

Programmable Digital Timer

PTA100/PTA400/PTA700/PTA900

Instruction Manual

PTA-BT0-E1

Please read this manual carefully before operation and keep this manual in a safe place in case you need it in the future

General information

- Dual display 3 digits, maximum 0.01 resolution
- Main features
 - Timing steps: maximum 4 steps, optional 2 steps
 - Output: maximum 4 outputs, (PTA100 2 outputs maximum), relay status configurable
 - Timing units: second, minute, hour, units configurable for each step
 - Display: 000 or 00.0 or 0.00, configurable for each step
 - Timer running mode: auto-run after power on/initiated and reset via terminals at the back/initiated and reset via push button on the front
 - Timer working mode: sequence control mode/ cycle control mode
 - Timer counting mode: up/down counting mode
- RS-485 Modbus RTU available on request

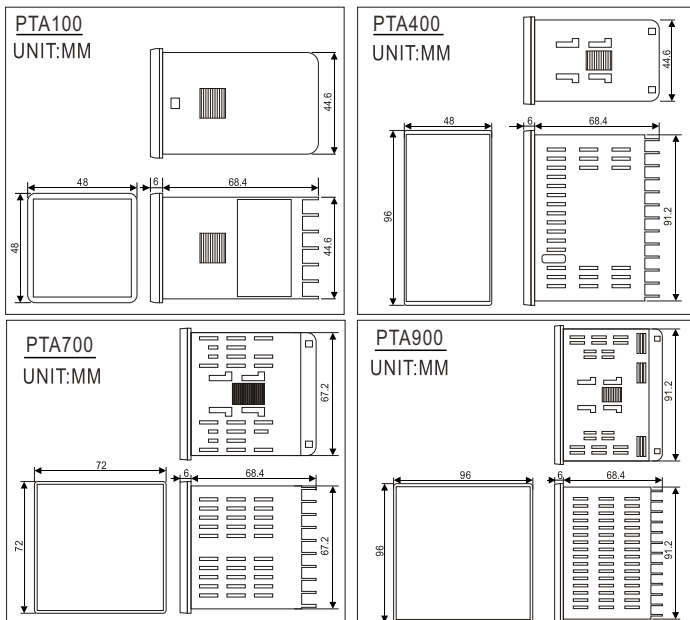
1. Ordering Information

Please check below ordering information for correct model

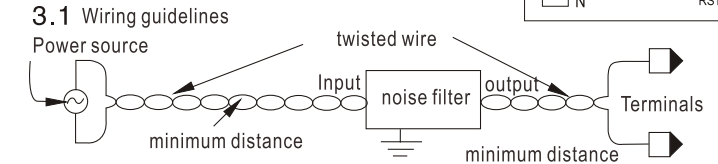
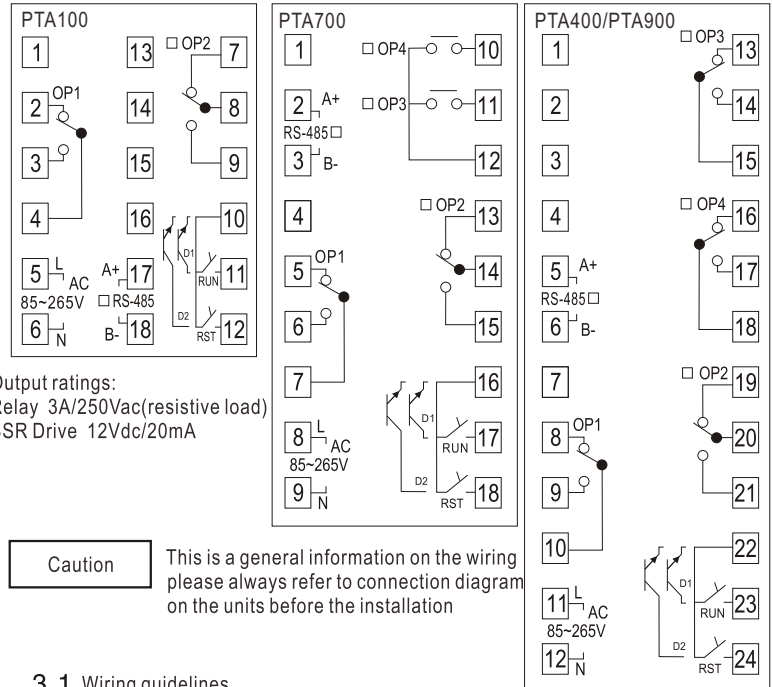
Size(Width*Height)	Function Code
PTA100 (48mm*48mm)	□ - □ - □ □ □ □ - □
PTA400 (48mm*96mm)	① ② ③ ④ ⑤ ⑥ ⑦
PTA700 (72mm*72mm)	
PTA900 (96mm*96mm)	

- ①. Power supply 96 : 85~265Vac 24: 24VDC/AC
- ②. Timer program steps 2: 2 steps 4: 4 steps
- ③. Output 1[OP1]
N: Without output R: Relay output V: SSR Drive
- ④. Output 2[OP2]
N: Without output R: Relay output V: SSR Drive
- ⑤. Output 3[OP3]
N: Without output R: Relay output V: SSR Drive
- ⑥. Output 4[OP4]
N: Without output R: Relay output V: SSR Drive
- ⑦. Communication
N: Without output K: With RS-485 modbus RTU communication

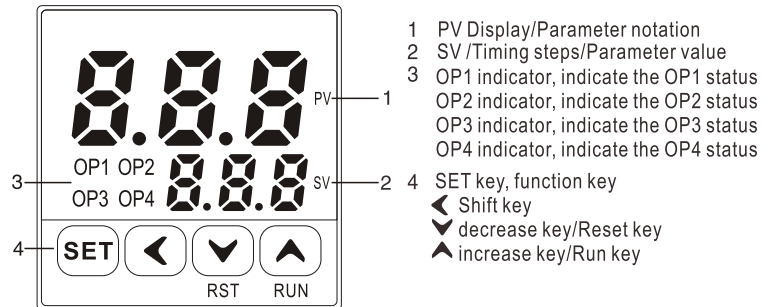
2. Mounting and Dimensions



3. Wiring Diagram



4. Panel description



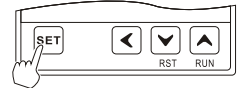
5. Configuration

5.1 Parameter level 1

Press SET once to parameter level 1

5.1.1 Parameters under parameter level 1

Press SET once and you can see below parameters one by one, press SET 5 seconds to save the configuration



Notation	Description	Range	Details
t 1.C	Timing range for STEP 1	0 to 999	t1.C for second t1.N for minute t1.H for hour
t 2.C	Timing range for STEP 2	0 to 999	t2.C for second t2.N for minute t2.H for hour
t 3.C	Timing range for STEP 3	0 to 999	t3.C for second t3.N for minute t3.H for hour

Notation	Description	Range	Details
t4.C	Timing range for STEP 4	0 to 999	t4.C for second t4.N for minute t4.H for hour
bt0	Software version		BT0: timer with 4 steps BT2: timer with 2 steps
LCK	Operation access protection	0 to 999	LCK=0 Level 1 parameter configurable and accessible LCK=1 All parameters in parameter level 1 can't be configured expect LCK LCK=12 Press SET to parameter level 2 LCK=13 Press SET to parameter level 3 LCK=104 Press SET to parameter level 4

5.2 Parameter level 2

Set LCK=12, and press SET to parameter level 2

Press SET once and you can see below parameters one by one, press SET 5 seconds to save the configuration

Notation	Description	Range	Details
UN1	Timing unit for step 1	C,N,H	Define the timing unit for step 1 C: Second N: Minute H:Hour
dP1	Decimal point for step 1	0,1,2	Define the decimal point for step 1 0: No decimal 1:1 decimal 2: 2 decimals
UN2	Timing unit for step 2	C,N,H	Define the timing unit for step 2 C: Second N: Minute H:Hour
dP2	Decimal point for step 2	0,1,2	Define the decimal point for step 2 0: No decimal 1:1 decimal 2: 2 decimals
UN3	Timing unit for step 3	C,N,H	Define the timing unit for step 3 C: Second N: Minute H:Hour
dP3	Decimal point for step 3	0,1,2	Define the decimal point for step 3 0: No decimal 1:1 decimal 2: 2 decimals
UN4	Timing unit for step 4	C,N,H	Define the timing unit for step 4 C: Second N: Minute H:Hour
dP4	Decimal point for step 4	0,1,2	Define the decimal point for step 4 0: No decimal 1:1 decimal 2: 2 decimals
d1	Timer triggered by terminals at the back with different mode	0,1,2,3,4	Check supplement 1
d2	timer reset from the terminals at the back with different mode	0,1,2	Check supplement 2
Act	Running mode after power on	0,1	Act used to define the running mode after power on Act=0, Timer goes to "rdY" holding pattern after power on Act=1, Timer starts counting at step 1 except when D1=3 D1 trigger the timer when D1=3
rUN	Counting mode configuration	0,1	This parameter used to define the counting mode rUN =0, counting up rUN=1, counting down

5.3 Parameter level 3(communication setup)

Press SET to parameter level 3 when LCK=13

Notation	Description	Range	Details
Add	Device address	0 to 127	Used to define the device address in communication
BAU	Communication speed		Used to define the communication speed 2.4K, 4.8K,9.6K,19.2K

Interface: Base on standard RS-485, support 03 read, 06 and 10 write command
 Connection method: 2 wire system, half-duplex multi drop connection
 Communication speed: 2400bps, 4800bps, 9600bps, 19200bps(factory default is 9600 bps)
 Data type: Start bit: 1
 Data bit: 8
 Parity bit: None
 Stop bit: 1
 Protocol: MODBUS RTU

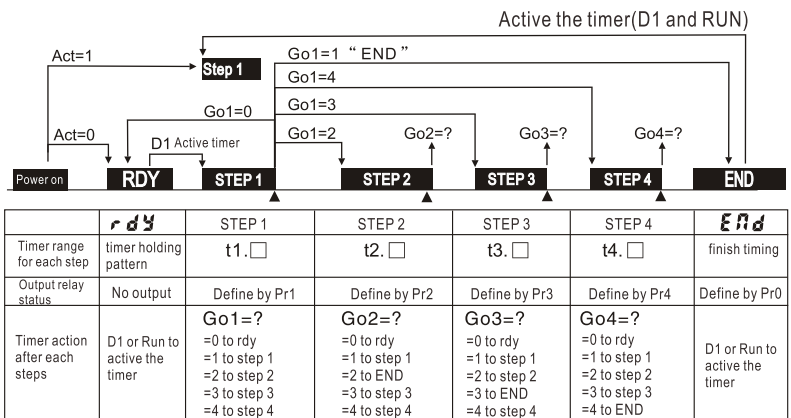
5.4 Parameter level 4(Programming level)

Set LCK=104, and press SET to parameter level 4

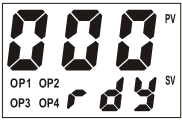
Press SET once and you can see below parameters one by one, press SET 5 seconds to save the configuration

Notation	Description	Range	Details
PrP	Timer steps	1~4	To configure the total time steps 1 for 1 steps, 2 for 2 steps, 3 for 3 steps, 4 for 4 steps
Pr0	Relay status when timer at END status	0~15	This parameter used to define the OP1 ,OP2, OP3,OP4 relay status when timer at END status For details information please refer to supplement 3 on page 3 of this manual
Pr1	configure the OP1, OP2,OP3,OP4 relay status when timer at step 1	0~15	configure the OP1,OP2,OP3,OP4 relay status when timer at step 1, refer to supplement 3 on how to calculate the Pr1 value
GO1	Set timer action when step 1 finished	0~4	When timer finish the step 1 program, timer has several options for the next action, this parameter used to define the next action for timer, refer to supplement 4 on page 4 of this manual for more details
Pr2	configure the OP1, OP2,OP3,OP4 relay status when timer at step 2	0~15	configure the OP1,OP2,OP3,OP4 relay status when timer at step 2, refer to supplement 3 on how to calculate the Pr2 value
GO2	Set timer action when step 2 finished	0~4	When timer finish the step 2 program, timer has several options for the next action, this parameter used to define the next action for timer, refer to supplement 4 on page 4 of this manual for more details
Pr3	configure the OP1, OP2,OP3,OP4 relay status when timer at step 3	0~15	configure the OP1,OP2,OP3,OP4 relay status when timer at step 3, refer to supplement 3 on how to calculate the Pr3 value
GO3	Set timer action when step 3 finished	0~4	When timer finish the step 3 program, timer has several options for the next action, this parameter used to define the next action for timer, refer to supplement 4 on page 4 of this manual for more details
Pr4	configure the OP1, OP2,OP3,OP4 relay status when timer at step 4	0~15	configure the OP1,OP2,OP3,OP4 relay status when timer at step 4, refer to supplement 3 on how to calculate the Pr4 value
GO4	Set timer action when step 4 finished	0~4	When timer finish the step 4 program, timer has several options for the next action, this parameter used to define the next action for timer, refer to supplement 4 on page 4 of this manual for more details

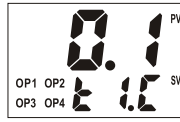
6. Programming guidelines



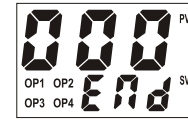
6.1 Timer patterns



rdY pattern(timer holding pattern)



Timer running pattern



Timing finish pattern

All output relay at open status
you can use D1 terminals or
RUN key to active the timer

Relay status can be defined
by Pr1,Pr2,Pr3,Pr4
Timer can be reset by D2 terminals
or RST key on the panel

Relay status can be defined by parameter Pr0
timer can be activated by D1 terminals at the back
or RUN key on the panel

Supplement

Supplement 1

The timer can be triggered from the terminal at the back, D1 are the terminals you can used to trigger the timer, for MWT100, the D1 goes to terminal 10 and 11, for MWT700, the D1 goes to terminal 16 and 17, for MWT400/MWT900, the D1 goes terminals 22 and 23. D1 value can be 0,1,2,3,4, the timer can be triggered by different approach with D1 at different value. here is the details

D1=0, D1 function disabled, you can't trigger the timer from D1 terminals and you can't trigger the timer from the front panel either.

D1=1, Timer can not be triggered from the terminals but can be activated from the panel(RUN key)

D1=2, Timer can be activated from the panel. and also can be triggered from the D1 terminals, the timer can be triggered once D1 close and release in a short period of time

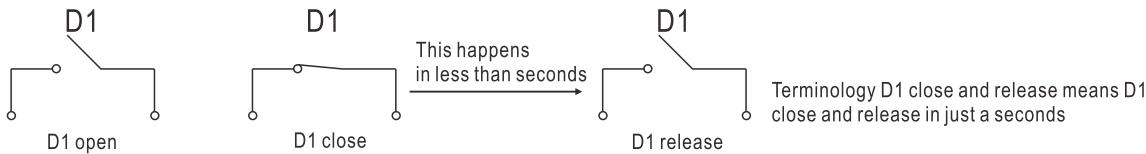
D1=3, Timer can not be triggered from the front plate, but timer will be triggered if D1 close and keep the closing status, if D1 open during the process the timer goes back to "rdY" status and timer stop working

D1=4, Timer can be triggered from the panel or terminal at the back, D1 close and release or keep closing status can both trigger the timer, the timer keep counting even D1 release during the process.

When the timer can be activated from the panel, press RUN key for 3 seconds can active the timer

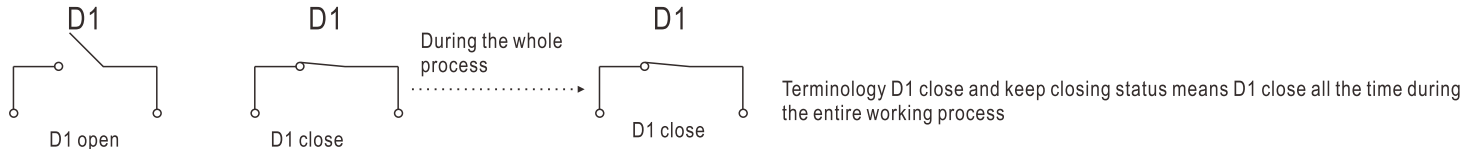
1.1) Terminologies

D1 close and release



1.2) Terminologies

D1 close and keep closing status



Supplement 2

To configure the timer reset function via terminal D2 at the back, function is different when D2 value different. When D2=0, timer can't be reset from the D2 and timer can't be reset from the front panel, when D2=1, Timer can be reset from D2 and the front plate and timer goes back to "rdY" status after reset, When D2=2, timer can be reset from the D2 and from the front panel, the timer goes back to STEP 1 after reset. for reset function, D2 need to close and release, the front plate key RST can be used to reset the timer as well when D2=1 or 2

Supplement 3(Configuration on parameter Pr0)

This parameter used to define the relay status when timer finish the entire program and goes to END status. by put different value on the Pr0, various relay for OP1, OP2, OP3, OP4 can be set at close or release status. below is the detailed information on how to calculate Pr0 value.

Pr0=0~15

if you don't want any relay at close status, then set Pr0=0

OP1 relay close, other relay open, Pr0=1

OP2 relay close, other relay open, Pr0=2

OP3 relay close, other relay open, Pr0=4

OP4 relay close, other relay open, Pr0=8

if you need more than 1 relays closed at the same time when timer finish the entire process, then plus the value of Pr0 which represent each relay at close status and you will get a total value of Pr0. for example.

If you need OP1 and OP2 close at the same time, then Pr0=1+2=3

If you need OP1 and OP3 close at the same time, then Pr0=1+4=5

If you need OP1,OP2 and OP3 close at the same time, then Pr0=1+2+8=11

If you need OP2,OP3 close at the same time, then Pr0=2+4=6

You can adapt the same rules to come up with proper value for Pr1/Pr2/Pr3/Pr4

Supplement 4

When timer finish the STEP 1 program, it could have several options regarding what to do next, the parameter Go1 defines the next action to take for the timer. the Go1 at different value could leads to different action

Go1=0, means timer goes to "rdY" ready status when timer finish the STEP 1

Go1=1, means timer goes to "END" end status when timer finish the STEP 1, relay pattern and end status can be configured via parameter Pr0

Go1=2, means timer goes to STEP 2 when it finish the STEP 1

Go1=3, means timer goes to STEP 3 when it finish the STEP 1

Go1=4, means timer goes to STEP 4 when it finish the STEP 1