DIN Rail Mounted Type Indicating Controller

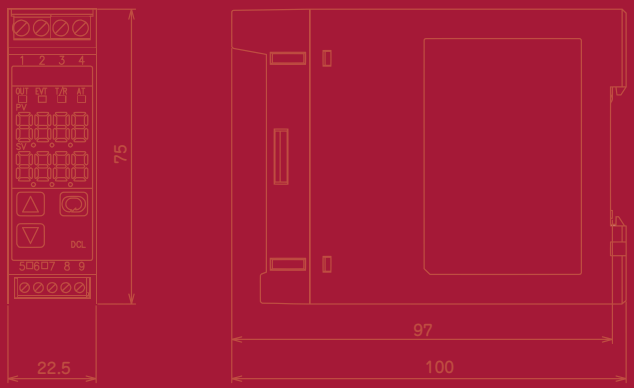
DCL-33A

Indicating Controller

Standard indication with Control Panel Convenience

More space saved through compact design

Multi-input function enables process variety



Expandable in accordance with your needs

Easily mountable

■Model

DCL-33A-□/M,□,□□□				Series name: DCL-33A (W22.5×H75×D100mm)
Control output (OUT)	R			Relay contact: 1a
	S			Non-contact voltage (for SSR drive): 12^{+3}_{0}V DC
	A			DC current: 4 to 20mA DC
Input		M		Multi-input
Supply voltage				100 to 240V AC (*1)
		1		24V AC/DC
Options			W(5A)	Rated current: 5A
			W(10A)	Rated current: 10A
			W(20A)	Rated current: 20A
			W(50A)	Rated current: 50A
			C5	Serial communication (EIA RS-485)

Heater burnout alarm (*2)

Please designate the specification from the □, □□□ columns.
When adding an option, enter it punctuated by a comma.
(*1): For the power supply, 100 to 240V AC is standard. However, when ordering 24V AC/DC, enter "1" after the input.
(*2): For DC current output type, the W option cannot be applied.

■Rated scale

Input types		Scale	
Thermo-couple	K	−200 to 1370 ℃	−320 to 2500 °F
		−199.9 to 400.0 ℃	−199.9 to 750.0 °F
	J	−200 to 1000 ℃	−320 to 1800 °F
	R	0 to 1760 ℃	0 to 3200 °F
	S	0 to 1760 ℃	0 to 3200 °F
	B	0 to 1820 ℃	0 to 3300 °F
	E	−200 to 800 ℃	−320 to 1500 °F
	T	−199.9 to 400.0 ℃	−199.9 to 750.0 °F
	N	−200 to 1300 ℃	−320 to 2300 °F
	PL-Ⅱ	0 to 1390 ℃	0 to 2500 °F
	C(W/Re5-26)	0 to 2315 ℃	0 to 4200 °F
RTD	Pt100	−200 to 850 ℃	−300 to 1500 °F
		−199.9 to 850.0 ℃	−199.9 to 999.9 °F
	JPt100	−200 to 500 ℃	−300 to 900 °F
		−199.9 to 500.0 ℃	−199.9 to 900.0 °F
DC current	4 to 20mA	−1999 to 9999 −199.9 to 999.9 −19.99 to 99.99 −1.999 to 9.999	
	0 to 20mA		
DC voltage	0 to 1V		
	0 to 5V		
	1 to 5V		
	0 to 10V		

・For DC current and DC voltage inputs, scaling and decimal point place change are possible.
・For DC current input, 50Ω shunt resistor (sold separately) has to be externally installed.

■Standard specifications

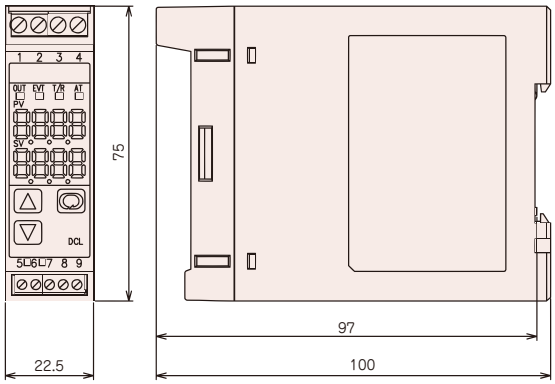
Display	PV: Red 4-digit, character size; 7.5×4.0mm (H×W) SV: Green 4-digit, character size; 7.5×4.0mm (H×W)	
Input	Thermocouple : K, J, R, S, B, E, T, N, PL-Ⅱ, C(W/Re5-26) External resistance: 100Ω or less (For B input: 40Ω or less) RTD : Pt100, JPt100 3-wire system (Allowable input lead wire resistance, 10Ω or less per wire) DC current : 0 to 20mA DC, 4 to 20mA DC 50Ω shunt resistor (50Ω shunt resistor must be connected between input terminals) Allowable input current: 100mA or less DC voltage : 0 to 1V DC Input impedance: 1MΩ or more, Allowable input voltage: 5V or less, Allowable signal source resistance: 2kΩ or less 0 to 5V DC, 1 to 5V DC, 0 to 10V DC Input impedance: 100kΩ or more, Allowable input voltage: 15V or less Allowable signal source resistance: 100Ω or less	
Accuracy (Setting, Indication)	Thermocouple : Within ±0.2% of each input span ±1digit, or within ±2℃ (4°F), whichever is greater However, for R or S input, 0 to 200℃ (0 to 400°F): Within ±6℃ (12°F) B input, 0 to 300℃ (0 to 600°F): Accuracy is not guaranteed. K, J, E, N, T inputs, less than 0℃ (32°F): Within ±0.4% of each input span ±1digit RTD : Within ±0.1% of each input span ±1digit, or within ±1℃ (2°F), whichever is greater DC current, voltage : Within ±0.2% of each input span ±1digit	
Input sampling period	250ms	
Control output (OUT)	Must be specified. ・Relay contact :1a 3A 250V AC (resistive load), 1A 250V AC (inductive load $\cos\phi$=0.4), Electric life: 100,000 cycles ・Non-contact voltage :12^{+3}_{0}V DC Max. 40mA DC (short-circuit protected) ・DC current :4 to 20mA DC Load resistance: Max. 550Ω Output accuracy: Within ±0.3% of Output span (Within ±0.048mA) Resolution: 12000	
Control action	The following control action can be selected by keypad operation. [Default: PID] PID (with AT), PI control, PD control (with manual reset), P control (with manual reset), ON/OFF control Proportional band (P) : 0.0 to 110.0% (ON/OFF control when set to 0.0) [Default: 2.5%] Integral time (I) : 0 to 1000 sec (Off when set to 0) [Default: 200 sec] Derivative time (D) : 0 to 300 sec (Off when set to 0) [Default: 50 sec] Proportional cycle : 1 to 120 sec (Not available for DC current output type) [Default: 30 sec for relay contact, 3 sec for non-contact voltage] ARW : 0 to 100% [Default: 50%] Manual reset : ±Proportional band converted value [Default: 0.0] Hysteresis : For thermocouple and RTD, 0.1 to 100.0℃(°F) [Default: 1.0℃] For DC input, 1 to 1000 (The placement of the decimal point follows the selection.) Output limit : 0 to 100% (for DC current output type, −5 to 105%)	
Event output (EVT)	Alarm	Alarm types and status Energized/De-energized can be selected by keypad operation. ・No alarm action ・High limit alarm (Deviation setting) Setting range: −Scaling span to scaling span ・Low limit alarm (Deviation setting) Setting range: −Scaling span to scaling span ・High/Low limits alarm (Deviation setting) Setting range: 0 to scaling span ・High/Low limit range alarm (Deviation setting) Setting range: 0 to scaling span ・Process high alarm Setting range: Scaling low limit value to scaling high limit value ・Process low alarm Setting range: Scaling low limit value to scaling high limit value ・High limit alarm with standby (Deviation setting) Setting range: −Scaling span to scaling span ・Low limit alarm with standby (Deviation setting) Setting range: −Scaling span to scaling span ・High/Low limits alarm w/standby (Deviation setting) Setting range: 0 to scaling span Negative minimum value: −199.9, −1999 Positive maximum value: 999.9, 9999 Setting accuracy : The same as the indication accuracy Action : ON/OFF action Hysteresis : Thermocouple, RTD: 0.1 to 100.0℃(°F) DC current, voltage input: 1 to 1000 (The placement of the decimal point follows the selection.) Output : Open collector Control capacity: 0.1A (Max.) 24V DC
	Loop break alarm	Detects heater burnout, sensor burnout and actuator trouble. Loop break alarm time : 0 to 200 minutes Loop break alarm span : Thermocouple and RTD input: 0 to 150℃(°F) or 0.0 to 150.0℃(°F) DC current, voltage input: 0 to 1500 Output : Open collector Control capacity: 0.1A (Max.) 24V DC
	Heater burnout alarm (option)	Watches heater current with current transformer (CT), and detects Heater burnout. Heater rated current must be designated from 5A, 10A, 20A, 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 ±5% of heater rated current Output : Open collector Control capacity: 24V DC 0.1A (Max.) Output self holding : Not available Accessories : CT [CTL-6S (for 5A,10A, 20A), or CTL-12-S36-10L1U (for 50A)] (1 piece), Wire harness (3m)

Supply voltage	Must be specified. 100 to 240V AC 50/60Hz, 24V AC/DC 50/60Hz For the supply voltage, 100 to 240V AC is standard. When ordering 24V AC/DC, enter "1" after the input code. Allowable voltage fluctuation range: 85 to 264V AC, 20 to 28V AC/DC
Power consumption	Approx. 6VA
Insulation resistance	For non-contact voltage output type (SSR drive) or DC current output type, insulation test must not be performed because OUT terminals are not electrically insulated from Communication terminals. Other combinations except above: 10MΩ or more, at 500V DC
Dielectric strength	1.5kV AC for 1 minute between input terminals and power terminals, between output terminals and power terminals
Environment	Ambient temperature: 0 to 50℃ Ambient humidity: 35 to 85%RH (Non-condensing)
Safety standard	UL: Power input rating 100 - 240V AC, 24V AC/DC File No. E159038
Material・Color	Material: Flame-resistant resin Color: Light gray
External dimension	22.5 x 75 x 100mm (W x H x D)
Mounting	DIN rail
Setting	Sheet key input
Weight	Approx. 120g
Attached functions	Sensor correction, Set value lock, Power failure countermeasure, Self-diagnosis, Automatic cold junction temperature compensation (thermocouple only), Sensor burnout alarm, Input error indication

■Options

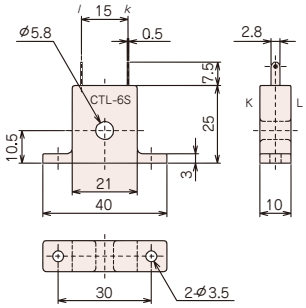
Heater burnout alarm (W)	Refer to Heater burnout alarm (option) of Event output.
Serial communication (C5)	Reading and setting of the various set values or various setting status changes of the DCL-33A can be operated from an external computer. The SV of the programmable controller (with SVTC option) can be transmitted to the DCL-33A (with C5 option) digitally in combination with programmable controller(with SVTC option) and DCL-33A (with C5 option). Communication interface : EIA RS-485 Communication method : Half-duplex communication Synchronization method : Start-stop synchronization Communication speed : 2400/4800/9600/19200bps (Selectable by keypad operation) Parity : Even/Odd/No parity (Selectable by keypad operation) (only for Modbus protocol) Stop bit : 1 or 2 (Selectable by keypad operation) (only for Modbus protocol) Communication protocol : Shinko protocol/Modbus protocol (Selectable by keypad operation) Number of connectable units : A maximum of 31 units per host computer Communication error detection : Double detection by parity and checksum

■External dimensions（Scale：mm）

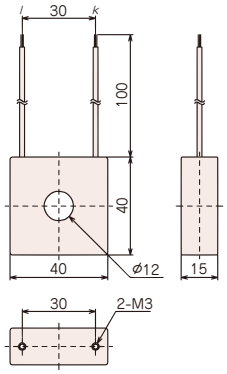


■CT dimensions（Scale：mm）

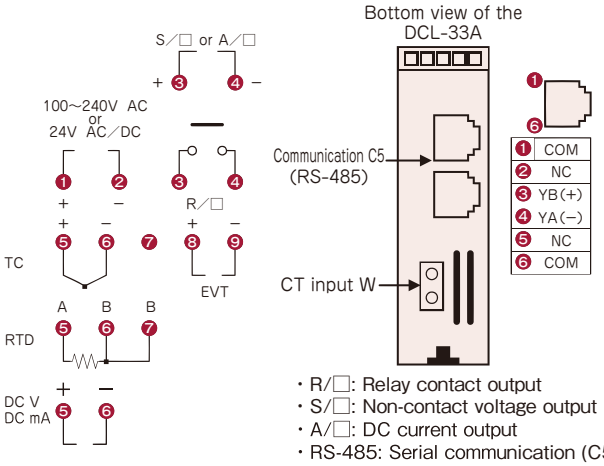
CTL-6S (for 5A, 10A, 20A)



CTL-12-S36-10L1U (for 50A)



■Terminal arrangement



・R/□: Relay contact output
・S/□: Non-contact voltage output
・A/□: DC current output
・RS-485: Serial communication (C5)
・EVT: Event output

■Ferrules and tightening torque

Terminal number	Terminal screw	Ferrules with insulation sleeve	Conductor cross sections	Tightening torque	Crimping pliers
1 to 4	M2.6	AI 0.25-8 YE	0.2 to 0.25mm²	0.5 to 0.6N·m	CRIMPFOX ZA 3 CRIMPFOX UD 6
		AI 0.34-8 TQ	0.25 to 0.34mm²		
		AI 0.5-8 WH	0.34 to 0.5mm²		
		AI 0.75-8 GY	0.5 to 0.75mm²		
		AI 1.0-8 RD	0.75 to 1.0mm²		
		AI 1.5-8 BK	1.0 to 1.5mm²		
5 to 9	M2.0	AI 0.25-8 YE	0.2 to 0.25mm²	0.22 to 0.25N·m	
		AI 0.34-8 TQ	0.25 to 0.34mm²		
		AI 0.5-8 WH	0.34 to 0.5mm²		

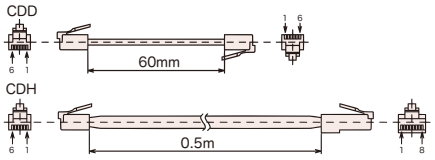
When using ferrules, use the above ferrules and crimping pliers made by Phoenix Contact GMBH & CO.

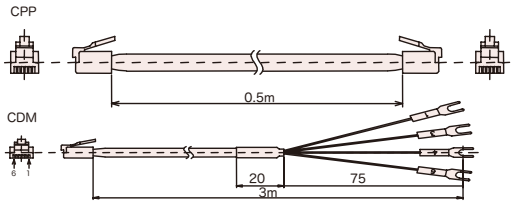
Accessories sold separately

■Communication cable

Model	CDD : Communication cable to connect the DCL-33A units Cable length: Approx. 60mm CDH : Communication cable to connect the DCL-33A and operator interface Cable length: Approx. 0.5m (standard) (Can be extended by 0.5m each time.) CDM : Communication cable to connect the DCL-33A and OMR-100, or connect the DCL-33A and operator interface or programmable controller Cable length: Approx. 3m (standard) (Can be extended by 1m each time.) CPP : Communication cable to connect the DCL-33A and SIF-400 Cable length: Approx. 0.5m (standard) (Can be extended by 0.5m each time.)

■ External dimensions

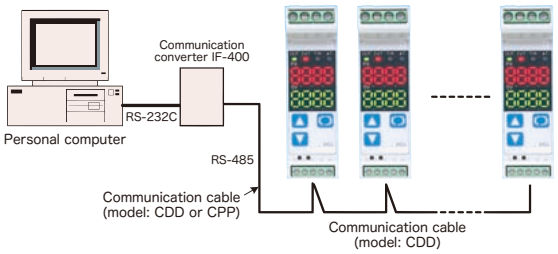




Configuration example

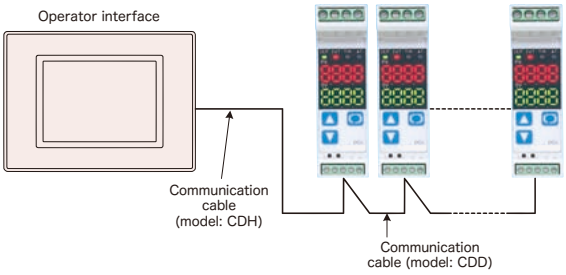
When a PC monitors multiple DCL-33A units

By connecting to the PC, up to 40 points of temperature control can be monitored using a communication converter.
(If PC's communication specification is RS-485, it is not necessary to use a communication converter.)
As a communication converter, Shinko IF-400 is provided.
SWM-JC001M is also available as monitoring software.



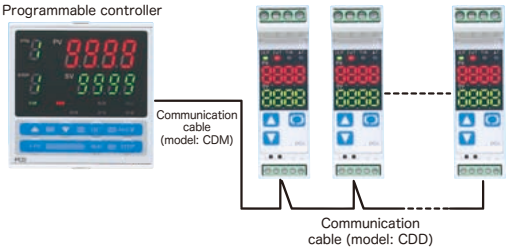
When an operator interface monitors plural DCL-33A units

A maximum of 31 points of temperature control and monitoring can be carried out by connecting DCL-33A units to the operator interface.
The following operator interfaces are usable.
Digital Electronics Corp.: GLC series, GP series, LT3300S
Hakko Electronics CO., LTD.: V7 series, V6 series
(For the communication cable, use Shinko's exclusive cable.)



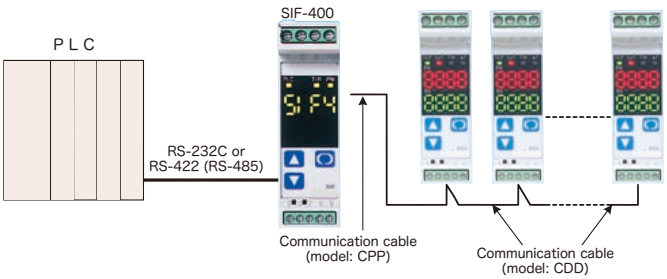
When using DCL-33A units as a programmable controller

By using Shinko programmable controller PCD-33A or PC-935 (with SVTC option) for program setting in combination with DCL-33A (with C5 option), DCL-33A can also be used as a programmable controller for a maximum of 31 positions.



When using max. 50 DCL-33A units with the PLC

By connecting to the PLC via PLC interface unit SIF-400, a maximum of 50 DCL-33A units can be connected.
Please make inquiries concerning PLCs compatible with SIF-400 to us or our agency.



SAFETY PRECAUTIONS

- To ensure safe and correct use, thoroughly read and understand the manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after consulting purpose of use with our agency or main office.
  (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Also proper periodic maintenance is required.
- This instrument must be used under the conditions and environment described in the manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

Caution with respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument.
In the case of resale, ensure that this instrument is not illegally exported.

· This catalog is as of September 2010 and its contents are subject to change without notice.
· If you have any inquiries, please consult us or our agency.