

Please use this manual change with the user's manuals listed below.

1. Applicable User's Manual and Page

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	3-16	3.2.14 Sensor Backup(for the 2-input model only)	Change CAUTION.
	4-2	Table 4.1 List of Alarms	Add *1 and *2.
	4-3	Table 4.1 List of Alarms	Add *1 and *2.
	4-4	Table 4.2 Output Operation	Add *2.
	4-7	4.3 Self Check Function	Add NOTE.



IMPORTANT

- The Test Output by the forced output function is automatically canceled 10 minutes (it is changeable by F30:RELEASE TIME setting) after changing to MANUAL MODE. Even if the power of the configuration tool is turned off or if the communication cable is disconnected during test output execution, the Test Output state is maintained.
- If you wish to cancel the Test Output immediately, select the NORMAL MODE with “F10:OUTPUT MODE”. Also, when the temperature transmitter is turned off, the Test Output is canceled.
- If “I30:OUTPUT” is set to 4 mA or 20 mA, the MANUAL MODE cannot be set using F10.



NOTE

If the temperature transmitter has the integral indicator, “TEST” is displayed in the lower row along with its output level (% indication) during test output.

Also, “AL.70” alarm (Output Man Mode alarm) is generated during Test Output. This informs that the Test Output is in progress; this is not abnormal.

3.2.9 Burnout Function

(1) Setting the output state at sensor burnout

If a sensor mapped to the PV value is broken or if it has become disconnected from the terminal, you can set the output state.

The following shows the setting parameters related to the sensor burnout.

Parameter	Settings	Remarks
E40: BURN OUT	Operation setting of burnout function	HIGH (21.6 mA) LOW (4 mA) USER (The value set in E41 or E42) OFF (Hold with previous output value)
E41: BURN OUT mA	Specify the burnout output in mA when “USER” is selected.	It is also reflected in E42
E42: BURN OUT %	Specify the burnout output in % format when “USER” is selected.	Also reflected in E41

* Either E41 or E42 can be set, and they are reflected mutually.
If a sensor is burnt out, alarm AL.09, AL.10 to AL.13, or AL.22 occurs.



CAUTION

There is a time lag between sensor failure and sensor abnormality detection. Since the failed measurement value is output, the current output also becomes undefined. When an error is detected, it becomes the output set with this parameter. However, when sensor burnout is set to OFF, it may be held with indefinite measurement value, so please understanding this point.



NOTE

Even if abnormality or disconnection of the terminal block temperature sensor occurs, AL22 may not be output and AL04 may be generated.

(2) Display of output state of hardware abnormal value

Parameter name	Display	Description
E43:TX FAILURE	HIGH: 110% (21.6 mA) LOW: -5% (3.2 mA)	The output state at hardware abnormality setting can be set by the slide switch of the MAIN assembly.

3.2.13 Output Adjustment

The Output Adjustment function adjusts analog output values. When a precision ammeter (for calibration) is connected, when the 0% and 100% are output, and if there is a deviation in PV value, the Output Adjustment is executed.

Use the following parameters for adjustment purposes.

Parameter	Usage
I30:OUTPUT	Sets the Output mode. Set the analog output to NORMAL (Normal Output), 4 mA, or 20 mA.
I31:OUT ZERO	Output adjustment: Zero-point adjustment
I32:OUT GAIN	Output adjustment: Gain point adjustment
I33:OUT ADJ CLR	Output adjustment: Clear of data

[Adjustment method]

- (1) Write "4 mA" in "I30:OUTPUT", and output 4 mA current.
- (2) Read the actual output PV value using the precision ammeter for calibration.
- (3) Write the PV value that was read in Step (2), in "I31:OUT ZERO".
If only the zero-point adjustment is required, skip Steps (4), (5) and (6), and proceed to Step (7).
- (4) Write "20 mA" in "I30:OUTPUT", and output 20 mA current.
- (5) Read the actual output PV value using the precision ammeter for calibration.
- (6) Write the PV value that was read in Step (5), in "I32:OUT GAIN".
- (7) Write "NORMAL" in "I30:OUTPUT", and return to the normal output.

3.2.14 Sensor Backup (for the 2-input model only)

If Sensor1 has failed, the Sensor Backup function automatically uses Sensor2 as output. Even if Sensor1 is recovered during backup operation, Sensor2 will continue to be used until the backup operation is reset by the parameter or by switching the power OFF. If Sensor2 has failed during backup operation, the temperature transmitter generates an AL.24 "Backup Sns2 Fail" alarm and outputs the sensor burnout.

(1) Setting the sensor backup function

- (1) Set the "sensor type" and "number of wire connections" of Sensor1 and Sensor2. If Sensor1 and Sensor2 must measure the same target (both should measure the temperature or voltage).
- (2) Set an alarm mask appropriately.

Setting parameter	Target Alarm	Default value	Setting value
K10:S1 FAIL MASK	AL.10 S1 Failure	NO MASK	NO MASK
K11:S2 FAIL MASK	AL.11 S2 Failure	NO MASK	NO MASK
K12:S1 SHRT MASK	AL.12 S1 Short	MASK	MASK/ NO MASK
K13:S2 SHRT MASK	AL.13 S2 Short	MASK	MASK/ NO MASK
K23:BKUP S1 MASK	AL.23 Backup S1 Fail	NO MASK	NO MASK
K24:BKUP S2 MASK	AL.24 Backup S2 Fail	NO MASK	NO MASK



IMPORTANT

Always set "K10:S1 FAIL MASK", "K11:S2 FAIL MASK", "K23:BKUP S1 MASK", and "K24:BKUP S2 MASK" parameters to NO MASK.

To activate the Sensor Backup function even if the sensor short-circuit is detected, set "K12:S1 SHRT MASK" and "K13:S2 SHRT MASK" to "NO MASK". If the Sensor Backup function is not required when a short-circuit occurs, set them to "MASK".



CAUTION

There is a time lag between sensor failure and sensor abnormality detection.

Since the failed measurement value is output, the current output also becomes undefined.

For this reason, until failure of Sensor 1 switches to Sensor 2, or "Output state at sensor burnout" due to failure of Sensor 2 The output becomes undefined until switching to the output.

When an abnormality is detected, it is output according to the measured value of Sensor 2 or "Output state at sensor burnout".

- (3) Set the PV mapping to the Sensor Backup function.

Setting parameter	Setting value
B10:PV is	Sensor Backup

For details about mapping, refer to Section 3.2.3. "Process variable mapping".

Table 4.1 Alarm List

Indicator display	BRAIN configuration tool display	Cause	Output operation upon error	Action
AL.00	CPU Failure	The main CPU has failed.	Data output and communication do not occur if the transmitter has failed.	Device Replacement
AL.01	Snsr NV Failure	CRC mismatching of the sensor's non-volatile memory has occurred, or normal data wiring has failed.	Data output and communication are permitted if the transmitter has failed.	
AL.02	Temp NV Failure	CRC mismatching of TEMP ASSY non-volatile memory has occurred, or Write/Read Verify mismatching has occurred. (System cannot start up normally.)		
AL.03	AD Conv Failure	Hardware failure at input side		
AL.04 ^{*1}	Main R-Calc Fail	Mismatching of MAIN ASSY CPU inverse computation has occurred.		
AL.05	Temp R-Calc Fail	Mismatching of TEMP ASSY CPU inverse computation has occurred.		
AL.06	Temp Volt Fail	Abnormal TEMP ASSY power voltage		
AL.07	Comm NV Fail	CRC mismatching of communication non-volatile memory has occurred, or normal data wiring has failed.		
AL.08	Temp NV Warning	CRC mismatching of TEMP ASSY non-volatile memory has occurred, or Write/Read Verify mismatching has occurred. (System can start up but may fail.)	The output continues.	
AL.09	Int Comm Fail	Internal communication error	The output and communication for sensor burnout are permitted.	
AL.10	S1 Failure	The Sensor1 input circuit is open or disconnected from the terminal.	See Table 4.2.	<ul style="list-style-type: none"> • Check the soundness of the temperature sensor. • Check the sensor connection.
AL.11	S2 Failure	The Sensor2 input circuit is open or disconnected from the terminal.		
AL.12	S1 Short	Sensor1 has shorted.		
AL.13	S2 Short	Sensor2 has shorted.		
AL.14	S1 Corrosion	Sensor1 has corroded.	Normal operation	Check the sensors, terminals, and cables.
AL.15	S2 Corrosion	Sensor2 has corroded.	Normal operation	
AL.20	S1 Signal Error	The Sensor1 input has error	Normal operation	<ul style="list-style-type: none"> • Check the soundness of the temperature sensor. • Check the sensor type.
AL.21	S2 Signal Error	The Sensor2 input has error	Normal operation	
AL.22 ^{*2}	Term Sensor Fail	The terminal block temperature is abnormal. The terminal block temperature sensor has failed, or its circuit is open.	See Table 4.2.	Device Replacement

Indicator display	BRAIN configuration tool display	Cause	Output operation upon error	Action
AL.23	Backup S1 Fail	Sensor1 has failed during sensor backup, and the Sensor2 data is output.	Output the backup side data. If the backup side sensor has also failed, data is output by the burnout setting.	Check the soundness of Sensor1.
AL.24	Backup S2 Fail	Sensor2 has failed during sensor backup.	Normal operation	Check the soundness of Sensor2.
AL.25	Sensor Drift	Sensor drift	Normal operation	Check the soundness of the sensor.
AL.26	S1 Temp Cycle	Temperature cycle count of Sensor1 has exceeded the threshold.	Normal operation	Reset the temperature cycle count.
AL.27	S2 Temp Cycle	Temperature cycle count of Sensor2 has exceeded the threshold.	Normal operation	Reset the temperature cycle count.
AL.30	Output Too Low	The PV value has dropped below the lower limit.	Lower limit: 3.68 mA (-2%)	Check and correct the lower limit setting.
AL.31	Output Too High	The PV value has exceeded the upper limit.	Upper limit: 20.8 mA (105%)	Check and correct the upper limit setting.
AL.40	S1 Temp Low	The measurement temperature of Sensor1 is too low.	Normal operation	Check the sensor type.
AL.41	S1 Temp High	The measurement temperature of Sensor1 is too high.	Normal operation	
AL.42	S2 Temp Low	The measurement temperature of Sensor2 is too low.	Normal operation	
AL.43	S2 Temp High	The measurement temperature of Sensor2 is too high.	Normal operation	
AL.44	Amb Temp Low	The ambient temperature is below -40°C.	Normal operation	
AL.45	Amb Temp High	The ambient temperature is above 85°C.	Normal operation	Place the transmitter away from the heat source.
AL.50	LRV Too Low	The LRV has been set below the temperature range of sensor specifications.	Normal operation	Check and correct the lower limit setting.
AL.51	LRV Too High	The LRV has been set above the temperature range of sensor specifications.	Normal operation	
AL.52	URV Too Low	The URV has been set below the temperature range of sensor specifications.	Normal operation	Check and correct the upper limit setting.
AL.53	URV Too High	The URV has been set above the temperature range of sensor specifications.	Normal operation	
AL.54	Span Too Small	The span has been set below the recommended minimum span.	Normal operation	Check and correct the upper and lower limit settings.
AL.60	Illegal PV Cfg	The sensor (or sensor value) mapped to PV has been set incorrectly.	Hold to the output upon error. 4-mA current is output if it occurred during startup.	Check the PV mapping.
AL.61	Reserved	Reserved		
AL.62	Reserved	Reserved		
AL.70	Output Man Mode	Forced Output mode has been selected.	The set value of Forced Output mode	Set to the normal mode.

*1: AL04 may be generated even when abnormality or disconnection of the terminal block temperature sensor occurs.

*2: Even if abnormality or disconnection of the terminal block temperature sensor occurs, AL22 may not be output and AL04 may be generated.

The sensor burnout conditions depend on the setting of current output mapping, and the alarm occurred. These conditions are as follows.

Table 4.2 Output Operations

Current output mapping	S1 Failure	S2 Failure	S1 Short	S2 Short	Term Sensor Fail
SENS.1	Sensor burnout	Normal operation	Sensor burnout	Normal operation	Output Hold*2
S.1-TER	Sensor burnout	Normal operation	Sensor burnout	Normal operation	Output Hold*2
TERM	Normal operation	Normal operation	Normal operation	Normal operation	Output Hold*2
SENS.2	Normal operation	Sensor burnout	Normal operation	Sensor burnout	Output Hold*2
S.2-TER	Normal operation	Sensor burnout	Normal operation	Sensor burnout	Output Hold*2
S.1-S.2	Sensor burnout	Sensor burnout	Sensor burnout	Sensor burnout	Output Hold*2
S.2-S.1	Sensor burnout	Sensor burnout	Sensor burnout	Sensor burnout	Output Hold*2
AVG	Sensor burnout	Sensor burnout	Sensor burnout	Sensor burnout	Output Hold*2
BACKUP	*1	*1	*1	*1	Output Hold*2

*1: If both Sensor1 and Sensor2 have failed, a Sensor Burnout is output.

*2: Fixed output value just before the alarm occurred.



NOTE

While the Sensor Backup function is active, if both AL.23 Backup S1 Fail and AL.24 Backup S2 Fail occur, sensor burnout will occur. For details about sensor backup refer to Section 3.2.14 "Sensor Backup Function".



IMPORTANT

If S1 Failure, S2 Failure, S1 Short, S2 Short, Term Sensor Fail, Backup S1 Fail, and Backup S2 Fail are masked, the sensor burnout due to these events is also suppressed.

If it is necessary for the sensor burnout event to occur, release the alarm mask (NOMASK setting).

4.2 History Functions

The YTA710 temperature transmitter has the following history functions.

(1) Alarm history

(1) Number of history records

Up to 59 history records are stored in the temperature transmitter memory, and any five of them can be referred to simultaneously. If more than 59 records are stored, history records will be deleted in order starting from the oldest and overwritten by new history records.

(2) History data buffer

The same 59 history records are held in the buffer that is constantly updated and in the parameter display buffer of the temperature transmitter.

Before displaying the parameters, synchronize the parameter display buffer with the buffer that is constantly updated. Then, update them to the latest information.

Execute the following parameters to synchronize the data.

Parameter	Option	Remarks
P18:AL LOG UPD	NO EXEC	Nothing occurs even if this value is written. In normal circumstances, this value is displayed.
	EXEC	When this value is written, the buffers are synchronized explicitly. When synchronization has finished, the system returns to the NO EXEC state automatically.

4.3 Self Check Function

The YTA has the following self-check functions.

(1) Hardware failure

This function detects a failure of CPU, AD converter, memory and others.

(2) Sensor failure

This function detects an open circuit of sensors. The transmitter flows the current, and outputs an open-circuit alarm if the resistance exceeds the threshold.

Parameter setting: Not required

Alarm output: If the resistance exceeds the threshold, an S1 Failure (AL.10) or S2 Failure (AL.11) alarm is output.

(3) Terminal block failure

This function detects an open circuit of CJC. The transmitter measures the CJC resistance and notifies of a terminal block failure if the resistance exceeds the threshold.

Parameter setting: Not required

Alarm output: If the resistance exceeds the threshold, a Term Sensor Fail (AL.22) alarm is output.



NOTE

Even if abnormality or disconnection of the terminal block temperature sensor occurs, AL22 may not be output and AL04 may be generated.

(4) TC short-circuit (TC)

This function detects a short-circuit of the TC sensor. The transmitter flows current, and outputs a short-circuit alarm if the sensor resistance (S1 RP23 for L10, or S2 RP43 for L15) is below the threshold.

Set the threshold (resistance) using the following parameters.

Threshold setting parameter	Alarm detected	Remarks
L20:S1TC SHRT TH	S1 Short (AL.12)	
L22:S2TC SHRT TH	S2 Short (AL.13)	2-input model only



NOTE

In order to output the S1 (or S2) Short alarm, "K12:S1 SHRT MASK" and "K13:S2 SHRT MASK" must be set to "NO MASK". (The alarm is masked by default.)

(5) "RTD" or "ohm" short-circuit (for 3-wire/4-wire type only)

This function detects a short-circuit of the sensor during "RTD" or "ohm" measurement. If the sensor resistance drops below the threshold (L11: S1 RC1 to L14: S1 RC4, L17: S2RC4, L16: S2RC4), a short-circuit alarm is output.

The threshold is fixed to 5 Ω, and parameter setting is not required.

Threshold setting parameter	Alarm detected	Remarks
Not applicable	S1 Short (AL.12)	
Not applicable	S2 Short (AL.13)	2-input model only



NOTE

- The alarm mask must be released in order to output the S1 (or S2) Short alarm. (The alarm is masked by default.)
- In the case of 3-wire RTD or ohm connection, if actual connection and connection setting are imbalanced, an unforeseen alarm may be generated.

(6) RTD Corrosion (for 3-wire/4-wire type only)

This function detects any corrosion between terminal block and measurement cables. If the resistance between the terminal block and cables (L11:S1 RC1 to L14:S1 RC4, L17:S2 RC3, L16:S2 RC4) exceeds the threshold, a corrosion alarm is output.

Set the threshold using the following parameters.

Threshold setting parameter	Alarm detected	Remarks
L21:S1RTD COR TH	S1 Corrosion (AL.14)	
L23:S2RTD COR TH	S2 Corrosion (AL.15)	2-input model only



NOTE

The alarm mask must be released in order to output the S1 (or S2) Corrosion alarm. (The alarm is masked by default.)