

# Digital combo timer+counter 2 in 1 unit(CONC) CFT100

## User manual

CFT00-CONC-C1

Please read this manual carefully before operating and keep this manual for future reference

### Timer feature

Relay output: OP1 relay    Relay output mode: on delay or off delay  
 Timer unit: second, minute, hour, display 0000,000.0,0.000  
 Timer startup mode: Run automatically after power on, trigger by external switch, trigger by master device  
 Timer sequence: count down or count up

### Counter feature

Relay output: OP2 relay  
 Input type: NPN pulse signal(rising edge/falling edge count selectable)  
                   Dry contact input  
                   Trigger by timer, in correlation with timer

Maximum frequency: 1-5000HZ selectable

Output mode: N/R/C(HN,EN,LN, refer to further elaboration on manual)

Output reset time:0.01~99.99 seconds

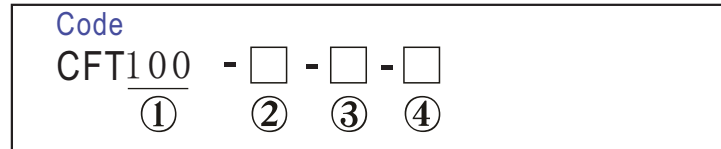
Memory retention: memory on, memory off configurable

Reset mode: Auto reset, front plate reset, reset from other device such as HMI via RS-485 Modbus

Communication: RS-485 Modbus communication

## 1. Ordering information

Please checking below ordering information and make sure item you ordered is suitable for your application



### ①. Size

100: 48mm\*48mm, 1/16 DIN

### ②. Output for counter

N: No output

2: With OP2 output for counter

OP1 relay is a standard feature for timer output

### ③. Power supply

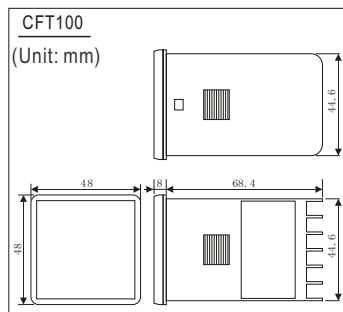
B:AC 85~265Vac      D: DC 24V

### ④. Communication

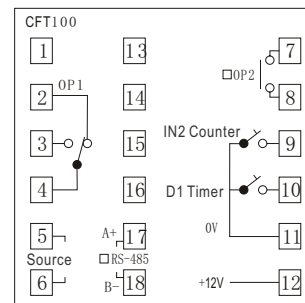
N: Without communication

M: With RS-485 communication

## 2. Size

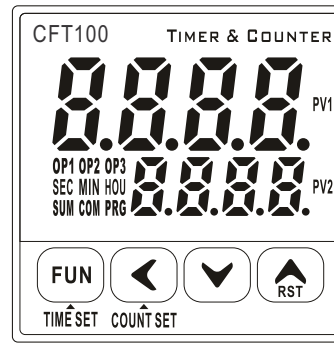


## 3. Wiring diagram



OP1 Relay rating:250VAC, 5A(resistive load)  
 OP2 Relay rating: 250VAC, 3A(resistive load)

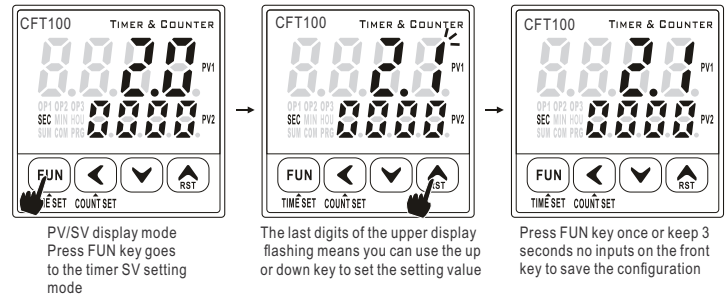
## 4. Panel Description



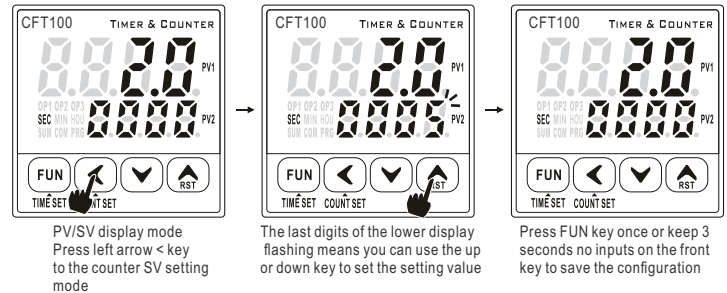
PV1: Display window for timer(parameter notation)  
 PV2: Display window for counter(parameter value)  
 COM: RS-485 indicator  
 OP1: Output indicator for timer output  
 OP2: Output indicator for counter output  
 OP3: N/A, reserved for other function  
 SEC: Timer unit, seconds  
 MIN: Timer unit, minutes  
 HOU: Timer unit, hours  
 SUM: Reserved  
 COM: RS-485 communication indicator  
 PRG: Reserved  
**FUN**: Setting key for counter, function key  
 ◀ : setting key for counter, shift key  
 ▼ : decrement key  
 ▲ : increment key/manual reset key for counter

## 5. Setting value for timer/counter, counter manual reset

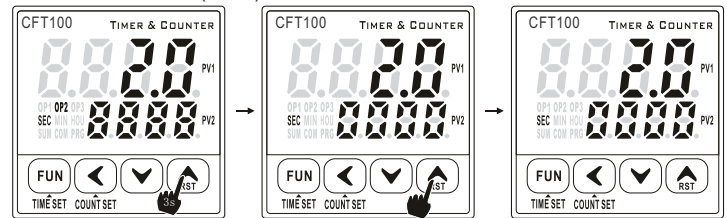
### 5.1 Setting value of timer



### 5.1 Setting value of counter



### 5.3 Counter reset(RST)



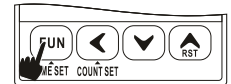
## 6. Parameter menu

### 6.1 Parameter menu 1

Refer to image right, press FUN key for 3 seconds

6.1.1 parameters under menu 1

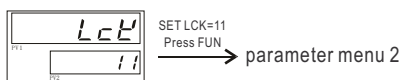
below parameter will pops-up one by one when you press the FUN key, press FUN key to exit the menu 1 and save the configuration



Notation	Description	Remark
$t_1$	OP1 output for timer when the relay pull-in, takes t1 time to release	OP1 relay pull-in delay, t1 will be the time range for the relay to release after pull-in t1 range 0.0~99.9 seconds, if t1=0.0, relay will stay pull-in
$t_c$	OP2 output relay reset time	OP2 relay reset time range:0.01~99.9 seconds configurable
CONC	software version edition	Upper display: software version Lower display: software edition
LCK	Password	LCK=11, press FUN key goes to parameter menu 2 LCK=12, press FUN key goes to parameter menu 3 LCK=13, press FUN key goes to parameter menu 4

## 6.2 Parameter menu 2

Goes to parameter menu 1, and set LCK=11, Press FUN key to parameter menu 2



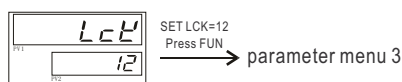
### 6.2.1 parameters under menu 2

below parameter will pops-up one by one when you press the FUN key, press FUN key to exit the menu 1 and save the configuration

Notation	Name	Range	Description
<i>Unt</i>	Timer unit Unt	0,1,2	This parameter used to assign the timer unit 0: seconds, 1: minutes 2: hours
<i>dp</i>	Decimal points for timer dp	0,1,2	Define the decimal points for timer 0:without decimal, 1:1 decimal 2: 2 decimals
<i>d1</i>	Timer trigger mode d1	0-5	0: timer activated right after power on, D1 switch used to pause the process 1: timer activated right after power on, D1 switch used to reset the process 2: timer enters into holding pattern, D1 switch used to activate the timer 3: timer enters into holding pattern, D1 switch pull-in will activate the timer, D1 switch open to abort the process and reset 4: timer enters into holding pattern, D1 switch pull-in or pull-in release will both trigger the timer, D1 open will not reset the timer 5: timer will be triggered via master device
<i>OP</i>	Timer relay output mode OP1 output mode	0, 1	0: OP1 on delay, ( stay as pull-in or delay t1 time release) 1: OP1 pull-in immediately, release delay
<i>rUN</i>	Timer sequence rUN	0,1	0: count up 1: count down

## 6.3 Parameter menu 3

Goes to parameter menu 1, and set LCK=12, Press FUN key to parameter menu 3



### 6.3.1 parameters under menu 3

below parameter will pops-up one by one when you press the FUN key, press FUN key to exit the menu 1 and save the configuration

Notation	Name	Description
<i>HZ</i>	input frequency HZ	input frequency configuration range: 1-5000 HZ, based on different input source, the HZ is different, if the HZ is put as 3000, then the input HZ should be less than 3000, for a mechanical dry contact input, the proper HZ should 1-10, higher HZ will cause false counting, HZ=3000-5000 for encoders
<i>INT</i>	input pulse mode selection INT	=0: single pulse input, (IN1 addition, IN2 subtraction), counting when signal connected, =1: single pulse input, (IN1 addition, IN2 subtraction), counting when signal disconnected =2: 2 phase input, 90° quadrature addition and subtraction (U & D)
<i>Sut</i>	Power failure memory Sut	=0: without retention function, reset to 0 after power on =1: with retention function, counter starts to work from where it went off. Remark: must reboot the counter to make the change effective if you change sut from 0 to 1
<i>Con</i>	OP1 output mode Con	=n: when PV1 SP1, OP1 relay energize immediately PV1 and OP1 relay have to be reset manually =r: when PV1 SP1, OP1 relay energize immediately PV1 and OP1 relay will reset automatically after delay SP1 =c: when PV1 SP1, OP1 relay energize immediately PV1 reset automatically, OP1 relay reset after delay SP1 =Hn: when PV1 > SP1, OP1 relay energize immediately PV1 and OP1 relay have to be reset manually =En: when PV1 = SP1, OP1 relay energize immediately PV1 and OP1 relay have to be reset manually =Ln: when PV1 < SP1, OP1 relay energize immediately PV1 and OP1 relay have to be reset manually =noP, no output for counter, no SV for counter, only display

## 6.4 Parameter menu 4

Goes to parameter menu 1, and set LCK=13, Press FUN key to parameter menu 4



### 6.4.1 parameters under menu 4

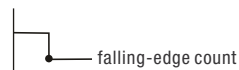
below parameter will pops-up one by one when you press the FUN key, press FUN key to exit the menu 1 and save the configuration

Notation	Name	Range	Description
<i>Ucr</i>	communication format Ucr	N	=N : 8 data bits+without Redundancy Check+1 stop bit(8N1) =O : 8 data bits+odd redundancy check+1 stop bit(8O1) =E : 8 data bits+even redundancy check+1 stop bit(8E1)
<i>Add</i>	address Add	1	device address from 1-127
<i>BAU</i>	baud rate bAU	9, 6	baud rate 2.4K, 4.8K, 9.6K, 19.2K

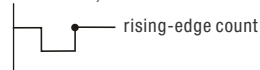
## 7. Special instructions

- 7.1 Maximum input frequency, parameter under menu 2  
range 1-5000HZ. please select the suitable input HZ according to input signals  
for example: if you put HZ=3000, means the counter is ok for input frequency less than 3000HZ, the counter will have some false counting if the input is dry contact input and yet you set the frequency at high frequency  
guidelines: for dry contact input, put HZ at 1~10, for transistor input, put HZ=3000 for encoder, put HZ=5000

- 7.2 Pulse input pattern, *INT* under menu 2  
Int=0, single pulse input, counting executed when signal connected, IN1 for addition, IN2 for subtraction



Int=1, single pulse input, counting executed when signal disconnected, IN1 for addition, IN2 for subtraction



Int=2, counter works in line with the timer, when timer triggers and goes up or down counter goes up or down by one, the value increase by 1

## 8. RS-485 communication

COM-CONC-C1 communication protocol

1. communication protocol

- Modbus-RTU communication, support 03 read, 06 and 10 write
- Single master device, RS-485 multi-drop format  
baud rate: 2400, 4800, 9600, 19200(9600 default)  
data format: 1 start bit+ 8 data bit+ CRC checking, +1 stop bit

Parameters	Address(HEX)	Range	R/W
PV for timer	000H	0-9999	R
PV for counter	001H	0-9999	R
Indicator	002H	Binary format bit7:COM bit6:SUM bit5:HOU bit4:MIN bit3:SEC bit2:OP3 bit1:OP2 bit0:OP1 (=1 on, =0 off)	R
SV for timer	003H	0-999	R/W
SV for counter	004H	0-999	R/W
timer relay output delay time, t1	005H	0-999	R/W
Master device trigger or reset timer	006H	menu 2, set d1=5 write 1: active the timer write 0: reset the timer	R/W
Master device reset counter	007H	write 1: reset counter reset OP2	R/W