Plug-in 2ch Digital Indicating Controller

WCL-13A

Eco-Friendly,
Power Saving
Plug-in Controller

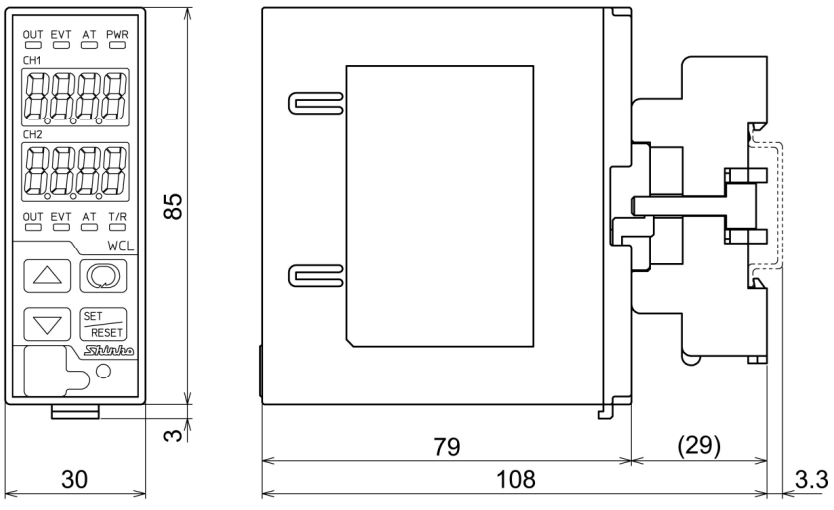
● Space saving! Energy saving!

· **Auto-light function**
Display brightness is controlled after measurement from the front light sensor.
This saves energy when connecting multiple units.

· **Display-off function**
Displays are turned off when operation does not occur for the time set during Indication time setting. PV, SV or no indication is selectable during Display selection mode via keypad.

· **2ch, but so compact!**
Economizes the control panel.
30x85x108mm (WxHxD, including the socket)

External dimensions (Scale: mm)



● User defined combinations

• The following can be selected.
2ch controller spec.
Controller + Timer spec.: CH1 timer
Delay timer

● Various functions

• **I/O for each channel is individually selectable**!
Input:
Individually selectable from thermocouple, RTD, DC current, DC voltage for each channel. Also infrared thermocouples (RD-300 series, RD-401) are usable.

Output:
Selectable from Relay contact, Non-contact voltage and DC current output.

(e.g.) CH1 control output: Relay contact output
CH2 control output: DC current output

• **Input sampling period selectable**
Select from a choice of: 25ms, 125ms, 250ms via keypad.
High accuracy control can be performed by selecting optimal sampling period.

Shinko

KEMA CERTIFICATE ISO 9001:2000 DUTCH COUNCIL FOR ACCREDITATION C 013
KEMA CERTIFICATE ISO 14001:2004 DUTCH COUNCIL FOR ACCREDITATION C 390
(HQ only)

■ Model

W C L - 1 3 A - □ □ / □ □ □, □ □								Series name: WCL-13A
Control action	3							PID
Alarm action		A						Alarm type can be selected by keypad.
CH1 control output			R					Relay contact
			S					Non-contact voltage
			A					DC current
CH2 control output				R				Relay contact
				S				Non-contact voltage
				A				DC current
				T				Timer spec (*1)
CH1 input					M			Multi-range
					I			Infrared thermocouple
CH2 input						M		Multi-range
						I		Infrared thermocouple
						T		Timer spec (*1)
Supply voltage								100 to 240V AC (standard)
							1	24V AC/DC (*2)
Option							W(20A)	Heater burnout alarm: Single-phase 20A
							W(100A)	Heater burnout alarm: Single-phase 100A
							W3(20A)	Heater burnout alarm: 3-phase 20A
							W3(100A)	Heater burnout alarm: 3-phase 100A
							C5	Serial communication RS-485

(*1) If timer spec is selected for CH2 input, CH2 output will be timer spec.

(*2) Supply voltage 100 to 240V AC is standard. When ordering 24V AC/DC, enter “1” after the input code.

■ Rated input range

Multi-range input

Input		Range	
Thermocouple	K	-200 to 1370℃	-320 to 2500℉
		-199.9 to 400.0℃	-199.9 to 750.0℉
	J	-200 to 1000℃	-320 to 1800℉
	R	0 to 1760℃	0 to 3200℉
	S	0 to 1760℃	0 to 3200℉
	B	0 to 1820℃	0 to 3300℉
	E	-200 to 800℃	-320 to 1500℉
	T	-199.9 to 400.0℃	-199.9 to 750.0℉
	N	-200 to 1300℃	-320 to 2300℉
	PL-Ⅱ	0 to 1390℃	0 to 2500℉
	C(W/Re5-26)	0 to 2315℃	0 to 4200℉

Input		Range	
RTD	Pt100	-199.9 to 850.0℃	-199.9 to 999.9℉
		-200 to 850℃	-300 to 1500℉
	JPt100	-199.9 to 500.0℃	-199.9 to 900.0℉
		-200 to 500℃	-300 to 900℉
DC current (*1) (*2)	4 to 20mA DC	-1999 to 9999	
	0 to 20mA DC		
DC voltage (*1)	0 to 1V DC		
	0 to 5V DC		
	1 to 5V DC		
	0 to 10V DC		

(*1): Scaling and decimal point place change are possible.

(*2): 50Ω shunt resistor (sold separately) should be connected externally.

Infrared thermocouple input

Input	Range	
K-50F/10C	-50 to 500℃	-58 to 932℉
K-80F/27C		
K-140F/60C		
K-180F/90C		
K-240F/120C		
K-280F/140C		
K-340F/170C		
K-440F/220C		

■ Standard specifications

Display	PV/SV display: 7-segment Red LED 4-digit, character size 7.4 × 4mm (H × W)
Input	Thermocouple: K, J, R, S, B, E, T, N, PL-Ⅱ, C (W/Re5-26) External resistance: 100Ω or less, however, 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: Input impedance: 50Ω (50Ω shunt resistor must be connected between input terminals) Allowable input current: 50mA DC or less (When 50Ω shunt resistor is connected.) DC voltage : 0 to 1V DC: Input impedance: 1MΩ or more. Allowable input voltage: 5V DC 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 DC or less, Allowable signal source resistance: 100Ω or less Infrared thermocouple: RD-300 series or RD-401
Accuracy (Setting/Indication)	Thermocouple : Within ±0.2% of each input span±1 digit, or ±2℃ (4℉), whichever is greater However, R, S input, 0 to 200℃ (0 to 400℉): Within ±6℃ (12℉) B input, 0 to 300℃ (0 to 600℉): The accuracy is not guaranteed. K, J, E, T, N input, less than 0℃ (32℉): Within ±0.4% of each input span ±1digit RTD : Within ±0.1% of each input span±1 digit, or ±1℃ (2℉), whichever is greater DC current, voltage : Within ±0.2% of each input span±1 digit Infrared thermocouple : Within ±0.2% of each input span±1 digit, or ±2℃ (4℉), whichever is greater PV varies as Infrared emissivity setting value is changed. Setting range : 0.100 to 1.000 (Default: 0.900)
Input sampling period	25ms, 125ms, 250ms: Selectable by keypad (Default: 125ms)
Timer performance	Time accuracy: Within ±0.5% of setting time
Control output	Relay contact :1a Control capacity: 3A 250V AC (Resistive load), 1A 250V AC (Inductive load cosϕ=0.4) Electric life: 100,000 cycles Non-contact voltage: 12V DC±15%, Max. 40mA DC (short circuit protected) DC current : 4 to 20mA DC Load resistance: Max. 550Ω
Control action	The following actions can be selected by keypad (Default: PID) PID action (with auto-tuning), PI action, PD action (with auto-reset), P action (with auto-reset), ON/OFF action Proportional band (P) : 0 to 9999℃ (℉), 0.0 to 999.9℃ (℉) or 0.0 to 999.9% (ON/OFF action when set to 0 or 0.0) (Default: 10℃) Integral time (I) : 0 to 3600sec (Off when set to 0) (Default: 200sec) Derivative time(D) : 0 to 3600sec (Off when set to 0) (Default: 50sec) ARW : 0 to 100% (Default: 0%) Proportional cycle : 1 to 120sec (Default: Relay contact: 30sec, Non-contact voltage: 3sec) (Not available for DC current output) ON/OFF hysteresis : 0.1 to 100.0℃(℉), or 1 to 1000 (The placement of the decimal point follows the selection) (Default: 1.0℃) Output high limit : 0 to 100% (DC current: -5 to 105%) Output low limit : 0 to 100% (DC current: -5 to 105%) Reset : ±100.0 (Default: 0.0), DC voltage, current:: ±1000 (The placement of the decimal point follows the selection) Output rate-of-change: 0 to 100% (Default: 0%)
Alarm action	Output : No output (Reads with status flag in Serial communication) Alarm type can be selected by keypad (Default: No alarm action) High limit alarm (Deviation setting) Setting range: -(Input span) to input span Low limit alarm (Deviation setting) Setting range: -(Input span) to input span High/Low limits alarm (Deviation setting) Setting range: 0 to input span High/Low limit range alarm (Deviation setting) Setting range: 0 to input span Process high alarm Setting range: Input range low limit to input range high limit value Process low alarm Setting range: Input range low limit to input range high limit value High limit alarm with standby (Deviation setting) Setting range: -(Input span) to input span Low limit alarm with standby (Deviation setting) Setting range: -(Input span) to input span High/Low limits alarm with standby (Deviation setting) Setting range: 0 to input span Setting accuracy :The same as indication accuracy Action : ON/OFF action Hysteresis : Thermocouple, RTD input: 0.1 to 100.0℃ (℉), DC current, voltage input: 1 to 1000 Alarm delay timer : 0 to 9999sec
Delay timer	Between DI terminals Open: OFF, Closed: ON, Circuit current when closed: 7mA
Supply voltage	100 to 240V AC 50/60Hz, 24V AC/DC 50/60Hz (Allowable voltage fluctuation range: 85 to 264V AC, 20 to 28V AC/DC)
Power consumption	Approx. 9VA
Insulation resistance	10MΩ or more, at 500V DC
Dielectric strength	Between input terminal-power terminal, Between output terminal-power terminal: 1.5kV AC for one minute
Environment	Ambient temperature: 0 to 50℃ Ambient humidity: 35 to 85%RH (Non-condensing) Conforms to RoHS directive.
Case (Material, Color)	Material: Flame-resistant resin Color: Light gray
Mounting, Setting method	Mounting: DIN rail Setting: Sheet key input
Dimensions, Weight	Dimensions: 30×85×108mm (W×H×D, including the socket) Weight: Approx. 200g (including the socket)
Attached functions	Sensor correction, Set value lock, Automatic cold junction temperature compensation (Only for thermocouple), Burnout (Overscale), Indication range, Control range, Power failure countermeasure, Self-diagnosis, Warm-up indication, Display-off function, Auto-light function
Accessories sold separately	50Ω shunt resistor (RES-S01-050) for DC current input, CT (CTL-6S) for Heater burnout alarm 20A, CT (CTL-12-S36-10L1U) for Heater burnout alarm100A, Connector harness W 3m, Socket: ASK-001-1(Finger-Safe) (Round terminals unusable), ASK-002-1 (Round terminal usable)

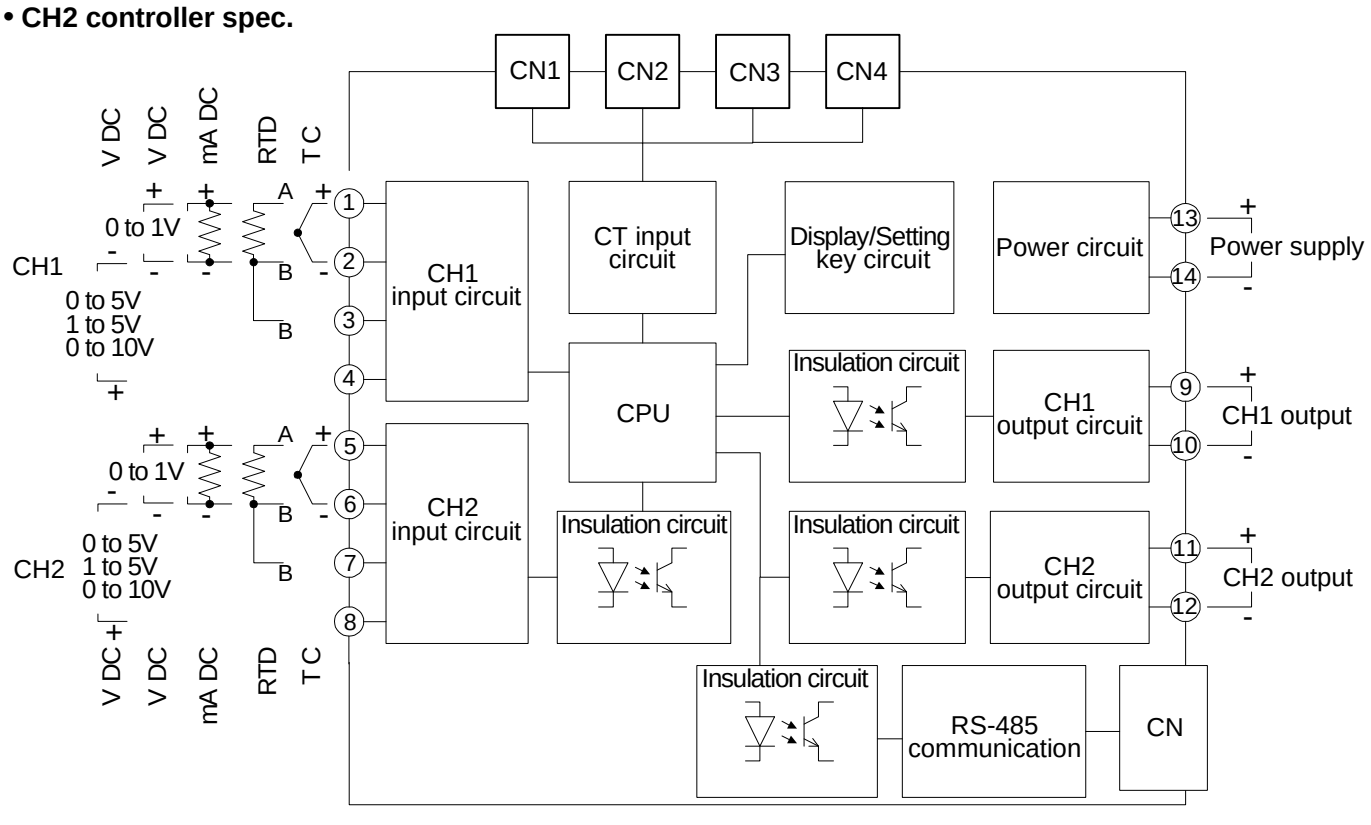
■Optional specifications

Please specify options according to users' needs. When ordering, specify an option to be applied

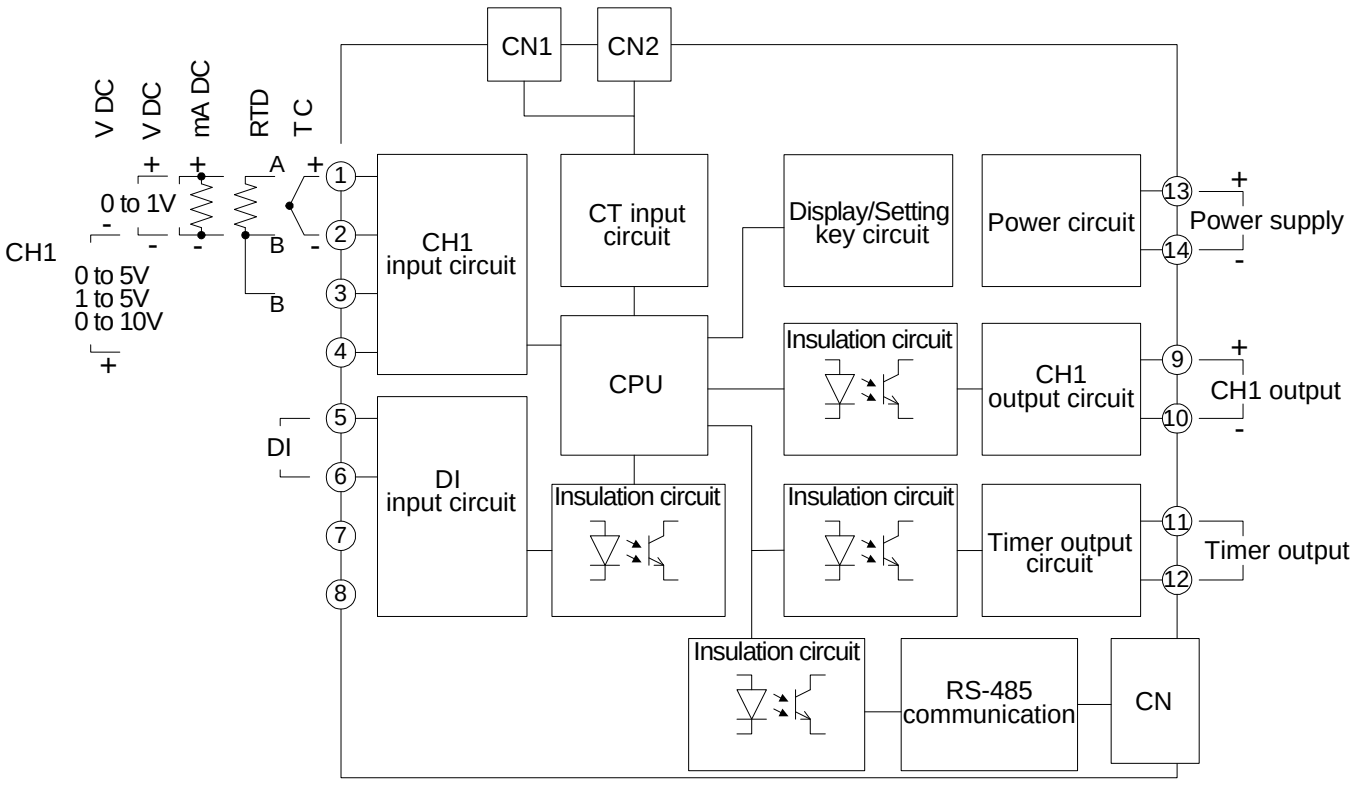
Heater burnout alarm (Sensor burnout alarm included) [W, W3]	Not available for DC current output type. This alarm turns ON in case of overscale and underscale. Output : No output (Reads with status flag in serial communication) Rated current : Single-phase 20A, 3-phase 20A, Single-phase 100A, 3-phase100A (Must be specified) Single-phase: Detects with CT1 input, 3-phase: Detects with CT1 & CT2 input Setting range : 0.0 to 20.0A when 20A is selected (Off when set to 0.0), 0.0 to100.0A when 100A is selected (Off when set to 0.0) Setting accuracy: ±5% of the rated current Action point : Set value Action : ON/OFF action
Serial communication [C5]	The following operations can be carried out from an external computer. (1) Reading and setting of the SV, PID values, (2) Reading of the PV and action status, (3) Function change Communication interface : EIA RS-485 Communication method : Half-duplex communication Synchronization method : Start-stop synchronization Communication speed : 9600/19200/38400bps, Selectable by keypad (Default: 9600bps) Data bit/parity : Data bit: 7/8, Parity: Even/Odd/No parity, Selectable by keypad (Default: 7 bits/Even parity) Stop bit : 1 or 2, Selectable by keypad (Default: 1) Communication protocol : Shinko protocol, Modbus (ASCII mode or RTU mode), Selectable by keypad. (Default: Shinko protocol) The communication converter IF-400 is available for Shinko protocol and Modbus protocol. (Communication speed 38400bps is not usable.)

■ Terminal arrangement

• CH2 controller spec.



• CH2 timer spec.



DC : DC current, voltage input for CH1/CH2 [For DC current input, connect 50Ω shunt resistor (sold separately) between input terminals]
TC : Thermocouple input, infrared thermocouple input for CH1/CH2
RTD: Resistance temperature detector input for CH1/CH2
DI : Digital input

Socket	Terminal screw, Conductor cross sections	Torque
Finger-Safe (Round terminals unusable)	M3, 2mm^2 max.	0.6 to 1.0N·m
Round terminals usable		

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 the 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 June, 2009 and its contents are subject to change without notice.
・If you have any inquiries, please consult us or our agency.

SHINKO TECHNOS CO., LTD.
OVERSEAS DIVISION

Reg. Office : 2-5-1, Senbahigashi, Minoo, Osaka, 562-0035, Japan
Tel : 81 - 72 - 727 - 6100
Fax : 81 - 72 - 727 - 7006
URL : http://www. shinko-technos. co. jp
E-mail : overseas @ shinko-technos. co. jp