

Digital Indicating Controller LT35A/37A SERIES



LT 35A/37A series is digital indicating controller with indicating accuracy of $\pm 0.2\%$ and the control cycle of approximately 0.3 seconds.

3 types of auto tuning functions and overshoot suppression functions achieve superior control stability. Combination of internal computing function and enriched input and output option support various usage scenarios.

Special loader software provides ease of setting operations and data acquisition.

FEATURES

● Compact design

Short depth of instrument (case 65mm) saves the space of instrument and control board.

● Universal input

Input types is user-changeable from among thermocouple, resistance thermometer, DC voltage and DC current.

● Outstanding controllability

Control system can be selected from two-position control and PID control.

It has overshoot suppression function and high-functional PID.

● 3 type of auto tuning

Can be selected from normal, rapid-response, stable tuning on the control target.

● Various input / output signal (optional) are available

Current transformer input 2 points, event output 3 points (Max), remote signal input 4 points, communication interface (RS485).

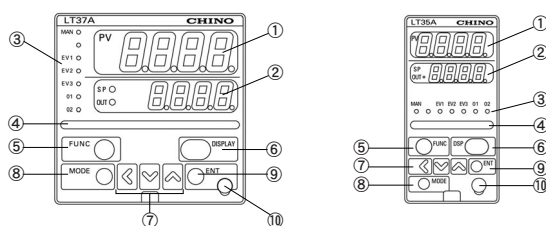
● Conformance to international safety standards

CE marking, RoHS

● Loader software is available

Various parameter settings and data acquisition can be done easily using loader software (sold separately).

PARTS NAMES OF FUNCTIONS



- ① Upper display : Displays PV values (measuring temperature, etc.) or setting items.
- ② Lower display : Displays SP values (preset temperature, etc.) and other parameter set values.
- ③ Status display lamp : MAN : Lights when MANUAL (manual mode)
EV1 to EV3 : Lights when event outputs are ON.
O1 to O2 : Lights when the control output is ON.
- ④ Multiple functions indicating lamp : User-settable max. 3 sets combination of condition and status as preferred functions (alarm, READY, etc.).
- ⑤ [FUNC] key : Press 1 second or longer, then enters frequently used functions and operations set in advance. The function is disabled at factory default.
- ⑥ [DISPLAY]/[DSP] key : Switch display in operation mode. Or back to operation mode from parameter setting mode.
- ⑦ [MODE] key : Switches the display.
- ⑧ <, V, ^ Key : Used for incrementing numeric values and performing arithmetic shift operation.
- ⑨ [ENT] key : Starts to change settings and set value
- ⑩ Loader connector : Connects to a personal computer by using USB loader cable.



MODELS

LT35A□□□□□□□□/LT37A□□□□□□□□

	Meas- ing input	Control output	I/O option	Terminal type	Power	Extra	Specifications	
LT35A							48mmX96mm front size	
LT37A							96mmX96mm front size	
0							Universal input	
							Control output 1	Control output 2
1	0						ON-OFF pulse output	—
5	0						SSR drive pulse output	—
5	3						SSR drive pulse output	Current output
5	5						SSR drive pulse output	SSR drive pulse output
3	0						Current output	—
3	3						Current output	Current output
*4	1						Event output: 3 points	
	2						Event output 3 points, Transmission signal output (current output)	
*2,*4	4						Event output 2 points (independent contact)	
*2	5						Event output 2 points (independent contact), Transmission signal output (current output)	
	0						—	
*1	1						Current transformer input 2 points External signal input: 4 points	
*1	2						Current transformer input 2 points External signal input: 4 points Communication interface RS485	
	0						Terminal block type	
	A						100 to 240 V AC	
	D						24V AC/DC	
	00						No additional treatment	
	Y0						Complying with the traceability certificate	
*3	T0						Tropical treatment	
*3	K0						Sulfur resistance treatment	

*1: Current transformer is sold separately.

*2: 24V AC/DC power supply can not be selected.

*3: Non-conforming to CE, UL/cUL.

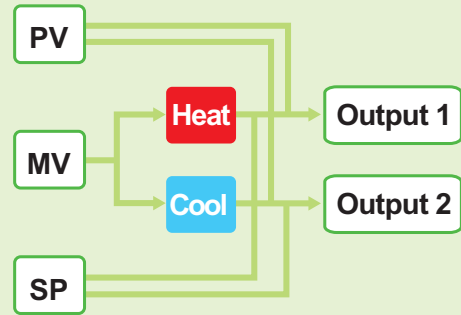
*4: Event output are 2 types, specify models of 3 point (common) or 2 points (independent).

Compact size



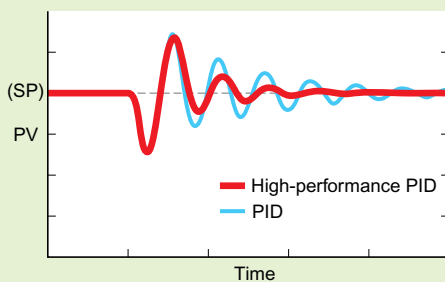
There are size 48x96mm and 96x96mm available. Depth is only 65mm, so it is space saving for any installation.

Correspond to heat / cool control

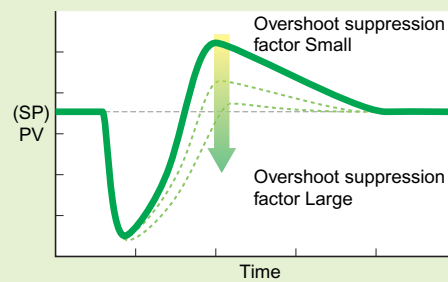


Control output of heat or cool can be assigned to the output 1 and 2. PV and SP can also be assigned and used as transmission signal output.

Advanced controllability



In addition to the conventional PID, "High-performance PID" is available which has unique algorithm aim to converge hunting quickly to decrease settling time.

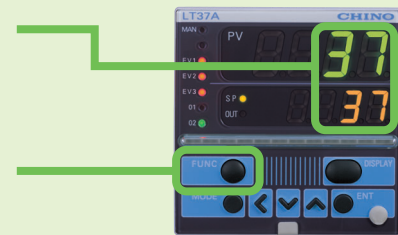


By "Overshoot suppression function" which controls overshoot at SP changing and/or disturbance response, the control has been able to develop stronger resistance for disturbance and superior stability.

Easy-to-read display On the display, measuring value (PV) is indicated in green and setting value (SP) is indicated in orange LEDs.

Frequently used operation can be assigned to the FUNC key

By assigning frequently used operation such as Auto/Manual and RUN/READY to the FUNC key, only one press of a button enables switching the functions.



Various combinations of input and output

Universal input

Thermocouple 15 types
RTD 2 types
DC Voltage / Current 9 types

Current transformer input (option)

2 points

External signal input (option)

4 points

Communication (option)

RS485 1 port



Control output (select at model)

ON-OFF pulse output
Current output
SSR drive pulse output

Transmission signal output (option)

Measuring value (PV)
Setting value (SP)
Control output (MV) etc.

Event output (option)

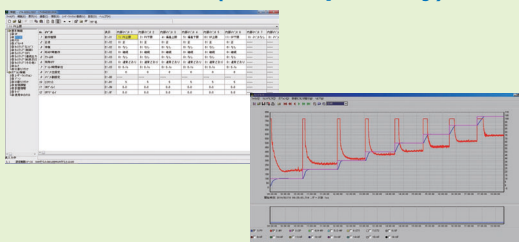
3 points
2 points (independent contact)

Loader connector

Support loader software 1 port

*Various parameter settings are available from PC by using dedicated loader software. However, it requires dedicated loader cable (sold separately).

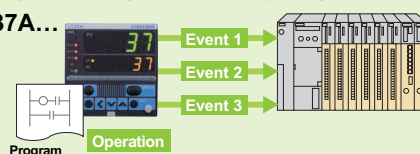
Loader software (sold separately)



Various parameter settings and data acquisition are available by connecting this controller to the PC which the loader software is installed.

Internal event can be output as external digital (contact) output by logical operation.

On LT37A...



3 points of event can be output

Result of the logical operation which performed on selected five points of various internal events is able to be assigned to the three points of external digital outputs. It can simplify process of event outputs which logical operation was conventionally performed on receiver side.

SPECIFICATIONS

Input specifications

Input signal: Universal input (Thermocouple, Resistance Thermometer, DC voltage/current)
 Range type: Refer to a measuring range table
 Input sampling cycle: 300ms
 Accuracy rating: $\pm 0.2\%FS \pm 1\text{digit}$
 Reference junction compensation accuracy: $\pm 0.5^\circ\text{C}$ (at ambient temperature $23^\circ\text{C} \pm 2^\circ\text{C}$)

Control specifications

Output type: ON-OFF pulse output type 1c 250V AC/ 30V DC 3A (resistance load)
 Current output type 0 to 20mA DC, 4 to 20 mA DC (It can be changed by the setting)
 SSR drive pulse output type 19V DC $\pm 15\%$, Internal resistance 82 Ω , Allowable current Max. 24mA DC

Event output

Output point: Max. 3 points
 Contact capacity: 250V AC/ 30V DC 2A (resistance load)
 Output type: Relay output 1a
 Type: Absolute value, deviation, loop diagnosis, timer, heater disconnection and etc. Total 30 types
 *Event output is a standard feature.

General specifications

Ambient temperature range: 0 to 50°C
 Power supply voltage range: AC power supply: 100 to 240 V AC, 50/60Hz

DC power supply: 24 V AC, 50/60Hz/24V DC
 Power consumption: AC power supply: 12 VA and/or lower
 DC power supply: 12 VA and/or lower (24V AC) 8W and/or lower (24V DC)
 Safety standards: CE marking compliant product
 Weight: LT35A 250g, LT37A 300g

OPTION

External signal input Input point: 4 points
 Function: AUTO/MANUAL, RUN/READY, SV, Timer Stop/Start and etc. Total 17 functions
 Transmission signal output Output type: 0 to 20mA DC or 4 to 20mA DC current output
 Allowable load resistance: 600 Ω and/or lower
 Output accuracy: $\pm 0.2\%FS$ (at ambient temperature $23^\circ\text{C} \pm 2^\circ\text{C}$), however, 0 to 1mA is at $\pm 1\%FS$
 Current transformer input (CT) Input point: 2 points
 CT sold separately: $\varnothing 5.8$ (LTA-P207), $\varnothing 12$ (LTA-P208)
 Measuring current: 0.4 to 50.0A
 Display accuracy: $\pm 5\%FS$
 Communication interface Communication type: RS485
 Connection unit: Max. 31 units
 Communication speed: Max. 38,400bps
 Communication protocol: MODBUS
 Terminating resistor: Connection prohibited

MEASURING RANGE

Input type	C01 Set value	Measuring range	Accuracy
Thermocouple	K	1 -200 to 1200°C	$\pm 0.2\%FS \pm 1\text{digit}$
		2 0 to 1200°C	
		3 0.0 to 800.0°C	
		4 0.0 to 600.0°C	
		5 0.0 to 400.0°C	
		6 -200.0 to 400.0°C	
		7 -200.0 to 200.0°C	
	J	8 0 to 1200°C	Minus area is $\pm 0.4\%FS \pm 1\text{digit}$
		9 0.0 to 800.0°C	
		10 0.0 to 600.0°C	
		11 -200.0 to 400.0°C	
	E	12 0.0 to 800.0°C	
		13 0.0 to 600.0°C	
	T	14 -200.0 to 400.0°C	
	R	15 0 to 1600°C	
	S	16 0 to 1600°C	
	B	17 0 to 1800°C	
	N	18 0 to 1300°C	
	Platinel II	19 0 to 1300°C	Under 260°C : $\pm 4.0\%FS$, $260-800^\circ\text{C}$: $\pm 0.4\%FS$
RTD	WRe5-26	20 0 to 1400°C	$\pm 0.2\%FS \pm 1\text{digit}$, Minus area is $\pm 0.4\%FS \pm 1\text{digit}$
	NiMo	21 0 to 2300°C	
	PR40-20	22 0 to 1300°C	
	PR40-20	23 0 to 1900°C	
	DIN U	24 -200.0 to 400.0°C	
	DIN L	25 -100.0 to 800.0°C	
	CR-AuFe	26 0.0 to 360.0 K	
	Pt100	41 -200.0 to 500.0°C	$\pm 1.5K$
	JPt100	42 -200.0 to 500.0°C	
	Pt100	43 -200.0 to 200.0°C	$\pm 0.2\%FS \pm 1\text{digit}$
	JPt100	44 -200.0 to 200.0°C	
	Pt100	45 -100.0 to 300.0°C	
	JPt100	46 -100.0 to 300.0°C	
	Pt100	47 -100.0 to 200.0°C	
	JPt100	48 -100.0 to 200.0°C	
	Pt100	49 -100.0 to 150.0°C	
	JPt100	50 -100.0 to 150.0°C	
	Pt100	51 -50.0 to 200.0°C	
	JPt100	52 -50.0 to 200.0°C	
	Pt100	53 -50.0 to 100.0°C	
	JPt100	54 -50.0 to 100.0°C	
	Pt100	55 -60.0 to 40.0°C	
	JPt100	56 -60.0 to 40.0°C	
	Pt100	57 -40.0 to 60.0°C	
	JPt100	58 -40.0 to 60.0°C	
	Pt100	59 -10.00 to 60.00°C	
	JPt100	60 -10.00 to 60.00°C	
DC voltage/current	Pt100	61 0.0 to 100.0°C	
	JPt100	62 0.0 to 100.0°C	
	Pt100	63 0.0 to 200.0°C	
	JPt100	64 0.0 to 200.0°C	
	Pt100	65 0.0 to 300.0°C	
	JPt100	66 0.0 to 300.0°C	
	Pt100	67 0.0 to 500.0°C	
	JPt100	68 0.0 to 500.0°C	
	0 to 10mV	81	
	-10 to 10mV	82	
	0 to 100mV	83	$\pm 0.2\%FS \pm 1\text{digit}$
	0 to 1V	84	
	1 to 5V	86	
	0 to 5V	87	
	0 to 10V	88	
	0 to 20mA	89	
	4 to 20mA	90	

*Lower limit of indication value of B thermocouple is 20°C

Applicable standards

Thermocouple

K, J, E, T, R, S, B, N : JIS C 1602-1995
 Platinel II : Engelhard Industries (ITS90)
 WRe5-26 : ASTM E988-96 (Reapproved 2002)
 DIN U, DIN L : DIN43710-1985
 NiMo : ASTM E1751-00

PR40-20 : Johnson Matthey
 CR-AuFe : Hayashi Denko

Resistance thermometer

Pt100 : JIS C 1604-1997
 JPt100 : JIS C 1604-1989

ACCESSORY

Item	Model
Attachment (for terminal block type)	LTA-P307
Manual	L3A-11-□

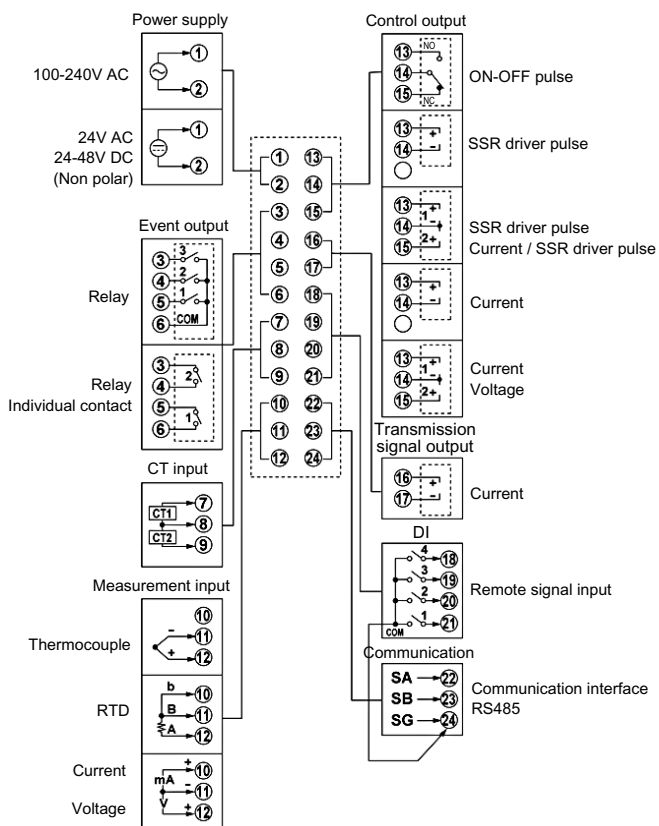
OPTIONAL SOFTWARE

Item	Model
Loader software (cable included)	LTA-S001
Loader software	LTA-S002
Loader cable	LTA-S003

ACCESSORY (Sold separately)

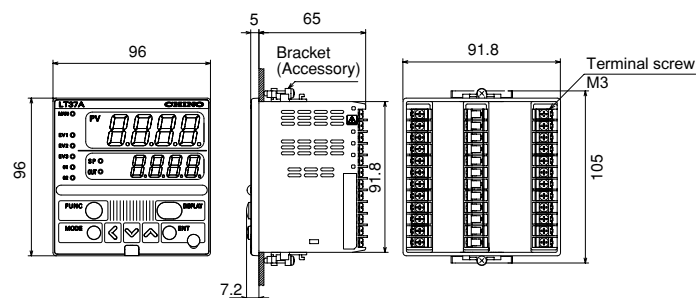
Item	Model
Hard cover	LT35A LTA-P301
	LT37A LTA-P302
Soft cover	LT35A LTA-P303
	LT37A LTA-P304
Terminal cover	LT35A LTA-P305
	LT37A LTA-P306
Current transformer	LTA-P207 (5.8 mm hole dia.) LTA-P208 (12 mm hole dia.)
Attachment	LTA-P307
Shunt resistor 250Ω	EZ-RX250

TERMINAL BOARD

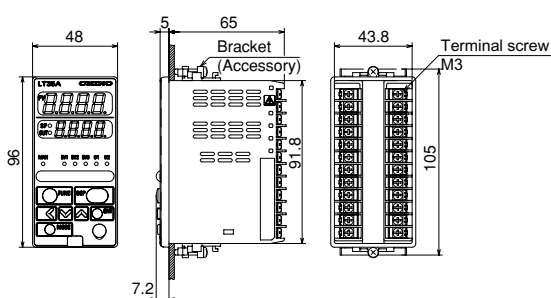


DIMENSIONS

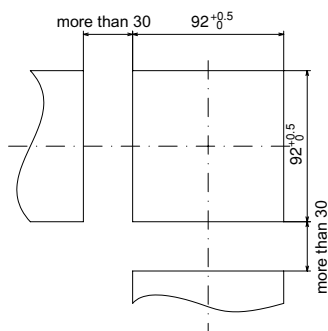
LT37A



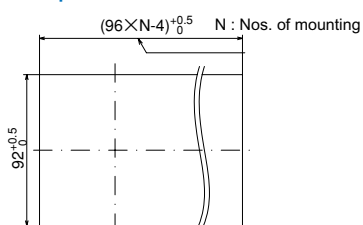
LT35A



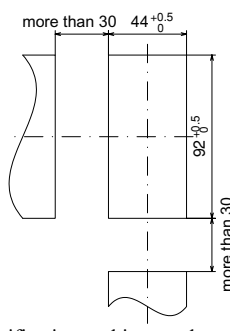
Panel cutout



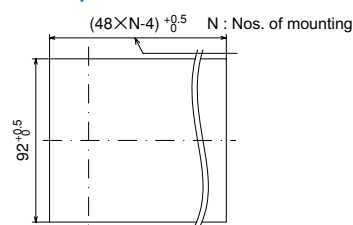
Minimum clearance for plural installation



Panel cutout



Minimum clearance for plural installation



Unit : mm

Specifications subject to change without notice. Printed in Japan (I) 2014. 12

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