

# Limit Controllers

## - DCL Series

### DCL Series Standard Features



7.5 mm x 22.5 mm  
DIN Rail Mount

### • 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.

## DCL-33A

### • Limit Controller Function Specifications

1 setpoint, high- or low-limit control type, and latching limit action

### • True Multi-Input

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

### • Programmable Alarm

Units feature standard single alarm output

### • Safety Approvals

UL, CUL and CE Approvals

### • Large LED Display

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

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

### • Modbus Protocol With RS485 (Option)

Units offer communications capabilities

## DCL-38A

### • Limit Controller Function Specifications

1 setpoint, high- or low-limit control type, and latching limit action

### • True Multi-Input

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

### • Safety Approvals

CE Marking

### • Large LED Display

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

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

### • Warranty

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

## Input Range Table

Input Type		Scale	
Thermocouple	K	-200 to 1370°C	-320 to 2500°F
	J	-199.9 to 400.0°C	-199.9 to 750.0°F
	R	-200 to 1000°C	-320 to 1800°F
	S	0 to 1760°C	0 to 3200°F
	B	0 to 1760°C	0 to 3200°F
	E	0 to 1820°C	0 to 3300°F
	T	-200 to 850°C	-320 to 1500°F
	N	-199.9 to 400.0°C	-199.9 to 750.0°F
	PL-II	-200 to 1390°C	-320 to 2300°F
	C (W/Re5-260)	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
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.

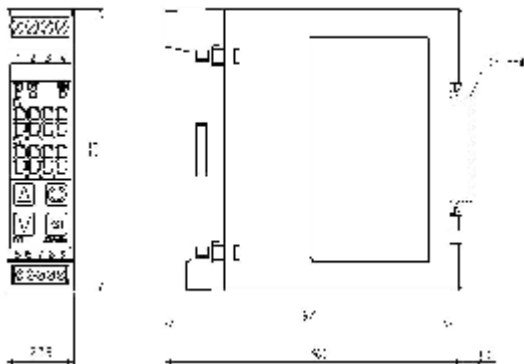
## General Specifications

<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>	Types <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 Allowable signal source resistance: 2kΩ 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>	Thermocouple ----- Within $\pm 0.2\%$ $\pm 1$ digit of each input span or $\pm 2^\circ\text{C}$ ( $4^\circ\text{F}$ ) whichever is greater However, R or S input and 0 to 200°C (0 to 400°F): Within $\pm 6^\circ\text{C}$ ( $12^\circ\text{F}$ ) B input and 0 to 300°C (0 to 600°F): Accuracy is not guaranteed. RTD ----- Within $\pm 0.1\%$ $\pm 1$ digit of input span, or $\pm 1^\circ\text{C}$ ( $2^\circ\text{F}$ ) whichever is greater DC current and DC voltage --- Within $\pm 0.2\%$ $\pm 1$ digit of each input span
<b>Input Sampling Rate</b>	0.25 seconds
<b>Output DCL-38A</b>	Type 33A <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> </ul> Type 38A <ul style="list-style-type: none"> <li>• Relay contact. 1a1b Control capacity 3A 120 AC (resistive load) 1A 120 AC (inductive load <math>\cos \phi=0.4</math>) Electric Life: 100,000 times</li> </ul>
<b>Alarm (For DCL-33A)</b>	Action ----- ON/OFF action Output ----- Open collector Control capacity: 24VDC 0.1A (Max.)

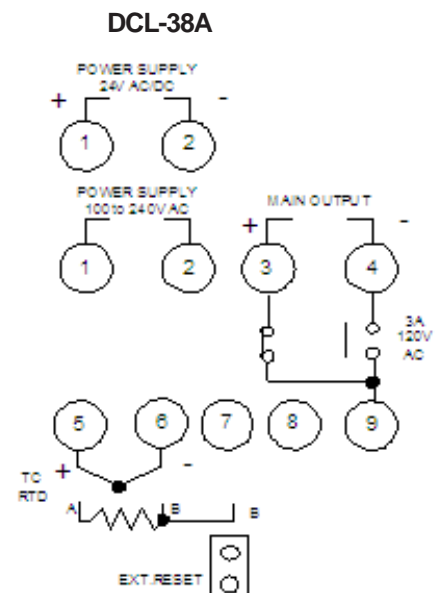
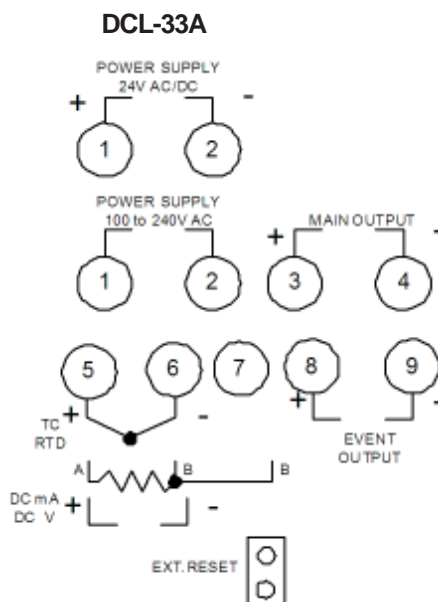
## Options

<b>Serial Communication [C5] (For DCL-33A)</b>	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)
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## External Dimensions



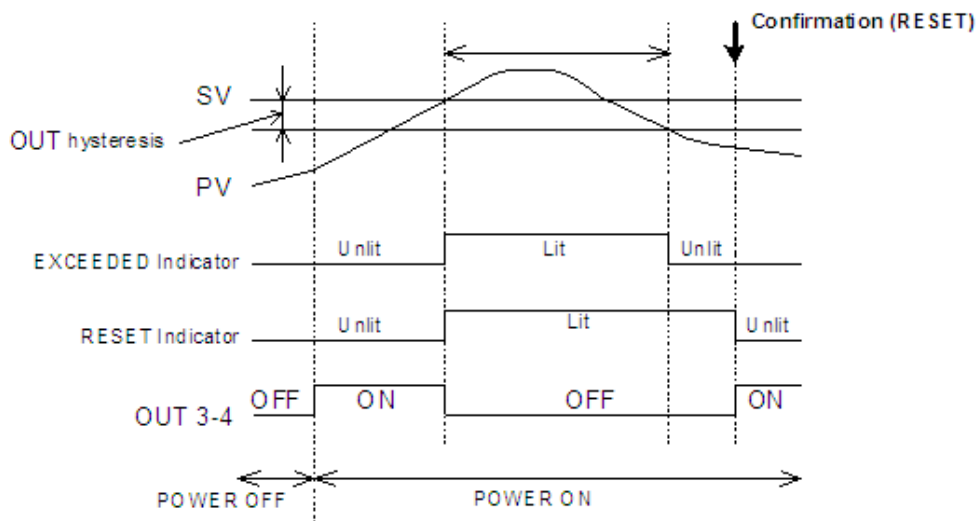
## Terminal Wiring



## Action Explanation (for DCL-33A)

### High limit control action (Fig. 1)

Auto start will be used for purposes of explanation of the High limit control action.



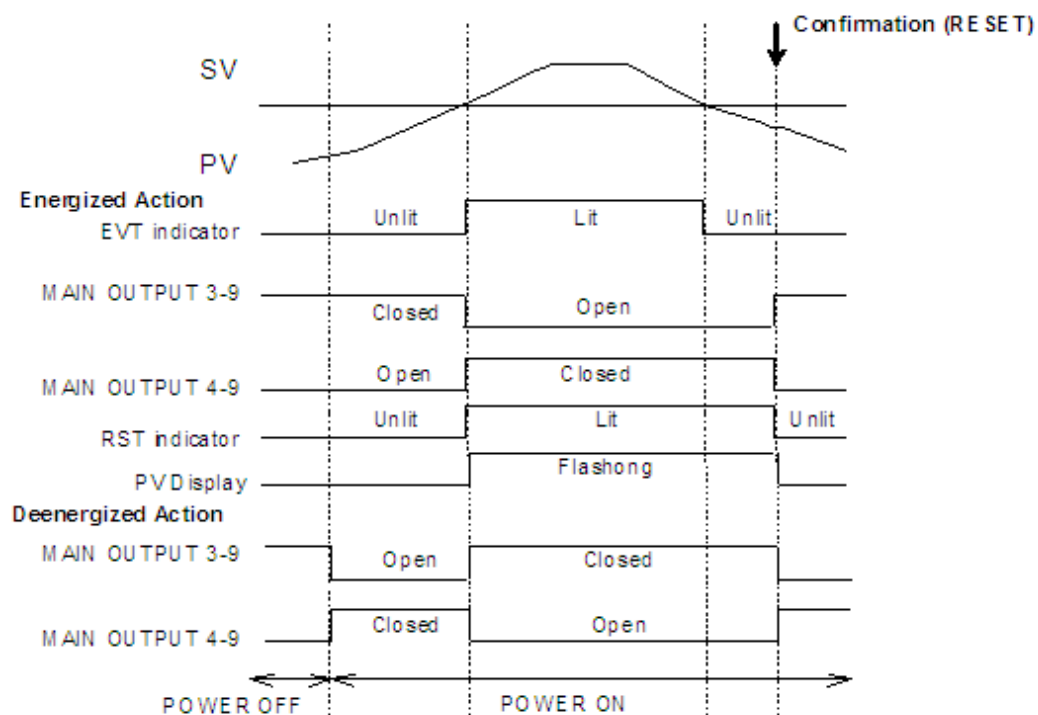
- (1) Limit control action will initiate after power supply to the controller is turned on.
- (2) If PV exceeds SV, the EXCEEDED and RESET indicators light, and OUT (Limit control output terminals between 3-4) is turned OFF.
- (3) If PV drops below (SV-OUT hysteresis), the EXCEEDED indicator light goes off. At this time, the RESET indicator is lit, and OUT (Limit control output terminals between 3-4), is in OFF status.
- (4) If the RST key is pressed, or if the External reset are shorted, the RESET indicator goes off, OUT (Limit control output terminals between 3-4) is turned ON, and limit control initiates again.
- (5) While the EXCEEDED indicator is lit, even if the RST key is pressed or if External reset are shorted, limit control action does not initiate.

## Action Explanation (for DCL-38A)

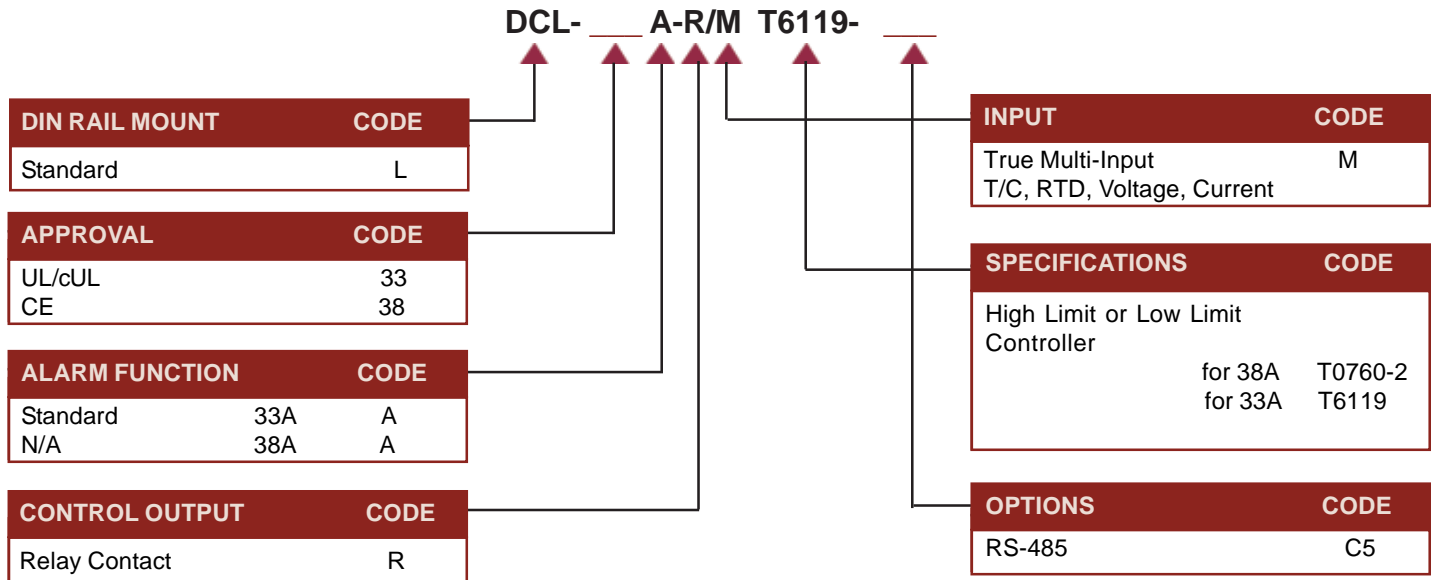
### High limit control action (Fig. 2)

If the PV exceeds the SV, or if the power supply is turned OFF during the process, then MAIN OUTPUT NO contact (between terminals 4 and 9) is turned ON, the RESET indicator lights, and the PV display flashes.

Even if the PV drops below the SV or even if the power is restored, this status will be maintained until the RESET key is pressed or until external reset terminals (input) are shorted.



## Model Number Configuration



\* for only DCL-33A



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