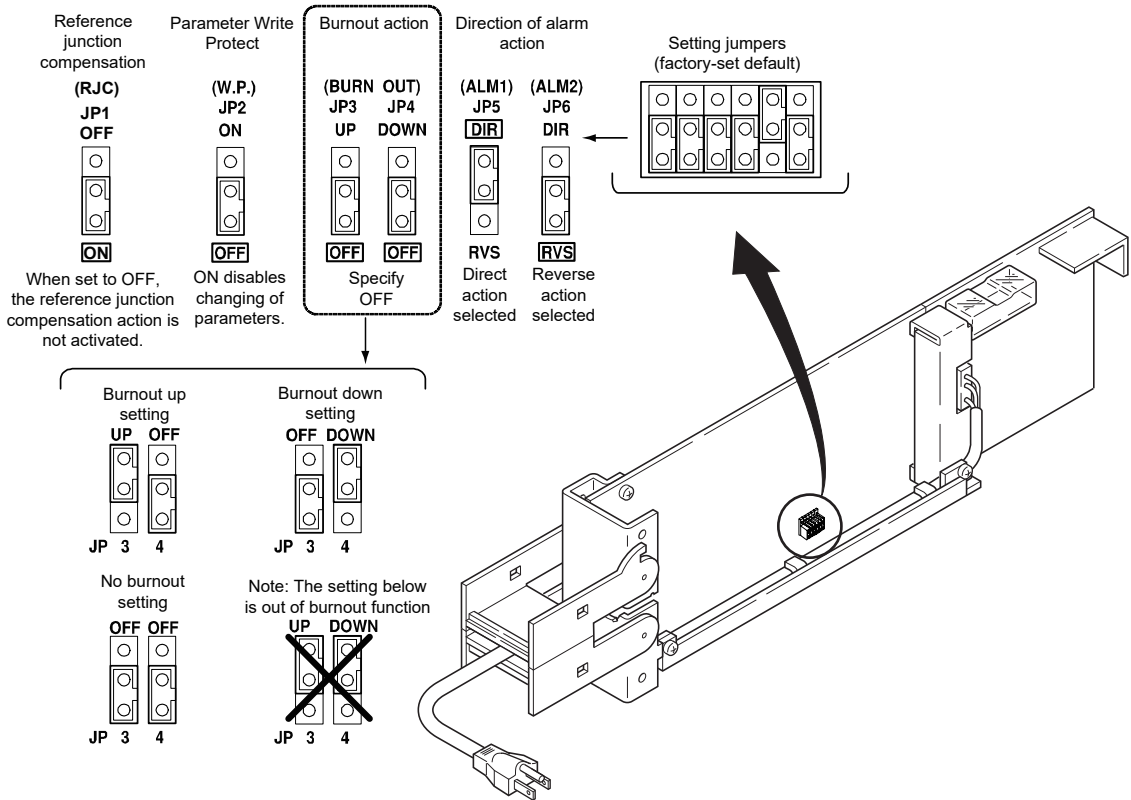
| | BURN OUT Setting |
|-------------|---------------------------------|
| Burnout OFF | Set both of UP and DOWN to OFF. |
| Upscale | Set only UP to ON. |
| Downscale | Set only DOWN to ON. |

Do not set both UP and DOWN to ON. The action is not guaranteed.
Operation is not guaranteed if the jumper is not set.

5.2.1 Check of Setting Jumper and its Location

The setting jumpers are located on the main board of the internal unit.
Draw out the internal unit, and check the current jumper settings.
Current jumper settings can also be checked on a PC (VJ77) or the JHT200 Handy Terminal.

| Jumper Name | Parameter Name |
|---|------------------|
| RJC jumper | D37: RJC |
| Parameter Write Protect jumper | A55: WRT PROTECT |
| Burnout action setting jumper | D31: BURN OUT1 |
| Alarm 1 action setting jumper | E07: ALM1 ACTION |
| Alarm 2 action setting jumper (SALD-724 only) | E08: ALM2 ACTION |



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Figure 5-2 Setting Jumper

5.2.2 Change of Setting Jumper

Follow the procedure below to change the setting jumpers:



- For SALD-2xx or SALD-7xx, first remove the reference junction block (RJC) from the terminal block. Then draw out the internal unit.
- Operation is not guaranteed if the jumper is not set.

- (1) Pull the terminal block cover toward you to draw out the internal unit from the rack case.
- (2) Check the jumpers on the main board of the internal unit, and change their settings as desired. Use tweezers or another fine-tipped object to change the setting jumpers.
- (3) Return the internal unit to the rack case.
- (4) Return the terminal block cover to its original position.

5.3 Setting of Parameters

This instrument has BRAIN communication parameters for specifying functions and adjusting input. Connect a PC (VJ77) or the JHT200 Handy Terminal (*1) to the instrument to display or set parameters (modular jack conversion adapter (E9786WH) is required.) On the SALD model with display setter (SALD-xx4), input indication (engineering unit) can be displayed and alarm set points can be displayed/set on the front panel. For details on parameters, refer to the Parameter List.

*1: BT200 BRAIN Terminal of YOKOGAWA ELECTRIC Corporation can also be used.

When connecting a PC (VJ77) or the JHT200 Handy Terminal, the adapter for modular-jack (model E9786WH) is required. When using the BT200 BRAIN Terminal of YOKOGAWA Electric Corporation, the communication cable of 5-pin connector type (model F9182EE) and the adapter for modularjack (model E9786WH) are required.

5.3.1 Parameter Change Disable Function

The SALD is provided with a parameter change disable function for preventing parameter settings from being changed by operator error.

Table 5-1 Parameter Change Disable Function

| | Disable Setting Method | Disable Cancel Method | Description of Disable Operation |
|--------------------------------|---|---|---|
| Parameter Write Protect jumper | Set W.P. jumper on the main board to "ON". | Set W.P. jumper on the main board to "OFF". | <ul style="list-style-type: none"> Changing of parameter setting by key switches. Changing of parameter setting by a PC (VJ77) or the Handy Terminal. |
| Enable switch (SALD-xx4 only) | Changes cannot be made if no settings are made for 30 minutes after operating any key switch on the front panel in a setting change enable state. | Press the Enable switch. | <ul style="list-style-type: none"> Changing of parameter setting by key switches. |

5.3.2 Setting of Parameters Using Display Setter (SALD-xx4)

On the SALD-xx4, you can change alarm set point using the display setter on the front panel.

Other parameters are changed using a PC (VJ77) or the JHT200 Handy Terminal.

The table below describes the relationship between key switch operations and migration of display states.

Table 5-2 Relationship between Key Switch Operations and Migration of Display States

| Key Switch | Display Function | | | |
|------------|--|---|---|---|
| | Display Mode | Setting Change Mode | Setting Fix Mode | Indicator Out Mode |
| Δ | Displays the next parameter. | Cancels the newly changed values, returns to the display mode, and displays the next parameter. | Cancels the newly changed values, returns to the display mode, and displays the next parameter. | This mode is entered if no key switches are operated for 30 minutes when the display mode parameter is set to “OFF”. The display mode is returned to if any key switch is pressed in the indicator out mode. |
| → | Advances to the setting change mode when a settable or changeable parameter is displayed in the setting change enabled state. (*1) | Moves setting digit. | Returns to the setting change mode, and moves to the next digit. | |
| ↑ | Displays the previous parameter. | Changes the set point. | No operation | |
| SET | No operation | Advances to the setting fix mode. | Fixes the set point, and advances to the display mode. | |
| ENBL | Enters setting change enable state. Enable switch is disabled if the Parameter Write Protect jumper is set to “ON” | | | |

*1: When the Parameter Write Protect jumper on the main board is set to "ON", the SALD will not advance to the setting change mode. In this state, "LOC" is displayed on the display setter.

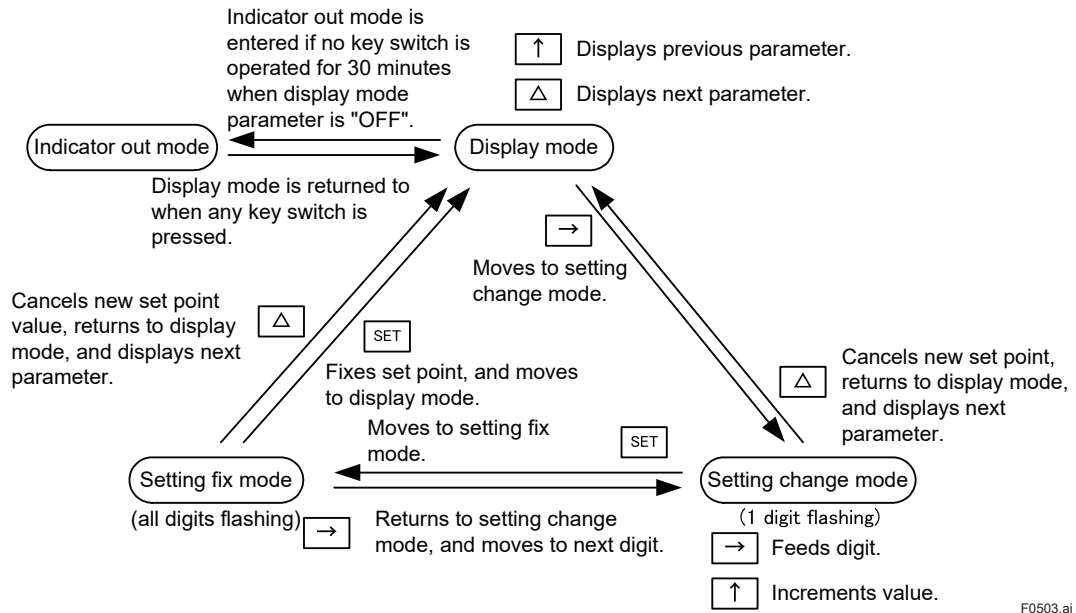


Figure 5-3 Key Switch Operations and Migration of Display States

Switching the Display

Each press of the Δ key switches the display data.

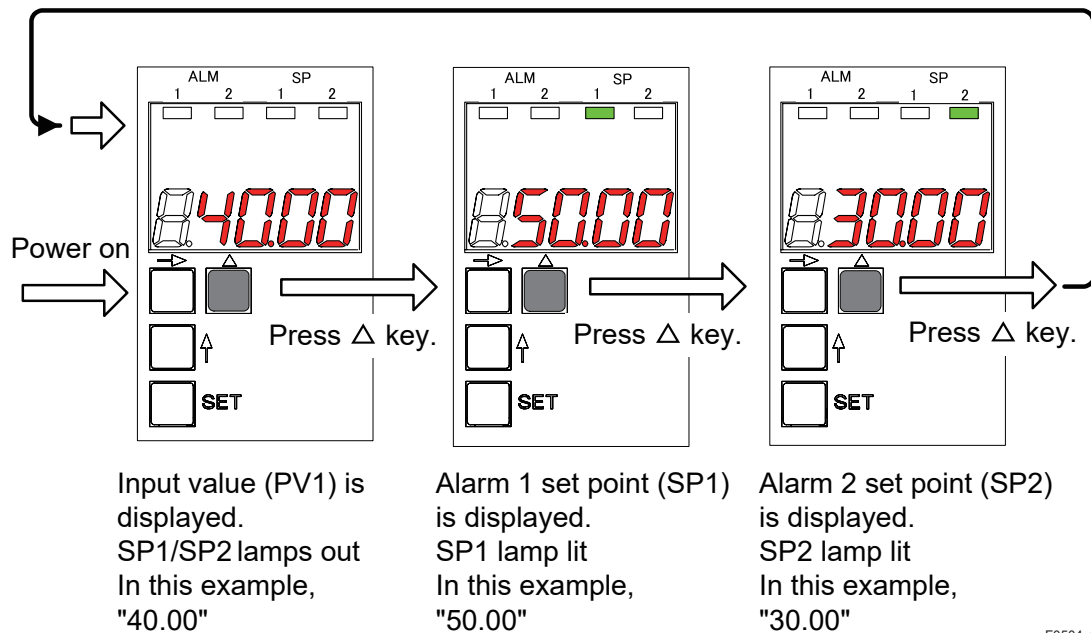


Figure 5-4 Progression of Display Screen

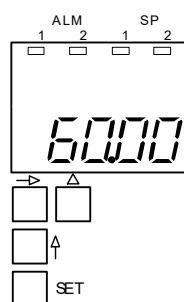
LED Indicator Lamps

The table below lists the type of LED indicator lamps on the front panel and their lighting conditions.

| LED Lamp | Color | Lighting Conditions | Remarks |
|----------|--------|---|---------------|
| ALM1 | Yellow | Lit when alarm 1 output relay is energized | |
| ALM2 | Yellow | Lit when alarm 2 output relay is energized | |
| SP1 | Green | Lit when alarm 1 set point (SP1) is displayed on the display setter | SALD-xx4 only |
| SP2 | Green | Lit when alarm 2 set point (SP2) is displayed on the display setter | SALD-724 only |

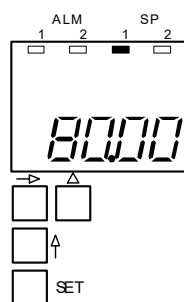
■ Setting Parameters

Display the desired parameter (e.g. alarm set point), and follow the procedure below to change its set point.



(1) Input value (60.00) is displayed at power ON.

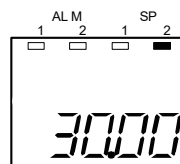
Press the - key. → The SP1 lamp lights, and the alarm 1 set point is displayed.



(2) The alarm 1 set point (80.00) is displayed.

Press the - key. → In the case of the SALD-x14, the SP1 lamp goes out, and the input value is displayed.

→ In the case of the SALD-724, the SP2 lamp lights, and the alarm 2 set point is displayed.

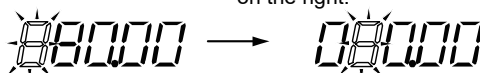


Alarm 2 set point (30.00) is displayed. (SALD-724 only)

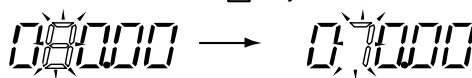
(3) Press the ENBL switch to enter setting change enable state.

(4) Set the alarm set point. (Change the alarm 1 set point to "70.00" from "80.00".)
Alarm set points whose SP lamp is lit can be changed.

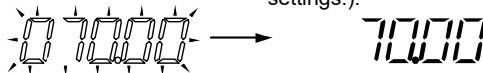
Press the - key. → The uppermost digit on the display flashes.
Hold down the key to move the flashing section to the digit on the right.



Press the - key. → This increments the value at the flashing digit. Hold down the key to feed the value to "7".



Press the - SET key. → All parameter digits flash. Pressing the SET key again causes "70.00" to light. (This fixes the new parameter settings.).



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Figure 5-5 Setting Parameters



- When the Parameter Write Protect jumper on the main board is set to "ON", the SALD will not advance to the setting change mode. In this state, "LOC" is displayed on the display setter.
- Do not turn off the power of the instrument during parameter setting.

■ Display at Power ON

The model with display setter displays REV NO. (revision number of software for the SALD) for about 2 seconds after power ON.

Example of display (REV NO.10)



■ LOC Display

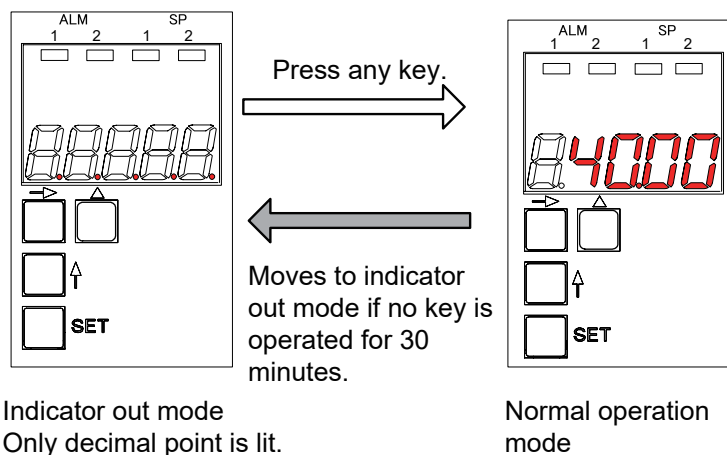
When "LOC" is displayed, this indicates that parameter settings cannot be changed. (The Parameter Write Protect jumper on the main board is set to "ON".)
To cancel the "LOC" display and return to the previous display, press any key.

■ Indicator Out Mode Display

In this mode, only the decimal point is displayed on the display setter.
When the display mode parameter (DSP MODE) is set to "OFF", and no key operation is performed for 30 minutes, the SALD moves to the indicator out mode.
To cancel this mode and return to the display mode, press any key switch.
I/O signal processing and calculations are performed as usual even in the indicator out mode.

If the self check discovers an error (A/D conversion error, EEPROM error, EEPROMSUM error) in the indicator out mode, this mode is canceled, and the error is displayed. Also, the SALD does not move to the indicator out mode when an error (A/D conversion error, EEPROM error, EEPROMSUM error) occurs.

conversion error, EEPROM error, EEPROMSUM error) occurs.



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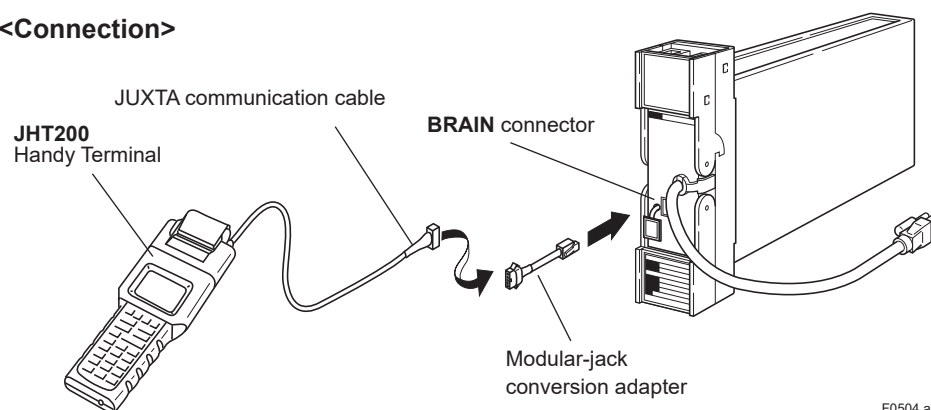
Figure 5-6 Indicator Out Mode

5.3.3 Setting of Parameters Using Handy Terminal



- For details of operation and adjusting procedures of JHT200 Handy Terminal, refer to the instruction manual “JHT200 Handy Terminal” (IM 77J50H01-01EN).
- If the option code “/FCAL” is not specified, the temperature unit cannot be set with “deg F”.

<Connection>



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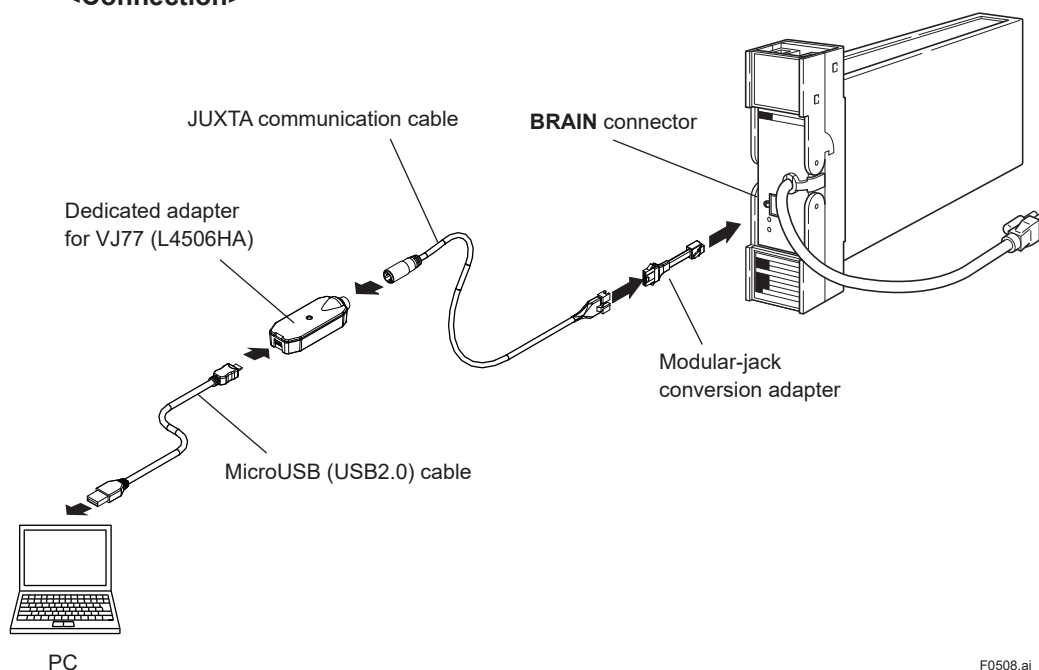
Figure 5-7 Connecting the Handy Terminal

5.3.4 Setting of Parameters Using VJ77 Parameters Setting Tool



- For details of operation and adjusting procedures of VJ77 Parameters Setting Tool, refer to the instruction manual “Model VJ77 PC-based Parameters Setting Tool” (IM 77J01J77-01E).
- If the option code “/FCAL” is not specified, the temperature unit cannot be set with “deg F”.

<Connection>



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Figure 5-8 Connecting a PC (VJ77)

5.4 Parameter List

BRAIN communication parameters for SALD are as follows.

On the SALD-xx4, only the input value can be displayed, and the alarm set point can be display/set on the display setter on the front panel. Other, parameters are display/set using a PC (VJ77) or the Handy Terminal.

| No. | Parameter Name | Symbol | Description | Display Conditions |
|-----------------|-------------------------|----------------|--|-----------------------|
| Initial display | | | | |
| 01 | Model Name | MODEL | Displays the model name. | Displayed on all |
| 02 | Tag Number | TAG NO | Displays the tag number that is set. | |
| 03 | Self Check | SELF CHK | Displays the result (GOOD/ERROR) of the self check. | |
| A | Display 1 | DISPLAY1 | | |
| A03 | PV1 | PV1 | Input value (engineering unit) after input processing (square root or scaling) | Displayed on all |
| A15 | Alarm 1 Relay Display | RLY1 STATUS | Displays the state of the alarm 1 relay. DE-ENERGIZED: De-energized ENERGIZED: Energized | |
| A16 | Alarm 2 Relay Display | RLY2 STATUS | Displays the state of the alarm 2 relay. DE-ENERGIZED: De-energized ENERGIZED: Energized | Displayed on SALD-724 |
| A54 | Status Display | STATUS | Displays the value added to the value (Hex) indicating the self check result. 0000: Normal 0001: EEPROM error 0002: EEPROMSUM error 0008: Input range exceeded 0010: Setting error 0020: Input burnout 0040: Power interruption during operation 0080: RJC error 1000: A/D conversion error | Displayed on all |
| A55 | Parameter Write Protect | WRT PROTECT | Displays the state of the Parameter Write Protect jumper. OFF: Setting of parameters enabled ON: Setting of parameters disabled | |
| A56 | REV NO. | REV NO. | Displays the device revision No. | |
| A58 | MENU REV | MENU REV | Displays the revision No. of the parameter group. | |
| A60 | Self Check | SELF CHK | Displays the result (GOOD/ERROR) of the self check. | |
| B | Display 2 | DISPLAY2 | | |
| B03 | PV1 | Same as item A | | |
| B15 | Alarm 1 Relay Display | | | |
| B16 | Alarm 2 Relay Display | | | |
| B60 | Self Check | | | |

| No. | Parameter Name | Symbol | Description | Setting Range | Factory-set Value | Display Conditions |
|-----|---|--------------|--|--|--|---|
| D | Setting Parameters | SET(I/O) | | | | |
| D01 | Tag Number 1 | TAG NO.1 | 8 alphanumerics can be entered. | | | Displayed on all |
| D02 | Tag Number 2 | TAG NO.2 | 8 alphanumerics can be entered. | | | |
| D03 | Comment 1 | COMMENT1 | 8 alphanumerics can be entered. | | | |
| D04 | Comment 2 | COMMENT2 | 8 alphanumerics can be entered. | | | |
| D07 | Sensor Type 1 | SENSOR TYPE1 | Selects the sensor type of universal input. | TC mV RTD | Item to be specified at ordering. (*1) | Displayed on SALD-7xx |
| D08 | Thermocouple Type 1 | TC TYPE1 | Selects the thermocouple type when universal input and TC. Note: Initialized when SENSOR TYPE1 is changed. | Type K Type E Type J Type T Type R Type S Type B Type N Type W3 Type W5 | Item to be specified at ordering. | Displayed on SALD-7xx, and when SENSOR TYPE1=TC. |
| D09 | RTD Type 1 | RTD TYPE1 | Selects the RTD type when universal input and RTD. Note: Initialized when SENSOR TYPE1 is changed. | Pt100-90 Pt100-68 JPt100 Pt50 | Item to be specified at ordering. (*2) | Displayed on SALD-7xx and when SENSOR TYPE1=RTD. |
| D15 | Input 1 Unit | UNIT1 | Selects the unit when temperature input. | degC K degF | degC degF (when /FCAL is specified.) | Displayed on SALD-2xx, SALD-3xx, or SALD-7xx (universal input) and when SENSOR TYPE1=TC or RTD. |
| D27 | Input 1 LOW Range | INPUT1 L_RNG | Settable at mV input only. Sets the minimum value of input range. Note: Initialized when - SENSOR TYPE 1 - TC TYPE1 - RTD TYPE1 or - UNIT1 is changed. | -50.0 to 150.0 mV However, INPUT1 L_RNG<H_RNG | 0.0 mV | Displayed on SALD-1xx or SALD-7xx (universal input) and when SENSOR TYPE1=mV. |
| D28 | Input 1 HIGH Range | INPUT1 H_RNG | Settable at mV input only. Sets the maximum value of input range. Note: Initialized when - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 - UNIT1 is changed. | -50.0 to 150.0 mV However, INPUT1 L_RNG<H_RNG | 100.0 mV | |
| D31 | Burnout1 | BURN OUT1 | Selects the action of input 1 burnout. For SALD-xx0, the setting is changeable. For SALD-xx4, indicates the status of setting jumper on main board. | OFF UP DOWN | Item to be specified at ordering. (optional) If not specified, the burnout (B31) is set to OFF. | Displayed on all |
| D37 | ON/OFF of Input Reference Junction Compensation | RJC | Sets ON/OFF for reference junction compensation. For SALD-xx0, the setting is changeable. For SALD-xx4, indicates the status of setting jumper on main board. | ON OFF | ON | Displayed on SALD-2xx or SALD-7xx (universal input) and when SENSOR TYPE1=TC |

*1: Optional for SALD-7xx. If not specified, Sensor Type 1(D07) is set to RTD.

*2: Optional for SALD-7xx. If not specified, RTD Type 1(D09) is set to Pt100 (ITS-90).

5.4 Parameter List

| No. | Parameter Name | Symbol | Description | Setting Range | Factory-set Value | Display Conditions |
|-----|--------------------------------|-----------|---|-------------------------------------|---------------------------|---|
| D38 | Fixed Value of RJC | RJC CONST | The set point is available when RJC=OFF. Can fix the reference junction temperature. Note: Initialized when - SENSOR TYPE1 - UNIT1 or - RJC ON/OFF jumper is changed. | -20.0 to 80.0 (engineering unit) | 0.0 (engineering unit) | Displayed when RJC=OFF. |
| D40 | Input 1 Decimal Point Position | DP1 | Sets the position of the decimal point for the input scale (SCH1, SCL1). Note: Initialized when - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 or - UNIT1 is changed. | ##### #####. ###.## ##.### | ####.# | Displayed on SALD-1xx or SALD-7xx (universal input) and when SENSOR TYPE1=mV. |
| D41 | Input 1 Scale L | SCL1 | Sets the conversion standard value at INPUT1 L_RNG to scale and display the input value in engineering units. Note: Initialized when - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 or | -9999 to 9999 (engineering unit) | 0.0 | |
| D42 | Input 1 Scale H | SCH1 | Sets the conversion standard value at INPUT1 H_RNG to scale and displays the input value in engineering units. Note: Initialized when - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 or - UNIT1 is changed. | -9999 to 9999 (engineering unit) | 100.0 | |
| D46 | PV1 | PV1 | Displays the input value after input processing (scaling). | - | | Displayed on all |
| D47 | Input 1 Bias | BIAS1 | Adds the bias value to the value after input processing, and displays as the PV1. Note: Setting range is a span in engineering unit (EUS) $\pm 10\%$. Note: Initialized when - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 - UNIT1 - INPUT1 H_RNG - INPUT1 L_RNG - SCH1 or SCL1 is changed. | $\pm 10\%$ of scaled span (EUS) *1 | 0.0 | Displayed on all |
| D51 | Display Mode | DSP MODE | Selects the display setter state after 30 minutes elapses after a key switch operation. OFF: Power save mode Only the decimal point is displayed. ON: Constant ON mode Data is displayed at all times regardless of elapsed time. | OFF ON | ON | Displayed on SALD-xx4. |
| D60 | Self Check | SELF CHK | Result of self check (GOOD/ERROR) of the self check. | | | Displayed on all |

*1: Initialized when changing SCH1, SCL1

| No. | Parameter Name | Symbol | Description | Setting Range | Factory-set Value | Display Conditions |
|-----|--------------------------|-------------|---|---------------------------------------|-------------------|------------------------|
| E | Setting Alarm Parameters | SET(ALM) | | | | |
| E01 | Alarm 1 Set Point | SET POINT1 | <p>Sets alarm 1 set point in engineering unit.</p> <p>Note: Initialized when</p> <ul style="list-style-type: none"> - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 - UNIT1 - INPUT1 H_RNG - INPUT1 L_RNG - SCH1 or SCL1 is changed. <p>Default: Maximum value of measuring input range when ALM1 ACTION = DIRECT.</p> <p>Minimum value of measuring input range when ALM1 ACTION = REVERSE.</p> | -19999 to 32000 (engineering unit) | (Note) | Displayed on all |
| E02 | Alarm 2 Set Point | SET POINT2 | <p>Sets alarm 2 set point in engineering unit.</p> <p>Note: Initialized when</p> <ul style="list-style-type: none"> - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 - UNIT1 - INPUT1 H_RNG - INPUT1 L_RNG - SCH1 or SCL1 is changed. <p>Default: Maximum value of measuring input range when ALM2 ACTION = DIRECT.</p> <p>Minimum value of measuring input range when ALM2 ACTION = REVERSE.</p> | -19999 to 32000 (engineering unit) | (Note) | Displayed on SALD-724. |
| E07 | Alarm 1 Action | ALM1 ACTION | <p>Displays the direction (direct/reverse) of action of alarm 1.</p> <p>The setting can be changed on the SALD-xx0.</p> <p>On the SALD-xx4, displays the state of the jumpers on the main board.</p> | DIRECT REVERSE | DIRECT | Displayed on all |
| E08 | Alarm 2 Action | ALM2 ACTION | <p>Displays the direction (direct/reverse) of action of alarm 2.</p> <p>The setting can be changed on SALD-xx0.</p> <p>On the SALD-xx4, displays the state of the jumpers on the main board.</p> | DIRECT REVERSE | REVERSE | Displayed on SALD-724. |

5.4 Parameter List

| No. | Parameter Name | Symbol | Description | Setting Range | Factory-set Value | Display Conditions |
|-----|----------------------|-------------|--|--|----------------------------------|------------------------|
| E09 | Alarm 1 Hysteresis | HYSTERESIS1 | Sets the hysteresis until the alarm 1 alarm state is canceled. Note: Initialized when - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 - UNIT1 - INPUT1 H_RNG - INPUT1 L_RNG - SCH1 or - SCL1 is changed. Setting range is 0 to 100% of span in engineering unit (EUS). | 0 to 100 % of span (EUS) in engineering unit | 0.5% of span in engineering unit | Displayed on all |
| E10 | Alarm 2 Hysteresis | HYSTERESIS2 | Sets the hysteresis until the alarm 2 alarm state is canceled. Note: Initialized when - SENSOR TYPE1 - TC TYPE1 - RTD TYPE1 - UNIT1 - INPUT1 H_RNG - INPUT1 L_RNG - SCH1 or - SCL1 is changed. Setting range is 0 to 100% of span in engineering unit (EUS). | 0 to 100 % of span (EUS) in engineering unit | 0.5% of span in engineering unit | Displayed on SALD-724. |
| E15 | Alarm 1 ON Delay | ON DELAY1 | Sets the dead time until the alarm is output after alarm 1 enters the alarm state. | 0 to 999 s | 0 s | Displayed on all |
| E16 | Alarm 2 ON Delay | ON DELAY2 | Sets the dead time until the alarm is output after alarm 2 enters the alarm state. | 0 to 999 s | 0 s | Displayed on SALD-724 |
| E17 | Alarm 1 OFF Delay | OFF DELAY1 | Sets the dead time until alarm output is stopped after alarm 1 is released from the alarm state. | 0 to 999 s | 0 s | Displayed on all |
| E18 | Alarm 2 OFF Delay | OFF DELAY2 | Sets the dead time until alarm output is stopped after alarm 2 is released from the alarm state. | 0 to 999 s | 0 s | Displayed on SALD-724 |
| E19 | Alarm 1 Relay Action | RLY1 ACTION | Specifies the direction of alarm 1 relay action. NRM DE-ENERGIZED: De-energized during normal operation NRM ENERGIZED: Energized during normal operation | NRM DEENERGIZED NRM ENERGIZED | NRM DEENERGIZED | Displayed on all |
| E20 | Alarm2 Relay Action | RLY2 ACTION | Specifies the direction of alarm 2 relay action. NRM DE-ENERGIZED: De-energized during normal operation NRM ENERGIZED: Energized during normal operation | NRM DEENERGIZED NRM ENERGIZED | NRM DEENERGIZED | Displayed on SALD-724 |
| E60 | Self Check | SELF CHK | Displays the result (GOOD/ERROR) of the self check. | | | Displayed on SALD-724 |

| No. | Parameter Name | Symbol | Description | Setting Range | Factory-set Value | Display Conditions |
|-----|-------------------------------|-----------|--|---------------------------|-------------------|-----------------------|
| P | Adjustment Parameters | ADJUST | | | | |
| P01 | Wiring Resistance correction1 | WIRING R1 | Corrects the wiring resistance of input1. Note:Initialized when BURN OUT1 is changed by parameter or setting jumper. | RESET EXECUTE | RESET | Display on all. |
| P03 | Input1 Zero Adjustment | ZERO ADJ1 | Performs zero adjustment (0% side) on input 1. n.nnn ** RST n.nnn ** INC n.nnn ** HINC n.nnn ** HDEC n.nnn ** DEC “n.nnn” indicates the current input value. “***” indicates mV when mV or TC input, and OHM when RTD input. Increase or decrease “n.nnn” until the target value is reached selecting INC/DEC. INC/DEC: Increase/decrease “n.nnn.” HINC/HDEC: Increase/decrease “n.nnn” more rapidly than INC/DEC. RST: When a reset is made, the adjustment values return to their factory settings. Note: Initialized when - SENSOR TYPE1 - TC TYPE1 or - RTD TYPE1 is changed. | | | |
| P04 | Span Adjustment (Input 1) | SPAN ADJ1 | Performs span adjustment (100% side) on input 1. Procedure for adjustment is same as that of ZERO ADJ1. Note: Initialized when - SENSOR TYPE1 - TC TYPE1 or - RTD TYPE1 is changed. | | | |
| P60 | Self Check | SELF CHK | Displays the result (GOOD/ERROR) of the self check. | | | |
| Q | Test Parameters | TEST | | | | |
| Q04 | Alarm 1 Forced Output | RLY1 TEST | Forcibly executes relay output regardless of the input state. Note: After the test ends, press the OK key to cancel the forced output state and set to the normal operation state. | DE-ENERGIZED ENERGIZED | | Display on all. |
| Q05 | Alarm 2 Forced Output | RLY2 TEST | | DE-ENERGIZED ENERGIZED | | Displayed on SALD-724 |
| Q60 | Self Check | SELF CHK | Displays the result (GOOD/ERROR) of the self check. | | | Display on all. |

Blank

Maintenance

This chapter describes the calibration procedures that can be done in the instrument room or service shop.

6.1 Test Equipment

For efficient maintenance of this alarm unit, it is recommended that the user have the following test equipment manufactured by Yokogawa or their equivalent.

- DC Voltage/Current Standard, Yokogawa GS200 or the equivalent..... 1 set
(Required for mV DC and thermocouple input type equipment)
- Decade Resistance Boxes, Yokogawa 279301 or the equivalent..... 1 set
(Required for RTD input type equipment)
- Digital Voltmeter, Yokogawa DM7560 or the equivalent..... 1 set
- PC, VJ77 Parameters Setting Tool..... 1 set
- Handy Terminal, JHT200 (BT200)..... 1 set
- Cold Junction Bottle, Type T-MJ..... 1 set
(To be made available only as required)
- Modular jack conversion adapter, Part No. E9786WH..... 1 set
- Digital Multimeter, Yokogawa DM7560 or the equivalent..... 1 set

6.2 Reference Table of Thermocouple and RTD

This instrument has been adjusted in accordance with the JIS thermoelectromotive force table and the resistance ratio table.

For the input signals used to adjust the instruments, refer to JIS C1602, IEC 60584-1 (ITS-90) for the thermocouple input type and to JIS C 1604, IEC 60751 (ITS-90), DIN (IPTS-68) for the platinum resistance temperature detector (RTD) input type.

6.3 Adjustment and Check



- For details of operation and adjusting procedures of VJ77 Parameters Setting Tool, refer to the instruction manual “Model VJ77 PC-based Parameters Setting Tool” (IM 77J01J77-01E).
- For details of operation and adjusting procedures of JHT200 Handy Terminal, refer to the instruction manual “JHT200 Handy Terminal” (IM 77J50H01-01EN).
- Do not turn off the power of the instrument during adjustment.

6.3.1 Adjustment of Input

Use a PC (VJ77) or the JHT200 Handy Terminal for adjustment.

The check procedure is shown below using the JHT200 Handy Terminal as an example.

- Connect the test equipment corresponding to each of input referring to Figure 6-1 through Figure 6-3.
- For thermocouple input, set reference junction compensation to OFF temporarily.
- Set the parameter write protect (W.P.) of setting jumper to OFF.
- Turn on the power while the equipment is connected to the instrument, and allow a warm-up period of about 5 minutes.
- Connect JHT200 Handy Terminal.
- Call P03: ZERO ADJ1 of the adjustment item (P: ADJUST).
- Apply an input equivalent to 0% of the input range. Check the input value and the input display value of P03: ZERO ADJ1.
- If the input value does not correspond to the display value of P03, adjust it using P03 parameter.
- Select INC (addition) or DEC (subtraction) for adjustment. (Selecting RST resets the adjusted value and retrieves the factory-set default.) When the error is large, select HINC or HDEC for adjustment using a value ten times as large as INC or DEC.
- Perform the same procedure for the 100% of input range. Use the parameter P04: SPAN ADJ1.
- After completing the adjustment, set the parameter write protect (W.P.) of setting jumper to ON as necessary.
- For thermocouple input, set the reference junction compensation to ON.

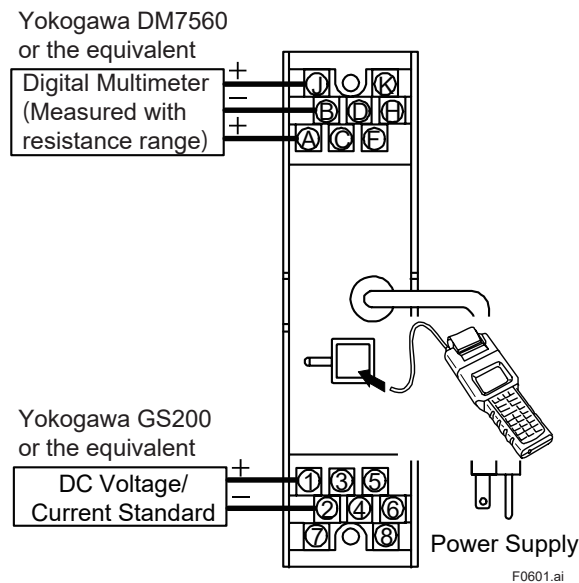


Figure 6-1 Wiring for mV DC Input Adjustment

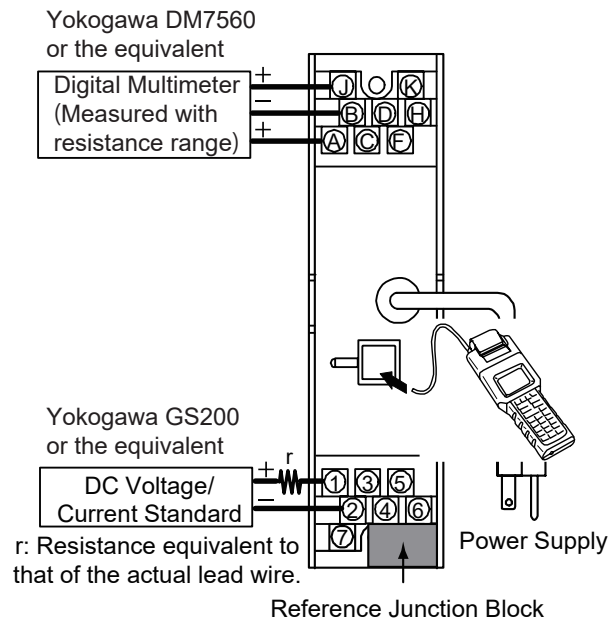


Figure 6-2 Wiring for Termocouple Input Adjustment

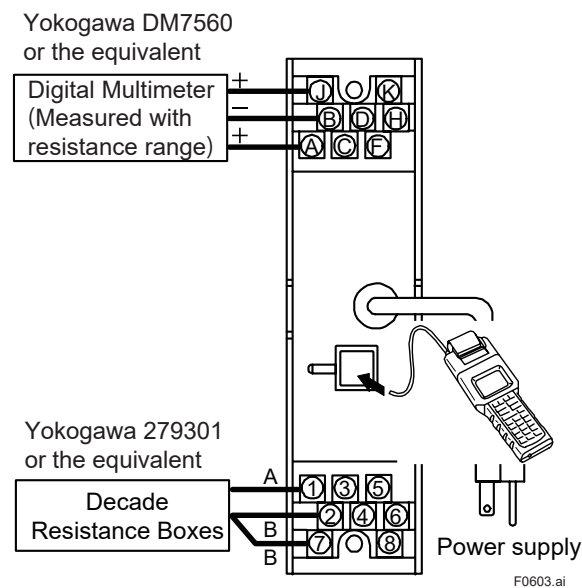


Figure 6-3 Wiring for RTD Input Adjustment

6.3.2 Check of Alarm Set Point



- For details of operation and adjusting procedures of VJ77 Parameters Setting Tool, refer to the instruction manual “Model VJ77 PC-based Parameters Setting Tool” (IM 77J01J77-01E).
- For details of operation and adjusting procedures of JHT200 Handy Terminal, refer to the instruction manual “JHT200 Handy Terminal” (IM 77J50H01-01E).
- Do not turn off the power of the instrument during adjustment.

Use a PC (VJ77) or the JHT200 Handy Terminal for check of Alarm Set Point.
The check procedure is shown below using the JHT200 Handy Terminal as an example.

Use JHT200 Handy Terminal for check.

The procedure for check is describes below.

- Connect the test equipment corresponding to each of input referring to Figure 6-1 through Figure 6-3.
- For thermocouple input, set reference junction compensation to OFF temporarily.
- Set the parameter write protect (W.P.) of setting jumper to OFF.
- Turn on the power while the equipment is connected to the instrument, and allow a warm-up period of about 5 minutes.
- Connect JHT200 Handy Terminal.
- Call the setting (alarm) items, E: SET(ALM).
- Set “DIRECT” for E07: ALM1 ACTION.
- Set “NRM ENERGIZED” for E19: RLY1 ACTION.
- Set a value equivalent to 0% for E01: SET POINT1. (Example: Set “0.0” for 0 to 100°C of type K.)
- Vary the input and confirm that the voltage when the alarm1 relay action indicator lamp on front panel turns on is within $\pm 0.5\%$ of measuring range. (Example: Voltage equivalent to $\pm 8.2^\circ\text{C}$ for type K.)
- Then set a value equivalent to 50% for SET POINT1. Confirm that the voltage when the alarm1 relay action indicator lamp on front panel turns on is within $\pm 0.5\%$ of measuring range. (Example: Set “50.0” for 0 to 100°C of type K.)
- Set a value equivalent to 100% for SET POINT1. Confirm that the voltage when the alarm1 relay action indicator lamp on front panel turns on is within $\pm 0.5\%$ of measuring range. (Example: Set “100.0” for 0 to 100°C of type K.)
- For SALD-724, set E08 and E20 of alarm 2 as described above. Set the value equivalent to 0%, 50% and 100% for E02 and confirm as above.
- After completing the check, set the parameter write protect (W.P.) of setting jumper to ON as necessary.
- For thermocouple input, set the reference junction compensation to ON.

Table 6-1 Relationship between Relay Action Indicator Lamp and Alarm Output

| Indicator Lamp | Condition of Alarm Output | |
|--------------------|---------------------------|-------|
| ON (illuminated) | Between terminals A and B | OPEN |
| | Between terminals J and B | CLOSE |
| | Between terminals F and H | OPEN |
| | Between terminals K and H | CLOSE |
| OFF (extinguished) | Between terminals A and B | CLOSE |
| | Between terminals J and B | OPEN |
| | Between terminals F and H | CLOSE |
| | Between terminals K and H | OPEN |

F, H and K terminals are for SALD-724 only.

6.3.3 Correction of Input Wiring Resistance

If an error occurs because of input wiring resistance when mV DC, thermocouple or RTD input, or if using a safety barrier such as BARD and the like with the instrument, input wiring resistance can be corrected by parameter using a PC (VJ77) or JHT200 Handy Terminal.



- **Correction of input wiring resistance should be made after completion of mounting wiring.**
- **Do not turn off the power to the instrument while calibrating the wiring resistance.**

The procedure is shown below using the JHT200 Handy Terminal as an example.

- Set the parameter write protect (W.P.) of setting jumper to OFF.
- Short-circuit the wires for input by the sensor side.
Short-circuit the 2 wires for mV DC or thermocouple input.
Short-circuit the 3 wires for RTD input.
- Connect JHT200 Handy Terminal. (Refer to Figure for Wiring.)
- Call P01: WIRING R1 of adjustment items (P: ADJUST).
- Select <EXECUTE>, and press ENTER twice.
- After the correction, set the parameter write protect (W.P.) of setting jumper to ON if necessary.
- For details, see "10.4 Setting Wire Resistance Compensation" in the VJ77 Parameters Setting Tool user's manual (IM 77J50H01-01EN) or "Wiring Resistance Adjustment" in the JHT200 Handy Terminal user's manual (IM 77J50H01-01EN).

6.3.4 Check of Reference Junction Temperature Compensation Action

For thermocouple input, check the action of reference junction temperature compensation using the cold junction bottle. The figure for wiring is shown in Figure 6-4 (example of JHT200).



When using the cold junction bottle, install the reference junction block (RJC) to the terminal block, then return the terminal cover and warm up the instrument for about 15 minutes.

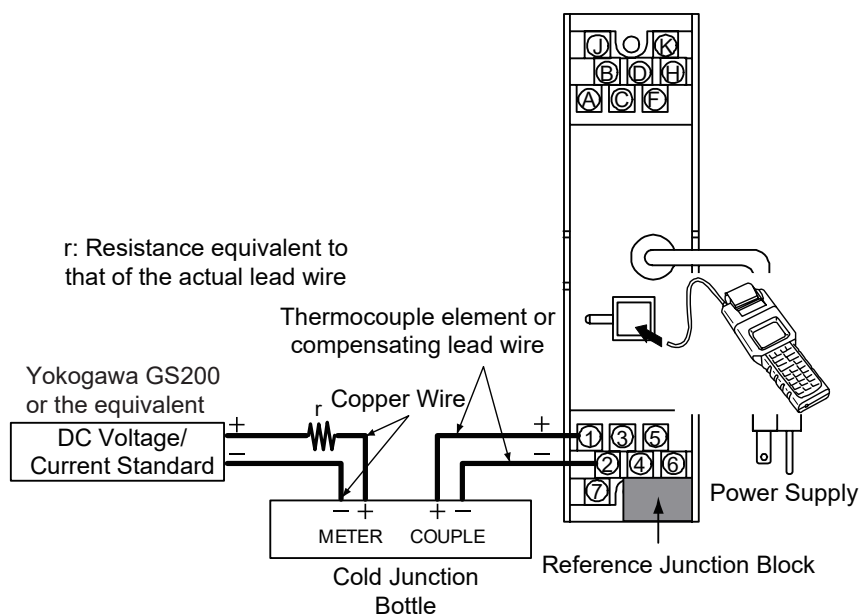


Figure 6-4 Check of Action for Reference Junction Temperature Compensation (Using Cold Junction Bottle)

6.4 List of Replaceable Parts



Contact YOKOGAWA's sales office or sales representative when replacing the spare parts.

| Part Name | Part Number | Recommended replacement period | Reference |
|-------------------|---|--------------------------------|--|
| Fuse | S9510VK | Approx. 3 years | If the fuse breaks or if the replacement period elapses, please have the item replaced. |
| Power supply unit | L3510YA: Standard L3510YF: Option codes /TB, /FBP, or /REK L3510YT: Option code /A2TB L3510YR: Option code /A2ER | 5-10 years | As the aluminum electrolytic capacitors used in the power supply unit are subject to deterioration from temperature and other operating conditions, we recommend the replacement period on the left. |

Troubleshooting

If any fault occurs in the instrument, note the symptoms and follow Section 7.1.

7.1 Action in Fault Condition.

The SALD has a self check function for detecting device errors on the actual SALD itself. Details of SALD errors can be confirmed on the display setter on the front panel and in the STATUS parameter using a PC (VJ77) or the JHT200 Handy Terminal. The blinking error display means failure.

| Indication on Display Setter (*1) | BRAIN Communication Parameter aDisplay | | | Device Operation | Cause of Error | Remedy |
|---|--|----------|-------------------|---|-------------------------------------|---|
| | STATUS (*2) | SELF CHK | Error Information | | | |
| Out | | | | Same state as power OFF | Hardware error | Contact YOKOGAWA's sales office or sales representative. |
| Out | | | | Lamp: All out Alarm output: NO: Open, NC: Closed Key switch: Disabled Communications: Stopped | Power supply error, broken fuse | |
| Out | | | | Lamp: All out Alarm output: Normal Key switch: Disabled Communications: Normal action | Display malfunction | |
| (AD.ER) Blinking | 1000 | ERROR | AD ERROR | Lamp: All out Alarm output: NO: Open, NC: Closed Key switch: Disabled Communications: Normal action | A/D conversion error | |
| (EEP.ER) Blinking | 0001 | ERROR | EEPROM ERROR | Lamp: All out Alarm output: NO: Open, NC: Closed Key switch: Disabled Communications: Unstable | EEPROM error | |
| (SU.ER) Blinking | 0002 | ERROR | EEPROM SUM ERROR | Lamp: All out Alarm output: NO: Open, NC: Closed Key switch: Disabled Communications: Unstable | EEPROMSUM error (Parameter error) | |
| (RJC.ER) Indicating RJC.ER and PV alternately | 0080 | ERROR | RJC ERROR | (*3) Lamp: Normal action Alarm output: Normal Key switch: Enabled Communication: Normal action | RJC sensor error | Replace RJC or check the ambient temperature |
| (1.BOUT) | 0020 | ERROR | INPUT1. BURN OUT | Lamp: Normal action Alarm output: Normal | Input 1 burnout | Check the connection of input 1 |
| | 0008 | ERROR | INPUT OVER RANGE | Key switch: Enabled Communication: Normal action | Out of input range -25 to +125% | Set the input within the range. (*4) |
| | 0010 | ERROR | RANGE SET ERROR | | SCH1 and SCL1 are same values | Set SCH1 or SCL1 again. |
| | 0040 | GOOD | None | | Power interruption during operation | Write "0000" at the STATUS display of BRAIN communication parameter |
| | 0000 | GOOD | - | - | - | - |

*1: On the SALD-x04, the error details are indicated in alphabet characters.

When two or more errors occur, high priority errors are displayed.

The table shows the errors in order of priority.

*2: STATUS error code is to be the addition display (hexadecimal number) when two errors or more occur.

*3: Once you run the unit under a reference junction temperature of -20°C or 80°C, run it per the burnout settings.

If the burnout setting is UP or DOWN, run the unit such that the input value runs out in the set direction and outputs according to that input value.

Operation while the burnout setting is OFF results in undefined.

*4: If errors continue even when the input is within the range, the input circuit is broken. Contact YOKOGAWA's sales office or sales representative.



If any of the following errors occurs, alarm output is de-energized. Set “NRM ENERGIZED” (normally energized) to the BRAIN communication parameters E19 and E20 to detect the following errors by alarm output contacts. Hardware error, Power supply error, Broken fuse, A/D conversion error, EEPROM malfunction and Parameter error.

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Power Supply Terminal Connections (Options /TB, /A2TB, and /REK)

If you specify the terminal block to which the power source is directly connected (option codes: /TB, /A2TB, and /REK), the external wiring to the terminal block is necessary; therefore, drawing out the internal unit requires previous turning off of the power source and disconnection of the wiring from the terminal block.

8.1 External View and Names of Components

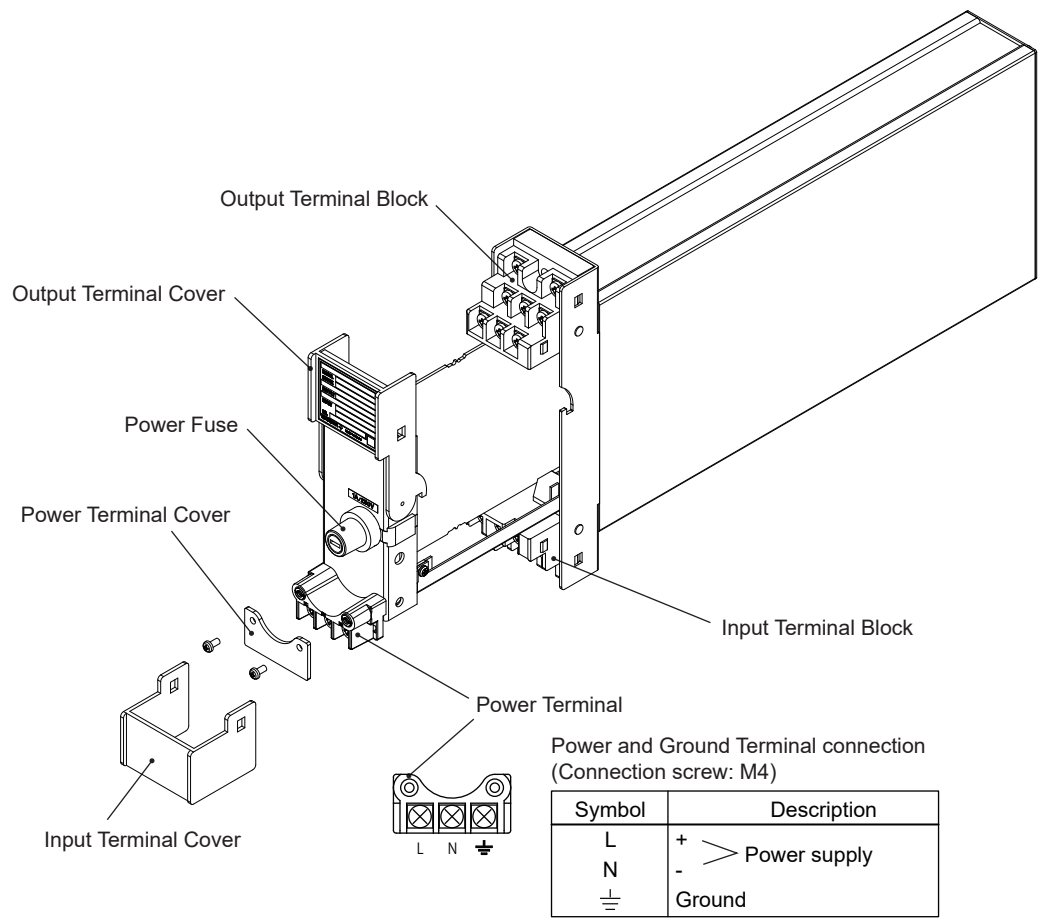


Figure 8-1 External View and Names of Components

8.2 Power Supply and Ground Wiring

- (1) All cable ends must be furnished with crimp-on type solderless lugs (for 4 mm screws).
- (2) Examples of applicable cables:
 - Cross-sectional area of the cable conductor: 2.0 mm². *
 - For the power supply, use cable having a cross-sectional area of at least 1.25 mm².
 - Applicable cable: 600 V vinyl insulated cable (IV) stranded wires, conforming to JIS C3307.
PVC insulated cables for electric appliances (KIV) stranded wires, conforming to JIS C3316.
- Note *: Power supply cables should be determined from the instrument power consumption—they must have conductors with cross-sectional area of at least 1.25 mm².
- (3) Wirings to power supply and ground terminals should be made after completion of signal terminal wirings.
(When signal terminal wirings are made after completion of power supply wiring, pull the internal unit approximately half way out of the housing. Do not remove the power terminal block.)
- (4) After completing the power supply and ground wiring, mount the power terminal cover.

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General Specifications

Model SALD (Style S)
mV and Temperature Alarm Unit

YEW SERIES 80

GS 01B04K02-02E

■ GENERAL

The SALD mV and Temperature Alarm Unit accepts a mV DC, thermocouple or RTD input signal, compares the input signal with an alarm setpoint, and outputs an alarm signal. One or two absolute alarm outputs can be provided on one input. Direct/reverse action can also be set to each of the alarm setpoints. Alarm LED is provided on the front panel for confirming alarm relay action (when relay is energized).

A PC (VJ77) or the JHT200 Handy Terminal* is used for setting the Alarm Unit parameters. For the SALD with display setter (SALD-□□4), input indication and alarm setpoints can be set on the front panel.

With the VJ77 Parameter Setting Tool you can do the following:

- Read/write all parameters at once
- Save read parameters to a file
- Copy parameters to other devices of the same model and suffix code (only with style code R or S).

*: When connecting a PC (VJ77) or the JHT200 Handy Terminal, the adapter for modular-jack (model E9786WH) is required.
When using the BT200 BRAIN Terminal of YOKOGAWA Electric Corporation, the communication cable of 5-pin connector type (model F9182EE) and the adapter for modular-jack (model E9786WH) are required.

■ STANDARD SPECIFICATIONS

Input Signals

Input: mV DC, thermocouple or RTD
Number of input: 1

| Input Type | | Measuring Range |
|----------------------|--------------------|--------------------|
| mV DC | | 0 to 100 mV DC |
| Thermocouple (*1) | Type K | -270.0 to 1372.0°C |
| | Type T | -270.0 to 400.0°C |
| | Type J | -210.0 to 1200.0°C |
| | Type E | -270.0 to 1000.0°C |
| | Type B | 50.0 to 1820.0°C |
| | Type R | -50.0 to 1768.0°C |
| | Type S | -50.0 to 1768.0°C |
| | Type N (*3) | -270.0 to 1300.0°C |
| | Type W3 (*3) | 0 to 2315°C |
| | Type W5 (*3) | 0 to 2315°C |
| RTD (*2) | JPt100 | -200.0 to 510.0°C |
| | Pt50 | -200.0 to 649.0°C |
| | Pt100 (ITS-90) | -200.0 to 850.0°C |
| | Pt100 (IPTS-68) | -200.0 to 660.0°C |

*1: Thermocouple JIS C 1602, IEC 60584-1 (ITS-90)
TypeK, T, E, J, R, S, B, N, W3(Note 1), W5(Note 2)
Note 1: ASTM E988 Standard: W97Re3-W75Re25
(tungsten97% rhenium3%-tungsten75% rhenium25%)
Note 2: ASTM E988 Standard: W95Re5-W74Re26
(tungsten95% rhenium5%-tungsten74% rhenium26%)



*2: RTD JIS C 1604, IEC 60751 (ITS-90) Pt100
JIS C 1604: 1989, DIN (IPTS-68) Pt100
JIS C 1604: 1989, JPt100
JIS C 1604: 1981, Pt50 JIS C 1604
*3: For SALD-7 type only

Measurement unit: °C, °F(*), K, mV
*: When specify the option code "/FCAL".

Input/Output Resistance

mV DC, Thermocouple:
Input resistance 1 MΩ,
External input resistance 500 Ω or less
RTD: Input leadwire resistance 10 Ω/lead or less

Output Signals

Output: Relay contact
Contact Capacity:
100 V AC, 1 A (resistive load)
220 V AC, 0.5 A (resistive load)
30 V DC, 1 A (resistive load)
110 V DC, 0.1 A (resistive load)
Contact Life Expectancy: 600,000 times
Number of Outputs: 1 (SALD-□1□) or 2 (SALD-724)

Alarm Functions

Alarm Action: 1 input, 1 absolute alarm (SALD-□1□)
1 input, 2 absolute alarms (SALD-724)

Alarm Settings

Absolute Alarm Setpoint:
-19999 to +32000 (engineering unit)
Hysteresis: 0 to 32000 (engineering unit)
Alarm ON/OFF Delay: 0 to 999 sec.
Direction of Alarm Action: Direct/Reverse
SALD-□□0 Selection by the parameter.
SALD-□□4 Selection by the jumper switch.

Direction of Alarm Relay Action (at normal operation):
De-energized/Energized

Direction of Alarm Relay Action: De-energized setting at normal operation

| Action | Input value < Setpoint | Setpoint < Input value |
|---------|------------------------|------------------------|
| Direct | Relay de-energized | Relay energized |
| Reverse | Relay energized | Relay de-energized |

Direction of Alarm Relay Action: Energized setting at normal operation

| Action | Input value < Setpoint | Setpoint < Input value |
|---------|------------------------|------------------------|
| Direct | Relay energized | Relay de-energized |
| Reverse | Relay de-energized | Relay energized |

Alarm Outputs

1 transfer contact for each setting

NO: "Normally Open" means open when relay is not energized.

NC: "Normally Closed" means closed when relay is not energized.

Burnout Function: UP/DOWN/OFF

SALD-□□0 Selection by the parameter

SALD-□□4 Selection by the jumper switch

Burnout Time: 60 sec.

Wiring Resistance Correction Function:

Corrects an error by wiring resistance using the parameter.

BRAIN Communication Function:

Use a PC (VJ77) or the JHT200 Handy Terminal* for setting the alarm action and specifying the function.

*: When connecting a PC (VJ77) or the JHT200 Handy Terminal, the adapter for modular-jack (model E9786WH) is required.
When using the BT200 BRAIN Terminal of YOKOGAWA Electric Corporation, the communication cable of 5-pin connector type (model F9182EE) and the adapter for modular-jack (model E9786WH) are required.

Indication Setting Function (SALD-□□4)

Digital indicator:

5-digit 7-segment LED (red)
Indication range; -19999 to +32000
(decimal point position selectable)
PV is displayed when SP indicator is not lit.

LED indicators

Alarm relay action indicator
(ALM1/ALM2; yellow)
Lit at relay energized state.
Alarm setpoint indicator
(SP1/SP2; green)
Lit when alarm setpoint is displayed.
(ALM2 and SP2 are provided on
SALD-724 only.)

Key switches (can set alarm setpoint)

Setting switches (→, ↑, SET, △) 4
Enable switch (ENBL) 1

Jumper switch

Alarm actions 1/2, burnout action, ON/
OFF of RJC

Indication Function (SALD-□□0):

Digital indicator is not provided.

LED indicator (ALM1: yellow)

Alarm action indicator (ALM1)
Lit at relay energized state.

■ MOUNTING AND APPEARANCE

Mounting: Indoor rack mounting

Wiring

Signal wiring: ISO M4 size (4 mm) screws on terminal block

Power and Ground wiring

100 V version: JIS C 8303 two-pin plug with earthing contact

Cable Length: 300 mm

Power supply terminal type (option code /TB)

220 V version: CEE 7 VII (CENELEC standard) plug (option code /A2ER)

Cable length: 300 mm

Power supply terminal type (option code /A2TB)

External Dimensions:

(Height× Width× Depth from the mounting face)

180× 48× 300 (mm)

Weight: 1.7 kg (including rack-mounting case)

■ STANDARD PERFORMANCE

Input accuracy: ± 0.5% (*4)/measuring range

Note that for thermocouple input, add the reference junction compensation accuracy to the accuracy above.

Reference Junction Compensation Accuracy

For temperatures 0°C and over:

±0.5°C (except for Types R and S)

±1.0°C (for Types R and S)

For temperatures below 0°C: Multiply accuracy for temperatures over 0°C by K, where

$$K = \frac{(\text{Thermocouple output change}/^{\circ}\text{C near } 0^{\circ}\text{C})}{(\text{Thermocouple output change}/^{\circ}\text{C at measurement temperature})}$$

Reference junction compensation is not performed for type B.

Alarm Setting Accuracy: Same as the input accuracy.

Repeatability of alarm action: Same as the input accuracy.

*4: Types K, T, E and N: Input accuracy for the temperature below -200°C is ±2.5%.

Type B: Input accuracy for the temperature below 600°C is ±2.5%.

Maximum Power Consumption

| Type | Power Supply | | |
|----------|--------------|---------------|---------------|
| | 24 V DC (mA) | 100 V AC (VA) | 220 V AC (VA) |
| SALD-□1□ | 35 | 3.2 | 4.7 |
| SALD-724 | 45 | 3.8 | 5.3 |

■ POWER SUPPLY AND ISOLATION

Power Supply Rated Voltage:

100 V version:

24-110 VDC \pm , -10 % , +10 % , 60 mA

100-120 VAC \sim , -10 % , +10 % , 50/60 Hz, 6.0 VA

220 V version:

135-300 VDC \pm , -10 % , +10 % , 10 mA

200-240 VAC \sim , -10 % , +10 % , 50/60 Hz, 8.0 VA

Power Supply Input Voltage: AC/DC both usage

100 V version: DC drive 20 to 130 V, no polarity

AC drive 80 to 138 V, 47 to 63 Hz

220 V version: DC drive 120 to 340 V, no polarity

AC drive 138 to 264 V, 47 to 63 Hz

Insulation Resistance

Between Input/Alarm output and Ground:

100 M Ω /500 V DC

Between Power and Ground:

100 M Ω /500 V DC

Dielectric Strength

Between Input terminals and Ground:

500 V AC for 1 minute

Between Alarm output terminal/Power and Ground:

1000 V AC for 1 minute (100 V version)

1500 V AC for 1 minute (220 V version)

■ NORMAL OPERATING CONDITIONS

Ambient Temperature: 0 to 50°C

Ambient Humidity: 5 to 90% relative humidity
(non-condensing)

Operating environment: Area free of hydrogen sulfide gas and other corrosive gases and dust and where the device is not exposed to sea breeze or direct sunlight.

Continuous vibration: (at 5 to 9 Hz) Half amplitude of 1.5 mm or less
(at 9 to 150 Hz) 4.9m/s² or less,
1 oct/min for 90 minutes each
in the three axis directions

Impact: 49 m/s² or less, 11 ms, 3 axes, 6 directions, 3 times each

Installation altitude: 2,000 m or less above sea level

Warm-up time: 15 minutes or more after the power is turned on

■ TRANSPORT AND STORAGE CONDITIONS

Temperature: -25 to 70°C

Temperature change rate: 20°C per hour or less

Humidity: 5 to 95%RH (no condensation)

■ OPTIONS

/NHR: Without rack case (internal unit only)

/FBP: Power supply fuse bypass

/LOCK: Power supply plug with lock

/WSW: With spring washer

/REK: Mount to same line with EK series rack

/TB: With power supply terminal

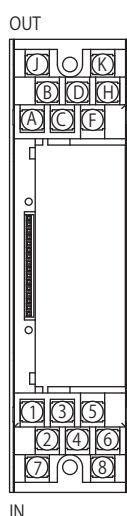
/A2TB: 220V version with power supply terminal

/A2ER: 220V version with power supply plug

/FCAL: Fahrenheit range

■ TERMINAL CONNECTIONS

Terminal arrangement



| Terminal Designation | Description |
|----------------------|-------------|
| A | NC |
| B | COM |
| C | |
| D | |
| F | NC |
| H | COM |
| J | NO |
| K | NO |

Alarm output 1

Alarm output 2 (*5)

Do not connect to the output terminal when the terminal is not in use.

*5: For SALD-724 only.

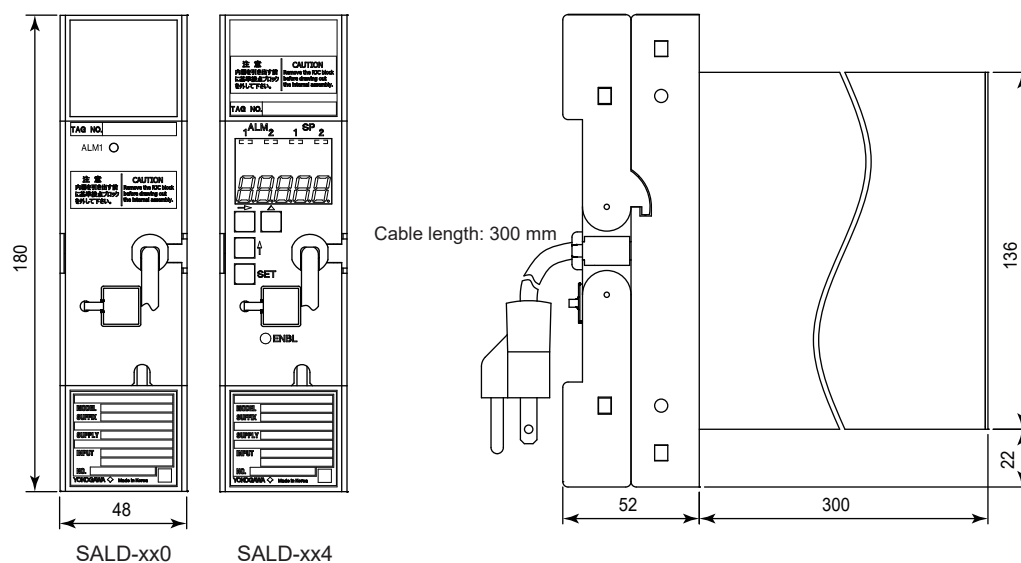
| Terminal Designation | Description | |
|----------------------|-----------------------------------|----------|
| | SALD-1□□, 2□□ | SALD-3□□ |
| 1 | + | A |
| 2 | - | B |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | (RJC block installation terminal) | |
| 7 | | |
| 8 | | |

Input 1

For SALD-7□□, the connection depends on the selected sensor type (mV DC, thermocouple or RTD).

■ EXTERNAL DIMENSIONS

Power supply plug type



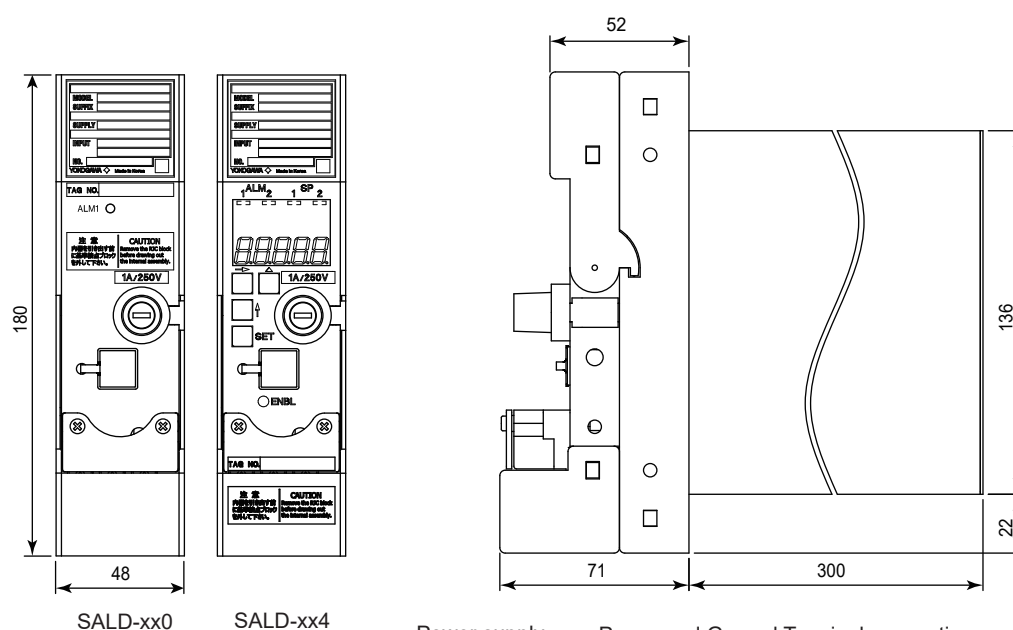
Trigonometry

Unit: mm

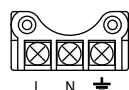
General tolerance = \pm (value of tolerance class IT18 based on JIS B 0401-2016) / 2

F01.ai

Power supply terminal type(option /TB or /A2TB)



Power supply terminal block



Power and Ground Terminal connection
(Connection screw: M4)

| Symbol | Description |
|---------|------------------|
| L | + > Power supply |
| N | - > Power supply |
| \perp | Ground |

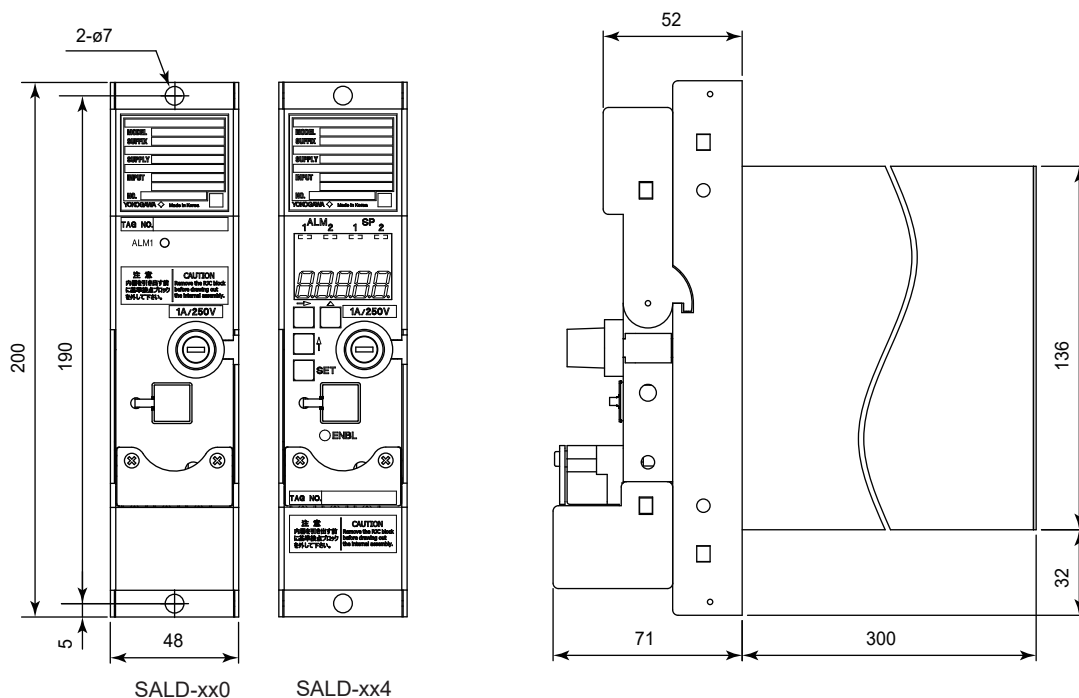
Trigonometry

Unit: mm

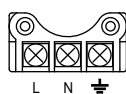
General tolerance = \pm (value of tolerance class IT18 based on JIS B 0401-2016) / 2

F02.ai

Power supply terminal type(option /REK)



Power supply terminal block



Power and Ground Terminal connection
(Connection screw: M4)

| Symbol | Description |
|---------|-------------|
| L | + |
| N | - |
| \perp | Ground |

Trigonometry

Unit: mm

General tolerance = \pm (value of tolerance class IT18 based on JIS B 0401-2016) / 2

F03.ai

■ MODEL AND SUFFIX CODES

| Model | Suffix Codes | Option Codes | Descriptions |
|---|--|---|--|
| SALD | | | mV and Temperature Alarm Unit |
| Input Signal | -1 -2 -3 -7 | | mV DC input Thermocouple input RTD input Universal input (mV, TC, RTD input) |
| Alarm | 1 2 | | 1 input, 1 setpoint absolute alarm 1 input, 2 setpoints absolute alarm |
| Display Setter | 0 4 | | Not provided Provided |
| Selectable Combination Suffix Codes SALD-110/-114 SALD-210/-214 SALD-310/-314 SALD-710/-714/-724 Auxiliary Codes SALD-1□□: "-MV" SALD-2□□: "-TK" to "-TS" SALD-3□□: "-PA" to "-PD" SALD-7□□: "-UN" | -MV -TK -TT -TJ -TE -TB -TR -TS -PA -PB -PD -UN | | mV DC Type K (ITS90, JIS C1602) Type T (ITS90, JIS C1602) Type J (ITS90, JIS C1602) Type E (ITS90, JIS C1602) Type B (ITS90, JIS C1602) Type R (ITS90, JIS C1602) Type S (ITS90, JIS C1602) JpT100 (JIS'89) Pt50 (JIS'81) Pt100 (ITS-90, JIS C1604) Universal input (mV, TC, RTD input) |
| Style Code | | *S | Style S |
| Option Codes (*1)(*2)(*3) | | /NHR /FBP /LOCK /WSW /REK /TB /A2TB /A2ER /FCAL | Without rack case Power supply fuse bypass Power supply plug with lock With spring washer Mount to same line with EK series rack With power supply terminal 220V version with power supply terminal 220V version with power supply plug Fahrenheit range |

*1: /LOCK, /REK, /TB, /A2TB, and /A2ER cannot be specified together.

*2: /FBP, /A2TB, and /A2ER cannot be specified together.

*3: When setting the temperature unit with "deg F", specify the option code /FCAL.

■ ACCESSORIES

Alarm label: 1 sheet

■ ORDERING INSTRUCTIONS

Specify the following when ordering:

1. Model, suffix code and auxiliary code, and optional suffix code, if necessary
2. Input sensor type (SALD-7□□ only): Mandatory specification
Select a sensor type (see table of Input Type on page 1).
If not specified: Pt100(ITS-90)
3. Burnout selection: Optional Specification
Select from UP, DOWN or OFF.
If not specified: OFF

Revision Information

- Title : Model SALD (Style S) mV and Temperature Alarm Unit
- Manual No. : IM 01B04K02-02E

Jul. 2002/5th

Renewal

Dec. 2002/6th

Correct

Mar. 2003/7th

Correct

May 2004/8th

Change of the company name.

Oct. 2019/9th

Change of the style number.

Jan. 2021/10th

VJ77 parameter setting tool (R3.01 or later) support

| | |
|----------------|--|
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