

Digital Indicating Controller



# FCL-100 Series



***The most compact, panel mount controller  
available today...at the lowest price!***

***Shinko***  
***North America Ltd.***

[www.mod-tronic.com](http://www.mod-tronic.com)

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## Standard Features



### Model FCL

1/32 DIN (48mm x 24mm)

## Input Range Table

Input Type		Scale	
Thermocouple	K	0 to 1370°C	0 to 2500°F
	J	0 to 1000°C	0 to 1800°F
	E	0 to 800°C	0 to 1500°F
	N	0 to 1300°C	0 to 2300°F
	PL-II	0 to 1390°C	0 to 2500°F
RTD	Pt100	-200 to 850°C	-300 to 1500°F
		-199.9 to 850.0°C	-199.9 to 999.9°F

## General Specifications

<b>Display</b>	PV/SV ----- Red Digits 8(h) x 4(W)mm	
<b>Input</b>	Type • Thermocouple ----- K, J, E, N, PL-II External resistance: 100Ω or less • RTD ----- Pt100, 3-wire system (Resistance per wire: 10Ω or less) Scale ----- Refer to the Rated Scale Resolution • Thermocouple, RTD ----- 1 (1°F) • With decimal point ----- 0.1 (0.1°F)	
<b>Accuracy (Set • Indicating)</b>	Thermocouple ----- Within ±0.3% of full scale ±1 digit or ±2°C (4°F) whichever is greater RTD ----- Within ±0.2% of full scale ±1 digit or ±1°C (2°F) whichever is greater	
<b>Input Sampling Rate</b>	0.25 seconds	
<b>Control Action</b>	PID (with auto-tuning function) Proportional band (P) ----- 0 to maximum of rated scale or 0.0 to maximum of rated scale Integral time (I) ----- 0 to 3600 seconds (OFF when set to 0) Derivative time (D) ----- 0 to 3600 seconds (OFF when set to 0) Proportional cycle ----- 1 to 120 seconds (Not available for DC output.) ARW ----- Automatic PD (With auto-reset function) Proportional band (P) ----- 0 to maximum of rated scale or 0.0 to maximum of rated scale Integral time (I) ----- 0 to 3600 seconds (OFF when set to 0) Proportional cycle ----- 1 to 120 seconds (Not available for DC output.) ON/OFF Action Hysteresis ----- 0.1 to 100.0°C (°F)	
<b>Control Output</b>	• Relay contact 3A 250V AC (Resistive load) 1A 250V AC (Inductive load cos φ=0.4) • Non contact voltage 12-14V DC Maximum 40mA (Short circuit protected) • Current 4 to 20mA DC load resistance: maximum 550Ω	} To be specified
<b>Insulated Resistance</b>	10MΩ or greater at 500V DC. When output is non contact voltage output, insulation test between communication terminal and output terminal must not be carried out.	

### • Structure

NEMA 4X protective construction.  
Black enclosure color.

### • Programmable Alarms

Units feature standard single alarm output.

### • Multi-Input

Units feature multi-input capabilities:  
5 thermocouple types and 1 RTD type.

### • Auto/Manual Control

Manual override allows you to take control of your process at anytime.

### • Superior Security Options

This feature eliminates potential operator error.

### • Safety Approvals

UL, cUL and CE Safety Approvals.

### • Warranty

All units manufactured to strict ISO standards and offer full 3 year manufacturers warranty.

### • Low Cost

Most advanced price/performance package available.

### • PID Autotune

All units feature as standard full function third generation PID Autotune. This feature minimizes process overshoot under the most demanding applications.

### • Large LED Display

All units feature bright display of either PV or SV, red 4 digits.



Shinko is an  
**ISO 9001**  
facility

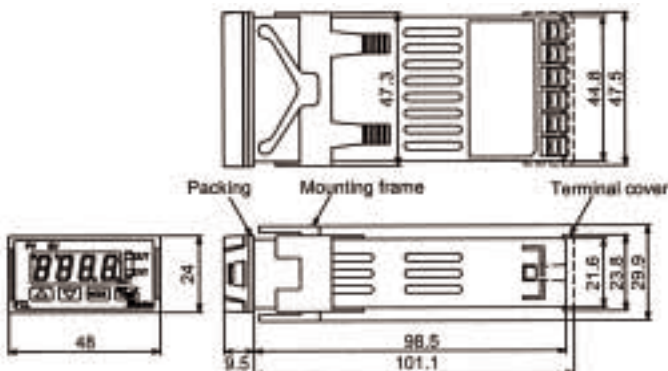
## General Specifications (continued)

<b>Temperature Alarm</b>	Output action is selectable by key operation. Standby function ----- Selectable by key operation Alarm action delayed timer ----- Settable (Setting range: 0 to 9999 seconds) Setting Accuracy ----- Thermocouple: Within $\pm 0.3\%$ of full scale $\pm 1$ digit or $\pm 2^{\circ}\text{C}$ ( $4^{\circ}\text{F}$ ) whichever is greater RTD: Within $\pm 0.2\%$ of full scale $\pm 1$ digit or $\pm 1^{\circ}\text{C}$ ( $2^{\circ}\text{F}$ ) whichever is greater Action ----- ON/OFF Action Hysteresis ----- $0.1$ to $100.0^{\circ}\text{C}$ ( $^{\circ}\text{F}$ ) Output ----- Open collector Control capacity ----- $24\text{VDC } 0.1\text{A}$ (maximum)
<b>Loop Break Alarm</b>	When manipulating value is in its maximum or minimum, the alarm works in case the process variable does not change more than the setting span within the setting time. It detects Heater burnout, Sensor burnout, and Abnormal at operation end. Setting range : Loop break alarm time ----- $0$ to $200\text{min}$ : Loop break alarm span ----- $0$ to $150$ or $0.0$ to $150^{\circ}\text{C}$ ( $^{\circ}\text{F}$ ) Output ----- Open collector Control capacity ----- $24\text{V DC } 0.1\text{A}$ (maximum)
<b>Mounting Method</b>	Provided with one piece mounting bracket.
<b>Setting Method</b>	Sheet key input.
<b>Material • Color</b>	Material: Flame resistant resin. Color: Black
<b>Supply Voltage</b>	$100$ to $240\text{V AC } 50/60\text{Hz}$ , $24\text{V AC/DC } 50/60\text{Hz}$ Allowable voltage fluctuation: $85$ to $264\text{V AC}$ , $20$ to $28\text{ AC/DC}$ Power consumption approximately $5\text{VA}$
<b>Environment</b>	Ambient temperature: $-10$ to $50^{\circ}\text{C}$ Ambient humidity: $35$ to $85\%\text{RH}$ (No condensation)

## Options

<b>Serial Communication [C5]</b>	Operates from the external computer Communication contents ----- Various setting status changes and the values reading of the FCL-100 Code form ----- ASCII Connectable units ----- A maximum of 31 units per host computer Data transfer rate ----- $9600\text{bps}$ ( $2400/4800/1920\text{bps}$ changeable by key operation.) Communication system ----- Half-duplex start stop synchronous Error detection ----- Parity check, checksum
<b>Heater Break Alarm [W]</b>	Watches the heater current with CT (current transformer), and detects the heater burnout. Rating ----- $5\text{A}$ , $10\text{A}$ , $20\text{A}$ , or $50\text{A}$ (specified) Setting accuracy ----- Within $\pm 5\%$ of heater current Control output ----- Open collector Control capacity ----- $24\text{V DC } 0.1\text{A}$ (maximum) Accessories ----- CT (Current Transformer)
<b>SV1/SV2 External Selection (SM)</b>	Main setting value 1 and 2 can be changed by external contact. Contact open for Main setting value 1, contact closed for main setting value 2.

## External Dimensions



**All units feature a full 3 year warranty and lifetime technical support!**

## Model Number Configuration

FCL-13A-\_\_\_\_/M\_\_\_\_

FRONT PANEL SIZE	CODE
1/32 DIN (48mm x 24mm)	L

ALARM FUNCTION (EVENT)	CODE
Temperature, Loop Break*	A

\*Open collector 24V DC control capacity.

CONTROL OUTPUT	CODE
Relay Contact	R
SSR Driver	S
4-20mA	A

INPUT	CODE
Multi-range T/C, RTD	M

SUPPLY VOLTAGE	CODE
24V AC/DC	24V
100 - 240V AC	-

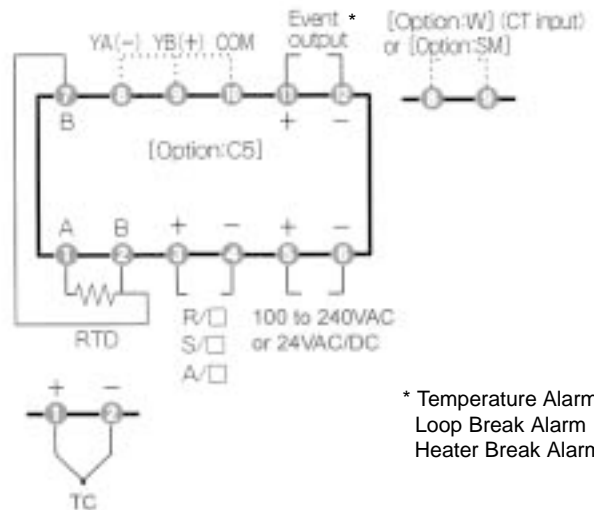
OPTIONS*	CODE
RS-485	C5
Heater Break (5A)	W5A
(10A)	W10A
(20A)	W20A
(50A)	W50A
Remote SV	SM

\*Only one option may be selected.



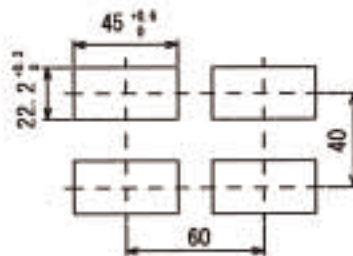
**High Performance  
Temperature & Recording  
Instrumentation  
...at the lowest prices  
anywhere!**

## Terminal Wiring



\* Temperature Alarm  
Loop Break Alarm  
Heater Break Alarm

## Panel Cutout



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