CHCN48 intelligent timer/ counter/ frequency meter/ revolution meter controller manual

Please read this manual in detail before your first use of the controller

1. Features

- This instrument can achieve different functions and different action logics by software programming.
- This instrument is a multi-functional optional meter. Optional One set point timer, Two set points timer, Accumulated timer, Frequency meter, Revolution meter, 4-digit up/down counter, 8-digit up/down counter. And six pre-set relay action logics optional.

2. Technical parameter

Power supply	85~265VAC
Sensor power	12VDC
Output mode	Relay contact NO/NC
Contact capacity	3A/ 220VAC
Voltage pulse	Low level:-30v~0.5v ; High level: 4v~30v
Input mode	High/Low voltage pulse NPN/PNP
Ambient temp.	0~40℃
Measure frequency	2~10KHz
External dimension	I type:48*48*91mm; II type: 48*48*95mm
Perforate dimension	45mm*45mm

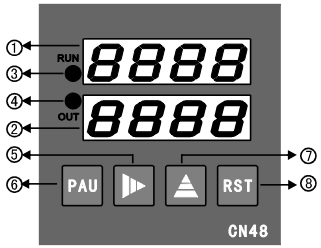
3. External Photo

CHCN-I type
Binding port connection

CHCN-II type
Pin connection

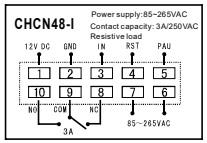
Pin connection
accessory base
(Rail mounted)

4. Panel Instruction

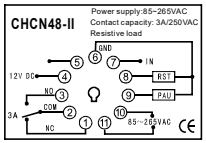


① Value / parameter name
② Value / parameter value
③ State indicator lights
④ Relay output indicator
⑤ Function / Shift button
⑥ Pause button
⑦ Function / increase button
⑧ Reset / Zero button

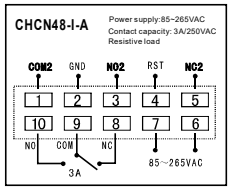
5. Connection



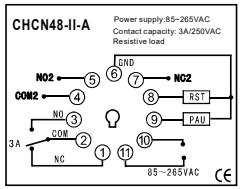
CHCN48-I:One delay, pause, reset, start



CHCN48-II :One delay, pause, reset, start



CHCN48-I-A: Two relays simultaneously Reset / start

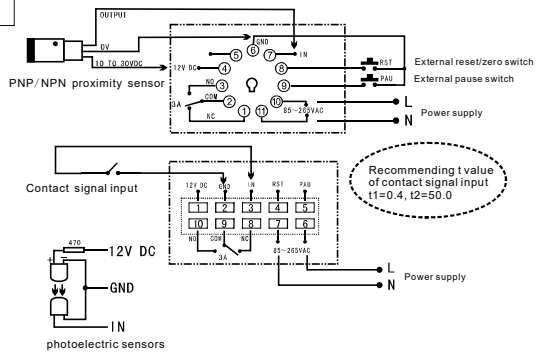


CHCN48-II-A: Two relays simultaneously Reset / start

Note: COM2/NO2/NC2 ports can be one delay relay and one instant relay output or simultaneously output with COM/NO/NC

Practice connection should be base on specific software setting and subject to diagram attached on the instrument.

6. Examples of sensor connection



Symbols explanation

12V DC: Power supply for external PNP/NPN sensor
IN: Sensor signal(pulse) input port
RST: Reset / zero signal input port (available for low level voltage)
PAU: Pause signal input port (available for low level voltage)
GND: For negative pole for External PNP/ NPN sensor(Low voltage)
85~265VAC: Power supply of instrument
COM/NO/NC: Output relay contacts
(Common point / normally open/ normally close)

7. Code of functions

Function code	Function Description	Setting range	Available relay action logic	Multiplying
01	Single delay timer (Count up)	0.01s~99.99s	1,2,3,4,5,6	
02	Single delay timer (Count down)	0.01s~99.99s	1,2,3,4,5,6	
03	Single delay timer (Count up)	1m~9999m	1,2,3,4,5,6	
04	Single delay timer (Count down)	1m~9999m	1,2,3,4,5,6	
05	Single delay timer (Count up)	1s~9999s	1,2,3,4,5,6	
06	Single delay timer (Count down)	1s~9999s	1,2,3,4,5,6	
07	Single delay timer (Count up)	1s~99m59s	1,2,3,4,5,6	
08	Single delay timer (Count down)	1s~99m59s	1,2,3,4,5,6	
09	Single delay timer (Count up)	1m~99h59m	1,2,3,4,5,6	
10	Single delay timer (Count down)	1m~99h59m	1,2,3,4,5,6	
11	Dual delays timer (Count up)	1m~99h59m	1,2	
12	Dual delays timer (Count down)	1m~99h59m	1,2	
13	Dual delays timer (Count up)	1s~99m59s	1,2	
14	Dual delays timer (Count down)	1s~99m59s	1,2	
15	Dual delays timer (Count up)	1s~9999s	1,2	
16	Dual delays timer (Count down)	1s~9999s	1,2	
17	Dual delays timer (Count up)	1m~9999m	1,2	
18	Dual delays timer (Count down)	1m~9999m	1,2	
19	8-digit accumulated timer (Instant reset)	0~99h59m59.99s	1,2,3,4,5,6	
20	8-digit accumulated timer (reset after 8 seconds)	0~99h59m59.99s	1,2,3,4,5,6	
21	8-digit accumulated timer (Instant reset)	0~9999h59m59s	1,2,3,4,5,6	
22	8-digit accumulated timer (reset after 8 seconds)	0~9999h59m59s	1,2,3,4,5,6	
23	8-digit accumulated timer (Instant reset)	0~9999d23h59m	1,2,3,4,5,6	
24	8-digit accumulated timer (reset after 8 seconds)	0~9999d23h59m	1,2,3,4,5,6	
25	Frequency meter	1Hz~9999Hz	1,3	
26	Frequency meter	1.0Hz~999.9Hz	1,3	
27	Tachometer	60~9999rpm	1,3	
28	Frequency/tachometer	0~9999	1,3	a,b
29	Up/down counter	0~9999	1,3,5	
30	Up/down counter with multiply	0~9999	1,3,5	a
31	8 digit up/down counter	0~99999999	1,3,5	
32	8 digit up/down counter with multiply	0~99999999	1,3,5	a

8. Relay action logic programming

Code of Relay action logic	Power on		Measure value=Setting value		Auto reset
	Counting	Relay	Counting	Relay	
1	Start①	Off	Stop	On	
2	Hold②	Off	Stop	On	
3	Start	On	Stop	Off	
4	Hold	On	Stop	Off	
5	Start	Off	Stop	On	Yes③
6	Hold	Off	Stop	On	Yes

Note:
① Start: Means that when power is on, the instrument starts to count.
② Hold: Means instrument holds when power is on, and only starts to count when Reset button is pressed or Reset binding ports are connected.
③ Auto reset: Means instrument will reset, zero and start to count again in pre-set time delay after measure value reaches setting value. Pre-set delay time can be set between 0.1 to 999.9 seconds

Chapter 7 and Chapter 8 are the basic function options of CHCN48.
All programs start with this setting. *Code of functions* define counting method and range of the program. While *Code of relay action logic* define Relay working method. Please refer to the Chapter 9 for setting these two important parameters.

9. Functions, Relay action, Memory setting

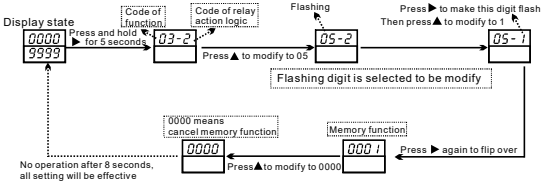
Below is an example of basic setting:

1. For example: to make CHCN48 a single delay timer, starting to count when power is on. Relay is on after counting up to 60 seconds. No auto reset and memory function.

Remarks: Memory function is to save current counting number when come across power failure. When power is recovered, counting will start at saved point before failure.

2.Step #1, according to the 'code of function' in Chapter 7, code of single delay timer with 60 seconds is 05; according to the 'code of Relay action logic', it should be code number 1 for Relay output method.

3. So press and hold ▶ for 5 seconds to enter parameter menu. No action after 8 seconds, all the setting will be effective and the instrument quit to display state.

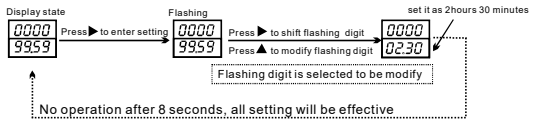


Remarks: For memory function: 0000 means none memory function
0001 means has memory function
Only when Code of Relay action logic is 5 or 6 will display delay time of reset setting.

The instrument needs to be powered off and on again to execute the new basic setting.

10.Single delay timer(function code 01-10)

1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)
2. When the instrument is set to be a Single delay timer, upper window displays current value, while lower window displays setting value.(Display state)
3.Below is an example of how to modify the setting value regarding to function code 09(single delay timer). We are now changing to setting value 2hours 30 minutes.

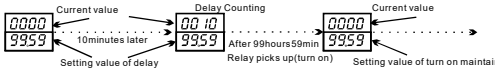


Explanation of Press button and Binding ports:
4.Pause button(PAU):Hold this button to pause counting, Release this button to start counting again.
5.Reset button(RST): Press this button to reset counting number and start from initial.
6.PAU binding port: Connect this port with GND port, the instrument will pause counting. disconnect to continue counting.
7.RST binding port: Connect this port with GND port to reset the instrument and make it start to count from initial.
8. IN binding port: invalid

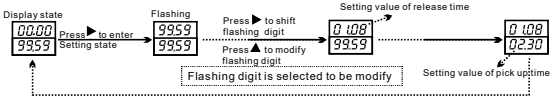
11. Dual delay timer (function code 11-18)

1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)
2. Dual delay timer means user can set relay delay time also its release time. When the instrument is set to be a Dual delay timer, upper window displays current value delay/release, while lower window displays setting value of delay/release.

For example:
An program that Relay picks up after delay 99hour59min and then release after delay 19hours59min.



3.Below is an example of setting a Dual delay timer. Code of function as 11, and release delay 1hour8min. And pick up maintain 2hour30min. This is the second step of setting a Dual delay timer.



Explanation of Press button and Binding ports:
4.Pause button(PAU):Hold this button to pause counting, Release this button to start counting again.
5.Reset button(RST): Press this button to reset counting number and start from initial.
6.PAU binding port: Connect this port with GND port, the instrument will pause counting. disconnect to continue counting.
7.RST binding port: Connect this port with GND port to reset the instrument and make it start to count from initial.
8. IN binding port: invalid

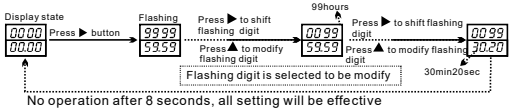
9. Setting value review: in normal display state, press▲button, all 8 LED digit flashes. Upper window display setting value of Relay release time, and lower window display setting value of Relay pick up time. Press▲button again, the instrument back to normal display state.

12. 8-digit accumulated timer(Code of function 19-24)

1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)

2. When the instrument is set to be a accumulated timer, all 8-digit LED displays Current value

3.Below is an example of setting a accumulated timer, setting value as 99hours30min20second.



Explanation of Press button and Binding ports:

4.Pause button(PAU):Hold this button to pause counting, Release this button to start counting again.

5.Reset button(RST): Press this button to reset counting number and start from initial. When code of function is selected 20, 22, 24, press and hold RST for 8 set can reset the instrument.

6.PAU binding port: Connect this port with GND port, the instrument will pause counting. disconnect to continue counting.

7.RST binding port: Connect this port with GND port to reset the instrument and make it start to count from initial. **If the code of function is 20, 22 or 24, reset action should delay for 8 seconds to take effect.**

8. IN binding port: invalid

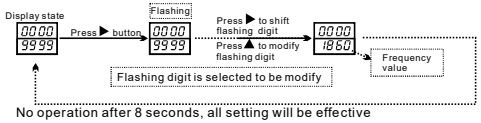
9. Setting value review: in normal display state, press▲button, all 8 LED digit flashes. All 8-digit LED display setting value. Press▲button again, the instrument back to normal display state.

13. Frequency meter(Code of function 25-26)

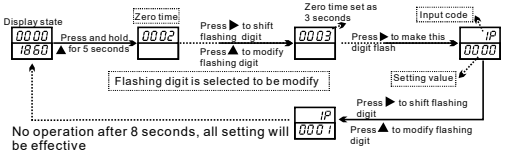
1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)

2. When the instrument is set to be a accumulated timer, all 8-digit LED displays Current value

3. Following is an example of function code 25, to set relay turns on when frequency beyonds 1860Hz. (Process of setting the set value)



4. Under normal display state, press and hold ▲ for 5 seconds to enter frequency meter setting menu(as following flow), including zero time setting and input signal setting.
Below is an example of setting zero time as 3 seconds, efficient input signal as NPN top edge.



5. Zero time: because measure low limit is 0.1Hz, when voltage pulse stop suddenly, the instrument enters hold state, display state can not return to zero. This parameter is to define zero delay time when voltage pulse stops suddenly.

6. Definition of Input signal parameter (IP)

0000 --NPN negative-edge ↓ 0001 --NPN positive-edge ↑

0002 --PNP negative-edge ↓ 0003 --PNP positive-edge ↑

7. IN binding port as voltage pulse input end.

8. Pause button(PAU) / Reset button (RST) is invalid; PAU binding port/ RST binding port is invalid.

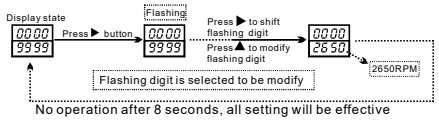
9. If measure frequency is beyond 9999, frequency signal can not be recognized correctly, the instrument will display EEEE characters.

14. Revolution meter(Code of function 27)

1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)

2. When the instrument works as a revolution meter, the upper window displays measuring value, while lower window display setting value.

3. The following is an example to set setting value as 2650 rpm. When measuring value reaches 2650 rpm, relay is on. (supposed 1 pulse per round)



5. Under normal display state, press and hold ▲ for 5 seconds to enter frequency meter setting menu(as following flow), including zero time setting and input signal setting. The same operation as point (4) in Chapter 13

6. Zero time: because measure low limit is 0.1Hz, when voltage pulse stop suddenly, the instrument enters hold state, display state can not return to zero. This parameter is to define zero delay time when voltage pulse stops suddenly.

7. Definition of Input signal parameter (IP)

0000 --NPN negative-edge ↓ 0001 --NPN positive-edge ↑

0002 --PNP negative-edge ↓ 0003 --PNP positive-edge ↑

8. IN binding port as voltage pulse input end.

9. Pause button(PAU) / Reset button (RST) is invalid; PAU binding port/ RST binding port is invalid.

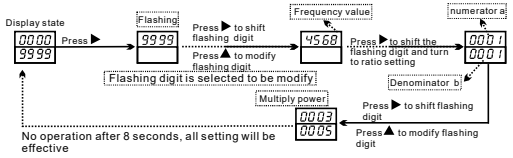
10. If measure revolution is beyond 9999, frequency signal can not be recognized correctly, the instrument will display EEEE characters.

15. Frequency meter with Multiplying(Code of function 28)

1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)

2. When the instrument works as a frequency meter, the upper window displays measuring value, while lower window display setting value.

3. The following is an example of setting for action point 4568Hz,multiplying a=3,b=5. In this state, upper window displays current measuring value* a/b.



4. Display value = measuring value* a/b, setting range: a, 0~9999; b, 1~9999

5. Under normal display state, press and hold ▲ for 5 seconds to enter frequency meter setting menu(as following flow), including zero time setting and input signal setting. The same operation as point (4) in Chapter 13

6. Zero time: because measure low limit is 0.1Hz, when voltage pulse stop suddenly, the instrument enters hold state, display state can not return to zero. This parameter is to define zero delay time when voltage pulse stops suddenly.

7. Definition of Input signal parameter (IP)

0000 --NPN negative-edge ↓ 0001 --NPN positive-edge ↑

0002 --PNP negative-edge ↓ 0003 --PNP positive-edge ↑

8. IN binding port as voltage pulse input end.

9. In normal state, press to check setting value, upper window displays setting value, lower window is blank; press again to check current multiply power, upper window displays numerator a, lower window displays denominator b.

10. Pause button(PAU) / Reset button (RST) is invalid; PAU binding port/ RST binding port is invalid.

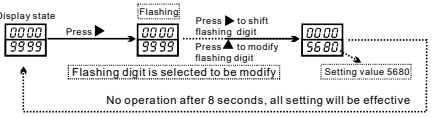
11. If measure revolution is beyond 9999, frequency signal can not be recognized correctly, the instrument will display EEEE characters.

16. Up/Down Counter 4-digit(Code of function 29)

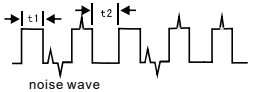
1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)

2. When the instrument works as a counter, the upper window displays measuring value, while lower window display setting value.

3. The following is an example to set setting value as 5680. The lower window displays setting value

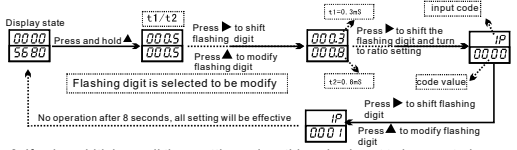


4.anti-interference setting, press and hold for 5 seconds to enter. In setting state upper windows display minimum pulse width t1, lower windows display maximum pulse width t2. Setting range 0.1~999.9ms. The higher frequency, the smaller pulse width. When measuring value up to 5KHz, user can directly set t1=0 and t2=0. User can also refer to the following chart. t1 and t2 is usually not the same. t1 should equal to real pulse width. Too small t1 value will miss the real pulse. Too large t1 value will cause over count.



Frequency (Hz)	Cycle(ms, t1+t2)
1	1000. 0
10	100. 0
100	10. 0
1000	1. 0
2000	0. 5
10000	0. 2

5. In normal state, press and hold▲for 5 seconds to enter parameter setting state. including anti-interference setting (t1, t2 parameter) and input type setting (IP parameter).
Following is an example to set t1=0.5, t2=0.8, input type is NPN positive edge.



6. If pulse width is small than setting value, this pulse is not to be counted.

7. Definition of Input signal parameter (IP)

0000 --NPN negative-edge ↓ 0001 --NPN positive-edge ↑

0002 --PNP negative-edge ↓ 0003 --PNP positive-edge ↑

8. IN binding port as voltage pulse input end.

9.PAU binding port is for controlling counting up or down. Connected PAU and GND is for counting down, Disconnected PAU and GND is for counting up.

10. RST reset binding port: For external reset button, connected RST and GND is for reset, discounted RST and GND will make the counter start over.

11. Pause button(PAU) is invalid

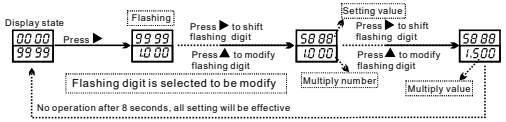
12. Reset button(RST) : when the counter is working, user press RST button to reset the counter.

17. Counter with multiplying (4-digit, code of function 30)

1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)

2. When the instrument works as a counter, the upper window displays measuring value, while lower window display setting value.

3. Following is an example to set setting value as 5888 and multiplying a=1.500. When it is in setting state, the upper window displays setting value and the lower window display multiplying parameter a.



4. Current display value= measuring value*a, setting range of a is 0.001~9.999

5. Press ▲ and hold for 5 second to enter parameter setting. The same method as described in point (4),(5) and (6) of Chapter 16

6. Definition of Input signal parameter (IP)

0000 --NPN negative-edge ↓ 0001 --NPN positive-edge ↑

0002 --PNP negative-edge ↓ 0003 --PNP positive-edge ↑

7. IN binding port as voltage pulse input end.

8. Setting value and multiplying setting recheck. In normal state, press ▲ button to recheck setting value and multiplying number, upper window flashing display setting value while lower window display multiply value. Press ▲ button again to exit.

9.PAU binding port is for controlling counting up or down. Connected PAU and GND is for counting down, Disconnected PAU and GND is for counting up.

10. RST reset binding port: For external reset button, connected RST and GND is for reset, discounted RST and GND will make the counter start over.

11. Pause button(PAU) is invalid

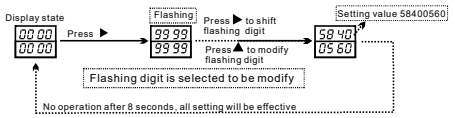
12. Reset button(RST) : when the counter is working, user press RST button to reset the counter.

18. Count up/down Counter (8-digit, code of function 31)

1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)

2. When the instrument works as a 8-digit counter, all window display setting value.

3. Following is an example to set setting value as 58400560.



4. Press ▲ and hold for 5 second to enter parameter setting. The same method as described in point (4),(5) and (6) of Chapter 16

5. Definition of Input signal parameter (IP)

0000 --NPN negative-edge ↓ 0001 --NPN positive-edge ↑

0002 --PNP negative-edge ↓ 0003 --PNP positive-edge ↑

6. IN binding port as voltage pulse input end.

7. Setting value recheck. In normal state, press▲ button to recheck setting value, all two windows flashing display setting value. Press▲ button again to exit.

8.PAU binding port is for controlling counting up or down. Connected PAU and GND is for counting down, Disconnected PAU and GND is for counting up.

9. RST reset binding port: For external reset button, connected RST and GND is for reset, discounted RST and GND will make the counter start over.

10. Pause button(PAU) is invalid

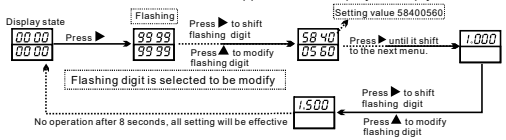
11. Reset button(RST) : when the counter is working, user press RST button to reset the counter.

19. Counter with multiplying (8-digit, code of function 32)

1. At first, to set function and relay output method.(Skipped, please refer to Chapter 9)

2. When the instrument works as a 8-digit counter, all window display setting value.

3. Following is an example to set setting value as 58400560 and multiplying a=1.500. When it is in setting state, all window display 8-digit setting value. After it shifts to next the next menu, upper window displays multiply number.



4. Current display value= measuring value*a, setting range of a is 0.001~9.999

5. Press ▲ and hold for 5 second to enter parameter setting. The same method as described in point (4),(5) and (6) of Chapter 16

6. Definition of Input signal parameter (IP)

0000 --NPN negative-edge ↓ 0001 --NPN positive-edge ↑

0002 --PNP negative-edge ↓ 0003 --PNP positive-edge ↑

7. IN binding port as voltage pulse input end.

8. Setting value and multiplying setting recheck. In normal state, press▲ button to recheck setting value and multiplying number, all 8-digit window flashing display setting value. Press ▲ button again to shift to multiply number recheck. Press ▲ button again to exit.

9.PAU binding port is for controlling counting up or down. Connected PAU and GND is for counting down, Disconnected PAU and GND is for counting up.

10. RST reset binding port: For external reset button, connected RST and GND is for reset, discounted RST and GND will make the counter start over.

11. Pause button(PAU) is invalid

12. Reset button(RST) : when the counter is working, user press RST button to reset the counter.

20. Caution

- Avoid to use the instrument in caustic, inflammable, explosive, moist, environment.
- Please use shielded wires.
- This instrument will be upgraded in software and hardware without further notice.

CHCN48 intelligent timer/ counter/ frequency meter/ revolution meter controller manual

Please read this manual in detail before your first use of the controller