User's Manual

Model EXAxt AV550G HART Protocol

IM 11M12D01-51E

vigilantplant.®

YOKOGAWA
Yokogawa Electric Corporation

IM 11M12D01-51E
2nd Edition

INTRODUCTION

This is the HART Communicator manual for the EXAxt series of Model AV550G. This manual is described under the HART equipment that is ready to operate.

When using the HART Protocol for the EXAxt AV550G, please refer to the following instruction manuals.

Special descriptions in this manual

This manual describes the products and instruction manuals listed below.

Products

AV550G: Averaging converter

Instruction manual

AV550G Instruction Manual: IM 11M12D01-01E

Drawings in this manual

Drawings in this manual may be emphasized, abbreviated or partially omitted for easier explanation.

Screen images in this instruction manual are drawings to give you an idea of functions and operation; they may be slightly different from actual screen displays.

Other items

The contents of this manual are subject to change without prior notice.

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◆ After-sales Warranty

- **Do not modify the product.**

- **During the warranty period, for repair under warranty carry or send the local sales representative or service office. Yokogawa will replace or repair anyproduct to the damaged parts and return the product to you.**

- **Before returning a product for repair under warranty, provide us with the model name and serial number and a description of the problem. Any diagrams or data explaining the problem would also be appreciated.**
  - If we replace the product with a new one, we won't provide you with a repair report.
  - Yokogawa warrants the product for the period stated in the pre-purchase quotation. Yokogawa shall conduct defined warranty service based on its standard. When the customer site is located outside of the service area, a fee for dispatching the maintenance engineer will be charged to the customer.

- **In the following cases, customer will be charged repair fee regardless of warranty eriod.**
  - Failure of components which are out of scope of warranty stated in instruction manual.
  - Failure caused by usage of software, hardware or auxiliary equipment, which Yokogawa Electric did not supply.
  - Failure due to improper or insufficient maintenance by user.
  - Failure due to modification, misuse or outside-of-specifications operation which Yokogawa does not authorize.
  - Failure due to power supply (voltage, frequency) being outside specifications or abnormal.
  - Failure caused by any usage out of scope of recommended usage.
  - Any damage from fire, earthquake, storms and floods, lightning, disturbances, riots, warfare, radiation and other natural changes.

- **Yokogawa does not warrant conformance with the specific application at the user site. Yokogawa will not bear direct/indirect responsibility for damage due to a specific application.**

- **Yokogawa Electric will not bear responsibility when the user configures the product into systems or resells the product.**

- **Maintenance service and supplying repair parts will be covered for five years after the production ends. For repair for this product, please contact the nearest sales office cribed in this instruction manual.**

Model EXAxt AV550G
HART Protocol

IM 11M12D01-51E 2nd Edition

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1. Operation via HART Communicator

1.1 Conditions of Communication Line

1.1.1 Interconnection between AV550G and HART Communicator

The HART Communicator can interface with the AV550G from the control room, the AV550G site, or any other wiring termination point in the loop, provided there is a minimum load resistance of 250Ω between the connection and the receiving instrument. To communicate, it must be connected in parallel with the AV550G, the connections are non-polarized. Figure 1.1 illustrates the wiring connections for direct interface at the AV550G site. The HART Communicator can be used for remote access from any terminal strip as well.

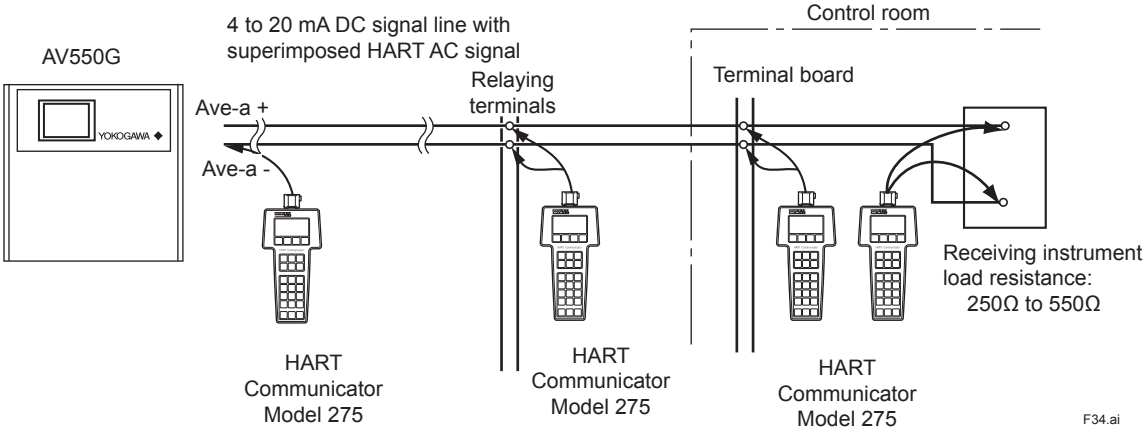


Figure 1.1 Interconnection Diagram

1.1.2 Communication Line Requirements

Specifications for Communication Line:

Load resistance: 250 to 550Ω (including cable resistance)

When multidrop mode, see Figure 1.2.

Minimum cable size: 24 AWG, (0.51 mm diameter)

Cable type: Single pair shielded or multiple pair with overall shield

Maximum twisted-pair length: 2,000 m

Maximum multiple twisted-pair length: 1,000 m

Use the following formula to determine cable length for a specific application;

$$L = \frac{65 \times 10^6}{(R \times C)} - \frac{(C_f + 10{,}000)}{C}$$

where: L = length in feet or meters

R = resistance in ohms, current sense resistance

C = cable capacitance in pF/ft or pF/m

Cf = 50,000 pF

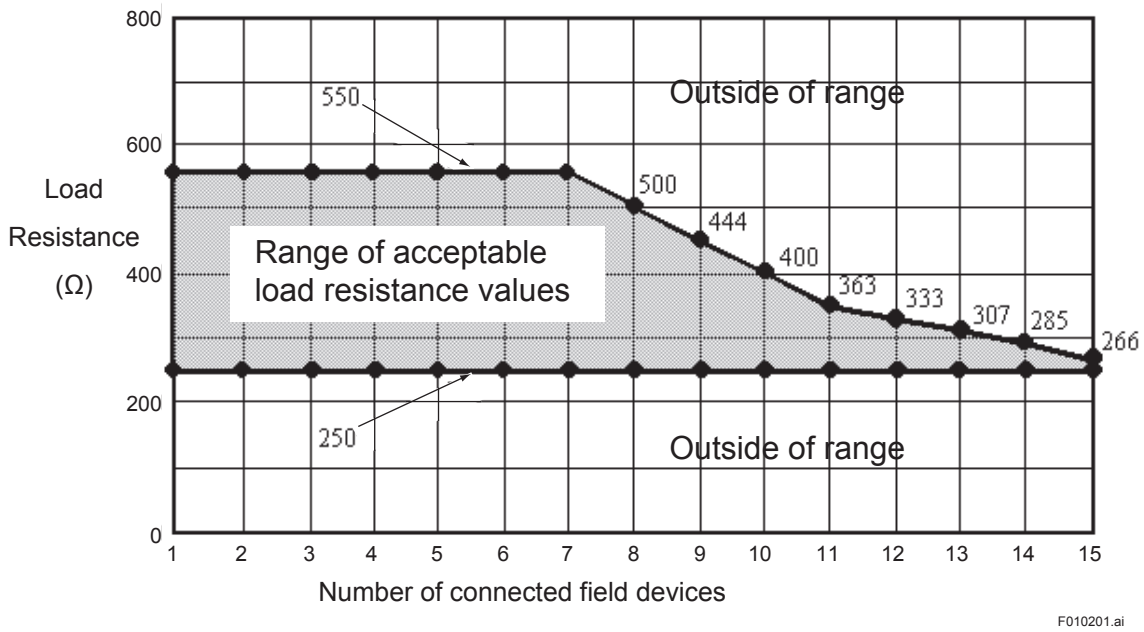


Figure 1.2 Load Resistance and Number of Devices in Multidrop Mode

2. Basic Operation of the HART Communicator (Model 275)

2.1 Keys and Functions

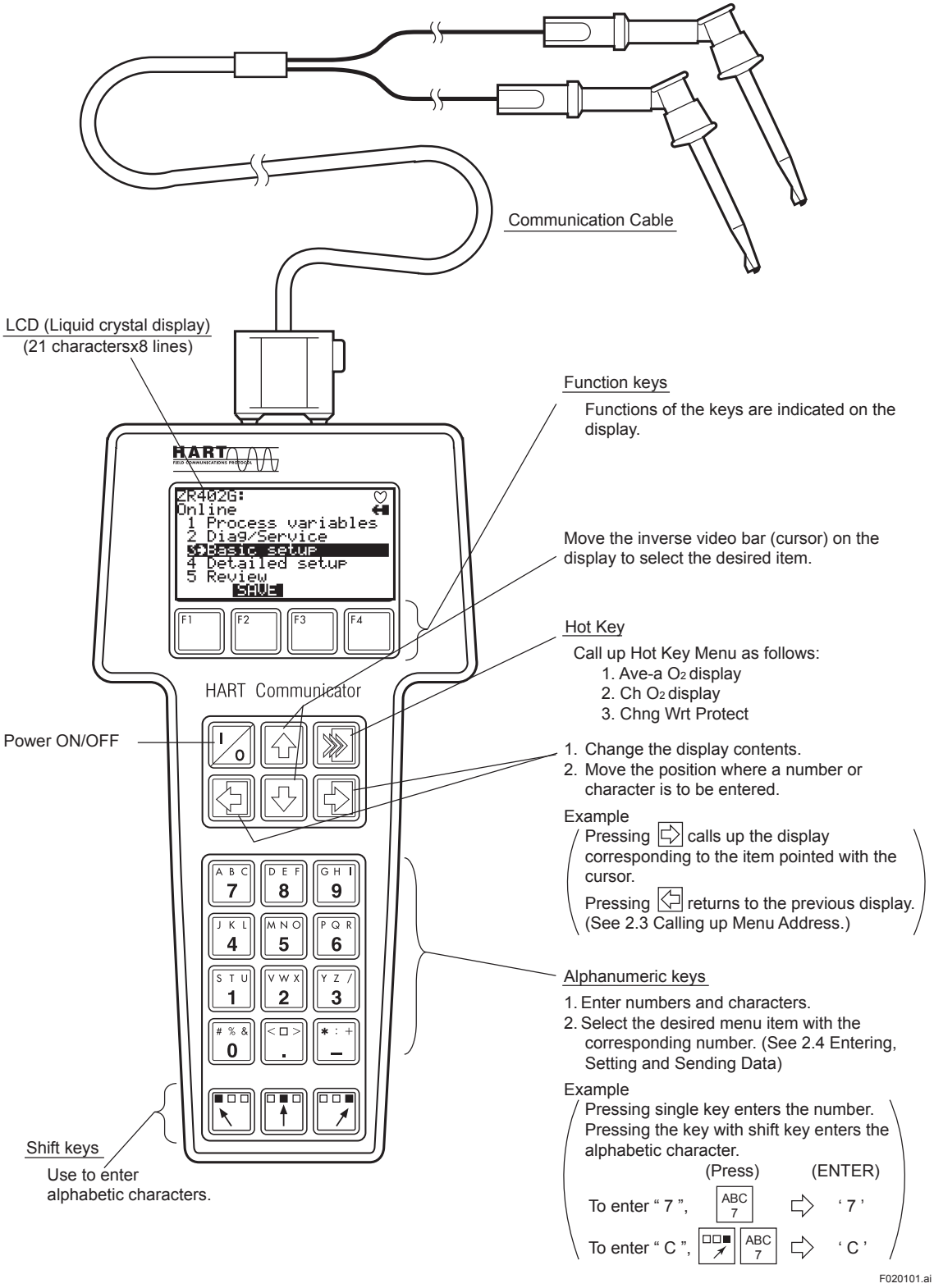


Figure 2.1 HART Communicator

2.2 Display

The HART Communicator automatically searches for AV550G on the 4 to 20 mA loop when it is turned on. When the HART Communicator is connected to a AV550G, it displays “Online” menu as shown below.

(If AV550G is not found, the communicator displays the message “No Device Found. Press OK....” Press the OK ‘F4’ function key and the main menu appears. Please retry after confirming the connection with the AV550G.)

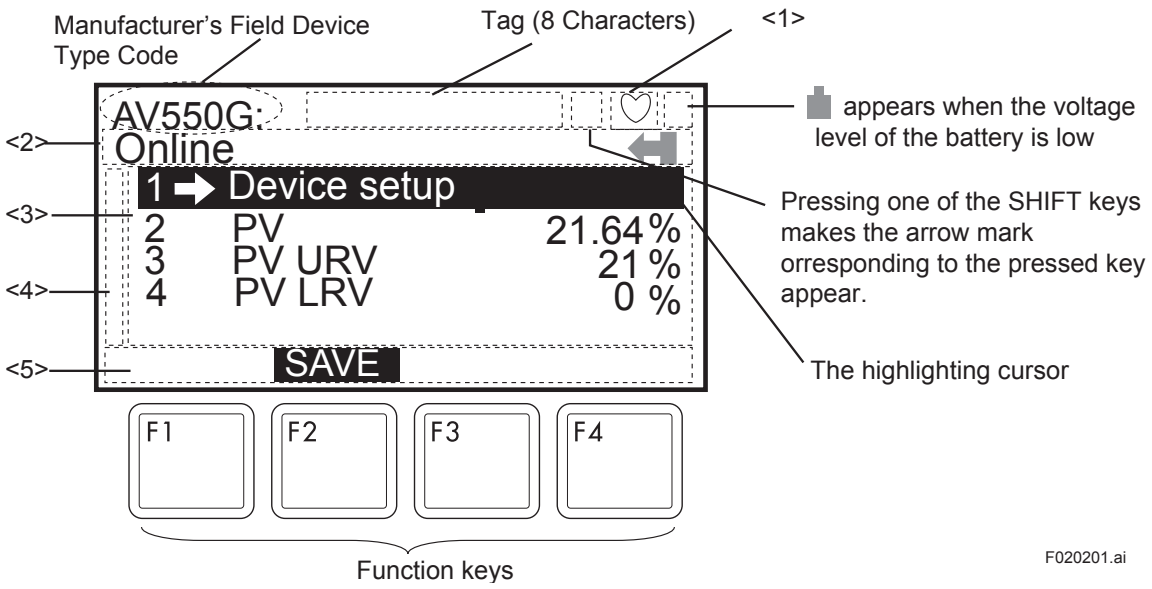


Figure 2.2 Display

<1> ♡ appears and flashes during communication between the HART Communicator and the AV550G. In Burst mode*, ♥ appears.

<2> The current display menu title appears.

<3> Each item in menu of <2> appears.

<4> ↓ and/or ↑ appear when the items are scrolled out of the display.

<5> On any given menu, the label appearing above a function key indicates the function of that key in the current menu.

Note: (*) Refer to “3.2.1 Burst Mode”.

Function Key Labels

F1	F2	F3	F4
HELP access on-line help	**ON/OFF** activates or deactivates a binary variable	**ABORT** terminate current task	**OK** acknowledge information on screen
RETRY try to reestablish communication	**DEL** delete current character or Hot Key Menu item	**ESC** leave value unchanged	**ENTER** accept user-entered data
EXIT leave the current menu	**SEND** send data to device, or mark data to send	**QUIT** terminate session because of a communication error	**NEXT** leave the current menu
YES answer to yes/no question	**PGUP** move up one help screen	**PGDN** move down one help screen	**NO** answer to yes/no question
ALL include current Hot Key item on Hot Key Menu for all devices	**PREV** go to previous message in a list of messages	**NEXT** go to next message in the list of messages	**SKIP** do not mark variable to be sent in off-line configuration
		HOME go to the top menu in the device description	**ONE** include Hot Key item for one device
SAVE save information to communicator	**EDIT** edit a variable value	**BACK** go back to menu from which HOME was pressed	
SEND send data to device, or mark data to send	**ADD** add current item to Hot Key Menu		

F0204.ai

2.3 Calling Up Menu Addresses

3.1 Menu Tree shows the configuration of Online Menu which is needed for the operation with HART Communicator. The desired item can be displayed with ease by understanding the menu configuration.

When the HART Communicator is connected to the AV550G, "**Online**" menu will be displayed after the power is turned on (See Figure 2.2). Call up the desired item as follows:

Key operation

There are two ways to select a desired menu item.

1. Use the ⇩ or ⇧ key to select the desired item, and then press the ⇨ key.

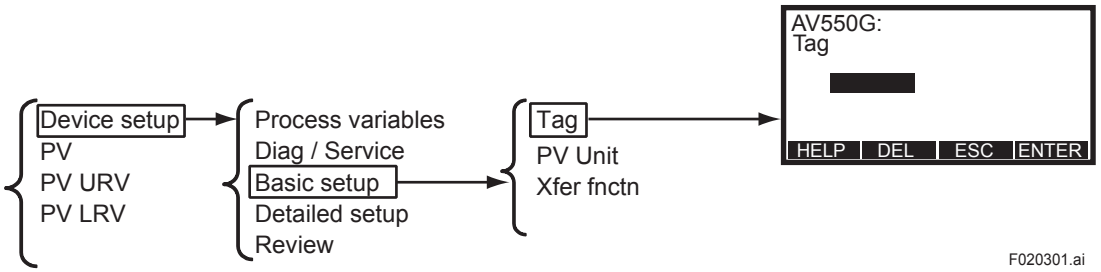
2. Press the number key corresponding to the desired item.

• To return to the previous display, press the ⇦ key.

If **EXIT, ESC** and **ABORT** are displayed, press the desired function Key.

> Example: Call up the **"Tag"** to change the tag number.

Check where "**Tag**" is located in the menu tree. Then, call up "**Tag**" on the display according to the menu tree.



	Display	Operation	
1	AV550G: Online 1 ➡ Device setup 2 PV 21.64 % 3 PV URV 21 % 4 PV LRV 0% SAVE	or STU 1	Display 1 at left appears when the HART communicator is turned on. Select "**Device set up**".
2	AV550G: Device setup 1 Process variables 2 Diag/Service 3 ➡ Basic setup 4 Detailed setup 5 Review SAVE HOME	x 2 or YZ/ 3	Select "**Basic setup**".
3	AV550G: Basic setup 1 ➡ Tag 2 PV Unit % 3 Xfer fnctn Linear HELP SAVE HOME	or STU 1	Select "**Tag**".
4	AV550G: Tag HELP DEL ESC ENTER		The display for Tag setting appears. (The default value of "**Tag**" is blank.)

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2.4 Entering, Setting and Sending Data

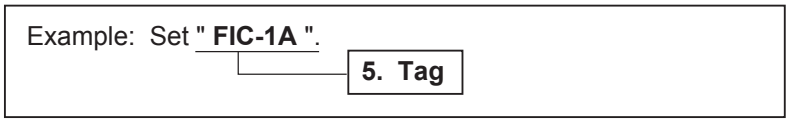
The data, which are entered with the keys, are set in the HART Communicator by pressing **ENTER (F4)**. Then, by pressing **SEND (F2)**, the data are sent to the AV550G. Note that the data are not set in the AV550G if **SEND (F2)** is not pressed.

All the data set with the HART Communicator are held in memory unless power is turned off, so all data can be sent to the AV550G in one burst.

Operation

Entering data on the "**Tag**" setting display.

On alphabetic characters, only capital letters can be used for setting Tag No. with HART Communicator.



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Call up "**Tag**" setting display.

1. Device setup ---> 3.basic setup ---> 5.Tag

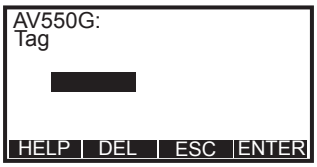

Fig-2001.ai

On the setting display shown above, enter the data as follows:

Character to be entered	Operation	Display
F	DEF 8	F
I	GHI 9	F I
C	ABC 7	F I C
-	* : + –	F I C -
1	STU 1	F I C - 1
A	ABC 7	F I C - 1 A

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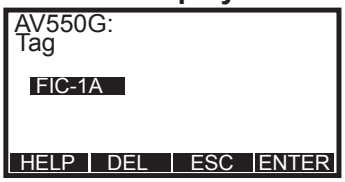
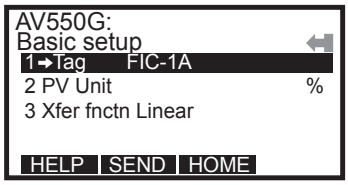
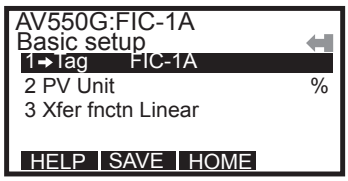
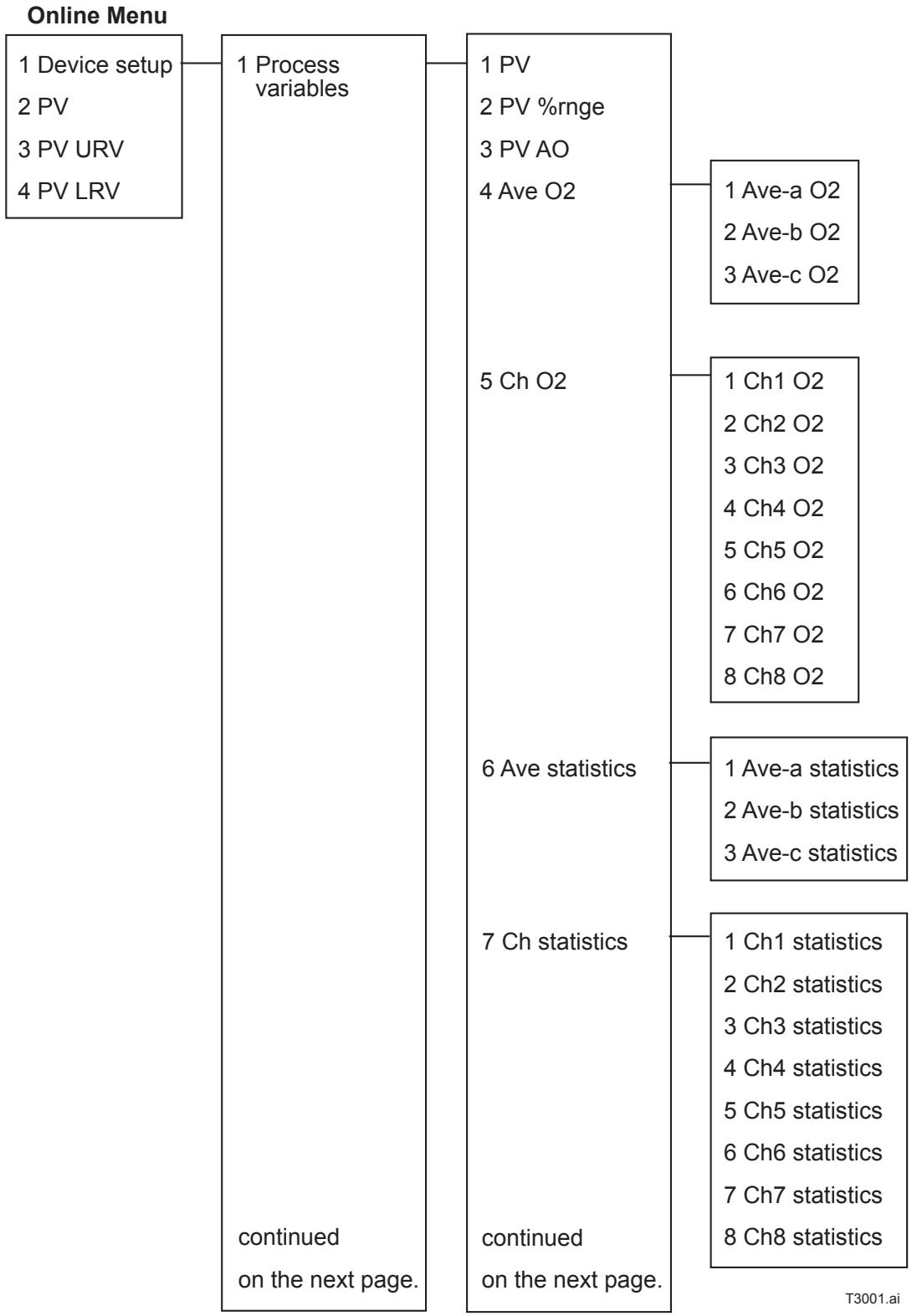
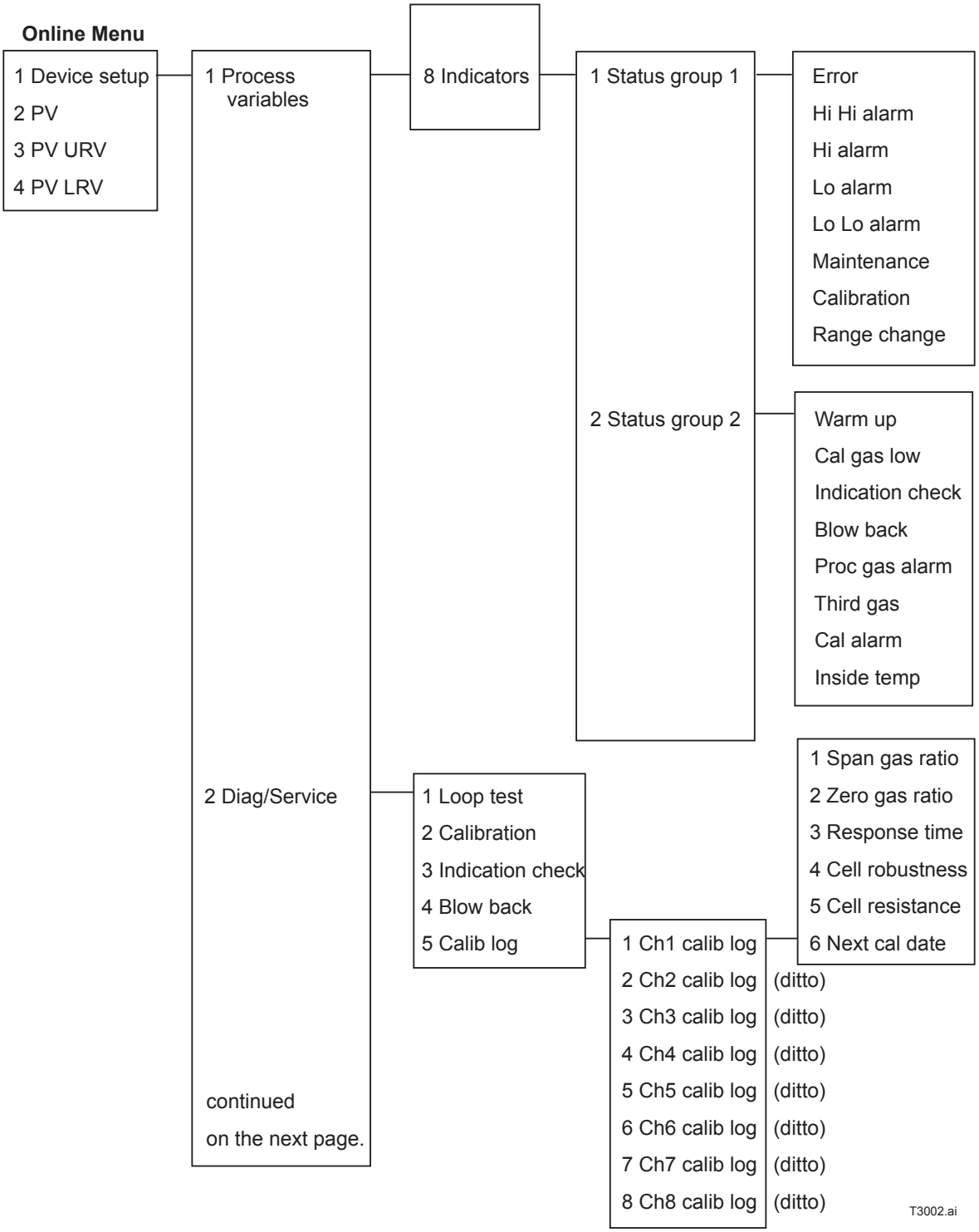
	Display	Operation	
1		(ENTER)	Press **ENTER (F4)** to set the data in the HART Communicator after entering the data.
2		(SEND)	Press **SEND (F2)** to send the data to the AV550G. ♡ is flashing during communication.
3			SEND label changed to SAVE label, and the transmission is completed. Press **HOME (F3)**, and return "Online Menu".

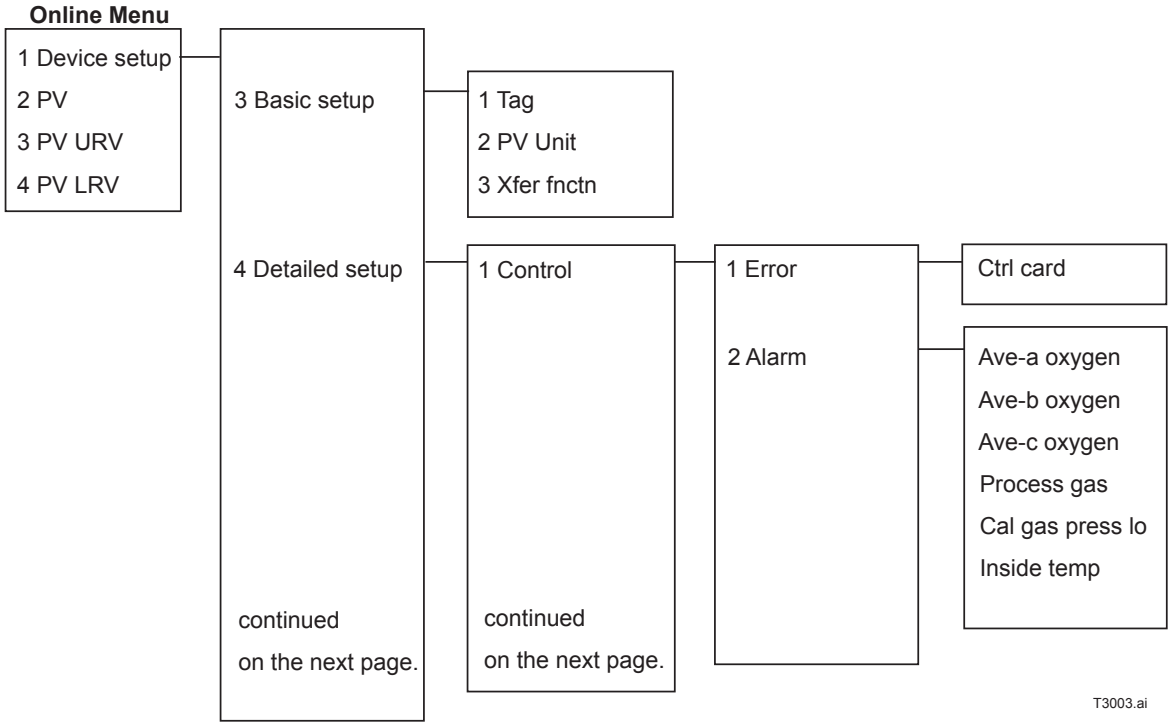
F020404.ai

3. Parameters

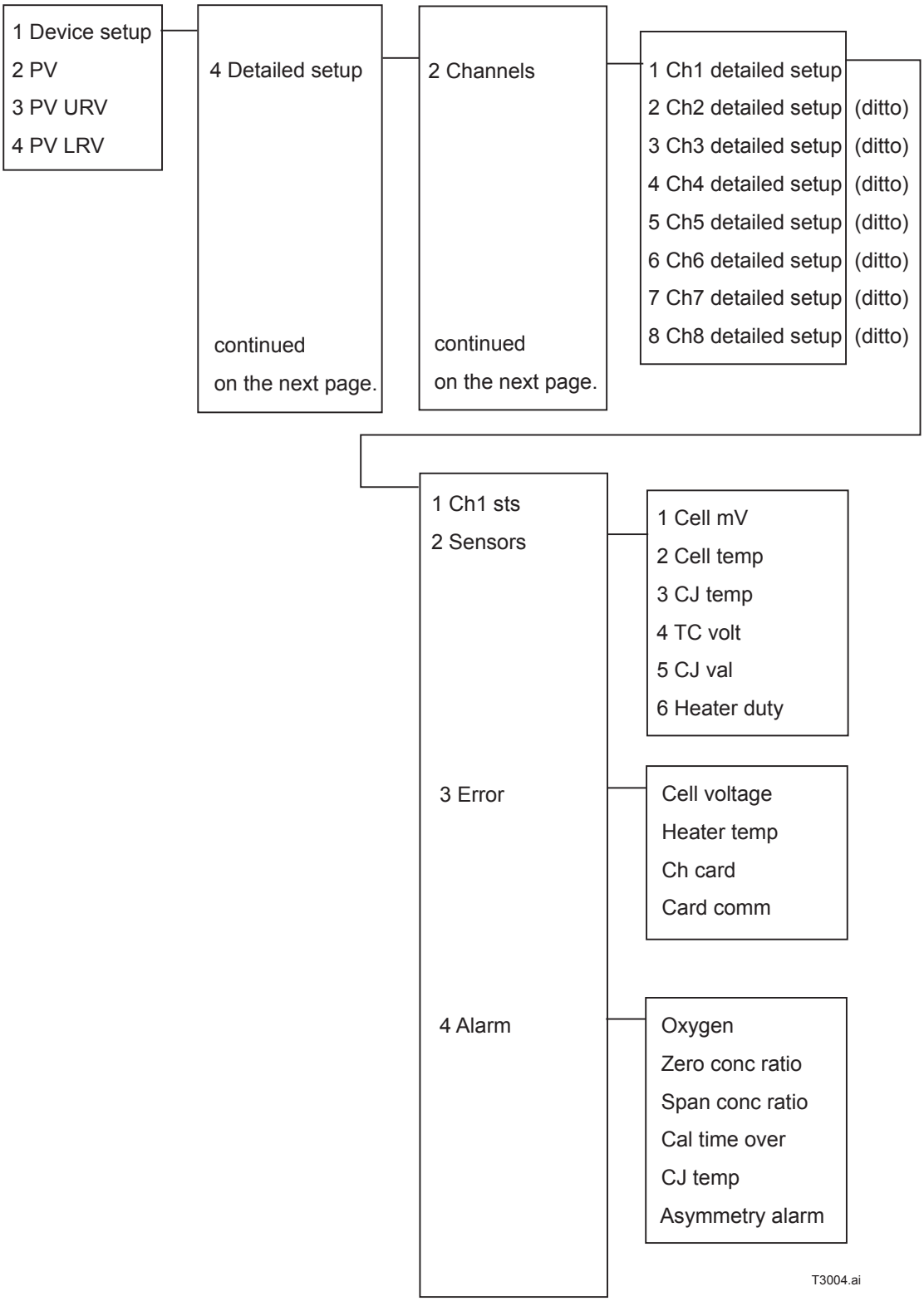
3.1 Menu Tree

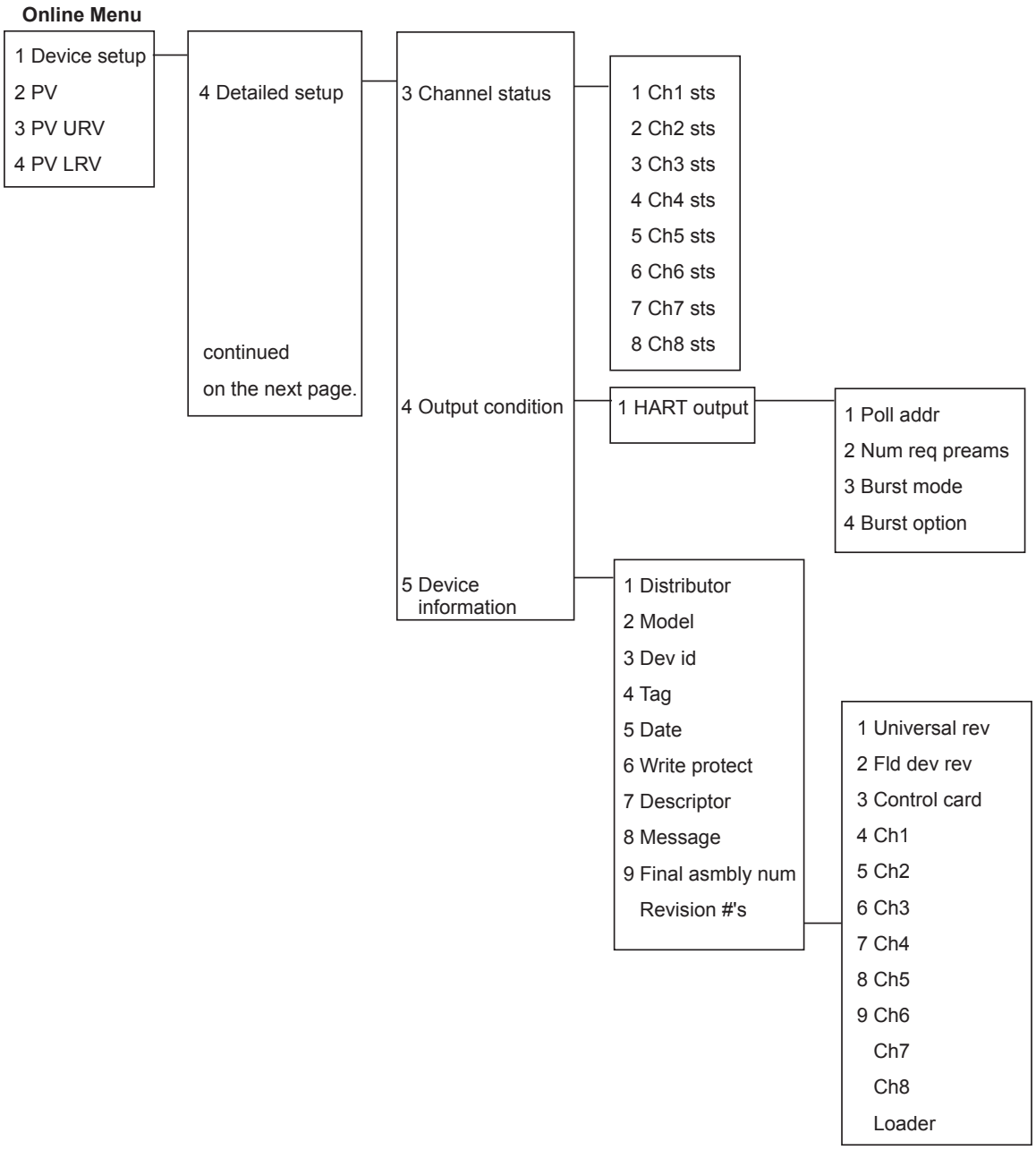



Online Menu
1 Device setup
2 PV
3 PV URV
4 PV LRV
1 Process variables
8 Indicators
1 Status group 1
Error
Hi Hi alarm
Hi alarm
Lo alarm
Lo Lo alarm
Maintenance
Calibration
Range change
2 Status group 2
Warm up
Cal gas low
Indication check
Blow back
Proc gas alarm
Third gas
Cal alarm
Inside temp
2 Diag/Service
1 Loop test
2 Calibration
3 Indication check
4 Blow back
5 Calib log
1 Ch1 calib log
2 Ch2 calib log (ditto)
3 Ch3 calib log (ditto)
4 Ch4 calib log (ditto)
5 Ch5 calib log (ditto)
6 Ch6 calib log (ditto)
7 Ch7 calib log (ditto)
8 Ch8 calib log (ditto)
1 Span gas ratio
2 Zero gas ratio
3 Response time
4 Cell robustness
5 Cell resistance
6 Next cal date
continued
on the next page.
T3002.ai

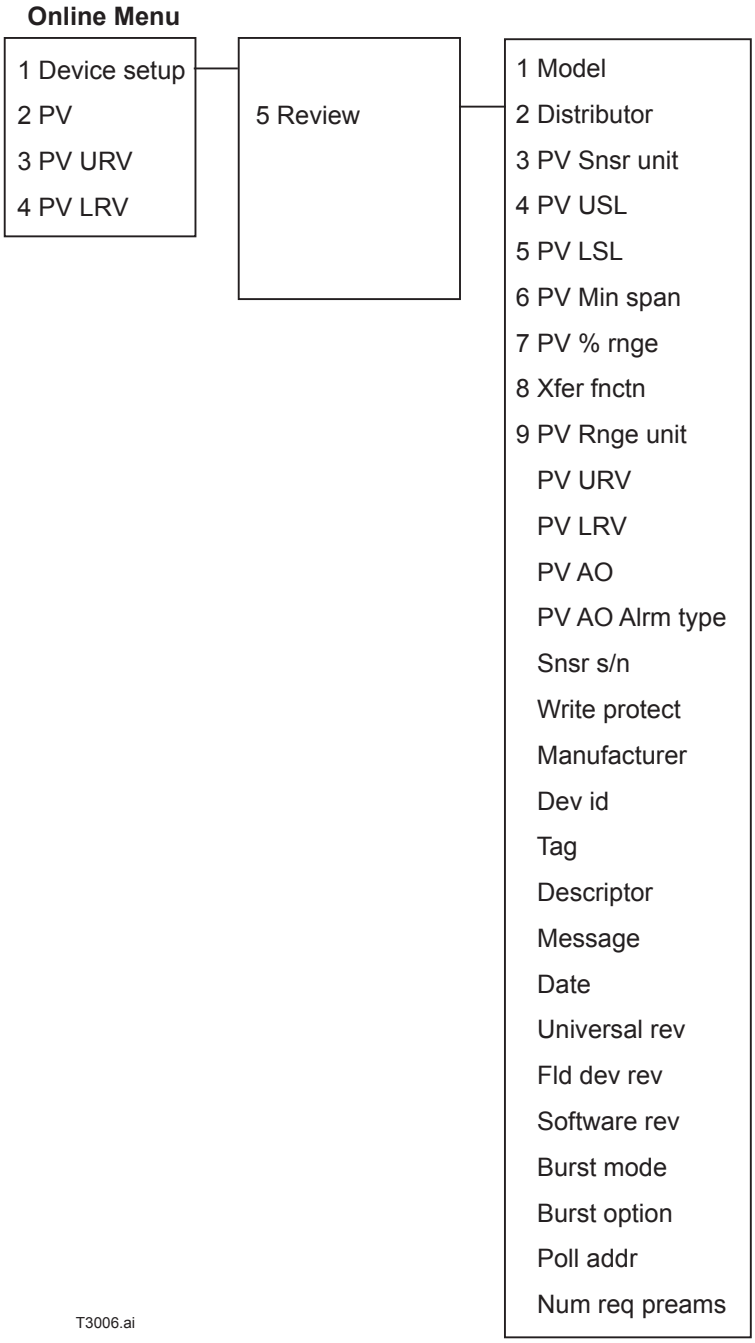

Online Menu
1 Device setup
2 PV
3 PV URV
4 PV LRV
3 Basic setup
1 Tag
2 PV Unit
3 Xfer fnctn
4 Detailed setup
1 Control
1 Error
Ctrl card
2 Alarm
Ave-a oxygen
Ave-b oxygen
Ave-c oxygen
Process gas
Cal gas press lo
Inside temp
continued
on the next page.
continued
on the next page.
T3003.ai

Online Menu


1 Device setup
2 PV
3 PV URV
4 PV LRV
4 Detailed setup
continued
on the next page.
2 Channels
continued
on the next page.
1 Ch1 detailed setup
2 Ch2 detailed setup (ditto)
3 Ch3 detailed setup (ditto)
4 Ch4 detailed setup (ditto)
5 Ch5 detailed setup (ditto)
6 Ch6 detailed setup (ditto)
7 Ch7 detailed setup (ditto)
8 Ch8 detailed setup (ditto)
1 Ch1 sts
2 Sensors
1 Cell mV
2 Cell temp
3 CJ temp
4 TC volt
5 CJ val
6 Heater duty
3 Error
Cell voltage
Heater temp
Ch card
Card comm
4 Alarm
Oxygen
Zero conc ratio
Span conc ratio
Cal time over
CJ temp
Asymmetry alarm
T3004.ai


Online Menu
1 Device setup
2 PV
3 PV URV
4 PV LRV
4 Detailed setup
continued
on the next page.
3 Channel status
1 Ch1 sts
2 Ch2 sts
3 Ch3 sts
4 Ch4 sts
5 Ch5 sts
6 Ch6 sts
7 Ch7 sts
8 Ch8 sts
4 Output condition
1 HART output
1 Poll addr
2 Num req preams
3 Burst mode
4 Burst option
5 Device information
1 Distributor
2 Model
3 Dev id
4 Tag
5 Date
6 Write protect
7 Descriptor
8 Message
9 Final asmbly num
Revision #'s
1 Universal rev
2 Fld dev rev
3 Control card
4 Ch1
5 Ch2
6 Ch3
7 Ch4
8 Ch5
9 Ch6
Ch7
Ch8
Loader

T3005.ai


Online Menu
1 Device setup
2 PV
3 PV URV
4 PV LRV
5 Review
1 Model
2 Distributor
3 PV Snsr unit
4 PV USL
5 PV LSL
6 PV Min span
7 PV % rnge
8 Xfer fnctn
9 PV Rnge unit
PV URV
PV LRV
PV AO
PV AO Alrm type
Snsr s/n
Write protect
Manufacturer
Dev id
Tag
Descriptor
Message
Date
Universal rev
Fld dev rev
Software rev
Burst mode
Burst option
Poll addr
Num req preams
T3006.ai

3.2 Setting Parameters

3.2.1 Burst Mode

The AV550G continuously sends the data stored in it when burst mode is set “On”. Either one of measured value, % output value, or 4 to 20 mA output value can be selected and sent. The data is sent periodically at 75 ms intervals as a digital signal when the AV550G is set in burst mode. Therefore, communication by the HART simultaneous communicator is also possible.

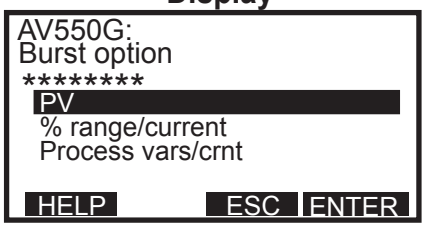
Setting of Burst Mode

Call up “**Burst option**” display.

1.Device setup ---> 4.Detailed setup ---> 4.Output condition ---> 1.HART output --->

4.Burst option

Display **Operation**



(ENTER)

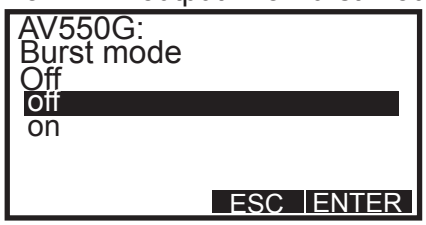
Set data to be sent.

- Measured value (PV)
- % output value (% range/current)
- 4 to 20 mA output value (Process vars /crnt)

Call up" **Burst mode**" display.

3.HART output → 3.Burst mode

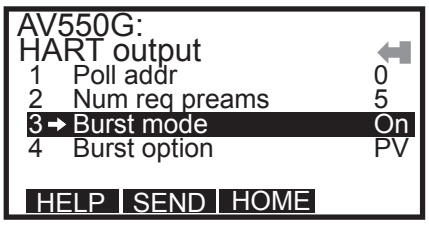
1



(ENTER)

Set "On" and press **ENTER (F4)**.

2



(SEND)

Press **SEND (F2)**.

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3.2.2 Multidrop Mode

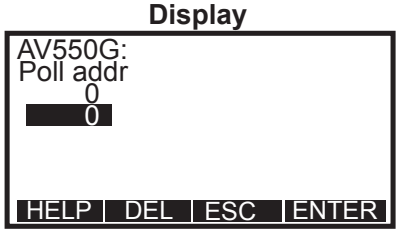
Field devices in multidrop mode refer to the connection of several field devices on a single communication line. Up to 15 field devices can be connected when set in multidrop mode. To activate multidrop communication, each field device address must be changed to a unique number in the range 1 to 15. This change deactivates the 4 to 20mA output and changes it to 4mA.

Setting of Multidrop Mode

Call up "**Poll addr**" display.

1.Device setup ---> 4.Detailed setup ---> 4.Output condition ---> 1.HART output ---->1.Poll addr

Display



Operation

"1" F4 (ENTER) F2 (SEND)

Set the polling address (a number from 1 to 15) and press **ENTER (F4)** Then Press **SEND (F2).**

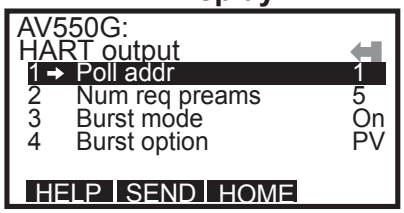
F030210-1.ai

Call up **"Auto Poll"** display.

HART output ---> Online Menu ---> Main Menu ---> 4.Utility ---> 1.Configure Communication ---> 1.Polling

Display **Operation**

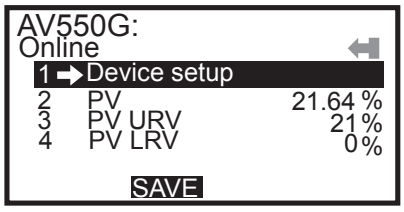
1



F3 (HOME)

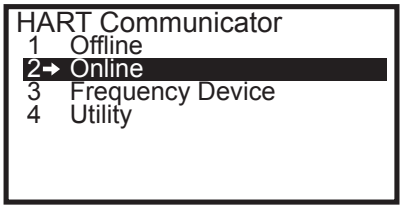
Return "**Online Menu**" with **HOME (F3)**.

2



Return to "**Main Menu**" with a "**previous**" key.

3



JLK 4

Select "**Utility**".

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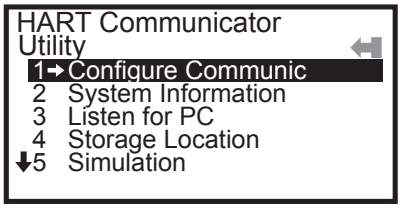
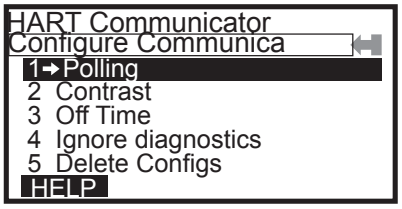
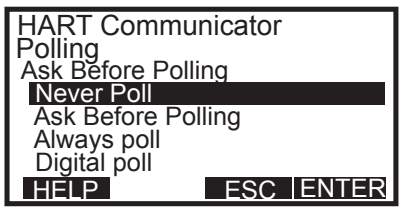
4


Select "**Configure Communication**"

5


Select "**Polling**".

6


x3 F4 (ENTER)

Select "**Digital Poll**" and press ENTER (F4).

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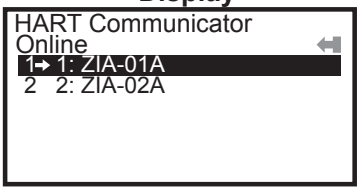
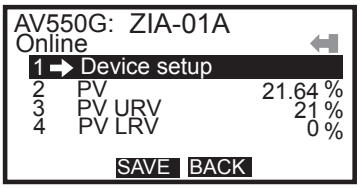
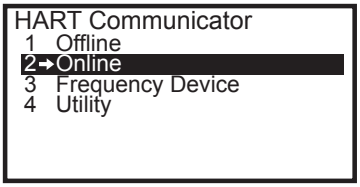
NOTE

1. If "Polling" is set to "Never Poll" after the address is set, "Online Menu" cannot be called up and displayed. Be sure to set "Polling" to "Digital Poll" after setting the polling address.
2. When the same polling address is set for two or more field devices in multidrop mode, communication with those field devices is disabled.

Example: Communication when set in the multidrop mode.

	Display	Operation
1		(1) The HART Communicator searches for field devices is set in multidrop mode when the HART Communicator is turned on. When a HART Communicator is connected to a field device, its tag will be displayed (display 1).
2		(2) Select desired field device. After that, normal communication with the selected field device is possible. However, the communication speed is slow in this case (display 2).
3		(3) To communicate with another field device, call up display 3 , and select "Online". (4) Display1 will appear. Repeat the above operation.

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Releasing from Multidrop Mode

First, call up the "**Poll addr**" display, and set the address to 0.

Second, call up the "**Polling**" display, and set "**Never Poll**".

> **NOTE** If the above releasing method is carried out in the reverse order "**Online Menu**" can not be called up.

3.2.3 Software Write Protect

AV550G configured data is saved by the write protect function. Write protect status is set to YES when 8 alphanumerics are entered in the New password field and transferred to the AV550G. In write protect YES status, the averaging converter AV550G does not accept parameter changes. When the 8 alphanumeric string entered in the New password field is also entered in the Enable write field and transferred to the averaging converter, it will be possible to change averaging converter parameters during a 10 minute period.

To change the averaging converter from write protect YES status back to write protect NO status, enter 8 spaces in the New password field after write protect has been released using enable write.

Setting Password

Example: Set the password to 1234

Call up "**Chng Wrt Protect**" display.

Hot key ---> 3.Chng Wrt Protect

	Display	Operation	
1	AV550G: Chng Wrt Protect 1→Write protect No 2 Enable wrt 10min 3 New password 4 Software seal Keep HELP SAVE	YZ/ 3	Select the "**New password**".
2	AV550G: Enter new password to change state of write protect: 1234 DEL ABORT ENTER	'1 2 3 4' F4 (ENTER)	Set "**1234**" and press **ENTER (F4)** .
3	AV550G: Re-enter new password within 30 seconds: 1234 DEL ABORT ENTER	"1 2 3 4" F4 (ENTER)	Reenter "**1234**" and press **ENTER (F4)** within 30 seconds.
4	AV550G: It changed the state of protection related password. OK	F4 (OK)	

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Changing Password

Example: To change the password from 1234 to 6789A

Call up "**Chng Wrt Protect**" display.

Hot key ---> 3.Chng Wrt Protect

	Display	Operation	
1	AV550G: Chng wrt Protect 1 Write protect No 2➔Enable wrt 10min 3 New password 4 Software seal Keep SAVE	VWX 2	Select the "**Enable wrt 10min**".
2	AV550G: Enter current password to enable to write for 10 minutes: 1234 DEL ABORT ENTER	"1 2 3 4" F4 (ENTER)	Set the old password "**1234**" and press **ENTER (F4)**.
3	AV550G: Released the write protection for 10 minutes. ABORT OK	F4 (OK)	Press **OK (F4)**.
4	AV550G: If you want to release completely, you have to change password to all of spaces. ABORT OK	F4 (OK)	Press **OK (F4)**.
5	AV550G: Chng Wrt Protect 1 Write protect Yes 2 Enable wrt 10min 3➔New password 4 Software seal Keep SAVE	YZ/ 3	Select the "**New password**".
6	AV550G: Enter new password to change state of write protect: 6789A DEL ABORT ENTER	"6789A" F4 (ENTER)	Set new password "**6789A**" and press **ENTER (F4)**.
7	AV550G: Re-enter new password within 30 seconds: 6789A DEL ABORT ENTER	"6789A" F4 (ENTER)	Reenter new password "**6789A**" and press **ENTER (F4)**.

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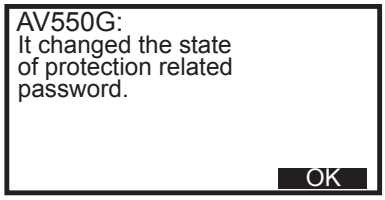

(OK)

Press **OK (F4)**.

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NOTE

1. Enable wrt 10 min releases write protect status for 10 minutes. While write protect status is released, enter a new password in the New Password field.

   It will not be possible to set a new password when 10 minutes have elapsed.

2. To release write protect status completely, enter 8 spaces in the New Password field according to the instructions given in Changing the Password. This causes write protect status to change from YES to NO.

“Master password” and “Software Lock”

If you forget the password that has been registered, it is possible to release the mode for 10 minutes by using a master password. Enter YOKOGAWA to release Write protect status for 10 minutes. If this master password is used, the status shown in the parameter “Software seal” is changed from “Keep” to “Break” Press Hot key and select “2 Wrt protect menu”. Current status is shown in “4 Software seal”. This status will be reverted from “Break” to “Keep” by registering a new password.

3.3 Calibration

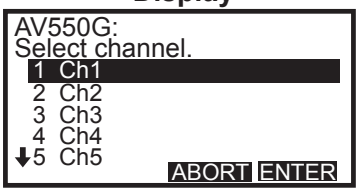
Here we explain how to excute Semi-Auto Calibration using HART communications.
This requires the AV550G Calibration mode to have been set to Semi-Auto or Auto.
For further details, refer to “Section 9. Calibration” in the AV550G Instruction Manual.

NOTE

Calibration-related parameters can not be set remotely using HART communication.
Calibration can not be canceled using HART communication.

Call up “**Calibration**” display.

1. Device setup ---> 2. Diag/Service ---> 3. Calibration

	Display	Operation	
1		STU 1	Select Channel to be calibrated (Ch1 in this example).
2		F4 (OK)	Confirm that you want to execute calibration
3			Calibration is started using parameters (Cal. Time, Hold Time) set in the AV550G

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3.4 Indication Check

Here we explain how to excute a Semi-Auto Indication check using HART communications. This requires the AV550G Indication check mode to have been set to Semi-Auto or Auto.
For further details, refer to “Section 10. Indication Check” in the AV550G Instruction Manual.

NOTE

Indication-Check-related parameters can not be set remotely using HART communication.
Indication Check can not be canceled using HART communication.

Call up “**Indication check**” display.

1. Device setup ---> 2. Diag/Service ---> 3. Indication check

	Display	Operation
1	AV550G: Select channel. 1 Ch1 2 Ch2 3 Ch3 4 Ch4 5 Ch5 ABORT ENTER	STU 1 Select Channel for Indication Check (Ch1 in this example).
2	AV550G: You select Ch1. Do you want to execute semi-auto indication check? ABORT ON	F4 (OK) Confirm that you want to execute Indication Check
3	AV550G: Diag/Service 1 Loop test 2 Calibration 3 Indication check 4 Blow back 5 Calib log HELP SAVE HOME	Indication Check is started using parameters (Check Time, Hold Time) set in the AV550G

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3.5 Blow Back

Here we explain how to excute a Semi-Auto Blow Back using HART communications.
This requires the AV550G Blow back mode to have been set to Semi-Auto or Auto.
For further details, refer to “Section 10.5 Blow Back” in the AV550G Instruction Manual.

NOTE

Blow-Back-related parameters can not be set remotely using HART communication.
Blow Back can not be canceled using HART communication.

Call up “**Blow back**” display.

1. Device setup ---> 2. Diag/Service ---> 4. Blow back

	Display	Operation
1	AV550G: Do you want to execute blow back? ABORT ON	F4 (OK) Confirm that you want to execute Blow Back
2	AV550G: Diag/Service 1 Loop test 2 Calibration 3 Indication check 4 ➔Blow back 5 Calib log HELP SAVE HOME	Blow Back is started using parameters (Blow Back Time, Hold Time) set in the AV550G

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3.6 Self-Diagnostics

Here we explain how to check Error or Alarm messages from the AV550G using a HART Communicator. The table below shows the correspondence between error and alarm messages displayed on the HART Communicator and corresponding error and alarm messages in the AV550G. For more details about these error and alarm messages, and troubleshooting procedures, refer to “Section 12. Troubleshooting” in the AV550G Instruction Manual.

3.6.1 Control Card Self-Diagnostics

Call up “**Detailed setup**” display.

1. Device setup ---> 4. Detailed setup

	Display	Operation
1	AV550G: Detailed setup 1➔Control 2 Channels 3 Channel status 4 Output condition 5 Device information SAVE HOME	STU 1 Select “ **Control** ”
2	AV550G: Control 1➔Error 2 Alarm SAVE HOME	STU 1 Select “ **Error** ”
3	AV550G: Error Ctrl card OFF HELP ON SAVE HOME	If OFF is displayed (at right) then there are no errors. Revert to Error/Alarm screen.
4	AV550G: Control 1➔Error 2 Alarm SAVE HOME	Select “ **Alarm** ”
5	AV550G: Alarm Ave-a oxygen ON Ave-b oxygen OFF Ave-c oxygen OFF Process gas OFF Cal gas press lo OFF HELP EXIT	If OFF is displayed (at right) then there are no alarms. In the display at left, an Ave-a Oxygen Concentration Alarm has occurred.

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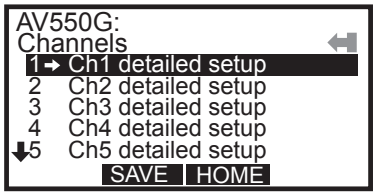
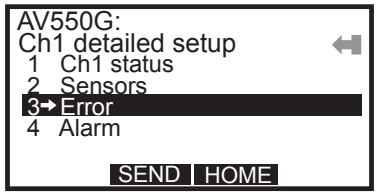
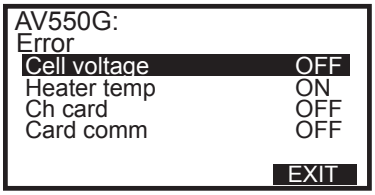
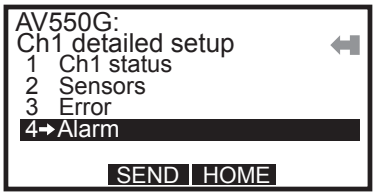
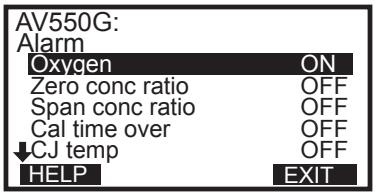
3.6.2 Channel Card Self-Diagnostics

Call up "**Detailed setup**" display.

1. Device setup ---> 4. Detailed setup

	Display	Operation	
1		VWX 2	Select "**Channels**"
2		STU 1	Select "**Ch1 detailed setup**" (this example shows how to display Self-Diagnostics for Channel 1).
3		YZ/ 3	Select "**Error**"
4		⇦	If OFF is displayed (at right) then there are no errors. In this example, a "**Heater temp**" alarm has occurred. Revert to Error/Alarm screen.
5		JKL 4	Select "**Alarm**"
6			If OFF is displayed (at right) then there are no alarms. In the display at left, an Oxygen concentration alarm has occurred.

F030701-1.ai

Table3.1 AV550G Alarms and Errors displayed on HART Communicator

	HART Communicator Display	Explanation	AV550G display
Control card	Ctrl card	Control card abnormality	Error 4
	Ave-a oxygen	Ave-a oxygen concentration outside alarm limits	Alarm 1
	Ave-b oxygen	Ave-b oxygen concentration outside alarm limits	
	Ave-c oxygen	Ave-c oxygen concentration outside alarm limits	
	Process gas	Process gas alarm contact signal received by AV550G	Alarm 6
	Cal gas press lo	Cal gas press lo alarm contact signal received by AV550G	Alarm 7
	Inside temp	AV550G case internal temperature over alarm limit	Alarm 9
Channel card	Cell voltage	Cell emf abnormal	Error 1
	Heater temp	Heater temperature abnormal	Error 2
	Ch card	Channel card abnormality detected	Error 3
	Card comm.	Communications between control card and channel card abnormal	Error 5
	Oxygen	Channel oxygen concentration outside alarm limits	Alarm 1
	Zero conc. ratio	Zero correction factor outside normal range	Alarm 2
	Span conc. ratio	Span correction factor outside normal range	Alarm 3
	Cal time over	Cell emf didn't stabilize during calibration interval	Alarm 4
	CJ temp	Cold (reference) junction temp. outside normal range	Alarm 5
	Asymmetry alarm	Abnormal change in asymmetry correction factor	Alarm 8

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3.7 Status Check

You can check Channel Card Status using the HART Communicator. The meanings of these status indications are displayed in the table below.

Call up "**Detailed setup**" display.

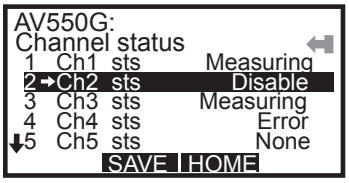
1. Device setup ---> 4. Detailed setup

Display **Operation**

1

Select "**Channel status**"

2



In the display example at left, Channel 2 is Disabled, Channel 4 is in Error status, and Channel 5 is Not Installed.
You can scroll the screen to display status of channels 6 and later.

F030801-1.ai

Table 3.2 HART Communicator Display and Channel Card Status

HART Communicator status display	Channel card status
None	Card is Not Installed
Disable	Channel is disabled
Warm up	Channel is in Warm Up status
Measuring	Channel is in Measurement status
Blow back	Channel is in Blow Back status
Cal	Channel is in Calibration status
Ind. check	Channel is in Indication Check status
Error	Channel is in Error status
Proc gas	Process Gas alarm has occurred.

T0302-1.ai

4. Maintenance

Various sensor data can be viewed on the HART Communicator.

For more details, refer to “Section 10.1 Display” in the AV550G Instruction Manual.

Call up “**Channels**” display.

1. Device setup ---> 4. Detailed setup ---> 2. Channels

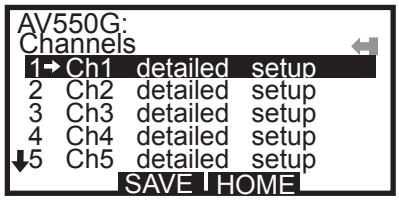
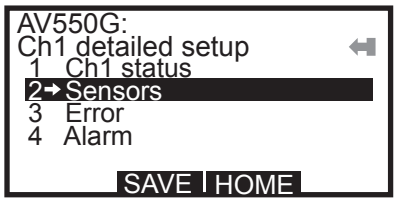
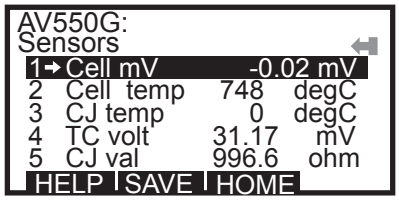
	Display	Operation
1		Select “**Ch1 detailed setup**” (this example shows how to display various data from Channel1).
2		Select “**Senors**”
3		Various data from Channel 1 is displayed. Meanings of data labels in “**Senors**” displayed on the HART communicator are shown in the table below.

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Table 4.1 Meaning of Data Labels in “Sensors”

HART Communicator display	Meaning of data
Cell mV	Cell emf displayed
Cell temp	Cell temperature is displayed
CJ temp	Cold junction (reference junction) temperature is displayed
TC volt	Thermocouple emf is displayed
CJ val	Cold junction (reference junction) resistance is displayed
Heater duty	Heater duty cycle ON time is displayed

T3009-1.ai

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