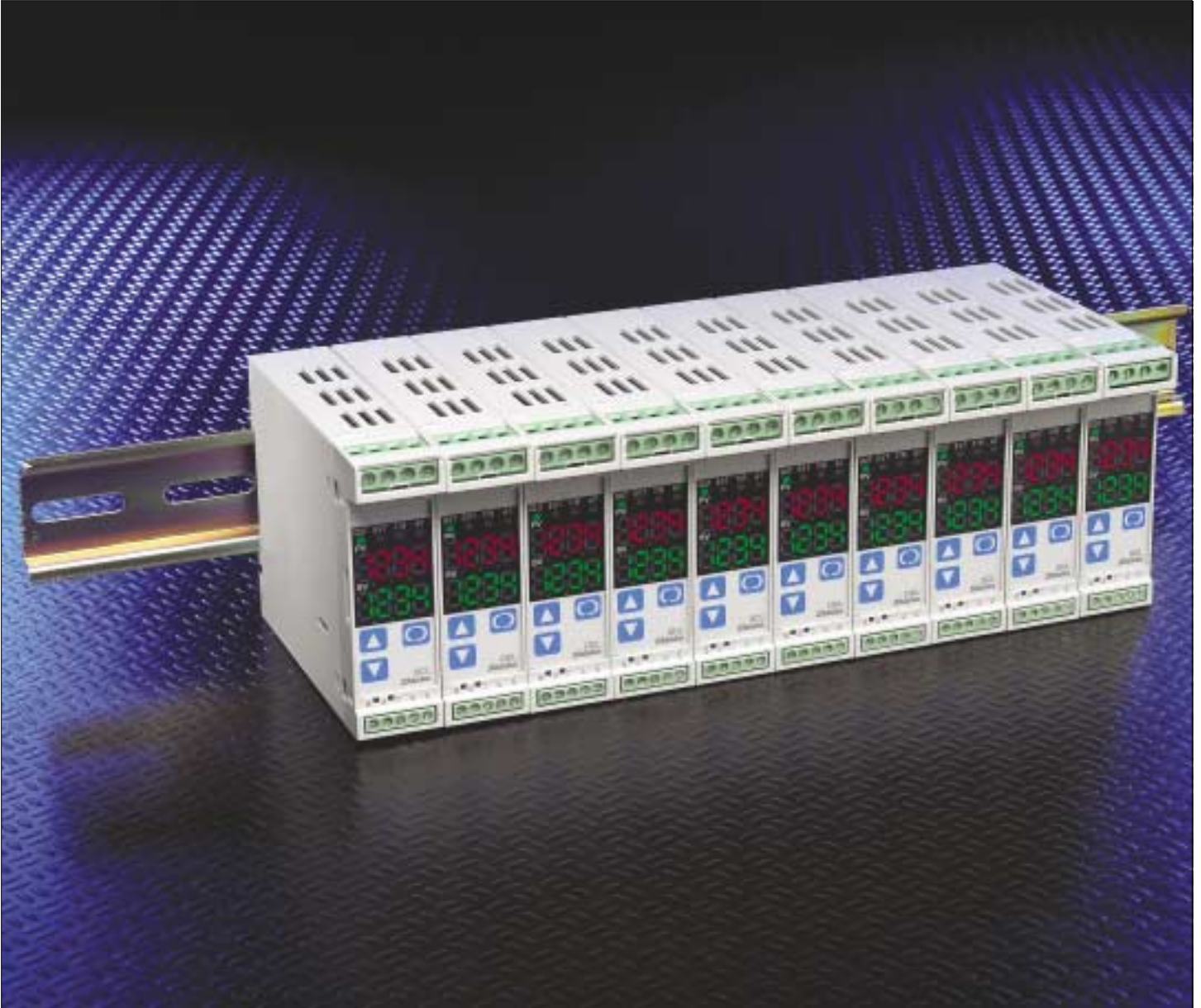


DIN Rail Indicating Controller



# DCL Series



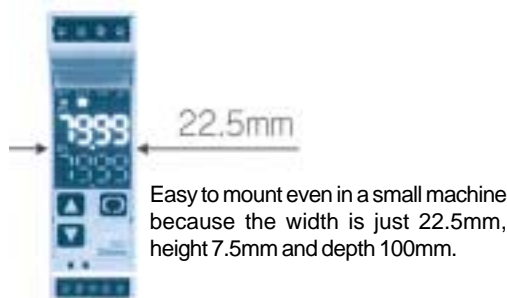
*Multi-purpose design allows the **DCL** to be used as a **controller, transmitter or alarm unit.***

**Shinko**  
North America Ltd.  
[www.shinkona.com](http://www.shinkona.com)

*Distributed by:*

## Standard Features

### • Space Saving Size



### • Easy Mounting And Detaching

Hook this instrument on the DIN rail and mount it. Maintenance is very easy. As it is fixed to the DIN rail, it is vibration proof. When detaching it pull down the hook at the lower part of the main body using flat bladed screwdriver then pull up this instrument.



### • Dual Use

This instrument is easily switched between controller or transmitter by simple key operation. When using as a transmitter, the signal or thermocouple input, RTD input or DC input is converted to a 4 to 20mA DC signal output. The input scale is easily changed. (This function is limited only A/\* type)

### • Expandable

It is possible to measure and control from 1 point to a maximum of 31 points using serial communication (RS-485). It is very easy to connect between DCL-33A's, between communication converter and DCL-33A using CDM and CPP communication cables (sold separately).

### • Large LED Display

PV Red 4 digits 7.5 x 4.1mm (H x W)  
SV Green 4 digits 7.5 x 4.1 mm (H x W)

### • Safety Approvals

UL, cUL and CE Safety Approvals.

### • Programmable Alarm

Units feature standard single alarm output.

### • Low Cost

Most advanced price/performance package available.

### • True Multi-Input

Units feature full multi-input capability:  
1 RTD type, 10 thermocouple types, mA, and V inputs

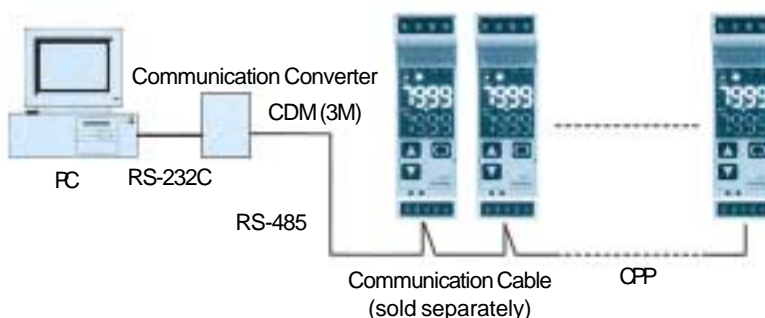
### • PID Autotune

Units feature full function third generation PID autotune.

## System Configuration (example)

### When connecting plural DCL-33A's to monitor:

It is very easy to control and monitor a maximum of 31 points by connecting PC communication with converter. (If the communication specification of PC is RS-485, communication converter is not required.)



### When DCL-33A is used as a transmitter:

Various process signals are converted into the insulated 4 to 20mA DC in the DCL-33A inner assembly, then 4 to 20mA is outputted. It is possible to monitor multipoint process values by connecting multipoint indicating recorder. (When DCL-33A is DC current output type, it can be used as a transmitter)

### When DCL-33A and a programmable controller are used together:

It is very easy to control and monitor a maximum of 31 points by connecting PC communication. If DCL-33A (with option C5) and Shinko programmable controller (with Option: SVTC) as a program setter are combined, it can be used as a multipoint programmable controller (a maximum of 31 units). (Setting value digital transmission is possible.)

## Input Range Table

Input Type		Scale	
Thermocouple	K	-200 to 1370°C -199.9 to 400.0°C	-320 to 2500°F -199.9 to 750.0°F
	J	-200 to 1000°C	-320 to 1800°F
	R	0 to 1760°C	0 to 3200°F
	S	0 to 1760°C	0 to 3200°F
	B	0 to 1820°C	0 to 3300°F
	E	-200 to 850°C	-320 to 1500°F
	T	-199.9 to 400.0°C	-199.9 to 750.0°F
	N	-200 to 1390°C	-320 to 2300°F
	PL-II	0 to 1390°C	0 to 2500°F
	C (W/Re5-260)	0 to 2315°C	0 to 4200°F
RTD	Pt100	-200 to 850°C	-300 to 1500°F
		-199.9 to 850.0°C	-199.9 to 999.9°F
DC	4 to 20mA DC	-1999.9 to 9999, -199.9 to 999.9 -19.99 to 99.99, -1.999 to 9.999	
	0 to 20mA DC		
	0 to 1V DC		
	0 to 5V DC		
	1 to 5V DC		
	0 to 10V DC		

• For DC current input a shunt resistor (sold separately) 50Ω is required.

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

Shinko is an  
**ISO 9001**  
facility

## General Specifications

<b>Display</b>	PV ---- Red 4 digits, Character size: 7.5 x 4.1mm (H x W) SV ---- Green 4 digits, Character size: 7.5 x 4.1mm (H x W)
<b>Input</b>	<p>Types</p> <ul style="list-style-type: none"> <li>• Thermocouple ----- K, J, R, S, B, E, T, N, PL-II, C (W/Re5-26) External resistance: 100Ω or less (However, B input: External resistance 40Ω or less)</li> <li>• RTD ----- Pt100, 3-wire system (Resistance per wire: 10Ω or less)</li> <li>• DC current - 0 to 20mADC, 4 to 20mADC, Input impedance: 50Ω (Connect shunt resistor 50Ω between input terminals.) Allowable input current: 50mA or less</li> <li>• DC voltage - 0 to 1V DC, Input impedance: 1MΩ or greater, Allowable input voltage: 5V or less - 0 to 5VDC, 1 to 5VDC, 0 to 10VDC, Input impedance: 100kΩ or greater, Allowable input voltage: 15V or less Allowable signal source resistance: 2kΩ or less</li> </ul>
<b>Accuracy (Setting, Indication)</b>	<p>Thermocouple ----- Within <math>\pm 0.2\%</math> <math>\pm 1</math> digit of each input span or <math>\pm 2^{\circ}\text{C}</math> (<math>4^{\circ}\text{F}</math>) whichever is greater However, R or S input and 0 to <math>200^{\circ}\text{C}</math> (0 to <math>400^{\circ}\text{F}</math>): Within <math>\pm 6^{\circ}\text{C}</math> (<math>12^{\circ}\text{F}</math>) B input and 0 to <math>300^{\circ}\text{C}</math> (0 to <math>600^{\circ}\text{F}</math>): Accuracy is not guaranteed.</p> <p>RTD ----- Within <math>\pm 0.1\%</math> <math>\pm 1</math> digit of input span, or <math>\pm 1^{\circ}\text{C}</math> (<math>2^{\circ}\text{F}</math>) whichever is greater</p> <p>DC current and DC voltage --- Within <math>\pm 0.2\%</math> <math>\pm 1</math> digit of each input span</p>
<b>Input Sampling Rate</b>	0.25 seconds
<b>Control Action</b>	<ul style="list-style-type: none"> <li>• PID action (with auto-tuning function)</li> <li>• PI action</li> <li>• PD action (with manual reset function)</li> <li>• P action (with manual reset function)</li> <li>• ON/OFF action</li> </ul> <p>Proportional band (P) ----- 0 to 110.0%</p> <p>Integral time (I) ----- 0 to 1000 seconds (OFF when set to 0)</p> <p>Derivative time (D) ----- 0 to 300 seconds (OFF when set to 0)</p> <p>Proportional cycle ----- 1 to 120 seconds (Not available for DC output.)</p> <p>ARW ----- 0 to 100%</p> <p>Manual reset ----- <math>\pm</math>Proportional band converted value</p> <p>Hysteresis -- Thermocouple input and RTD input: 0.1 to <math>100.0^{\circ}\text{C}</math> (<math>^{\circ}\text{F}</math>) DC current input and DC voltage input: 1 to 1000 (Decimal point place can be changed by selection.)</p> <p>Output limit ----- 0 to 100% (DC current output type: -5 to 105%)</p>
<b>Control Output (OUT)</b>	<p>Type must be designated.</p> <ul style="list-style-type: none"> <li>• Relay contact ----- 3A 250VAC (Resistive load), 1A 250VAC (Inductive load <math>\cos \phi=0.4</math>), Electric life: 100.000 times</li> <li>• Non-contact voltage - 12 to 14VDC Max. 40mA (short circuit protected)</li> <li>• DC current ----- 4 to 20mADC Load resistance: Max 550Ω Output accuracy: Within <math>\pm 0.3\%</math> of output span (Within <math>\pm 0.048\text{mA}</math>) Resolution: 12000</li> </ul>
<b>Control Output (OUT)</b>	<p>Alarm</p> <p>Alarm action can be selected by key operation as either Energized/Deenergized.</p> <p>Setting accuracy -- The same as indicating accuracy</p> <p>Action ----- ON/OFF action</p> <p>Hysteresis ----- Thermocouple input and RTD input: 0.1 to <math>100.0^{\circ}\text{C}</math> (<math>^{\circ}\text{F}</math>) DC current input, DC voltage input: 1 to 1000 (Decimal point place can be changed by selection)</p> <p>Output ----- Open collector Control capacity: 24VDC 0.1A (Max.)</p> <p>Loop Break Alarm</p> <p>Detects Heater burnout, Sensor burnout and abnormality at operation end.</p> <p>Loop break alarm time ----- 0 to 200 minutes</p> <p>Loop break alarm action span ---- Thermocouple input, RTD input: 0 to <math>150^{\circ}\text{C}</math> (<math>^{\circ}\text{F}</math>), or 0.0 to <math>150.0^{\circ}\text{C}</math> (<math>^{\circ}\text{F}</math>) DC current input and DC voltage input: 0 to 1500</p> <p>Output ----- Open collector Control capacity: 24VDC 0.1A (Max)</p>
<b>Supply Voltage</b>	<p>Voltage type must be specified: • 100 to 240VAC 50/60Hz or 24VAC/DC 50/60Hz</p> <p>Allowable voltage fluctuation: 85 to 264VAC, 20 to 28VAC/DC Power consumption approximately 6VA.</p>
<b>Mounting Method</b>	DIN Rail mounting.
<b>Setting Method</b>	Sheet key input.
<b>Material • Color</b>	Material: Flame resistant resin. Color: Light Grey
<b>Environment</b>	Ambient temperature: -10 to $50^{\circ}\text{C}$ Ambient humidity 35 to 85%RH (No condensing)



## Options

### Heater Burnout Alarm [W]

Watches the heater current with CT (current transformer), and detects the heater burnout.

Heater rating must be specified either 5A, 10A, 20A or 50A.

Setting range ----- Rated current 5A: 0.0 to 5.0A

Rated current 10A: 0.0 to 10.0A

Rated current 20A: 0.0 to 20.0A

Rated current 50A: 0.0 to 50.0A

Setting Accuracy --- Within  $\pm 5\%$  heater rated current

Output ----- Open collector Control capacity: 24VDC 0.1A (Max)

Output self holding - Not available

Accessories ----- CT (Current Transformer)

### Serial Communication [C5]

Operations such as changing each setting value, reading values and setting value of DCL-33A are carried out from external computer. Also it is possible to transmit the main setting value of the PCD-13A series digitally using PCD13A series (with option: SVTC) and DCL-33A (with option: C5).

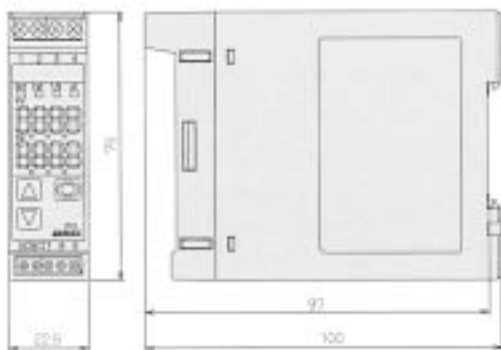
Communication interface ----- Based on EIA RS-485

Character mode ----- ASCII

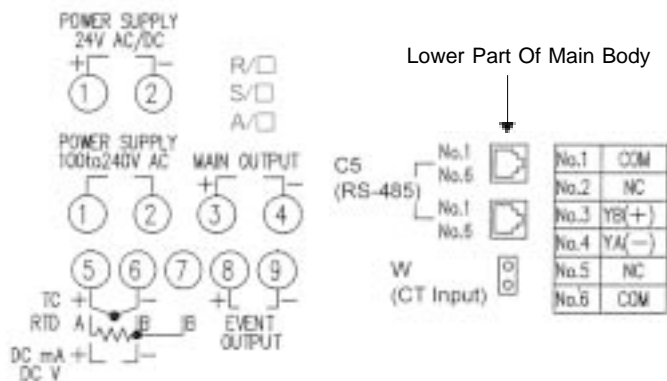
Number of connectable units ----- A maximum of 31 units per host computer.

Data transfer rate ----- 9600bps (2400/4800/19200bps Selectable by key operation)

## External Dimensions



## Terminal Wiring



## Model Number Configuration

DCL-33A- /M

ALARM FUNCTION	CODE
Standard	A

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

INPUT	CODE
Multi-range T/C, RTD, mA, VDC	M

SUPPLY VOLTAGE	CODE
24V AC/DC	1
100 - 240VAC	-

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

\* W\*: standard alarm and 4-20mA not available.

DCL-SNA-06.2002-A



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