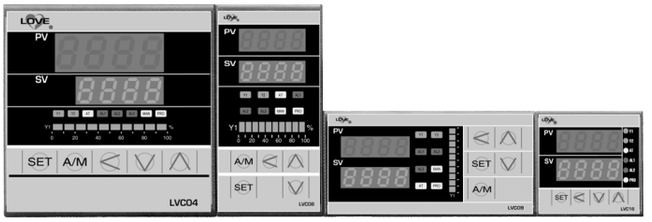
INSTRUCTIONS

FOR THE LVC SERIES

TEMPERATURE CONTROLLERS



LVC04 **LVC08** **LVC09** **LVC16**

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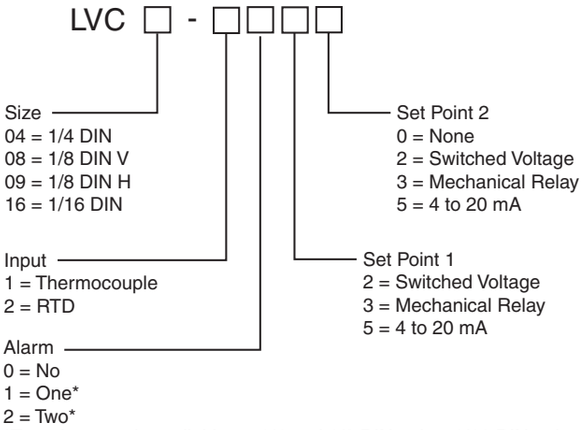
LVC_iom.indd 1 2002-07-31, 15:48:59

TABLE OF CONTENTS

Model Identification..... 3
Installation 4
Wiring 6
Front Panel Features 11
Auto Tune Functions / Setup..... 14
Error Codes 14
Programming and Operation 15
  Level 1 Programming (Set Points) 15
  Level 2 Programming (PID)..... 17
  Level 3 Programming (Input Selection)..... 18
  Level 4 Programming (Setup) 21
Input Code Selection Table..... 23
Alarm Function Code Selection Table..... 25
  Alarm Code Action Table..... 26
Changing Input Type from T/C to RTD..... 27
Changing Output Type from Control/Alarm to Heat/Cool..... 28
Specifications 29
Input Ranges 32
Dimensions..... 32

LVC_iom.indd 2 2002-07-31, 15:49:16

Model Identification



*Two alarms only available on 1/4 and 1/8 DIN units. 1/16 DIN units available with Alarm or Dual Set Point, but not both.

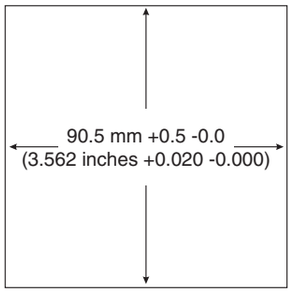
LVC_iom.indd 3 2002-07-31, 15:49:17

INSTALLATION

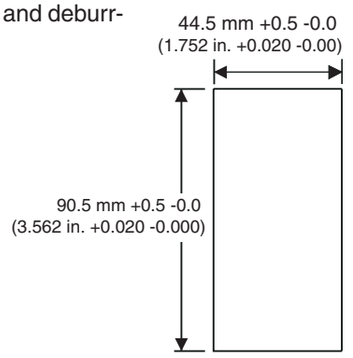
Mount the instrument in a location that will not be subject to excessive temperature, shock, or vibration. All models are designed for mounting in an enclosed panel.

Select the position desired for the instrument on the panel. If more than one instrument is required, maintain the minimum of spacing requirements as shown on the drawing below. Closer spacing will structurally weaken the panel, and invalidate the IP66, UL type 4X rating of the panel.

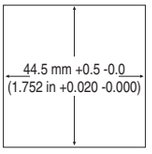
Prepare the panel by cutting and deburring the required opening.



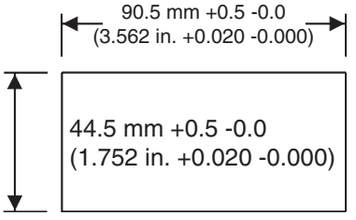
LCV04 - 1/4 DIN



LCV08 - 1/8 DIN Vertical



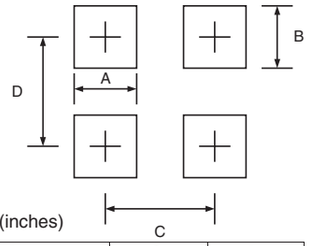
LCV16 - 1/16 DIN



LCV09 - 1/8 DIN Horizontal

LVC_iom.indd 4 2002-07-31, 15:49:17

Allow a minimum spacing between instruments of a minimum of 70 mm (2.756 inches) vertically on center, and 65 mm (2.559 inches) horizontally on center.



Panel Cut Out Dimensions in millimeters (inches)

	A	B	C	D
LCV16	44.5+0.5 (1.752+0.020)	44.5+0.5 (1.752+0.020)	65 (2.559)	70 (2.756)
LCV09	90.5+0.5 (3.562+0.020)	44.5+0.5 (1.752+0.020)	65 (2.559)	70 (2.756)
LCV08	44.5+0.5 (1.752+0.020)	90.5+0.5 (3.562+0.020)	65 (2.559)	70 (2.756)
LCV04	90.5+0.5 (3.562+0.020)	90.5+0.5 (3.562+0.020)	65 (2.559)	70 (2.756)

From the front of the panel, slide the housing through the cut out. The housing gasket should be against the housing flange before installing.

From the rear of the panel slide the mounting clips into the slotted channels molded into the housing. Hold the housing with one hand and using the other hand, push the mounting clips firmly against the panel until the spring loops are slightly compressed. The ratchets will hold the mounting clip and housing in place.

To remove, press the tab on the mounting clip to release the ratchets.

CAUTION: It is not necessary to remove the instrument chassis from the housing for installation. If the instrument chassis is removed from the housing, you must follow industry standard practice for control and protection against Electro-Static Discharge (ESD). Failure to exercise good ESD practices may cause damage to the instrument.

LVC_iom.indd 5 2002-07-31, 15:49:18

WIRING

Do not run RTD, thermocouple, or other class 2 wiring in the same conduit as power leads. Use only the type of thermocouple or RTD probe for which the control has been programmed. Maintain separation between wiring of sensor, optional inputs and outputs and other wiring. See the “Secure Menu” for input selection.

For thermocouple input always use extension leads of the same type designated for your thermocouple.

For supply connections use No. 16 AWG or larger wires rated for at least 75°C. Use copper conductors only. All line voltage output circuits must have a common disconnect and be connected to the same pole of the disconnect.

Input wiring for thermocouple, current, and RTD; and output wiring for current and 15 VDC is rated CLASS 2.

Control wiring is as shown (view is from rear of instrument showing wiring terminals).

Wiring for LCV04

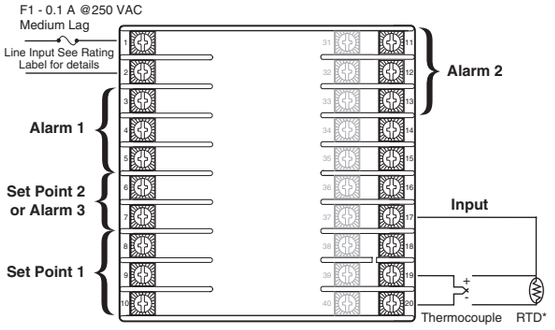
INPUT WIRING

Wire inputs as shown in the chart below.

Terminals	19	20	17	
Thermocouple	+	-		
RTD - 3 wire	A	B	B	
RTD - 2 wire*	A	B & J	J	(Jumper 3 to 4)

Key: ‘+’ = positive; ‘-’ = negative; ‘A’ = ‘odd’ colored lead; ‘B’ = ‘common’ leads; ‘J’ = Jumper.

LVC_iom.indd 6 2002-07-31, 15:49:18



OUTPUT WIRING

Wire outputs as shown in the chart below.

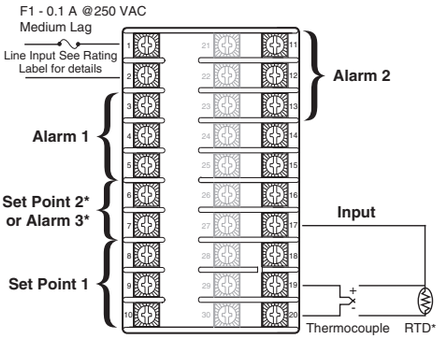
Terminals	3	4	5	6	7	8	9	10	11	12	13
SP1 Pulsed DC							+	-			
SP1 Relay						NO	NC	C			
SP1 Current							+	-			
SP2* Pulsed DC				+	-						
SP2* Relay				C	NO						
SP2* Current				+	-						
Alarm 1	NC	NO	C								
Alarm 2									NC	NO	C
Alarm 3*				C	NO						

Key: '+' = positive; '-' = negative; 'NC' = Normally Closed; 'NO' = Normally Open; 'C' = Common.

* Set Point 2 and Alarm 3 share the same output terminals. Only one designation is possible. See the Model code to determine the correct output/designation for your instrument.

LVC_iom.indd 7 2002-07-31, 15:49:19

Wiring for LCV08 and LCV09



INPUT WIRING

Wire inputs as shown in the chart below.

Terminals	19	20	17	
Thermocouple	+	-		
RTD - 3 wire	A	B	B	
RTD - 2 wire*	A	B & J	J	(Jumper 17 to 19)

Key: '+' = positive; '-' = negative; 'A' = 'odd' colored lead; 'B' = 'common' leads; 'J' = Jumper.

LVC_iom.indd 8 2002-07-31, 15:49:20

OUTPUT WIRING

Wire outputs as shown in the chart below.

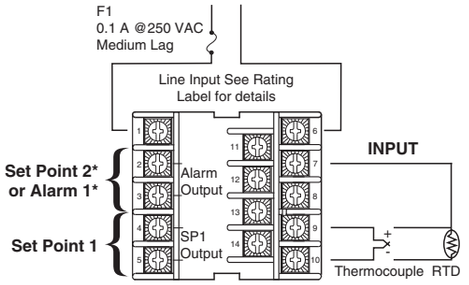
Terminals	3	4	5	6	7	8	9	10	11	12	13
SP1 Pulsed DC							+	-			
SP1 Relay						NO	NC	C			
SP1 Current							+	-			
SP2* Pulsed DC				+	-						
SP2* Relay				C	NO						
SP2* Current				+	-						
Alarm 1	NC	NO	C								
Alarm 2									NC	NO	C
Alarm 3*				C	NO						

Key: '+' = positive; '-' = negative; 'NC' = Normally Closed; 'NO' = Normally Open; 'C' = Common.

* Set Point 2 and Alarm 3 share the same output terminals. Only one designation is possible. See the Model code to determine the correct output/designation for your instrument.

LVC_iom.indd 9 2002-07-31, 15:49:21

Wiring for LCV16



WIRING

Wire as shown in the chart below.

Terminals	2	3	4	5	7	8	9	10
Thermocouple							+	-
RTD 3-wire					B		B	A
RTD 2-wire (jumper 9 to 7)					J		J&B	A
Curent/Voltage					+			-
SP 1 Pulsed DC			+	-				
SP1 Relay			C	NO				
SP1 Current			+	-				
SP2* Pulsed DC	+	-						
SP2* Relay	C	NO						
SP2* Current	+	-						
Alarm 1*	C	NO						

Key: '+' = positive; '-' = negative; 'A' = 'odd' colored lead; 'B' = 'common' leads; 'J' = Jumper; 'NC' = Normally Closed; 'NO' = Normally Open; 'C' = Common.

* Set Point 2 and Alarm 1 share the same output terminals. Only one designation is possible. See the Model code to determine the correct output/designation for your instrument.

LVC_iom.indd 10 2002-07-31, 15:49:22

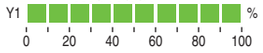
Before using please check whether range, input and output match your requirement.

1. Front panel instruction

1.1 Main Display
PV Process value 4 digit display (red color)
SV Setting value 4 digit display (green color)

1.2 LED Indicators

Y1	Output 1	green color
Y2	Output 2	green color
AT	Auto Tune	yellow color
AL1	Alarm 1	red color
AL2	Alarm 2*	red color
AL3	Alarm 3*	red color
MAN	Manual*	yellow color



Percent Output* green color
(Percent Output only enabled when Manual is selected. Lamps will light to indicate approximate output. Display is vertical on LVC09. Not available on LVC16.)

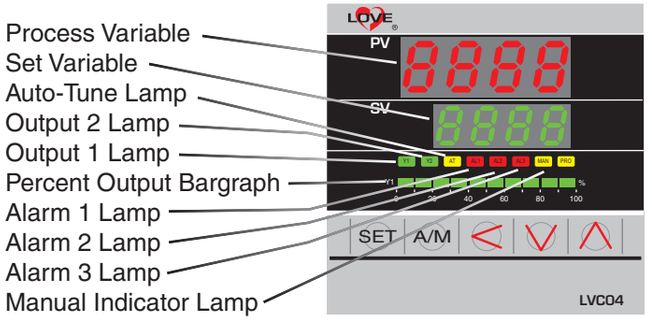
* Not available on all Models

1.3 KEYS

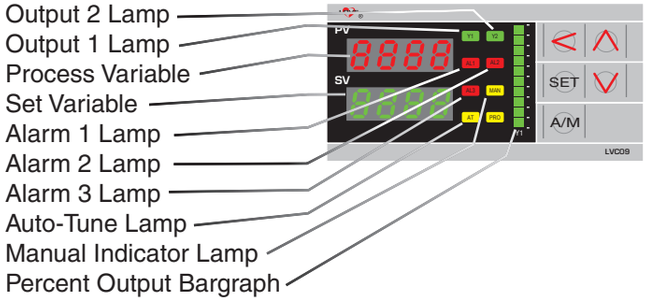
SET	MODE SET key
<	SHIFT key
V	DOWN key
^	UP key
A/M	Auto/Manual key*

LVC_iom.indd 11 2002-07-31, 15:49:23

LVC04

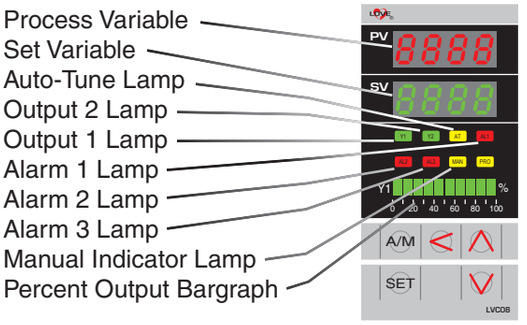


LVC09

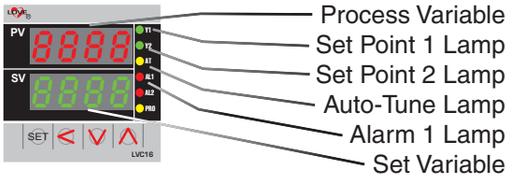


LVC_iom.indd 12 2002-07-31, 15:49:30

LVC08



LVC16



LVC_iom.indd 13 2002-07-31, 15:49:31

2 Auto tuning

2.1 Once AT is set YES auto tuning is started.

2.2 After auto tuning is finished, the PID parameters are set automatically.

2.3 ATVL = auto tuning offset and it will be subtracted from the SV (used to prevent over-shoot during auto tuning)

SV-ATVL = Auto-tuning value

ATVL = auto tuning offset (Example: if SV = 200 and ATVL=5, Auto tuning point is at 195

ATVL is the amount of offset from set point where auto tuning ocurs.

2.4 Causes for failure of Auto tuning feature

2.4.1 ATVL value is too large. (If not sure set ATVL=0)

2.4.2 System response time is too long. (Set PID parameters individually)

LED	DESCRIPTION
in1E	Open circuit of main control sensor.
AdCF *	A/D converter failed.
CJCE *	Cold junction compensation failed.
in2E	Open circuit of sub control sensor.
UUU1	PV exceeds USPL.
ooo1	PV under LSPL.
UUU2	Input signal of sub control exceeds the upper limit.
ooo2	Input signal of sub control under the lower limit.
rAMF *	RAM failed.
intF	Interface failed.
AUtF	Auto tuning failed.

NOTE: If an error designated with the asterisk "*" appears, return the control for service.

LVC_iom.indd 14 2002-07-31, 15:49:32

3. Error Code information

4. Programming and Operation Flow Charts

4.1 LEVEL 1 (User Level)

4.1.1 Press the **SHIFT KEY** to change the parameters. If the **SHIFT KEY** is pressed the first (rightmost) digit begins blinking. Press the **UP KEY** or **DOWN KEY** to increase or decrease the value of the digit, then press the **SHIFT KEY** again to go to the next digit. When the data entry is complete, press **SET KEY** to enter the value. If you go too far, press the **SET KEY** to cycle around to the digit you wish to modify.

4.1.2 The **SET KEY** also has the function of changing MODEs. If the **SET KEY** is pressed, the display shows the next MODE.

4.1.3 Press and hold the **SET KEY** for 5 seconds. The display goes to LEVEL 2. Repeat to return LEVEL 1.

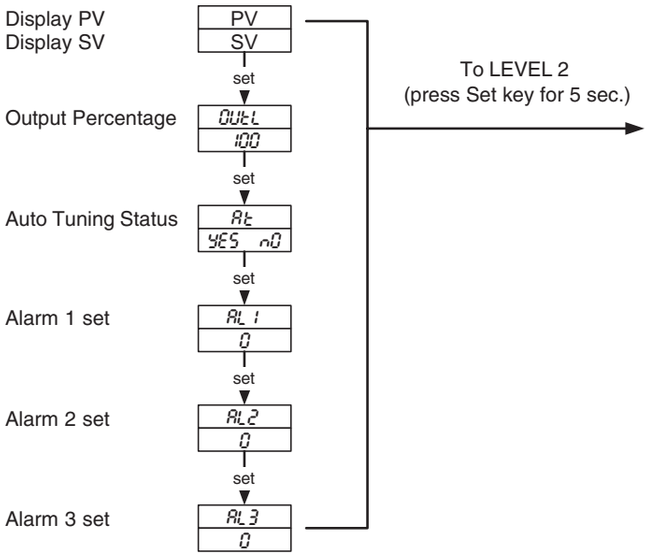
4.1.4 If no keys are pressed for 1 minute, the display will go to LEVEL 1.

4.1.5 Press the **A/M KEY** to force the display to go to LEVEL 1, regardless of the current selection.

4.1.6 If **OUTL** set "0", the controller has no output.

LVC_iom.indd 15 2002-07-31, 15:49:32

4.1.7 LEVEL 1 FLOW CHART



LVC_iom.indd 16 2002-07-31, 15:49:33

4.2 LEVEL 2 (PID Level)

Press SET key for 5 seconds to enter Level 2

P1 3	Set Point 1 Proportional Band	Range 0-200% ON/OFF at P=0
Set		
I1 240	Set Point 1 Integral Time	Range 0~3600 Sec Integral OFF at I=0
Set		
d1 60	Set Point 1 Derivative Time	Range 0~900 Sec Derivative OFF at D=0
Set		
db 1 0	Set Point 1 Dead-band Time	Dead time compensation Range 0~1000 Sec
Set		
AtuL 0	Set Point 1 Auto tuning off-set	Range 0~USPL
Set		
CYt 1 10	Set Point 1 Proportional Cycle	Output (SSR = 1, 4~20mA = 0, Relay >= 10). Range 0~150 Sec.
Set		
HYS 1 1	Set Point 1 Hysteresis	For ON/OFF control only Range 0~1000
Set		
P2 3	Set Point 2 Proportional Band	Sames as P 1
Set		
I2 240	Set Point 2 Integral Time	Sames as I 1
Set		
d2 240	Set Point 2 Derivative Time	Sames as d 1
Set		
CYt2 10	Set Point 2 Proportional Cycle	Sames as CYt 1
Set		
HYS2 1	Set Point 2 Hysteresis	Sames as HYS 1
Set		
GAP1 0	Main Control Gap (Output 1)	For 2 output use only, set the volume tuning "OFF" early to SV
Set		
GAP2 0	Sub Control Gap (Output 2)	For 2 output use only, set the volume turning "ON" early to SV
Set		
LCK 0000	Function Lock	
Set		
Return P1		

LCK = 0100, To enter Levels 1 & 2 and to change their parameters
LCK = 0110, To enter Levels 1 & 2 and to change Level 1 parameters only.
LCK = 0001, To enter Level 1 only and to change SV only
LCK = 0101, Unable to change any parameter except LCK
(Over this Level please contact our local distributor)

LVC_iom.indd 17 2002-07-31, 15:49:33

4.3 LEVEL 3 (INPUT Level)

When LCK=0000 press SHIFT key < and SET key SET, hold for 5 seconds to enter LEVEL 3

LEVEL 3

inP1 / 32	Main Control input selection	Select the input range. Refer to input Selection Chart on Page 23.
Set		
AnL1 / 0	Main Control Analog Zero set	When An1 through An5 are selected for inP1, set to low end of of range to be displayed.
Set		
AnH1 / 5000	Main Control Analog Span set	When An1 through An5 are selected for inP1, set to high end of of range to be displayed.
Set		
dP / 0000	Decimal point	To set the position of decimal point
Set		
LSPL / 0.0	Lower set point limit	To set the lowest point within inP1
Set		
USPL / 400.0	Upper set point limit	To set the highest point within inP1
Set		
AnL2 / 0	Analog Remote SP Scale low end set	It is used as input code are An1 to An5 Range LSPL~USPL
Set		
AnH2 / 5000	Analog Remote SP Scale high end set	Same as AnL2
Set		
AL1 / 01	Alarm mode for AL1	Range: 00~19 (see Chart on Pages13~14)
Set		
AL1 / 10	Time set for Alarm 1	Used with program function Range 0~99.59 minutes. 0 = Flicker Alarm; 99:59=continuous; >1 and <99:59 = delay time.
Set		
AL2 / 01	Alarm mode for AL2	Range: 00~19 (see Chart on Pages13~14)
Set		
AL2 / 0	Time set for Alarm 2	Same as AL1
Set		
AL3 / 01	Alarm mode for AL3	Range: 00~19 (see Chart on Pages13~14)
Set		
AL3 / 0	Time set for Alarm 3	Same as AL1
Set		
HYSA / 0	Hysteresis of alarm	Range: 0~1000
Set		
CLO1 / 150	Main Control calibration	Calibrate the low value of input Range LSPL~USPL (current output only)
Set		

LVC_iom.indd 18 2002-07-31, 15:49:34

CHO1 3500	Main Control Calibration high	To calibrate the high value of output Range: 0~9999 (current output only)
Set		
CLO2 150	Sub control Calibration low	Same as CLO1
Set		
CHO2 3200	Sub control Calibration high	Same as CHO1
Set		
CLO3	Transmitter control Calibration low	Same as CLO1
Set		
CHO3	Transmitter control Calibration high	Same as CHO1
Set		
cUt4 00	Timer of motor	Full run time of proportional motor (without potentiometer) Range: 0~150 Seconds
Set		
JAtE 0	Use in program for waiting continued operation	0 = No Wait Other = Wait volume
Set		
HYSt 1	Hysteresis for motor control	Range 0~1000
Set		
idnO 1	ID number (don't care)	Communication ID number
Set		
bAUd 2400	Baud rate (don't care)	UART baud rate selection Range 110~9600 Baud
Set		
SUOS 0	SV zero offset	Range -1000~1000
Set		
PUOS 0	PV zero offset	Range LSPL~USPL
Set		
Unit C	Unit of PV & SV	Select C, F, or A (analog = no descriptor)
Set		
SOFt 1000	Soft filter (don't care)	Adjust the response time of PV (the larger value, the faster the input response) Range 0.05~1.00.
Set		
CASC	don't care	
Set		
OUtd HEAt	Action mode	Select HEAt or CooL.
Set		
OPAd PId	Control action	Select PId ior SFty
Set		
Hz 60Hz	Frequency	Select 50Hz or 60Hz.
Set		
Return to InP1		

LVC_iom.indd 19 2002-07-31, 15:49:34

4.4.3 FUNCTION OF LCK

LCK=0000 allows entry to Level 3 (press SET + ⋖ for 5 sec.)

LCK=1111 allows entry to Level 4 (press SET + ⋖ for 5 sec.)

LCK=0100 allows entry to Level 1 & 2 and access to view and change their parameters.

LCK=0110 allows entry and viewing of Level 1 & 2 but allows changes to Level 1 parameters only.

LCK=0001 allows entry and viewing of Level 1 but allows changes to the SV only.

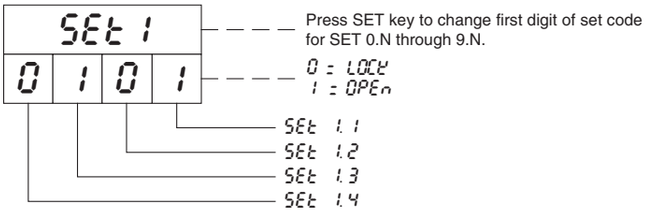
LCK=0101 prevents changes to all parameters except LCK.

LVC_iom.indd 20 2002-07-31, 15:49:34

4.4 LEVEL 4 (SET Level)

Level 4 allows selection or supression of various menu items. After programming, menu items may be locked out to prevent inadvertant alteration. When LCK= 1111, press the SET key [SET] and the SHIFT key [<] for 5 seconds to enter Level 4. Use the SET [SET] key to switch the high order set value (0.# through 9.#)

4.4.1 Display



4.4.2 Function of SETs

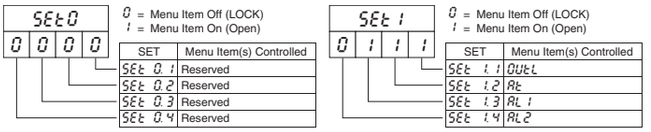
There are ten sets, each with four binary settings that control whether specified menu item(s) appear. The following chart shows the menu items associated with each set. The values shown are the Factory values.

CAUTION: Changing items listed as 'RESERVED' may cause unpredictable behavior of the instrument. DO NOT CHANGE RESERVED SETTINGS WITHOUT DIRECT INSTRUCTIONS FROM THE FACTORY.

LVC_iom.indd 21 2002-07-31, 15:49:34

SEt0

0 0 0 0



0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 0.1	Reserved
SEt 0.2	Reserved
SEt 0.3	Reserved
SEt 0.4	Reserved

SEt1

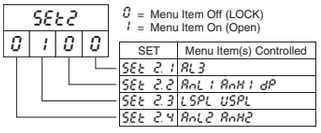
0 1 1 1

0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 1.1	OUtL
SEt 1.2	At
SEt 1.3	AL1
SEt 1.4	AL2

SEt2

0 1 0 0

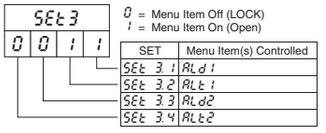


0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 2.1	AL3
SEt 2.2	AnL1 AnH1 dP
SEt 2.3	LSPL USPL
SEt 2.4	AnL2 AnH2

SEt3

0 0 1 1

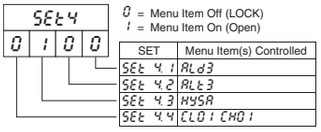


0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 3.1	ALd1
SEt 3.2	ALt1
SEt 3.3	ALd2
SEt 3.4	ALt2

SEt4

0 1 0 0

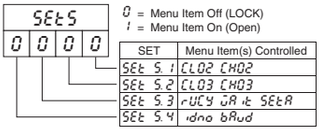


0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 4.1	ALd3
SEt 4.2	ALt3
SEt 4.3	HYSA
SEt 4.4	CLO1 CHO1

SEt5

0 0 0 0

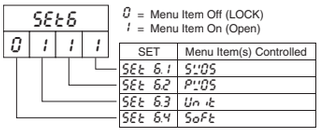


0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 5.1	CLO2 CHO2
SEt 5.2	CLO3 CHO3
SEt 5.3	rUCY GA it SEtA
SEt 5.4	idno bAud

SEt6

0 1 1 1

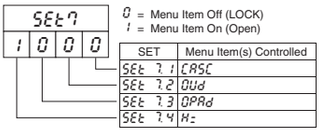


0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 6.1	SUOS
SEt 6.2	PUOS
SEt 6.3	Un it
SEt 6.4	SoFt

SEt7

1 0 0 0

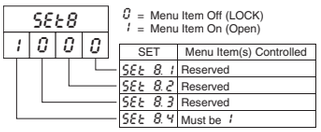


0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 7.1	CASC
SEt 7.2	OUd
SEt 7.3	OPAd
SEt 7.4	Hz

SEt8

1 0 0 0

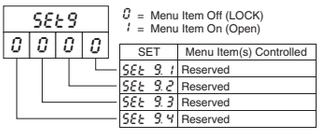


0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 8.1	Reserved
SEt 8.2	Reserved
SEt 8.3	Reserved
SEt 8.4	Must be 1

SEt9

0 0 0 0



0 = Menu Item Off (LOCK)
1 = Menu Item On (Open)

SET	Menu Item(s) Controlled
SEt 9.1	Reserved
SEt 9.2	Reserved
SEt 9.3	Reserved
SEt 9.4	Reserved

LVC_iom.indd 22 2002-07-31, 15:49:35

5. INPUT

5.1 Input selection (inP 1)

TYPE	CODE	RANGE
K Thermocouple	K 1	0.0 ~ 200.0˚C / 0.0 ~ 392.0˚F
	K2	0.0 ~ 400.0˚C / 0.0 ~ 752.0˚F
	K3	0 ~ 600˚C / 0 ~1112˚F
	K4	0 ~ 800˚C / 0 ~1472˚F
	K5	0 ~ 1000˚C / 0 ~ 1832˚F
	K6	0 ~ 1200˚C / 0 ~ 2192˚F
J Thermocouple	J 1	0.0 ~ 200.0˚C / 0.0 ~ 392.0˚F
	J2	0.0 ~ 400.0˚C / 0.0 ~ 752.0˚F
	J3	0 ~ 600˚C / 0 ~ 1112˚F
	J4	0 ~ 800˚C / 0 ~ 1472˚F
	J5	0 ~ 1000˚C / 0 ~ 1832˚F
	J6	0 ~ 1200˚C / 0 ~ 2192˚F
R Thermocouple	r 1	0 ~ 1600˚C / 0 ~ 2912˚F
	r2	0 ~ 1796˚C / 0 ~ 3216˚F
S Thermocouple	S 1	0 ~ 1600˚C / 0 ~ 2912˚F
	S2	0 ~ 1796˚C / 0 ~ 3216˚F
B Thermocouple	b 1	0 ~ 1820˚C / 0 ~ 3308˚F
E Thermocouple	E 1	0 ~ 800˚C / 0 ~ 1472˚F
	E2	0 ~ 1000˚C / 0 ~ 1832˚F
N Thermocouple	n 1	0 ~ 1200˚ / 0 ~ 2192˚F
	n2	0 ~ 1300˚C / 0 ~ 2372˚F
T Thermocouple	t 1	-199.9 ~ 400.0˚C / -199.9 ~ 752.0˚F
	t2	-199.9 ~ 200.0˚C / -199.9 ~ 392.0˚F
	t3	0.0 ~ 350.0˚C / 0.0 ~ 662.0˚F
W Thermocouple	U 1	0 ~ 2000˚C / 0 ~ 3632˚F
	U 1	0 ~ 2320˚C / 0 ~ 2372˚F
PL II Thermocouple	PL 1	0 ~ 1300˚C / 0 ~ 2372˚F
	PL2	0 ~ 1390˚C / 0 ~ 2534˚F
U Thermocouple	U 1	-199.9 ~ 600.0˚C / -199.9 ~ 999.9˚F
	U2	-199.9 ~ 200.0˚C / -199.9 ~ 392.0˚F
	U3	0.0 ~ 400.0˚C / 0.0 ~ 752.0˚F

LVC_iom.indd 23 2002-07-31, 15:49:35

TYPE	CODE	RANGE
L Thermocouple	L 1	0 ~ 400˚C / 0 ~ 752˚F
	L 2	0 ~ 800˚C / 0 ~ 1472˚F
JIS RTD (.003916 curve) PLT 100 OHM	JP 1	-199.9 ~ 600.0˚C / -199.9 ~ 999.9˚F
	JP 2	-199.9 ~ 400.0˚C / -199.9 ~ 752.0˚F
	JP 3	-199.9 ~ 200.0˚C / -199 ~ 392.0˚F
	JP 4	0 ~ 200˚C / 0 ~ 392˚F
	JP 5	0 ~ 400˚C / 0 ~ 752˚F
	JP 6	0 ~ 600˚C / 0 ~ 1112˚F
DIN RTD (.00385 curve) PLT 100 OHM	dP 1	-199.9 ~ 600.0˚C / -199.9 ~ 999.9˚F
	dP 2	-199.9 ~ 400.0˚C / -199.9 ~ 752.0˚F
	dP 3	-199.9 ~ 200.0˚C / -199.9 ~ 392.0˚F
	dP 4	0 ~ 200˚C / 0 ~ 392˚F
	dP 5	0 ~ 400˚C / 0 ~ 752˚F
	dP 6	0 ~ 600˚C / 0 ~ 1112˚F
JIS RTD (.003916 curve) PLT 50 OHM	JP.1	-199.9 ~ 600.0˚C / -199.9 ~ 999.9˚F
	JP.2	-199.9 ~ 400.0˚C / -199.9 ~ 752.0˚F
	JP.3	-199.9 ~ 200.0˚C / -199.9 ~ 392.0˚F
	JP.4	0 ~ 200˚C / 0 ~ 392˚F
	JP.5	0 ~ 400˚C / 0 ~ 752˚F
	JP.6	0 ~ 600˚C / 0 ~ 1112˚F
AN1 (analog)	An 1	-10 ~ 10mV / -1999 ~ 9999 units
AN2 (analog)	An2	0 ~ 10mV / -1999 ~ 9999 units
AN3 (analog)	An3	0 ~ 20mV / -1999 ~ 9999 units
AN4 (analog)	An4	0 ~ 50mV / -1999 ~ 9999 units
AN5 (analog)	An5	10 ~ 50mV / -1999 ~ 9999 units

LVC_iom.indd 24 2002-07-31, 15:49:35

6. ALARM

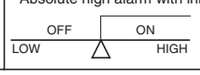
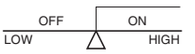
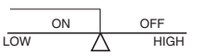
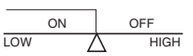
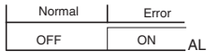
6.1 Alarm function selection

CODE	DESCRIPTION	INHIBIT
00 - 10	None (alarm functions disabled)	
01	Deviation high limit alarm	YES
11	Deviation high limit alarm	NO
02	Deviation low limit alarm	YES
12	Deviation low limit alarm	NO
03	Deviation high / low limit alarm	YES
13	Deviation high / low limit alarm	NO
04 - 14	Deviation high / low limit range alarm	NO
05	Absolute value high limit alarm	YES
15	Absolute value high limit alarm	NO
06	Absolute value low limit alarm	YES
16	Absolute value low limit alarm	NO
07	Segment end alarm (for optional programmer function only)	-
17	Program active alarm (for optional programmer function only)	-
08	System error alarm on	-
18	System error alarm off	-
09		-
19	On delay timer alarm	-

LVC_iom.indd 25 2002-07-31, 15:49:35

6.2 Alarm action description

▲ = SV △ = Alarm set value
Inhibit function suppresses alarm action until PV moves across the Alarm set value from alarm condition to normal condition. If PV re-crosses the Alarm set point the alarm will activate.

00 10	None (alarm inactive)
01	Deviation high alarm with inhibit
11	Deviation high alarm without inhibit
02	Deviation low alarm with inhibit
12	Deviation low alarm without inhibit
03	High & low alarms with inhibit
13	High & low alarms without inhibit
04 14	Band alarm
05	Absolute high alarm with inhibit 
15	Absolute high alarm without inhibit 
06	Absolute low alarm with inhibit 
16	Absolute low alarm without inhibit 
07	Reserved function. Do not use.
17	Reserved function. Do not use.
08	System error alarm 
18	System error alarm
09	Reserved function. Do not use.
19	Alarm delay timer When PV>=AL value, alarm action is suppressed for the peiod set in ALT. When time elapses, alarm output is enabled.

LVC_iom.indd 26 2002-07-31, 15:49:35

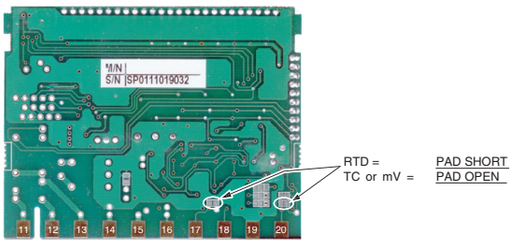
7. Changing Input from T/C Type to RTD Type

CAUTION: It is recommended that the appropriate input type be ordered from the Factory. If you have ordered the correct input type (see order code), it is not necessary to make the change(s) listed here.

To change the input from **T/C** to **RTD** type, use a low wattage soldering iron to place a solder short on the PCB pads an shown in the diagram below.

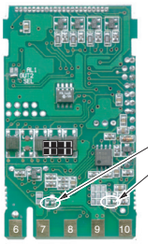
To change the unit back from **RTD** input to **TC** type, heat the pads and remove the solder with a solder remover or solder wick.

96 x 96 48 x 96 96 x 48
(PC Board)



RTD = PAD SHORT
TC or mV = PAD OPEN

48 x 48
(PC Board)



RTD = PAD SHORT
TC or mV = PAD OPEN

LVC_iom.indd 27 2002-07-31, 15:49:36

8. Modification of output from “HEAT/ALARM” to “HEAT/COOL”

CAUTION: It is recommended that the appropriate output type be ordered from the Factory. If you have ordered the correct output type (see order code), it is not necessary to make the change(s) listed here.

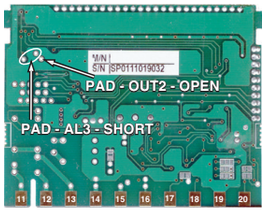
To change the input from **Heat/Alarm** to **Heat/Cool** type, use a low wattage soldering iron to place a solder short on the PCB pads an shown in the diagram below.

To change the unit back from **Heat/Cool** input to **Heat/Alarm** type, heat the pads and remove the solder with a solder remover or solder wick.

HEAT WITH ALARM

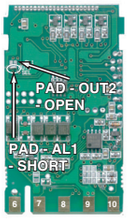
96 x 96 - 48 x 96 - 96 x 48

(PC Board)



48 x 48

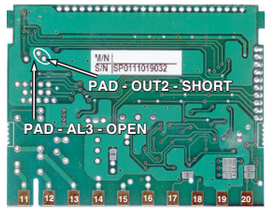
(PC Board)



HEAT / COOL

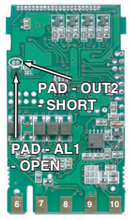
96 x 96 - 48 x 96 - 96 x 48

(PC Board)



48 x 48

(PC Board)



LVC_iom.indd 28 2002-07-31, 15:49:38

SPECIFICATIONS

Selectable Inputs: Thermocouple, RTD, DC Voltage, or DC Current selectable.

Input Impedance:

Thermocouple = * megohms minimum.
RTD current = * µA.

Sensor Break Protection: Upscale.

Set Point Range: Selectable (See Input Ranges Page ##).

Display: Two 4 digit, 7 segment LEDs.

LVC04: PV display is *mm (* in.) high, SV is *mm (* in.)
LCV09: PV and SV displays are *mm (* in.) high.
LVC08:
LVC16:

Control Action: Reverse (usually heating), Direct (usually cooling) selectable.

Proportional Band: 1 to 9999 °F, °C, or counts.

Reset Time (Integral): Off or 0.1 to 99.9 minutes.

Rate Time (Derivative): Off or 0.01 to 99.99 minutes.

Cycle Rate: 1 to 80 seconds.

On - Off Differential: Adjustable 1° F, 1° C, or 1 count to full scale in 1° F, 1° C, or 1 count steps.

Alarm On - Off Differential: 1° F, 1° C, or 1 count.

Fuzzy Percent: 0 to 100%.

Fuzzy Rate: Off or 0.01 to 99.99 counts per second.

Fuzzy Band: Off or 1 to 4000 °F, °C, or counts.

Accuracy: ±0.2% of span, ±1 least significant digit.

Resolution: 1 degree or 0.1 degree, selectable.

Line Voltage Stability: ±0.05% over the supply voltage range.

LVC_iom.indd 29 2002-07-31, 15:49:41

Temperature Stability: 100 ppm / °C typical, 200 ppm / °C maximum.

Common Mode Rejection: 140 db minimum at 60 Hz.

Normal Mode Rejection: 65 db typical, 60 db at 60 Hz.

Isolation:

Relay and SSR outputs: 1500 Vac to all other inputs and outputs.

SP1 and SP2 Current outputs: 500 Vac to all other inputs and outputs, but not isolated from each other,

SP1 and SP2 Switched Voltage outputs: 500 Vac to all other inputs and outputs, but not isolated from each other.

Process Output (934, 936): 500 VAC to all other inputs and outputs.

Supply Voltage: 85 to 265 Vac, 50 ~ 60 Hz. single phase.

Power Consumption: 4VA maximum.

Operating Temperature: 0 to +50 °C (+32 to 122 °F).

Storage Temperature: -25 to +65 °C (-13 to 149 °F).

Humidity Conditions: 50 to 85% non-condensing.

Memory Backup: Nonvolatile memory. No batteries required.

Control Output Ratings:

Relay: SPST, 3 A @ 240 Vac resistive; 1.5A @240 Vac inductive; Pilot duty rating 240 VA, 2 A @ 120 Vac or 1 A 240 Vac.

Alarm Relay: SPST, 3 A @ 240 Vac resistive; 1/10 HP@ 120 Vac.

Current (isolated): 0 to 20 mA across 600 ohms maximum.

Switched Voltage (isolated): 15 Vdc @ 20 mA.

Panel Cutout:

LVC04: PV display is *mm (* in.) high, SV is *mm (*

LVC_iom.indd 30 2002-07-31, 15:49:41

in.)
LCV09: PV and SV displays are *mm (* in.) high.
LVC08:
LVC16:

Depth Behind Mounting Surface: 80 mm (3.150 in.) maximum.

Weight: 220 g (8 oz).

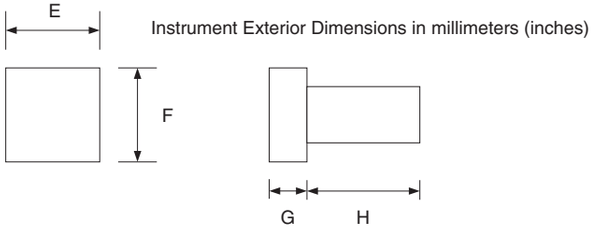
Agency Approvals: CE.

Front Panel Rating: IP54.

LVC_iom.indd 31 2002-07-31, 15:49:42

INPUT RANGES

DIMENSIONS



Instrument Exterior Dimensions in millimeters (inches)

MODEL	E	F	G	H
LCV16	50 (1.969)	50 (1.969)	17 (0.669)	80 (3.150)
LCV09	96 (3.543)	50 (1.969)	17 (0.669)	80 (3.150)
LCV08	50 (1.969)	96 (3.543)	17 (0.669)	80 (3.150)
LCV04	96 (3.543)	96 (3.543)	17 (0.669)	80 (3.150)

LVC_iom.indd 32 2002-07-31, 15:49:42