

LCU204 1/4 DIN Universal Temperature / Process Control

The Love LCU204 Series

Temperature/Process Controls

offer a high level of standard features in an economical 1/4 DIN package. Featuring universal input for thermocouples, RTDs, differential input, and process input; the LCU204 Series offers easy setup for most temperature and process applications. A standard 24 Volt isolated, regulated power supply is included to power most standard 4 to 20 mA transmitters.

Standard features include Self-tune®, Fuzzy Logic, fully adjustable PID, Auto/Manual control with bumpless transfer and front panel activation key, percent output indication, peak and valley indication, loop break protection and indication. For process inputs the display is fully programmable from -1999 to +9999 with user placeable decimal point. The ramp/soak function has 10 programmable segments, four end of program options, and a run/hold key on the front panel.

The LCU204 Series is available with single universal output with alarm or heat/cool outputs, and can be programmed for on-off, PID or heat/cool. All outputs are isolated from the inputs. Outputs include 3 Amp relay, 24 VDC SSR drive, and 0 to 20 mADC (scalable). If the proportional current output is not used for set point control, it may be configured as Process Variable Retransmission. A three stage set point feature allows one of three set point values and control parameters to be stored and implemented with simple dry contact closures.

Options include Heater Break Protection and RS-485 Serial Communications.

The LCU204 sets a new standard in quality, features, ease of use, and value. While having the highest level features and functions, many setup items only appear in the control menu when the function is selected. There is no need to wade through unnecessary menu items to get to the functions you need. For the best value in a 1/4 DIN control, the choice is the Love Controls LCU204 Series.



STANDARD FEATURES

- IP65 (NEMA 4X) front panel
- Self-Tune® or manual PID selectable with Fuzzy logic
- Universal Input
- Universal Output
- Auto/Manual control
- Ramp/Soak with program end control
- Regulated loop power supply for transmitters
- Alarm with selectable modes
- Three Stage Set Point
- Optional Computer Communications
- Optional Heater Break Alarm



Inputs

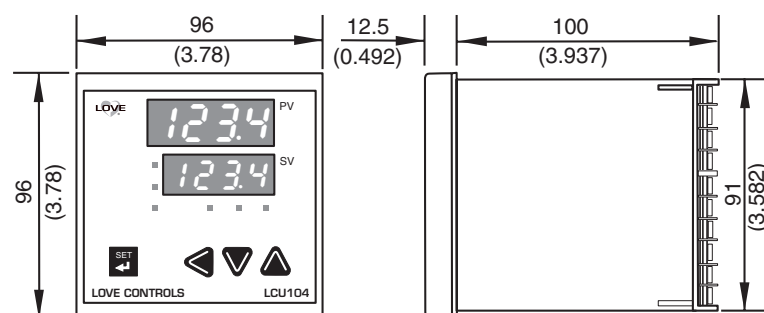
INPUT TYPE	RANGE °F	RANGE °C
Type J Thermocouple	-300 to +2300	-199.9 to +999.9
Type K Thermocouple	-300 to +2500	-200 to +1370
Type K Thermocouple	-199.9 to +999.9	0 to 2300
Type T Thermocouple	-300 to +750	-199.9 to +400.0
Type E Thermocouple	-300 to +1800	-199.9 to +999.9
Type L Thermocouple	-300 to +1300	-199.9 to +900.0
Type R Thermocouple	32 to 3100	0 to +1700
Type S Thermocouple	32 to 3100	0 to +1700
Type B Thermocouple	+32 to +3300	0 to +1800
Type N Thermocouple	-300 to +2400	-200 to +1300
Type U Thermocouple	-300 to +750	-199.9 to +400.0
Type W Thermocouple	32 to 4200	0 to 2300
Platinel II	32 to 2500	0 to 1390
100 Ω Plt. 0.00385 DIN RTD	-328 to 1607	-200 to +875
100 Ω Plt. 0.00392 Nist RTD	-328 to 1607	-200 to +875
1 to 5 V*	Scalable Units from -1999 to +9999	
-10 to +20 mV*	Scalable Units from -1999 to +9999	
0 to 100 mV*	Scalable Units from -1999 to +9999	
4 to 20 mA*	Scalable Units from -1999 to +9999	

* These inputs are fully scalable from a minimum of 100 counts span placed anywhere within the within the range of -1999 to +9999. Decimal point position is adjustable from the zero place (9999), tenths (999.9), hundredths (99.99), thousandths (9.999), or ten

FRONT PANEL KEY FUNCTIONS



DIMENSIONS



MODEL IDENTIFICATION

To order, specify part number by filling the boxes with the appropriate numbers.

LCU204 -

OPTIONS

- 00 = None
- 01 = RS-485 Communications and Heater Break
- 10 = Heat/Cool Version
- 11 = Heat/Cool with Communications and Heater Break

SPECIFICATIONS

Selectable Inputs: (See range chart)
13 Thermocouple, 2 RTD, DC Voltage, or DC Current selectable.

Input Impedance:
Thermocouple = 1 megohm minimum.
Current = 250 ohms (shunt resistor).
RTD current = 500 μ A. (Max. lead resistance = 10 ohms/wire)
Voltage = 1 megohm.

Sample Time: 250mS.

Sensor Break Protection: Upscale or downscale for thermocouples, upscale only for RTD.

Set Point Range: Selectable (See Range Chart).

Display: Two 4 digit, 7 segment LEDs. PV 19.7mm (0.78 in.), SV 13.2mm (0.52 in.).

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

Proportional Band: 0.1 to 999.9% of full scale.

Reset Time (Integral): Off or 1 to 6000 seconds.

Rate Time (Derivative): Off or 1 to 6000 seconds.

Cycle Rate: 1 to 80 seconds.

On-Off Differential: Adjustable 0.0 to 100% of full scale.

Alarm On-Off Differential: Adjustable 0.0 to 100% of full scale.

Fuzzy Logic: On or Off.

Accuracy: $\pm 0.1\%$ of span, ± 1 least significant digit.

Resolution: 1 count or 1 degree or 0.1 degree per range.

Temperature Stability: 100 ppm/ $^{\circ}$ C typical, 200 ppm/ $^{\circ}$ C max.

Reference Junction Accuracy: $\pm 1.5^{\circ}$ C @ 15 to 35° C, $\pm 2.0^{\circ}$ C 0 to 50° C

Supply Voltage: 100 to 240 VAC 50/60 Hz $\pm 10\%$.

Power Consumption: 10 VA maximum.

Operating Temperature: -0 to $+50^{\circ}$ C ($+32$ to 131° F).

Storage Temperature: -25 to $+70^{\circ}$ C (-40 to 176° F).

Humidity Conditions: 20 to 90% non-condensing.

Memory Backup: Nonvolatile memory. No batteries required.

Control Output Ratings:

SSR Drive (non-isolated): 24 VDC @ 20 mA (max load 600 ohms).

Relay: SPST, 3 A @ 240 VAC resistive.

Current (non-isolated): 4 to 20 mA across 600 ohms max.

Alarm Relays* (3): SPST, NO, 1A @ 240 VAC, 1A @ 30 VDC, resistive.

Alarm Deadband: 0 to 100% of full scale.

Panel Cutout: 45 mm x 22 mm (1.775" x 0.874").

Depth Behind Mounting Surface: 100 mm (3.94").

Weight: 472 g (15 oz).

Agency Approvals: CE, UL E83725.

Front Panel Rating: IP65 (Type 4X).

Communications Option:

Standard: RS-485

Address Range: 1 to 99.

Connection: 2-wire, Half Duplex

Communications Rate: Selectable, 600, 1200, 2400, 4800, 9600 Baud.

Start Bit: 1.

Data Bits: 7 or 8, programmable.

Parity Bit: None, even, or odd, programmable.

Stop Bit: 1 or 2, programmable.

Protocol: Modbus, ASCII or RTU, programmable.

Response Time: 10 to 100mS, programmable.

Heater Break Alarm: Uses Alarm 1 and 2.

Current Measurement Range: 1 to 50A AC (resolution 0.5A, $\pm 5\%$ full scale, ± 1 digit).

* Alarm 3 used as cooling output for Heat/Cool option.