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This document describes HART communication by FLXA402 4-Wire Converter. Before communicating using the HART protocol, refer to the User's Manual for the FLXA402 4-Wire Converter Operation of Converter [IM 12A01A03-01EN](#) for details of the parameters.

For latest User's Manual, download it from our website or scan QR code.

<http://www.yokogawa.com/an/flxa402/download/>



1. General

HART Communication superimposes specific waveforms called HART Communication waveforms on the 4–20 mA analog signal from a FLXA402 to enable remote intercommunication between the online FLXA402 and a setup tool (*).

*: FieldMate, Plant Resource Manager (PRM), or a handheld HART communicator may be used as the setup tool.

Note: When using FieldMate or a 375 Field Communicator, make sure you use the following or greater version of the product.
FieldMate R3.04.00 + Device Files R3.09.00

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1.1 Installing DD files

To enable HART communication between a FLXA402 and setup tool, the device description (DD) file of the FLXA402 needs to be installed in the setup tool. The DD file contains the HART communication details and menu configurations specific to the FLXA402.

FieldMate is provided with the latest versions of DD files at the time when sold. The current version of DD files can be downloaded from the following site (*):

YOKOGAWA : <http://www.yokogawa.com/an/download/an-dl-fieldbus-001en.htm>

(*): The URL s is subject to change without prior notice. If the URL cannot be accessed, consult your nearest sales office or the agency from which you purchased the product.

■ Before using FieldMate

Before using FieldMate, check the revision of Device Files.

Compatibility among revisions of FLXA402, FieldMate and DD file

| HOUSING ASSY | | FieldMate |
|-------------------|-----------------|--------------------------|
| Software revision | Device revision | Revision of Device Files |
| 1.01.01 or later | 1 | R3.09 or later |

The software revision and the device revision are shown on the display of FLXA402 Main or Home screen which is introduced by pressing the Detail. (Figure 1)

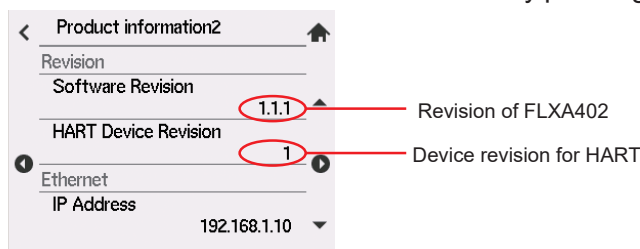


Figure 1 Software Revision

■ Installing DD File

For how to install the DD file, see the respective documentation for the setup tool you use. For FieldMate R3.04.00+Device Files R3.09.00, installing DD File is not required.

■ Connecting Setup Tool

Connect HART modem at the both ends of the load resistance which is 250 ohms or larger and is installed between the setup tool terminals and mA1.

You can connect the setup tool to any interconnection terminals such as those in the central control room, a converter's junction box, or somewhere within the transmission loop.

1.2 Functions Available via HART Communication

FLXA402 via Hart communication enables the following settings: Error settings (4.7), mA output settings (4.3), Contact input settings (4.2), HART setting (4.6.2). Information on the sensor settings or calibration are available as Read only. The numbers in the parentheses correspond the section number in the User's Manual [IM 12A01F01-03EN](#).

Correspondences between menu structure and FLXA402 front panel display

| | | |
|-------------------|-------|---|
| +– Converter Menu | ..... | Shows the information of the Slot 1 sensor in FLXA402 |
| +– HOLD | ..... | Enables Manual HOLD |
| +– WASH | ..... | Not operational |
| +– Detail | ..... | Read only |
| +– Trend | ..... | Disables reference |
| +– Other | ..... | Disables reference |
| +– Reset | ..... | Disables reference |
| +– Setting | ..... | Setting changeable: ma Output, ma Input, HART |
| +– Lang | ..... | Disables reference |
| +– Alarm | ..... | Disables reference |
| +– sensor Menu | ..... | Displays information of sensors on Slot1 |
| +– Detail | ..... | Read only |
| +– Calibration | ..... | Not executable |
| +– Reset Wellness | ..... | Not executable |
| +– Reset | ..... | Not executable |
| +– Setting | ..... | Read only |

1.2.1 Multi-drop mode

Multiple number of field devices put in multi-drop mode can be connected in parallel on a single cable. To enable the multi-drop mode, set the device address to a unique number from 1 to 63.

NOTE

Multi-drop mode communication requires the devices on the link to be given unique device addresses for polling (polling addresses). If the same address is set in two or more devices, correct communication is disabled.

Canceling multi-drop mode:

To release a device from the multi-drop mode, set the polling address to zero.

1.2.2 Write protection

Turning the slide switches ON disables the setting via HART communication (default: OFF).

If you create a password at "Setting" on the display, it protects HART setting, disabling writing over HART parameters. See 1.3 in [IM 12A01F01-03EN](#) Operation of Converter

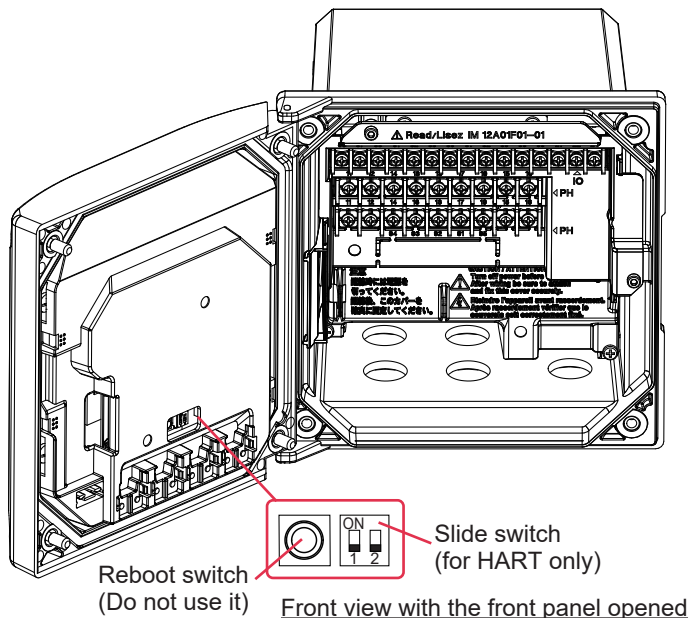


Figure 2 FLXA402

CAUTION

Slide switch 1 is for HART. DO NOT turn ON the Slide switch 2.

CAUTION

DO NOT push the button switch next to the Slide switches, when they are set to ON/OFF.

1.2.3 Device Variable Code

Use Device Variable Code for FLXA402 to set device variables from SV to QV.or to Read process values on Command 9.

| Code | Name | PV | SV | TV | QV |
|------|----------------------|----|----|----|----|
| 0 | AO1 current*1 | - | X | X | X |
| 1 | AI | X | X | X | X |
| 2 | Differential pH | X | X | X | X |
| 3 | Differential ORP | X | X | X | X |
| 4 | Differential Conduct | X | X | X | X |
| 5 | Differential Resist | X | X | X | X |
| 6 | Differential DO | X | X | X | X |
| 7 | Average pH | X | X | X | X |
| 8 | Average ORP | X | X | X | X |
| 9 | Average Conduct | X | X | X | X |
| 10 | Average Resist | X | X | X | X |
| 11 | Average DO | X | X | X | X |
| 12 | Ratio | X | X | X | X |
| 13 | Passage | X | X | X | X |
| 14 | Rejection | X | X | X | X |
| 15 | Deviation | X | X | X | X |
| 16 | pH calc | X | X | X | X |
| 17 | Script 1 | X | X | X | X |
| 18 | Script 2 | X | X | X | X |
| 19 | Script 3 | X | X | X | X |
| 20 | Script 4 | X | X | X | X |
| 21 | Script 5 | X | X | X | X |
| 22 | Script 6 | X | X | X | X |
| 23 | Script 7 | X | X | X | X |
| 24 | Script 8 | X | X | X | X |

| | | | | | |
|----|--------------------|---|---|---|---|
| 42 | Temp 2-1 | X | X | X | X |
| 43 | pH 2-1 | X | X | X | X |
| 44 | ORP 2-1 | X | X | X | X |
| 45 | rH 2-1 | X | X | X | X |
| 46 | Sensor mV1 2-1 | - | X | X | X |
| 47 | Sensor mV2 2-1 | - | X | X | X |
| 48 | Sensor mV3 2-1 | - | X | X | X |
| 49 | Conduct1 2-1 | X | X | X | X |
| 50 | Conduct2 2-1 | X | X | X | X |
| 51 | Resist1 2-1 | X | X | X | X |
| 52 | Resist2 2-1 | X | X | X | X |
| 53 | Concent1 2-1 | X | X | X | X |
| 54 | Concent2 2-1 | X | X | X | X |
| 55 | USP 2-1 | - | X | X | X |
| 56 | Sensor Ohms 2-1 | - | X | X | X |
| 57 | Oxygen 2-1 | X | X | X | X |
| 58 | Sensor current 2-1 | - | X | X | X |

| | | | | | |
|----|--------------------|---|---|---|---|
| 76 | Temp 1-3 | X | X | X | X |
| 77 | pH 1-3 | X | X | X | X |
| 78 | ORP 1-3 | X | X | X | X |
| 79 | rH 1-3 | X | X | X | X |
| 80 | Sensor mV1 1-3 | - | X | X | X |
| 81 | Sensor mV2 1-3 | - | X | X | X |
| 82 | Sensor mV3 1-3 | - | X | X | X |
| 83 | Conduct1 1-3 | X | X | X | X |
| 84 | Conduct2 1-3 | X | X | X | X |
| 85 | Resist1 1-3 | X | X | X | X |
| 86 | Resist2 1-3 | X | X | X | X |
| 87 | Concent1 1-3 | X | X | X | X |
| 88 | Concent2 1-3 | X | X | X | X |
| 89 | USP 1-3 | - | X | X | X |
| 90 | Sensor Ohms 1-3 | - | X | X | X |
| 91 | Oxygen 1-3 | X | X | X | X |
| 92 | Sensor current 1-3 | - | X | X | X |

| Code | Name | PV | SV | TV | QV |
|------|--------------------|----|----|----|----|
| 25 | Temp 1-1 | X | X | X | X |
| 26 | pH 1-1 | X | X | X | X |
| 27 | ORP 1-1 | X | X | X | X |
| 28 | rH 1-1 | X | X | X | X |
| 29 | Sensor mV1 1-1 | - | X | X | X |
| 30 | Sensor mV2 1-1 | - | X | X | X |
| 31 | Sensor mV3 1-1 | - | X | X | X |
| 32 | Conduct1 1-1 | X | X | X | X |
| 33 | Conduct2 1-1 | X | X | X | X |
| 34 | Resist1 1-1 | X | X | X | X |
| 35 | Resist2 1-1 | X | X | X | X |
| 36 | Concent1 1-1 | X | X | X | X |
| 37 | Concent2 1-1 | X | X | X | X |
| 38 | USP 1-1 | - | X | X | X |
| 39 | Sensor Ohms 1-1 | - | X | X | X |
| 40 | Oxygen 1-1 | X | X | X | X |
| 41 | Sensor current 1-1 | - | X | X | X |

| | | | | | |
|----|--------------------|---|---|---|---|
| 59 | Temp 1-2 | X | X | X | X |
| 60 | pH 1-2 | X | X | X | X |
| 61 | ORP 1-2 | X | X | X | X |
| 62 | rH 1-2 | X | X | X | X |
| 63 | Sensor mV1 1-2 | - | X | X | X |
| 64 | Sensor mV2 1-2 | - | X | X | X |
| 65 | Sensor mV3 1-2 | - | X | X | X |
| 66 | Conduct1 1-2 | X | X | X | X |
| 67 | Conduct2 1-2 | X | X | X | X |
| 68 | Resist1 1-2 | X | X | X | X |
| 69 | Resist2 1-2 | X | X | X | X |
| 70 | Concent1 1-2 | X | X | X | X |
| 71 | Concent2 1-2 | X | X | X | X |
| 72 | USP 1-2 | - | X | X | X |
| 73 | Sensor Ohms 1-2 | - | X | X | X |
| 74 | Oxygen 1-2 | X | X | X | X |
| 75 | Sensor current 1-2 | - | X | X | X |

| | | | | | |
|-----|--------------------|---|---|---|---|
| 93 | Temp 1-4 | X | X | X | X |
| 94 | pH 1-4 | X | X | X | X |
| 95 | ORP 1-4 | X | X | X | X |
| 96 | rH 1-4 | X | X | X | X |
| 97 | Sensor mV1 1-4 | - | X | X | X |
| 98 | Sensor mV2 1-4 | - | X | X | X |
| 99 | Sensor mV3 1-4 | - | X | X | X |
| 100 | Conduct1 1-4 | X | X | X | X |
| 101 | Conduct2 1-4 | X | X | X | X |
| 102 | Resist1 1-4 | X | X | X | X |
| 103 | Resist2 1-4 | X | X | X | X |
| 104 | Concent1 1-4 | X | X | X | X |
| 105 | Concent2 1-4 | X | X | X | X |
| 106 | USP 1-4 | - | X | X | X |
| 107 | Sensor Ohms 1-4 | - | X | X | X |
| 108 | Oxygen 1-4 | X | X | X | X |
| 109 | Sensor current 1-4 | - | X | X | X |

X configurable - not configurable

*Only (NaN) is displayed currently.

FLXA402 use the following extended Units code for each unit

| Unit | Unit Code |
|--------|-----------|
| rH | 240 |
| S/m | 241 |
| μS/m | 242 |
| S/cm | 243 |
| Ohm m | 244 |
| MOhm m | 245 |
| %SAT | 247 |

1.2.4 Diagnostics Command (Command 48)

| HART Status Group | CMD48 byte | bit | HART Alarm Name | Alarm Number | NE107 |
|--------------------------|------------|-----|-----------------------------|--------------|-------|
| Device Status | - | 0 | PV Out of Limit | - | S |
| | | 1 | Non-PV Out of Limit | - | S |
| | | 2 | Loop Current Saturated | - | S |
| | | 3 | Loop Current Fixed | - | N |
| | | 4 | More Status Available | - | N |
| | | 5 | Cold Start | - | N |
| | | 6 | Configuration Changed | - | N |
| Device Specific Status 0 | 0 | 7 | Device Malfunction | - | N |
| | | 0 | Hardware failure | 001 | F |
| | | 1 | Internal com. error | 002 | F |
| | | 2 | IO mod. param. read error | 003 | F |
| | | 3 | Com. mod. param. read error | 004 | F |
| | | 4 | CPU param. read error | 005 | F |
| | | 5 | Reserved | 006 | N |
| Device Specific Status 1 | 1 | 6 | Reserved | 007 | N |
| | | 7 | Reserved | 008 | N |
| | | 0 | VGB calc. error | 009 | F |
| | | 1 | Ratio calc. error | 010 | F |
| | | 2 | Passage calc. error | 011 | F |
| | | 3 | Rejection calc. error | 012 | F |
| | | 4 | Deviation calc. error | 013 | F |
| Device Specific Status 2 | 2 | 5 | Script error | 014 | N |
| | | 6 | Reserved | 015 | N |
| | | 7 | Reserved | 016 | N |
| | | 0 | mA1 output burn out | 017 | F |
| | | 1 | mA2 output burn out | 018 | F |
| | | 2 | mA3 output burn out | 019 | F |
| | | 3 | mA4 output burn out | 020 | F |
| Device Specific Status 3 | 3 | 4 | mA1 saturation | 021 | S |
| | | 5 | mA2 saturation | 022 | S |
| | | 6 | mA3 saturation | 023 | S |
| | | 7 | mA4 saturation | 024 | S |
| | | 0 | AI exceeds limit | 025 | S |
| | | 1 | AI out of range | 026 | F |
| | | 2 | Expiry time exceeded | 027 | M |
| | | 3 | Reserved | | N |
| | | 4 | Wash response failure | 029 | M |
| | | 5 | Reserved | | N |
| | | 6 | Converter Error Simulation | 031 | C |
| | | 7 | Fail safe occur | 032 | F |

| HART Status Group | CMD48 byte | bit | HART Alarm Name | Alarm Number | NE107 |
|--------------------------|------------------|-----|---------------------------------------|--------------|-------|
| Device Specific Status 4 | 4 | 0 | Simulated mA value 1 | 033 | C |
| | | 1 | Simulated mA value 2 | 034 | C |
| | | 2 | Simulated mA value 3 | 035 | C |
| | | 3 | Simulated mA value 4 | 036 | C |
| | | 4 | Outputs in HOLD1 | 037 | N |
| | | 5 | Outputs in HOLD2 | 038 | N |
| | | 6 | Outputs in HOLD3 | 039 | N |
| Device Specific Status 5 | 5 | 7 | Outputs in HOLD4 | 040 | N |
| | | 0 | Output configuration error | 041 | F |
| | | 1 | Other configuration error | 042 | C |
| | | 2 | Reserved | 043 | N |
| | | 3 | Reserved | 044 | N |
| | | 4 | Reserved | 045 | N |
| | | 5 | Reserved | 046 | N |
| Extended Device Status | 6 | 6 | Reserved | 047 | N |
| | | 7 | Reserved | 048 | N |
| | | 0 | Maintenance Required(NE107: M) | - | N |
| | | 1 | Device Variable Alert *1 | - | S |
| | | 2 | Critical Poew Failure | | F |
| | | 3 | Failure (NE107: F) | - | N |
| | | 4 | Out of Specification (NE107: S) | - | N |
| Device Operating Mode | 7 | 5 | Function Check (NE107: C) | - | N |
| | | 6 | Reserved | | N |
| | | 7 | Reserved | | N |
| | | 0 | Reserved | | N |
| | | 1 | Reserved | | N |
| | | 2 | Reserved | | N |
| | | 3 | Reserved | | N |
| Standardized Status0 | 8 | 4 | Reserved | | N |
| | | 5 | Reserved | | N |
| | | 6 | Reserved | | N |
| | | 7 | Reserved | | N |
| | | 0 | Device Variable Simulation Active | | C |
| | | 1 | Non-Volatile Memory Defect | | F |
| | | 2 | Volatile Memory Defect | | F |
| Standardized Status1 | 9 | 3 | Watchdog Reset Executed | | F |
| | | 4 | Power Supply Conditions Out of Range | | S |
| | | 5 | Environmental Conditions Out of Range | | S |
| | | 6 | Electronic Defect | | F |
| | | 7 | Device Configuration Locked | - | N |
| | | 0 | Status Simulation Active | - | N |
| | | 1 | Discrete Variable Simulation Active | - | C |
| Analog Channel Saturated | 10 | 2 | Event Notification Overflow | | N |
| | | 3 | Reserved | | N |
| | | 4 | Reserved | | N |
| | | 5 | Reserved | | N |
| | | 6 | Reserved | | N |
| | | 7 | Reserved | | N |
| | | 0 | Analog Channel 1 | | N |
| 1 | Analog Channel 2 | | N | | |
| 2 | Analog Channel 3 | | N | | |
| 3 | Analog Channel 4 | | N | | |
| 4 | Reserved | | N | | |
| 5 | Reserved | | N | | |
| 6 | Reserved | | N | | |
| 7 | Reserved | | N | | |

| HART Status Group | CMD48 byte | bit | HART Alarm Name | Alarm Number | NE107 |
|--|------------|----------|--------------------------------|--------------|-------|
| Standardized Status2 | 11 | 0 | Sub-Device List Changed | | N |
| | | 1 | Duplicate master Detected. | | N |
| | | 2 | Reserved | | N |
| | | 3 | Reserved | | N |
| | | 4 | Reserved | | N |
| | | 5 | Reserved | | N |
| | | 6 | Reserved | | N |
| Standardized Status2 for Wireless HART | 12 | 0 | Reserved | | N |
| | | 1 | Reserved | | N |
| | | 2 | Reserved | | N |
| | | 3 | Reserved | | N |
| | | 4 | Reserved | | N |
| | | 5 | Reserved | | N |
| | | 6 | Reserved | | N |
| Analog Channel Fixed | 13 | 0 | Analog Channel 1 | | N |
| | | 1 | Analog Channel 2 | | N |
| | | 2 | Analog Channel 3 | | N |
| | | 3 | Analog Channel 4 | | N |
| | | 4 | Reserved | | N |
| | | 5 | Reserved | | N |
| | | 6 | Reserved | | N |
| Device Specific Status 6 | 14 | 0 | Sensor 1-1 device failure | 101 | F |
| | | 1 | Sensor 1-2 device failure | 201 | F |
| | | 2 | Sensor 1-3 device failure | 301 | F |
| | | 3 | Sensor 1-4 device failure | 401 | F |
| | | 4 | Sensor 2-1 device failure | 501 | F |
| | | 5 | Reserved | 601 | N |
| | | 6 | Reserved | 701 | N |
| Device Specific Status 7 | 15 | 0 | Sensor 1-1 configuration error | 102 | F |
| | | 1 | Sensor 1-2 configuration error | 202 | F |
| | | 2 | Sensor 1-3 configuration error | 302 | F |
| | | 3 | Sensor 1-4 configuration error | 402 | F |
| | | 4 | Sensor 2-1 configuration error | 502 | F |
| | | 5 | Reserved | 602 | N |
| | | 6 | Reserved | 702 | N |
| Device Specific Status 8 | 16 | 0 | Temp. 1-1 exceeds user limit | 103 | S |
| | | 1 | Temp. 1-2 exceeds user limit | 203 | S |
| | | 2 | Temp. 1-3 exceeds user limit | 303 | S |
| | | 3 | Temp. 1-4 exceeds user limit | 403 | S |
| | | 4 | Temp. 2-1 exceeds user limit | 503 | S |
| | | 5 | Reserved | 603 | N |
| | | 6 | Reserved | 703 | N |
| Device Specific Status 9 | 17 | | Process 1-1 exceeds user limit | 104 | S |
| | | 1 | Process 1-2 exceeds user limit | 204 | S |
| | | 2 | Process 1-3 exceeds user limit | 304 | S |
| | | 3 | Process 1-4 exceeds user limit | 404 | S |
| | | 4 | Process 2-1 exceeds user limit | 504 | S |
| | | 5 | Reserved | 604 | N |
| | | 6 | Reserved | 704 | N |
| | 7 | Reserved | 804 | N | |

| HART Status Group | CMD48 byte | bit | HART Alarm Name | Alarm Number | NE107 |
|---------------------------|------------|-----|--------------------------------|--------------|-------|
| Device Specific Status 10 | 18 | 0 | Sensor 1-1 measurement warning | 105 | N |
| | | 1 | Sensor 1-2 measurement warning | 205 | N |
| | | 2 | Sensor 1-3 measurement warning | 305 | N |
| | | 3 | Sensor 1-4 measurement warning | 405 | N |
| | | 4 | Sensor 2-1 measurement warning | 505 | N |
| | | 5 | Reserved | 605 | N |
| | | 6 | Reserved | 705 | N |
| | | 7 | Reserved | 805 | N |
| Device Specific Status 11 | 19 | 0 | Sensor 1-1 out of spec. | 106 | S |
| | | 1 | Sensor 1-2 out of spec. | 206 | S |
| | | 2 | Sensor 1-3 out of spec. | 306 | S |
| | | 3 | Sensor 1-4 out of spec. | 406 | S |
| | | 4 | Sensor 2-1 out of spec. | 506 | S |
| | | 5 | Reserved | 606 | N |
| | | 6 | Reserved | 706 | N |
| | | 7 | Reserved | 806 | N |
| Device Specific Status 12 | 20 | 0 | Sensor 1-1 warning | 107 | N |
| | | 1 | Sensor 1-2 warning | 207 | N |
| | | 2 | Sensor 1-3 warning | 307 | N |
| | | 3 | Sensor 1-4 warning | 407 | N |
| | | 4 | Sensor 2-1 warning | 507 | N |
| | | 5 | Reserved | 607 | N |
| | | 6 | Reserved | 707 | N |
| | | 7 | Reserved | 807 | N |
| Device Specific Status 13 | 21 | 0 | Sensor 1-1 disable | 108 | F |
| | | 1 | Sensor 1-2 disable | 208 | F |
| | | 2 | Sensor 1-3 disable | 308 | F |
| | | 3 | Sensor 1-4 disable | 408 | F |
| | | 4 | Sensor 2-1 disable | 508 | F |
| | | 5 | Reserved | 608 | N |
| | | 6 | Reserved | 708 | N |
| | | 7 | Reserved | 808 | N |
| Device Specific Status 14 | 22 | 0 | Reserved | | N |
| | | 1 | Reserved | | N |
| | | 2 | Reserved | | N |
| | | 3 | Reserved | | N |
| | | 4 | Reserved | | N |
| | | 5 | Reserved | | N |
| | | 6 | Reserved | | N |
| | | 7 | Reserved | | N |
| Device Specific Status 15 | 23 | 0 | Reserved | | N |
| | | 1 | Reserved | | N |
| | | 2 | Reserved | | N |
| | | 3 | Reserved | | N |
| | | 4 | Reserved | | N |
| | | 5 | Reserved | | N |
| | | 6 | Reserved | | N |
| | | 7 | Reserved | | N |
| Device Specific Status 16 | 24 | 0 | Reserved | | N |
| | | 1 | Reserved | | N |
| | | 2 | Reserved | | N |
| | | 3 | Reserved | | N |
| | | 4 | Reserved | | N |
| | | 5 | Reserved | | N |
| | | 6 | Reserved | | N |
| | | 7 | Reserved | | N |

*: Reserved is fixed 0.

1.3 Precaution

- **Setting on the FLXA402 and a setup tool**

HART/MODBUS network/the panel operation, they cannot be established simultaneously to change the setting of FLXA402.

During the panel operation or the setting via MODBUS network, establishing HART connection issues a fail.

We recommend mA output to be on Manual Hold status while you are changing the setting.

(See 3.7 Hold operation (manual Hold) on [IM 12A01F01-03EN](#) Operation of Converter.

- **Access to parameters (Printout, Up/Download of parameters)**

The large number of parameters are configured in FLXA402. Therefore, it may take several minutes to carry our operation by using a lot of parameters.

- **Note on Display**

Update the menu display whenever the setting of FLXA402 is revised.

2. DD Menu Structure (Device revision 1, DD revision 1)

2.1 Online menu

| |
|-----------------------------|
| process_variables_root_menu |
| device_root_menu |
| diagnostic_root_menu |
| maintenance_root_menu |

2.1.1 process_variables_root_menu

| | | | | | | | | | | | | |
|-----------------------------|-------------------|---|-------------|--------------|-----------------|--------------------|----------------------|---------------------|-----------------|----------------|----------------|-----------------|
| Process variables root menu | Dynamic variables | | | | | | | | | | | |
| | | <table border="1"> <tr><td>PV</td></tr> <tr><td>PV % rng</td></tr> <tr><td>SV</td></tr> <tr><td>TV</td></tr> <tr><td>QV</td></tr> <tr><td>PV is</td></tr> <tr><td>SV is</td></tr> <tr><td>TV is</td></tr> <tr><td>QV is</td></tr> </table> | PV | PV % rng | SV | TV | QV | PV is | SV is | TV is | QV is | |
| PV | | | | | | | | | | | | |
| PV % rng | | | | | | | | | | | | |
| SV | | | | | | | | | | | | |
| TV | | | | | | | | | | | | |
| QV | | | | | | | | | | | | |
| PV is | | | | | | | | | | | | |
| SV is | | | | | | | | | | | | |
| TV is | | | | | | | | | | | | |
| QV is | | | | | | | | | | | | |
| | Device variables | | | | | | | | | | | |
| | | CH1-1 | | | | | | | | | | |
| | | <table border="1"> <tr><td>Sensor type</td></tr> <tr><td>PH sensor</td></tr> <tr><td>pH 1-1</td></tr> <tr><td>ORP 1-1</td></tr> <tr><td>rH 1-1</td></tr> <tr><td>Temp 1-1</td></tr> <tr><td>Sensor mV1 1-1</td></tr> <tr><td>Sensor mV2 1-1</td></tr> <tr><td>Sensor mV3 1-1</td></tr> </table> | Sensor type | PH sensor | pH 1-1 | ORP 1-1 | rH 1-1 | Temp 1-1 | Sensor mV1 1-1 | Sensor mV2 1-1 | Sensor mV3 1-1 | |
| Sensor type | | | | | | | | | | | | |
| PH sensor | | | | | | | | | | | | |
| pH 1-1 | | | | | | | | | | | | |
| ORP 1-1 | | | | | | | | | | | | |
| rH 1-1 | | | | | | | | | | | | |
| Temp 1-1 | | | | | | | | | | | | |
| Sensor mV1 1-1 | | | | | | | | | | | | |
| Sensor mV2 1-1 | | | | | | | | | | | | |
| Sensor mV3 1-1 | | | | | | | | | | | | |
| | | <table border="1"> <tr><td>SC sensor</td></tr> <tr><td>Conduct1 1-1</td></tr> <tr><td>Conduct2 1-1</td></tr> <tr><td>Resist1 1-1</td></tr> <tr><td>Resist2 1-1</td></tr> <tr><td>Temp1-1</td></tr> <tr><td>Concent1 1-1</td></tr> <tr><td>Concent2 1-1</td></tr> <tr><td>USP 1-1</td></tr> <tr><td>Sensor ohms 1-1</td></tr> </table> | SC sensor | Conduct1 1-1 | Conduct2 1-1 | Resist1 1-1 | Resist2 1-1 | Temp1-1 | Concent1 1-1 | Concent2 1-1 | USP 1-1 | Sensor ohms 1-1 |
| SC sensor | | | | | | | | | | | | |
| Conduct1 1-1 | | | | | | | | | | | | |
| Conduct2 1-1 | | | | | | | | | | | | |
| Resist1 1-1 | | | | | | | | | | | | |
| Resist2 1-1 | | | | | | | | | | | | |
| Temp1-1 | | | | | | | | | | | | |
| Concent1 1-1 | | | | | | | | | | | | |
| Concent2 1-1 | | | | | | | | | | | | |
| USP 1-1 | | | | | | | | | | | | |
| Sensor ohms 1-1 | | | | | | | | | | | | |
| | | <table border="1"> <tr><td>ISC sensor</td></tr> <tr><td>Conduct1 1-1</td></tr> <tr><td>Conduct2 1-1</td></tr> <tr><td>Temp1-1</td></tr> <tr><td>Sensor ohms 1-1</td></tr> </table> | ISC sensor | Conduct1 1-1 | Conduct2 1-1 | Temp1-1 | Sensor ohms 1-1 | | | | | |
| ISC sensor | | | | | | | | | | | | |
| Conduct1 1-1 | | | | | | | | | | | | |
| Conduct2 1-1 | | | | | | | | | | | | |
| Temp1-1 | | | | | | | | | | | | |
| Sensor ohms 1-1 | | | | | | | | | | | | |
| | | <table border="1"> <tr><td>DO sensor</td></tr> <tr><td>Oxygen1-1</td></tr> <tr><td>Temp 1-1</td></tr> <tr><td>Sensor current 1-1</td></tr> </table> | DO sensor | Oxygen1-1 | Temp 1-1 | Sensor current 1-1 | | | | | | |
| DO sensor | | | | | | | | | | | | |
| Oxygen1-1 | | | | | | | | | | | | |
| Temp 1-1 | | | | | | | | | | | | |
| Sensor current 1-1 | | | | | | | | | | | | |
| | | CH1-2 ... | | | | | | | | | | |
| | | CH1-3 ... | | | | | | | | | | |
| | | CH1-4 ... | | | | | | | | | | |
| | | CH2-1 ... | | | | | | | | | | |
| | | Converter | | | | | | | | | | |
| | | <table border="1"> <tr><td>AO1 current</td></tr> <tr><td>AI</td></tr> <tr><td>Differential pH</td></tr> <tr><td>Differential ORP</td></tr> <tr><td>Differential Conduct</td></tr> <tr><td>Differential Resist</td></tr> <tr><td>Differential DO</td></tr> <tr><td>Average pH</td></tr> <tr><td>Average ORP</td></tr> </table> | AO1 current | AI | Differential pH | Differential ORP | Differential Conduct | Differential Resist | Differential DO | Average pH | Average ORP | |
| AO1 current | | | | | | | | | | | | |
| AI | | | | | | | | | | | | |
| Differential pH | | | | | | | | | | | | |
| Differential ORP | | | | | | | | | | | | |
| Differential Conduct | | | | | | | | | | | | |
| Differential Resist | | | | | | | | | | | | |
| Differential DO | | | | | | | | | | | | |
| Average pH | | | | | | | | | | | | |
| Average ORP | | | | | | | | | | | | |

| | | | | |
|--|--------------------------|-------|-----------|------------------------|
| | | | | Average Conduct |
| | | | | Average Resist |
| | | | | Average DO |
| | | | | Ratio |
| | | | | Passage |
| | | | | Rejection |
| | | | | Deviation |
| | | | | pH calc |
| | | | | Script 1 |
| | | | | Script 2 |
| | | | | Script 3 |
| | | | | Script 4 |
| | | | | Script 5 |
| | | | | Script 6 |
| | | | | Script 7 |
| | | | | Script 8 |
| | Dynamic variables status | | | |
| | | | | PV quality |
| | | | | PV limit |
| | | | | SV quality |
| | | | | SV limit |
| | | | | TV quality |
| | | | | TV limit |
| | | | | QV quality |
| | | | | QV limit |
| | Device variables status | | | |
| | | CH1-1 | | |
| | | | PH sensor | |
| | | | | pH 1-1 quality |
| | | | | pH 1-1 limit |
| | | | | ORP 1-1 quality |
| | | | | ORP 1-1 limit |
| | | | | rH 1-1 quality |
| | | | | rH 1-1 limit |
| | | | | Temp 1-1 quality |
| | | | | Temp 1-1 limit |
| | | | | Sensor mV1 1-1 quality |
| | | | | Sensor mV1 1-1 limit |
| | | | | Sensor mV2 1-1 quality |
| | | | | Sensor mV2 1-1 limit |
| | | | | Sensor mV3 1-1 quality |
| | | | | Sensor mV3 1-1 limit |
| | | | SC sensor | |
| | | | | Conduct1 1-1 quality |
| | | | | Conduct1 1-1 limit |
| | | | | Conduct2 1-1 quality |
| | | | | Conduct2 1-1 limit |
| | | | | Resist1 1-1 quality |
| | | | | Resist1 1-1 limit |
| | | | | Resist2 1-1 quality |
| | | | | Resist2 1-1 limit |
| | | | | Temp 1-1 quality |
| | | | | Temp 1-1 limit |
| | | | | Concent1 1-1 quality |
| | | | | Concent1 1-1 limit |
| | | | | Concent2 1-1 quality |
| | | | | Concent2 1-1 limit |
| | | | | USP 1-1 quality |

| | | |
|-----------|------------|------------------------------|
| | | USP 1-1 limit |
| | | Sensor Ohms 1-1 quality |
| | | Sensor Ohms 1-1 limit |
| | ISC sensor | |
| | | Conduct1 1-1 quality |
| | | Conduct1 1-1 limit |
| | | Conduct2 1-1 quality |
| | | Conduct2 1-1 limit |
| | | Temp 1-1 quality |
| | | Temp 1-1 limit |
| | | Sensor Ohms 1-1 quality |
| | | Sensor Ohms 1-1 limit |
| | DO sensor | |
| | | Oxygen 1-1 quality |
| | | Oxygen 1-1 limit |
| | | Temp 1-1 quality |
| | | Temp 1-1 limit |
| | | Sensor current 1-1 quality |
| | | Sensor current 1-1 limit |
| CH1-2 | ... | |
| CH1-3 | ... | |
| CH1-4 | ... | |
| CH2-1 | ... | |
| Converter | | |
| | | AO1 current quality |
| | | AO1 current limit |
| | | AI quality |
| | | AI limit |
| | | Differential pH quality |
| | | Differential pH limit |
| | | Differential ORP quality |
| | | Differential ORP limit |
| | | Differential Conduct quality |
| | | Differential Conduct limit |
| | | Differential Resist quality |
| | | Differential Resist limit |
| | | Differential DO quality |
| | | Differential DO limit |
| | | Average pH quality |
| | | Average pH limit |
| | | Average ORP quality |
| | | Average ORP limit |
| | | Average Conduct quality |
| | | Average Conduct limit |
| | | Average Resist quality |
| | | Average Resist limit |
| | | Average DO quality |
| | | Average DO limit |
| | | Ratio quality |
| | | Ratio limit |
| | | Passage quality |

| | | | |
|--|-------------------|--|---|
| | | | Passage limit Rejection quality Rejection limit Deviation quality Deviation limit pH calc quality pH calc limit Script 1 quality Script 1 limit Script 2 quality Script 2 limit Script 3 quality Script 3 limit Script 4 quality Script 4 limit Script 5 quality Script 5 limit Script 6 quality Script 6 limit Script 7 quality Script 7 limit Script 8 quality Script 8 limit |
| | View input/output | | |
| | | AO1 current AO2 current AO3 current AO4 current AI current Contact in/out | |
| | Sensor variables | | |
| | | CH1-1 | |
| | | | PH sensor IMP1 1-1 IMP2 1-1 Sensor mV1 1-1 Sensor mV2 1-1 Sensor mV3 1-1 |
| | | | SC sensor Sensor Ohms 1-1 Polarization 1-1 |
| | | | ISC sensor Sensor Ohms 1-1 |
| | | | DO sensor Sensor current 1-1 Polarization voltage 1-1 Available KOH 1-1 Pressure level (process) |
| | | CH1-2 | ... |
| | | CH1-3 | ... |
| | | CH1-4 | ... |
| | | CH2-1 | ... |
| | User select | | User select values |
| | | | [selected device variavle name] [selected device variavle name] [selected device variavle name] |

| |
|---------------------------------|
| [selected device variavle name] |
| [selected device variavle name] |
| [selected device variavle name] |
| [selected device variavle name] |
| [selected device variavle name] |
| User select codes |
| User select code 1 |
| User select code 2 |
| User select code 3 |
| User select code 4 |
| User select code 5 |
| User select code 6 |
| User select code 7 |
| User select code 8 |

2.1.2 diagnostic_root_menu

| |
|---------------------------|
| Diagnostics root menu |
| Device status |
| Device Status |
| Extended Device Status |
| Standardized Status 0 |
| Standardized Status 1 |
| Device Specific Status 0 |
| Device Specific Status 1 |
| Device Specific Status 2 |
| Device Specific Status 3 |
| Device Specific Status 4 |
| Device Specific Status 5 |
| Device Specific Status 6 |
| Device Specific Status 7 |
| Device Specific Status 8 |
| Device Specific Status 9 |
| Device Specific Status 10 |
| Device Specific Status 11 |
| Device Specific Status 12 |
| Device Specific Status 13 |
| Config changed count |
| Clear config changed flag |
| Detailed device status |
| CH1-1 |
| PH sensor |
| SC sensor |
| ISC sensor |
| DO sensor |
| CH1-2 |
| ... |
| CH1-3 |
| ... |
| CH1-4 |
| ... |
| CH2-1 |
| ... |
| Converter |

2.1.3 maintenance_root_menu

| | | | |
|-----------------------|---------------------|------------------------|---------------------------|
| Maintenance root menu | | | |
| | Test | | |
| | | Simulation all clear | |
| | | Test auto release time | |
| | | Loop current(AO1) test | |
| | | AO2 test | |
| | | AO3 test | |
| | | AO4 test | |
| | | Status simulation | |
| | Display | | |
| | | Squawk | |
| | | Adjust touch panel | |
| | | Luminance select | |
| | Error configuration | | |
| | | Converter | |
| | | | Measurement alarm |
| | | | VGB calc. error |
| | | | Ratio calc. error |
| | | | Passage calc. error |
| | | | Rejection calc. error |
| | | | Deviation calc. error |
| | | | Script Error 1 |
| | | | Script Error 2 |
| | | | Script Error 3 |
| | | | Script Error 4 |
| | | | I/O alarm |
| | | | Fail safe occur |
| | | | Maintenance status |
| | | | Outputs in HOLD 1 |
| | | | Outputs in HOLD 2 |
| | | | Outputs in HOLD 3 |
| | | | Outputs in HOLD 4 |
| | | | Wash response failure 1 |
| | | | Wash response failure 2 |
| | | | Wash response failure 3 |
| | | | Wash response failure 4 |
| | | | Setting alarm |
| | | | mA 1 configuration error |
| | | | mA 2 configuration error |
| | | | mA 3 configuration error |
| | | | mA 4 configuration error |
| | | | Error in mA table 1 |
| | | | Error in mA table 2 |
| | | | Error in mA table 3 |
| | | | Error in mA table 4 |
| | | | Display 1-1 setting error |
| | | | Display 1-2 setting error |
| | | | Display 1-3 setting error |
| | | | Display 1-4 setting error |
| | | | Display 2-1 setting error |
| | | | Display 2-2 setting error |
| | | | Display 2-3 setting error |
| | | | Display 2-4 setting error |
| | | | HART setting error |
| | | | Contact config. error 1 |

| |
|-------------------------|
| Contact config. error 2 |
| Contact config. error 3 |
| Contact config. error 4 |

PH sensor

Sensor status

| |
|-------------------------|
| Sensor not detect |
| Temp element not detect |
| ID chip failure |
| LE detect |
| calibration due |
| imp1 glasbreak detect |
| imp2 glasbreak detect |

Measurement warning

| |
|----------------------|
| temp too high |
| temp too low |
| pH too high |
| pH too low |
| ORP too high |
| ORP too low |
| rH too high |
| rH too low |
| imp(pH/ORP) too high |
| imp(pH/ORP) too low |
| imp(ref) too high |
| imp(ref) too low |
| pH temp comp warning |
| SSA temp out. |
| Operating spec |

Device status

| |
|--------------------|
| SENCOM Comm. Error |
|--------------------|

SC sensor

Sensor status

| |
|-------------------------|
| Sensor not detect |
| Temp element not detect |
| ID chip failure |
| calibration due |

Measurement warning

| |
|-----------------------|
| temp too high |
| temp too low |
| conductivity too high |
| conductivity too low |
| temp comp1 warning |
| temp comp2 warning |
| USP limit exceeded |
| USP margin exceeded |
| Polarization detected |
| matrix1 error |
| matrix2 error |
| conc table error |
| SSA temp out. |
| Operating spec |

Device status

| |
|--------------------|
| SENCOM Comm. Error |
|--------------------|

ISC sensor

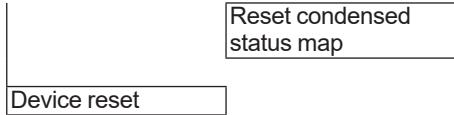
Sensor status

| | | | |
|----------------------|-----------|---------------------|------------------------------------|
| | | | Sensor not detect |
| | | | Temp element not detect |
| | | | ID chip failure |
| | | | calibration due |
| | | Measurement warning | |
| | | | temp too high |
| | | | temp too low |
| | | | conductivity too high |
| | | | conductivity too low |
| | | | temp comp1 warning |
| | | | temp comp2 warning |
| | | | matrix1 error |
| | | | matrix2 error |
| | | | conc table error |
| | | | SSA temp out. |
| | | | Operating spec |
| | | Device status | |
| | | | SENCOM Comm. Error |
| | DO sensor | | |
| | | Sensor status | |
| | | | Sensor not detect |
| | | | Temp element not detect |
| | | | ID chip failure |
| | | | sensor membrane failure |
| | | | calibration due |
| | | Measurement warning | |
| | | | temp too high |
| | | | temp too low |
| | | | DO too high |
| | | | DO too low |
| | | | SSA temp out. |
| | | | Operating spec |
| | | Device status | |
| | | | SENCOM Comm. Error |
| Condensed status map | | Device status | |
| | | | Primary Variable Out of Limits |
| | | | Non-Primary Variable Out of Limits |
| | | | Loop Current Saturated |
| | | | Loop Current Fixed |
| | | | More Status Available |
| | | | Cold Start |
| | | | Configuration Changed |
| | | | Device Malfunction |
| | | Ext dev status | |
| | | | Maintenance required |
| | | | Device variable alert |
| | | | Failure |
| | | | Out of Specification |
| | | | Function Check |

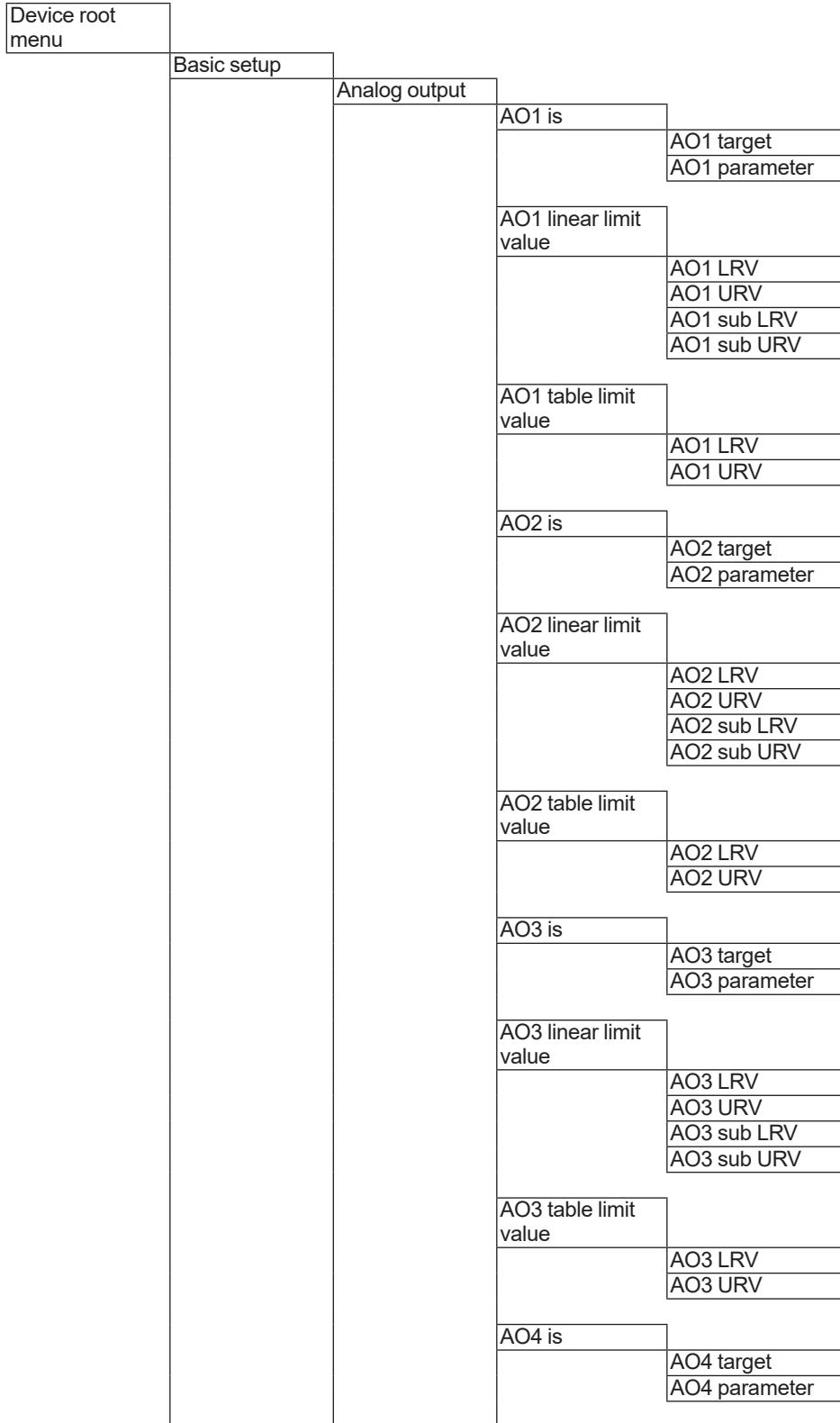
| | |
|----------------------------|-------------------------------------|
| Device diagnostic status 0 | |
| | Device configuration locked |
| Device diagnostic status 1 | |
| | Status simulation active |
| | Discrete Variable Simulation active |
| Device Specific Status 0 | |
| | Hardware failure |
| | Internal com. error |
| | IO mod. param. read error |
| | Com. mod. param. read error |
| | CPU param. read error |
| Device Specific Status 1 | |
| | VGB calc. error |
| | Ratio calc. error |
| | Passage calc. error |
| | Rejection calc. error |
| | Deviation calc. error |
| | Script error |
| Device Specific Status 2 | |
| | mA 1 output burn out |
| | mA 2 output burn out |
| | mA 3 output burn out |
| | mA 4 output burn out |
| | mA 1 saturation |
| | mA 2 saturation |
| | mA 3 saturation |
| | mA 4 saturation |
| Device Specific Status 3 | |
| | AI exceeds limit |
| | AI out of range |
| | Expiry time exceeded |
| | Wash response failure |
| | Converter Error Simulation |
| | Fail safe occur |
| Device Specific Status 4 | |
| | Simulated mA value 1 |
| | Simulated mA value 2 |
| | Simulated mA value 3 |
| | Simulated mA value 4 |
| | Outputs in HOLD1 |
| | Outputs in HOLD2 |
| | Outputs in HOLD3 |
| | Outputs in HOLD4 |

| | |
|--------------------------|--------------------------------|
| Device Specific Status 5 | |
| | Output configuration error |
| | Other configuration error |
| Device Specific Status 6 | |
| | Sensor 1-1 device failure |
| | Sensor 1-2 device failure |
| | Sensor 1-3 device failure |
| | Sensor 1-4 device failure |
| | Sensor 2-1 device failure |
| | Sensor 2-2 device failure |
| | Sensor 2-3 device failure |
| | Sensor 2-4 device failure |
| Device Specific Status 7 | |
| | Sensor 1-1 configuration error |
| | Sensor 1-2 configuration error |
| | Sensor 1-3 configuration error |
| | Sensor 1-4 configuration error |
| | Sensor 2-1 configuration error |
| | Sensor 2-2 configuration error |
| | Sensor 2-3 configuration error |
| | Sensor 2-4 configuration error |
| Device Specific Status 8 | |
| | Temp. 1-1 exceeds user limit |
| | Temp. 1-2 exceeds user limit |
| | Temp. 1-3 exceeds user limit |
| | Temp. 1-4 exceeds user limit |
| | Temp. 2-1 exceeds user limit |
| | Temp. 2-2 exceeds user limit |
| | Temp. 2-3 exceeds user limit |
| | Temp. 2-4 exceeds user limit |
| Device Specific Status 9 | |
| | Process 1-1 exceeds user limit |
| | Process 1-2 exceeds user limit |
| | Process 1-3 exceeds user limit |

| | |
|---------------------------|--|
| | Process 1-4 exceeds user limit Process 2-1 exceeds user limit Process 2-2 exceeds user limit Process 2-3 exceeds user limit Process 2-4 exceeds user limit |
| Device Specific Status 10 | Sensor 1-1 measurement warning Sensor 1-2 measurement warning Sensor 1-3 measurement warning Sensor 1-4 measurement warning Sensor 2-1 measurement warning Sensor 2-2 measurement warning Sensor 2-3 measurement warning Sensor 2-4 measurement warning |
| Device Specific Status 11 | Sensor 1-1 out of spec. Sensor 1-2 out of spec. Sensor 1-3 out of spec. Sensor 1-4 out of spec. Sensor 2-1 out of spec. Sensor 2-2 out of spec. Sensor 2-3 out of spec. Sensor 2-4 out of spec. |
| Device Specific Status 12 | Sensor 1-1 warning Sensor 1-2 warning Sensor 1-3 warning Sensor 1-4 warning Sensor 2-1 warning Sensor 2-2 warning Sensor 2-3 warning Sensor 2-4 warning |
| Device Specific Status 13 | Sensor 1-1 disable Sensor 1-2 disable Sensor 1-3 disable Sensor 1-4 disable Sensor 2-1 disable Sensor 2-2 disable Sensor 2-3 disable Sensor 2-4 disable |



2.1.4 device_root_menu



| | | | |
|----------------|---------------------|------------------------|--|
| | | AO4 linear limit value | |
| | | | AO4 LRV AO4 URV AO4 sub LRV AO4 sub URV |
| | | AO4 table limit value | |
| | | | AO4 LRV AO4 URV |
| | HART basic setup | | |
| | | PV is | |
| | | SV is | |
| | | TV is | |
| | | QV is | |
| | Tag setting | | |
| | | Tag | |
| | | Long tag | |
| Detailed setup | | | |
| | AO hold for setup | | |
| | Analog output/input | | |
| | | Analog output 1 | |
| | | | AO1 is |
| | | | AO1 target AO1 parameter |
| | | | AO1 mode |
| | | | AO1 function select |
| | | | AO1 burnout |
| | | | AO1 damping time |
| | | | AO1 simulation value |
| | | | AO1 hold setting |
| | | | AO1 hold Last/ Fixed select |
| | | | AO1 hold fixed value |
| | | | AO1 hold during calibration |
| | | AO1 linear limit value | |
| | | | AO1 LRV AO1 URV AO1 sub LRV AO1 sub URV |
| | | AO1 table limit value | |
| | | | AO1 LRV AO1 URV |
| | | Analog output 2 | ... |
| | | Analog output 3 | ... |
| | | Analog output 4 | ... |

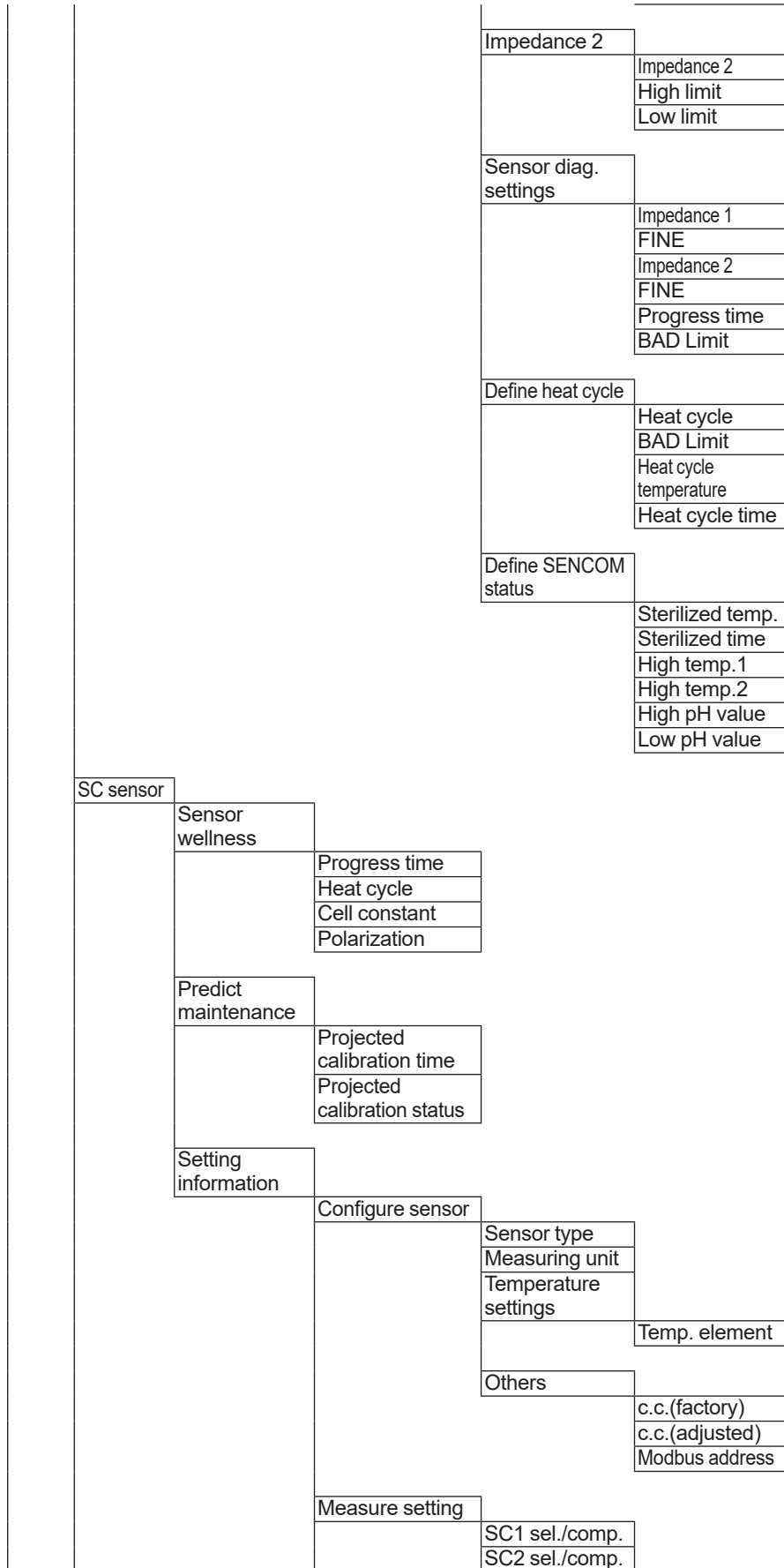
| | | |
|---------------------|---|-------------------------|
| Analog input | AI type | |
| | AI damping time | |
| | AI upper Limit | |
| | AI lower limit | |
| | AI temperature | |
| | | AI temp unit |
| | | AI Temp LRV |
| | | AI Temp URV |
| | AI pressure | |
| | | AI press unit |
| | AI Press LRV | |
| | AI Press URV | |
| | Pressure comp. (DO70G) | |
| Contact input | | |
| | Contact input 1 | |
| | | DI1 type |
| | | DI1 wash target |
| | | DI1 change range target |
| | Contact input 2 | |
| | | DI2 type |
| | | DI2 wash target |
| | | DI2 change range target |
| Display setup | | |
| | Auto return time select | |
| | Luminance select | |
| | Backlight auto off time select | |
| | Squawk setting | |
| Device information | | |
| | Date/Time | |
| | | Current date |
| | | Current time |
| | Serial No. | |
| | Software rev | |
| | Internal serial No. | |
| | | Housing assy |
| | | mA output module |
| | | Communication module |
| | | Analog sensor module 1 |
| | | Analog sensor module 2 |
| Sensor information | *The rest of this is displayed on the different area. | |
| HART detailed setup | | |
| | HART output | |
| | | PV is |
| | | SV is |
| | | TV is |

| | | |
|---------------------|--------------------|---------------------------|
| | QV is | |
| | Loop current mode | |
| | Poll addr | |
| HART identification | | |
| | Tag | |
| | Long tag | |
| | Num req preams | |
| | Num resp preams | |
| | Descriptor | |
| | Message | |
| | Date | |
| | Final assembly num | |
| | Distributor | |
| | Model | |
| | Write protect | |
| | STX Count | |
| | ACK Count | |
| HART sub unit setup | | |
| | Sub unit select | |
| | | Sensor 1-1 subunit enable |
| | | Sensor 1-2 subunit enable |
| | | Sensor 1-3 subunit enable |
| | | Sensor 1-4 subunit enable |
| | | Sensor 2-1 subunit enable |
| | | Sensor 2-2 subunit enable |
| | | Sensor 2-3 subunit enable |
| | | Sensor 2-4 subunit enable |
| HART revisions | | |
| | Fld dev rev | |
| | Dev id | |
| | Universal rev | |
| | Software rev | |
| | Hardware rev | |

* The rest of the Sensor information

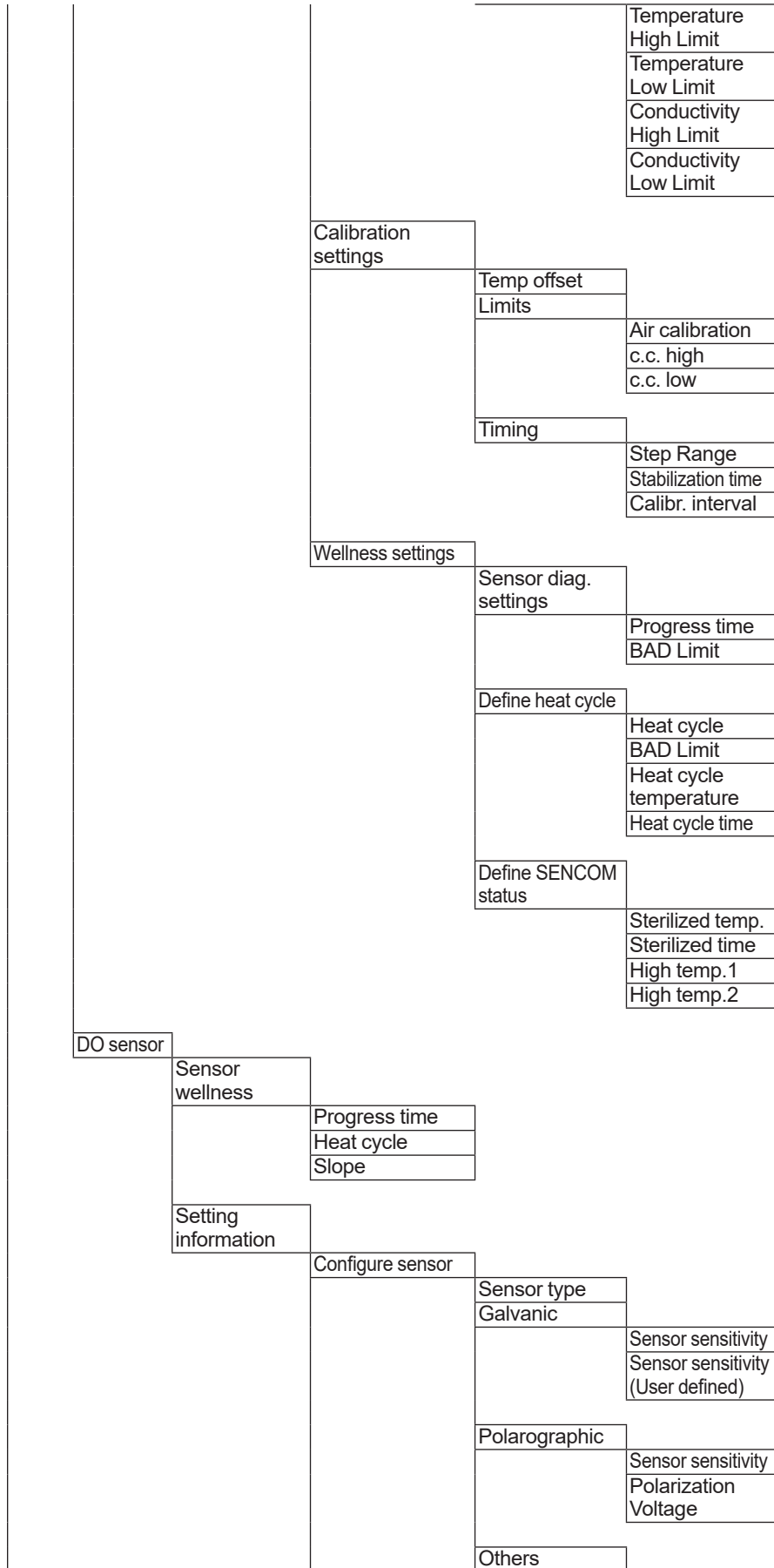
| | | | |
|--------------------|-------|----------------------------|------------------------------|
| Sensor information | CH1-1 | Sensor type | |
| | | Serial No. | |
| | | PH sensor | |
| | | Sensor wellness | |
| | | | Progress time |
| | | | Heat cycle |
| | | | Zero |
| | | | Slope |
| | | | Impedance1 |
| | | | Impedance2 |
| | | Predict maintenance | |
| | | | Projected maintenance time |
| | | | Projected maintenance status |
| | | | Projected replacement time |
| | | | Projected replacement status |
| | | Setting information | |
| | | Configure sensor | |
| | | | Sensor type |
| | | | Temp. element |
| | | | Modbus address |
| | | Measure setting | |
| | | Temperature settings | |
| | | | Unit |
| | | Temp. compensation | |
| | | | Compensation |
| | | | Manual temp. |
| | | | Reference temp. |
| | | Process Temp. Compensation | |
| | | | Method (pH) |
| | | | Temp coef (TC pH) |
| | | | Method(ORP) |
| | | | Temp coef1 (TC ORP) |
| | | | Temp coef2 (TC ORP) |
| | | | Impedance measure |
| | | High/Low alarm setting | |
| | | | Temp. high limit |
| | | | Temp. low limit |
| | | | pH high limit |
| | | | pH low limit |
| | | | ORP high limit |

| | | | |
|--|----------------------|----------------------|------------------|
| | | | ORP low limit |
| | | | rH high limit |
| | | | rH low limit |
| | Calibration settings | | |
| | | Temp offset | |
| | | Stabilization time | |
| | | Calibr. Interval | |
| | | Cal. set pH | |
| | | Unit | |
| | | | Zero unit |
| | | | Slope unit |
| | | Limits and timing | |
| | | | zero high limit |
| | | | zero low limit |
| | | | slope high limit |
| | | | slope low limit |
| | | | Step Range |
| | | Buffers (select set) | |
| | | | Select Buffer |
| | | Zero/Slope/ITP | |
| | | | Zero |
| | | | Slope |
| | | | ITP |
| | | | Zero2 |
| | | | Slope2 |
| | | Cal. set ORP/rH | |
| | | Limits and timing | |
| | | | zero high limit |
| | | | zero low limit |
| | | | slope high limit |
| | | | slope low limit |
| | | | Step Range (ORP) |
| | | | Step Range (rH) |
| | | zero/slope | |
| | | | Zero |
| | | | Slope |
| | | zero/slope2 | |
| | | | Zero |
| | | | Slope |
| | Wellness settings | | |
| | | Impedance 1 | |
| | | | Impedance 1 |
| | | | High limit |
| | | | Low limit |



| | | |
|--|---------------------------|---|
| | Concent1 sel./ comp. | |
| | Temperature settings | Unit |
| | Temp. compensation | Compensation Manual temp. Reference temp |
| | Temp coef | Temp coef1 Temp coef2 |
| | Matrix | Select matrix1 Select matrix2 |
| | High/Low alarm setting | Temperature High Limit Temperature Low Limit Conductivity High Limit Conductivity Low Limit Resistance High Limit Resistance Low Limit USP safety margin |
| | Calibration settings | Temp offset Limits Air calibration c.c. high c.c. low |
| | Timing | Step Range Stabilization time Calibr. interval |
| | Wellness settings | Sensor diag. settings Progress time BAD Limit |
| | Define heat cycle | Heat cycle BAD Limit Heat cycle temperature Heat cycle time |

| | | | | |
|--|------------|---------------------|---|---|
| | | | Others | |
| | | | | Polarization High Limit |
| | | | Define SENCOM status | |
| | | | | Sterilized temp. Sterilized time High temp.1 High temp.2 |
| | ISC sensor | | | |
| | | Sensor wellness | | |
| | | | Progress time Heat cycle Cell constant | |
| | | Predict maintenance | | |
| | | | Projected calibration time Projected calibration status | |
| | | Setting information | | |
| | | | Configure sensor | |
| | | | Measuring unit Temperature settings | |
| | | | | Temp. element |
| | | | Others | |
| | | | | c.c.(factory) c.c.(adjusted) Modbus address |
| | | | Measure setting | |
| | | | SC1 sel./comp. SC2 sel./comp. Concent1 sel./comp. Temperature settings | |
| | | | | Unit |
| | | | Temp. compensation | |
| | | | | Compensation Manual temp. Reference temp |
| | | | Temp coef | |
| | | | | Temp coef1 Temp coef2 |
| | | | Matrix | |
| | | | | Select matrix1 Select matrix2 |
| | | | High/Low alarm setting | |



| | | |
|----------------------|-----------------------------------|--------------------------|
| | | Temp. element |
| | | Modbus address |
| Measure setting | | |
| | DO settings | |
| | | Unit |
| | Temperature settings | |
| | | Unit |
| | Temp. compensation | |
| | | Compensation |
| | | Manual temp. |
| | Salinity comp. | |
| | | Compensation |
| | | Salinity |
| | Pressure comp. (Measure) | |
| | | Compensation |
| | | Pressure level (process) |
| | | Pressure unit |
| | High/Low alarm setting | |
| | | Temp. high limit |
| | | Temp. low limit |
| | | DO (mg/l) high limit |
| | | DO (mg/l) low limit |
| | | DO (ppm) high limit |
| | | DO (ppm) low limit |
| | | DO (ppb) high limit |
| | | DO (ppb) low limit |
| | | DO (%SAT) high limit |
| | | DO (%SAT) low limit |
| Calibration settings | | |
| | Temp offset | |
| | Limits and timing (Galvanic) | |
| | | zero high limit |
| | | zero low limit |
| | | slope high limit |
| | | slope low limit |
| | Limits and timing (Polarographic) | |
| | | zero high limit |
| | | zero low limit |
| | | slope high limit |
| | | slope low limit |
| | | Stabilization time |

| | | | | | | |
|-------|-------------------|----------------------------|------------------------------|-----------------|------------------------|-----------------|
| | | Step Range (mg/l) | zero point | span point | | |
| | | Step Range (ppm) | zero point | span point | | |
| | | Step Range (ppb) | zero point | span point | | |
| | | Step Range (%SAT) | zero point | span point | Calibr. interval | |
| | | zero/slope (Galvanic) | Zero Current | Slope | | |
| | | zero/slope (Polarographic) | Zero Current | Slope | | |
| | | Pressure Comp. (Cal.) | Pressure level (calibration) | | | |
| | Wellness settings | Sensor diag. settings | Progress time | BAD Limit | | |
| | | Define heat cycle | Heat cycle | BAD Limit | Heat cycle temperature | Heat cycle time |
| | | Check KOH residue | Sensor type | | | |
| | | Define SENCOM status | Sterilized temp. | Sterilized time | High temp.1 | High temp.2 |
| CH1-2 | ... | | | | | |
| CH1-3 | ... | | | | | |
| CH1-4 | ... | | | | | |
| CH2-1 | ... | | | | | |

2.2 Offline

| | |
|-----------------------------|-----------------------------|
| offline_root_menu | Tag |
| | Long tag |
| | Descriptor |
| | Message |
| | Date |
| | Final asmbly num |
| | Poll addr |
| | Loop current mode |
| | Num resp preams |
| | Test auto release time |
| | |
| | SV is |
| | TV is |
| | QV is |
| | |
| | AO1 target |
| | AO1 parameter |
| | AO1 mode |
| | AO1 function select |
| | AO1 burnout |
| | AO1 damping time |
| | AO1 simulation value |
| | AO1 hold Last/Fixed select |
| | AO1 hold fixed value |
| | AO1 hold during calibration |
| | |
| AO2 target | |
| AO2 parameter | |
| AO2 mode | |
| AO2 function select | |
| AO2 burnout | |
| AO2 damping time | |
| AO2 simulation value | |
| AO2 hold Last/Fixed select | |
| AO2 hold fixed value | |
| AO2 hold during calibration | |
| | |
| AO3 target | |
| AO3 parameter | |
| AO3 mode | |
| AO3 function select | |
| AO3 burnout | |
| AO3 damping time | |
| AO3 simulation value | |
| AO3 hold Last/Fixed select | |
| AO3 hold fixed value | |
| AO3 hold during calibration | |
| | |
| AO4 target | |
| AO4 parameter | |
| AO4 mode | |
| AO4 function select | |
| AO4 burnout | |
| AO4 damping time | |
| AO4 simulation value | |
| AO4 hold Last/Fixed select | |
| AO4 hold fixed value | |
| AO4 hold during calibration | |
| | |
| AI type | |
| AI damping time | |

| |
|--------------------------------|
| AI upper Limit |
| AI lower limit |
| AI Temp. LRV |
| AI Temp. URV |
| AI Press. LRV |
| AI Press. URV |
| Pressure comp.(DO70G) |
| |
| D11 type |
| D11 wash target |
| D11 change range target |
| D12 type |
| D12 wash target |
| D12 change range target |
| |
| Sub unit select |
| |
| Auto return time select |
| Luminance select |
| Backlight auto off time select |

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