CP350/CP370 Series

Digital Indicating Controller

PERFORMANCE SPECIFICATION CHINO

CP350/370 series is CHINO new digital indicating controller. It is Global Strategic Model for the 21st century. High function and more optional programmed control mode are provided.
Adopt MODBUS communication mode, CE approval.

FEATURES

- Universal power supply (100 to 240V AC)
- Multi input signal, high accuracy
- More programmed control mode
- Can select the PID mode from total PID type or differential type
- EVENT Output (DO): 2 points (standard), max. 7 points (option); External Input (DI): max. 6 points (OP)
- Various options such as double control output, communication function, and transmission signal output, external input, heater snapping alarm and panel sealing.

MEASURING RANGES

Input type		Input range	Rating accuracy	Exceptionally-Specified Accuracy
Thermocouple	B	0 to 1820°C	±0.25%±1digit However, more than 200°C or less than 0°C is ±0.5%±1digit	0 to 400°C: Out of specifications 400 to 800°C: ±0.5%±1digit
	R	0 to 1760°C		0 to 400°C: ±0.5%±1digit
	S	0 to 1760°C		0 to 400°C: ±0.5%±1digit
	N	0 to 1300°C		
	K1	-200 to 1370°C		
	K2	-199.9 to 500.0°C		
	E	-199.9 to 700.0°C		
	J	-199.9 to 900.0°C		
	T	-199.9 to 400.0°C		
	U	-199.9 to 400.0°C		
	L	-199.9 to 900.0°C		
	WRe5-WRe26	0 to 2310°C		
	W-WRe26	0 to 2310°C		0 to 400°C: ±0.5%±1digit
	PtRh40-PtRh20	0 to 1880°C		0 to 400°C: Out of specifications 400 to 800°C: ±1.5%±1digit
	Platinel Ⅱ	0 to 1390°C		
RTD	Pt100 1	-199.9 to 850.0°C	±0.25%±1digit	
	Pt100 2	-199.9 to 200.0°C		
	JPt100 1	-199.9 to 649.0°C		
	JPt100 2	-199.9 to 200.0°C		
DC voltage	5V	0 to 5V (0.000 to 5.000)	±0.25%±1digit	
DC Current	20mA*	4 to 20mA (equivalent to 1.00 to 5.00 V)		*DC voltage with 5 V is used. *Except for shunt resistor accuracy.

* To measuring DC Current, range is converted to DC Voltage by optional shunt resistor (250 Ω).

MODELS

CP3□0□□□□□□□□□A

Front Size
5 : 48 x 96
7 : 96 x 96

Control Output 1
1 : On-off pulse output type
3 : Current output type
5 : SSR drive pulse output type
6 : Voltage output type

Control Output 2
0 : None
1 : On-off pulse output type
3 : Current output type
5 : SSR drive pulse output type
6 : Voltage output type
E : 1 additional event relay output (EV3)

Communication RS485 + 1 external input
0 : None
S : Available

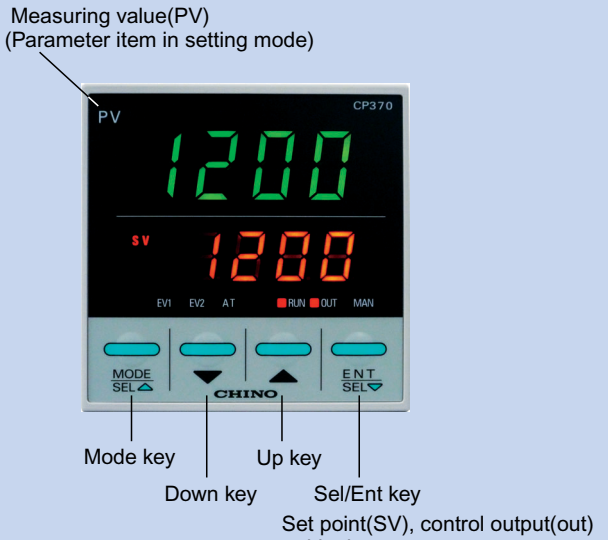
Transmission signal output
0 : None
1 : 4-20mA
2 : 0-1V
3 : 0-10V
E : 1 additional event relay output (EV4)

Program features
N : None
P : Available

3 additional event open collector signals + 5 additional external inputs
– : None
7 : 3 additional event open collector signals
8 : 5 additional external inputs
9 : 3 additional event open collector signals + 5 additional external inputs

Heater snapping wire alarm
0 : None
1 : Available
* If you want to select "1" for the 12th digit, select "1" or "5" for the 6th digit.

Panel sealing specification + Terminal cover
0 : No panel sealing specification + No terminal cover
1 : Panel sealing specification + No terminal cover
2 : No panel sealing specification + Terminal cover
3 : Panel sealing specification +Terminal cover



SPECIFICATIONS

Input specifications

Input signal: Thermocouple
B, R, S, N, K, E, J, T, U, L, WRe5-WRe26,
W-WRe26, PtRh40-PtRh20, Platinel II
DC voltage
0 to 5V
DC current
4 to 20mA
Resistance thermometer
Pt100, JPt100

Measuring range: Thermocouple 15 ranges
DC voltage 1 type
DC current 1 range
Resistance thermometer 4 type

Accuracy rating: ±0.25% of measurement range ±1 digit
*For details, refer to [Detailed specifications of accuracy things].

Resolution: Approximately 1/100,000

Sampling rate: Approximately 0.5 seconds

Burnout: Upper limit burnout is equipped as standard only for thermocouple and resistance thermometer

Input impedance: Thermocouple 1MΩ or more
DC voltage 500kΩ or more
DC current Approximately 250Ω (external)

Allowable signal source resistance:
Thermocouple 100Ω or less
DC voltage 300Ω or less

Allowable wire resistance (resistance thermometer):
5Ω or less (Same resistance for all wires)

Rated current (resistance thermometer): Approximately 125μA

Maximum allowable input:
Thermocouple ±10V or less
DC voltage ±10V or less
DC current ±30mA or less, ±7.5V or less
Resistance thermometer 500Ω or less,
±5V or less

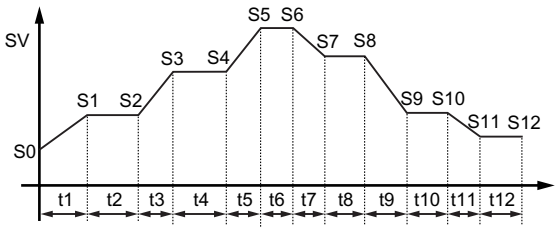
Maximum common mode voltage: 30VAC or less

Common mode rejection ratio:130dB or more (50/60Hz)

Normal mode rejection ratio: 50dB or more (50/60Hz)

Program specifications

Step & pattern number:
4 patterns and 12 steps or 1 pattern and 48 steps



Setting parameter: Step setting, Time setting, control parameter

Time setting: 00 hr: 00 min to 99 hr: 59 min or
00 min: 00 sec to 99min:59 sec

Program pattern repeat: 0 to 9999 times

Control parameter: 8 groups, select for each step, PID,
EV1/EV2/EV3/EV4
Output limiter, Output preset

Operation switching:
Program drive
(RUN, STOP, ADVANCE, RESET)
Pattern select (1/2/3/4),
Automatic output/Manual
Output, Constant-value control/Program control

Control specifications

Control cycle: Approximately 0.5 seconds

Output type: ON-OFF pulse type, Current output type,
SSR drive pulse type, Voltage output type

On-off pulse type: Output signal ON-OFF pulse conductive signal
Contact capacity:
Resistance load 100 to 240VAC Max 3A,
30VDC Max 3A
Inductive load 100 to 240VAC Max 1.5A,
30VDC Max 1.5A
Minimum load: 5VDC, 10mA or less
Pulse cycle: Approx. 1 sec to 180 sec adjustable

Current output type:
Output signal: 4 to 20mA DC
Load resistance: 600Ω or less

SSR drive pulse type: Output signal: On-off pulse voltage signal
ON voltage 12VDC ±20%
OFF voltage 0.8VDC or less
Pulse cycle: Approx. 1 sec to 180 sec adjustable

Voltage output type:
Output signal:0 to 10V
Output impedance: Approximately 10Ω
Load resistance: 50kΩ or more

Insulation: Insulated with internal circuit
(20MΩ or more/500VDC)

Control type: Multi control output PID type
(On-off pulse type,
Current output type, SSR drive pulse type, Voltage output type)
Fixed command setting or program setting selectable

Fixed command control setting value:
8 pairs (parameter pairs) select

Set point ramp function:
Set point ramp unit ... °C/minute
(common to rising/falling)
Set point rising ramp: 0 to 9999
(0 = no operation)
Set point falling ramp:
0 to -9999 (0 = no operation)
PV start function ... At SV change,
power-on, Run/Ready

Control set point accuracy ratings:
Relative error to displayed value ... ±1 digit

Auto-tuning: Standard

PID constants: P ... 0.1 (0.0) to 999.9% (0= 2-position)
I ... 0 to 9999 seconds
D ... 0 to 9999 seconds

Anti-reset windup: Upper limit ... 0.0 to 100.0%
Lower limit ... -100.0 to 0.0%

Overshoot suppression function:
ON/OFF selectable

Control operation: With direct/reverse action switchable

Output limiter: 8 set
Upper limit ... 0.0 to 105.0%,
Lower limit ... -5.0 to 100.0%

Output variation limiter: 0.1 to 100.0%

Run/Ready: Run/ready (cont stop, output:
preset output value) switchable

Preset output: -5.0 to 105.0%

Control at power recovery:
Continuous/ready switchable

●Event specifications

Event output points:
Relay output 2 points (EV1, EV2) standard
Max. 2 points relay output (EV3/EV4) option
Max. 3 points open collector output (EV5/EV6/EV7) option
Alarm type: (available EV1 to EV4)
Absolute value alarm... High/low, stand by enable/disable
Deviation alarm... High/low, standby enable/disable
Absolute deviation value alarm ...High/low, enable/disable
Output value alarm ...High/low, enable/disable
Fail, heater disconnection alarm, timer function
Event type: 34 types (max.) of alarm events
27 types of status events (max.)

Event dead band: Can be set by the resolution being 0.1 times the setting resolution of SV.

Event output phase: Normal/reverse switchable event output at Ready: Off/calculation switchable

Event output (EV1 to EV4):
Output signal ... non-voltage contact
Contact rating:
Resistance load ... 100 to 240V AC Max 3A, 30VDC, Max 3A
Inductive load ... 100 to 240V AC Max 1.5A, 30VDC Max 1.5A
Minimum load ... 10mA, 5VDC or more
Electrical life of relay ... a hundred thousand times or more
Protect element of contact ... Non internal: enable to set other elements

Event output (EV5 to EV7):
Output signal ... Transistor open collector output
Output rating ... 24V DC, 50mA or less

Insulation: Insulated with internal circuit (20MΩ or more /500VDC)
Insulated with relay output
Non-insulated with transmitter open collector output

●Display specifications

Display type: 4-digit LED display, two lines
Status display 8 independent LEDs

Display contents: First LED (yellow-green) display
At operation mode: Process value (PV)
At setting mode: Parameter item
Second LED (red) display
At operating mode Set-point value (SV), Control output value (OUT)
At setting mode: Parameter item
Status (red) display
EV1: Lights when EV1 or status 1 is activated
EV2: Lights when EV2 or status 2 is activated
AT: Lights when auto-adjustment
RUN: Lights when auto-operation
OUT: Lights when the control output value
MAN: Lights when manual operation
SV: Lights when the SV value displayed in second display
OUT: Lights when the output value displayed in second display

Automatic return: Returns to operation mode if any key is not pressed for more than approx 3 minute in setting mode

Key lock: Exist

●General specifications

Rated power voltage: General power supply specifications 100 to 240VAC (50/60Hz)
Ambient temperature: -10 to 50ºC (max. 40ºC for closed-installation)
Ambient humidity: 10 to 90% (no dew condensation)
Maximum power consumption:
Approx. 10V A without option
Approx. 16V A with option
Front material: Nonflammable ABS
Casing: Nonflammable polycarbonate
Color: Gray
Mounting method: Panel mounting
Weight: CP350 Approx. 240g without option
Approx. 330g with option
CP370 Approx. 330g without option
Approx. 420g with option

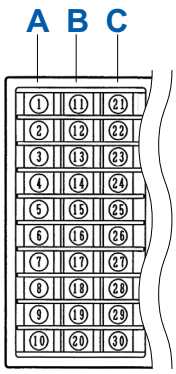
■ Available accessory

Name	Model	NOTE
Shunt resistor (250Ω)	EZ-RX250	For DC 4 to 20mA current
Contact protection element for relay output	CX-CR1	For light load
	CX-CR2	For heavy load
External CT	CTL-6-S-H	For heater Disconnection detection

●Option

Name	Content
Control output 2	Control calculation: SPLIT system/PID system The setting range of SPLIT system ·Direct ... 0.0 to 60.0% ·Reverse ... 40.0 to 100.0% Insulation: Not insulated with outputs Insulated with internal circuit
Additional events output	Event points: Event relay output ... two points (max.) (EV3/EV4) Event open-collector output ... three points (max.) (EV5/EV6/EV7) Event type: alarm events ... 34 types (max.) status events ... 27 types (max.)
Transmission signal output	Output signal proportionate by SV, MV, etc. Output signal: 4 to 20mA DC (Load resistance 600Ω or less) Selected 0 to 1V DC or 0 to 10V DC. (Output impedance approx. 10Ω Load resistance 50kΩ or more) Accuracy rating: ±0.3% of FS Resolution: Approx. 1/30,000 Output update period: Approx. 0.5 second Insulation: Insulated with internal circuit (20MΩ or more /500V DC)
External input	Input points: Six points (max.) Input signal: No-voltage contact, open-collector signal Function: 1. RUN/READY selectable by external input 2. Remote/Local selectable by external input 3. Auto/Manual selectable 4. Start Timer 5. Alarm event RESET 6. Select Parameter Group No. 7. Program operation (RUN/ADVANCE/RESET) 8. Select program pattern No. Insulation: Insulated with internal circuit (20MΩ or more for 500VDC)
Communication interface	Communications type: RS485 Protocol: MODBUS (RTU), MODBUS (ASCII), PRIVATE Communication function: Select transmission setting/data or digital transmission or digital remote transmission Insulation: Insulated with internal circuit (20MΩ or more / 500VDC)
Heater disconnection detection	Input signal: ±5.0 to 50.0A AC Accuracy rating: 5.0% of FS ±1 digit External CT: "CTL-6-SH" made by U-RD recommended
Panel sealing specification & Terminal cover	Front panel protection: Equivalent to IEC60529 IP65 (self-declaration) *Not possible during closed instrumentation Terminal cover protects terminal box

■Terminal board

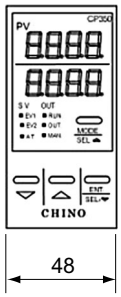


A line						B line			C line						
1	Measurement input	Thermocouple DC/AC	NC	RTD	A	11	Event output	EV5	21	Communication interface (RS485)	SA				
2			+		B	12		EV6	22		SB				
3			-		B	13		EV7	23		SG/COM(DI1)				
4	Event output	EV1	Relay output			14		COM	24	External input	DI1				
5		EV2	Relay output			15	External input	DI2	25	Heater disconnection alarm (CT)	CT				
6		COM	P.S.			16		DI3	26		CT				
7	Output 1 (Control output)	On-off pulse type (Relay output)	N.O	Others	+	17		DI4	27	Transmission signal output event output	Transmission signal output+/EV4				
8			COM		-	18		DI5	28		Transmission signal output -/COM				
9	Power supply	L	100 to 240V AC 50/60Hz			19		DI6	29	Output 2 (control output) Event output	On off pulse type EV3 (Relay output)	N.O	Others	+	
10		N				20		COM	30			COM		-	

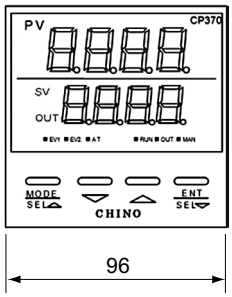
■Dimensions and panel cutout

●Front

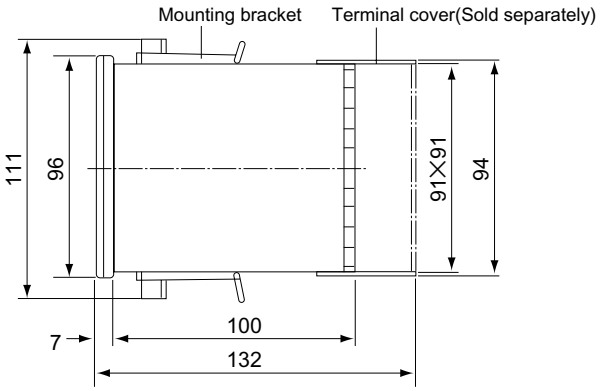
CP350



CP370

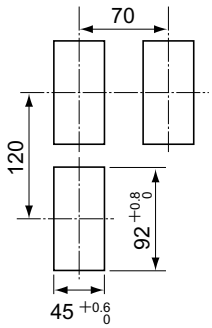


●Side

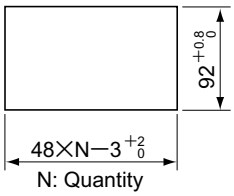


●CP350

[Single]

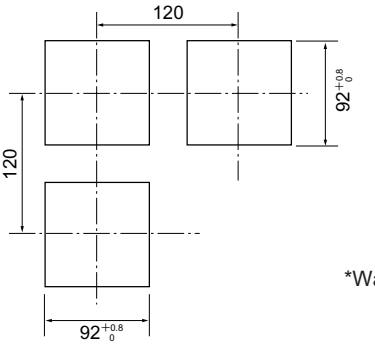


[Closed-insulation*]



●CP370

[Single]



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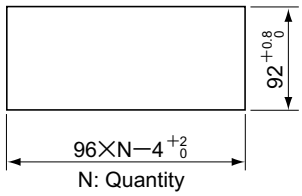

*Water proof not applicable

Unit: mm

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