Digital dual timer

HANYOUNG NUX

TT4

INSTRUCTION MANUAL

We appreciate you for purchasing HanYoung NUX Co.,Ltd product. Before using the product you have purchased, check to make sure that it is exactly what you ordered. Then, please use it following the instructions below.

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HEAD OFFICE

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■ Safety information

Before you use, read safety precautions carefully, and use this product properly. The precautions described in this manual contains important contents related with safety; therefore, please follow the instructions accordingly. The precautions are composed of DANGER, WARNING and CAUTION.

DANGER
Do not touch or contact the input/output terminals because they may cause electric shock.

WARNING

1. If there is a possibility of an accident caused by errors or malfunctions of this product, install external protection circuit to prevent the accident.
2. This product does not contain an electric switch or fuse, so the user needs to install a separate electric switch or fuse externally. (Fuse rating : 250V 0.5A)
3. To prevent defection or malfunction of this product, supply proper power voltage in accordance with the rating.
4. To prevent electric shock or devise malfunction of this product, do not supply the power until the wiring is completed.
5. Since this product is not designed with explosion-protective structure, do not use it at any place with flammable or explosive gas.
6. Do not decompose, modify, revise or repair this product. This may cause malfunction, electric shock or fire.
7. Reassemble this product while the power is off. Otherwise, it may cause malfunction or electric shock.
8. It you use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
9. Due to the danger of electric shock, use this product installed onto a panel while an electric current is applied.

CAUTION

1. The contents of this manual may be changed without prior notification.
2. Before using the product you have purchased, check to make sure that it is exactly what you ordered.
3. Check to make sure that there is no damage or abnormality of the product during delivery.
4. Do not use this product at any place with corrosive(especially noxious gas or ammonia) or flammable gas.
5. Do not use this product at any place with direct vibration or impact.
6. Do not use this product at any place with liquid, oil, medical substances, dust, salt or iron contents. (Pollution level 1 or 2)
7. Do not polish this product with substances such as alcohol or benzene.
8. Do not use this product at any place with excessive induction trouble, static electricity or magnetic noise.
9. Do not use this product at any place with possible thermal accumulation due to direct sunlight or heat radiation.
10. Install this product at place under 2,000m in altitude.
11. When the product gets wet, the inspection is essential because there is danger of an electric leakage or fire.
12. If there is excessive noise from the power supply, using insulating transformer and noise filter is recommended. The noise filter must be attached to a panel grounded, and the wire between the filter output side and power supply terminal must be as short as possible.
13. If gauge cables are arranged too closely, the effect on noise may occur.
14. Do not connect anything to the unused terminals.
15. After checking polarity of terminal, connect wires at the correct position.
16. When this product is connected to a panel, use a circuit breaker or switch approved with IEC847-1 or IEC947-3.
17. Install the circuit breaker or switch at near place for convenient use.
18. Write down on a label that the operation of circuit breaker or switch disconnects the power since the devise is installed.
19. For the continuous and safe use of this product, the periodical maintenance is recommended.
20. Some parts of this product have limited life span, and others are changed by their usage.
21. The warranty period for this product including parts is one year if this product is properly used.
22. When the power is on, the preparation period of contact output is required. In case of use for signals of external interlock circuit, use with a delay relay.
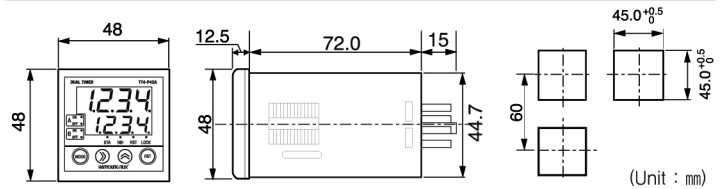
■ Model structure

Model	Model number					Contents
	□	–	□	□	□	
Appearance	TT4					Digital dual timer, DIN Size 48(W) × 48(H)mm
Setting division		P				For set up
Digit			4			4 (display: 9999)
Stage				2		2 stages
Plug type					A	11pin plug type
					B	8pin plug type

■ Specification

Model		TT4-P42A	TT4-P42B
Power voltage		100 – 240 V a.c 50 – 60 Hz	
Tolerable voltage alteration		±10 % of power voltage	
Power consumption		Approximately 9.1 VA	
Display method		PV : red FND 4 row (Alphabet height : 11 ㎜), SV : red FND 4 row (Alphabet height : 8 ㎜)	
Plug type		11 pin socket	8 pin socket
Control output	Contact structure	Output A : Time–Limit SPDT(1c), Output B : Time–Limit SPDT(1c)	
	Capacity	NO contact : 250 V a.c 5A resistance load, NC contact : 250 V a.c 2A resistance load	
Input method	non-voltage input	Impedance when short : max. 1k ohm	–
		Remaining voltage when short : max. 2V	
		Impedance when release : min. 100 k ohm	
Min signal time	START	Min. 20ms	–
	RST/INH		
Memory back up for electricity power failure		Semi permanent (EEPROM)	
Set up method		All time cognition (modification possible during power on)	
Time error	Repetition error	Case of power start (+−0.01%, max. +−0.05 sec)	
	Set up error	Case of signal start (+−0.005%, max. +−0.03 sec)	
	Voltage error	(Proportion of set up value)	
	Temperature error		
Relay life	Mechanical	More than 10 million times	
	Electrical	More than 10 thousand times (250 V a.c 3 A load resistance)	
Insulation resistance		More than 100 Mohm (500 V d.c mega standard, electric conduction terminal and exposed non-electrification metal part)	
Inner voltage		2000 V a.c 50/60 Hz per 1 min (electric conduction terminal and exposed non-electrification metal part)	
Inner noise		Square wave by noise simulator (Pulse gap=1 us), ±2 kV (within each operating power terminal)	
Vibration	Inner vibration	10 ~ 55 Hz (1 min per cycle), double amplitude 0.75 ㎜, X, Y, Z each Positions for 1hours	
	Malfunction	10 ~ 55 Hz (1 min per cycle), double amplitude 0.5 ㎜ X, Y, Z each Positions for 10 minutes	
Impact	Durability	300 ㎧ (30G) X, Y, Z each Positions for 3 times	
	Malfunction	100 ㎧ (10G) X, Y, Z each Positions for 3 times	
Surrounding temperature		−10 ~ 55 ℃ (freezing state prohibited)	
Preserving temperature		−20 ~ 65 ℃ (freezing state prohibited)	
Surrounding humidity		35 ~ 85 % R.H.	
Weight		Approximately 108 g	

※ Weight does not include weight of box

■ Dimension

(Unit : ㎜)

■ Front side structure
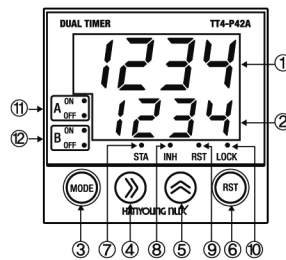
| list	Contents
① Operation time display	Display current operating time
② Set up time display	Display selected value within T1, T2, T3, and T4. Display operating time of channel B when output mode is 'DU'.
③ MODE key	Used when modifying set up function and set up time
④ SHIFT key	When modifying set up time, used as changing time to desired time
⑤ UP key	When modifying set up time, used as increasing time value
⑥ RST key	Used when resetting operation time and output. Used when decreasing time value
⑦ STA LED	Lighted when START signal sent in
⑧ INH LED	Lighted when INHIBIT signal sent in
⑨ RST LED	Lighted when RESET signal sent in
⑩ LOCK LED	Lighted when key lock setting is set as Loc.1, Loc.2, Loc.3
⑪ Output A ON, OFF LED	Output A ON – 'ON' LED lighted, Output A OFF – 'OFF' LED lighted
⑫ Output B ON, OFF LED	Output A ON – 'ON' LED lighted, Output A OFF – 'OFF' LED lighted

■ Connection

■ TT4–P42A
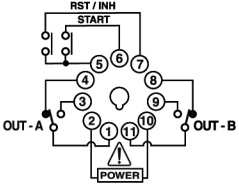
■ TT4–P42B
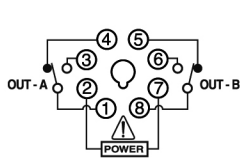
■ Time range

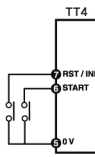| Setting list	Time range
RSEC 5999	0.01 sec ~ 59.99 sec
RSEC 9999	0.01 sec ~ 99.99 sec
RSEC 9999	0.1 sec ~ 999.9 sec
RSEC 9999	1 sec ~ 9999 sec
Rn S 5959	1 sec ~ 59 min 59 sec
Rn S 9959	1 sec ~ 99 min 59 sec
Rn In 9999	0.1 min ~ 999.9 min
Rn In 9999	1 min ~ 9999 sec
RH n 9959	1 min ~ 99 hour 59 min
RHor 9999	0.01 hour ~ 99.99 hour
RHor 9999	0.1 hour ~ 999.9 hour
RHor 9999	1 hour ~ 9999 hour

■ Input connection

Non contact input(case of sensor output is NPN voltage output)
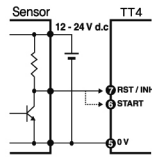
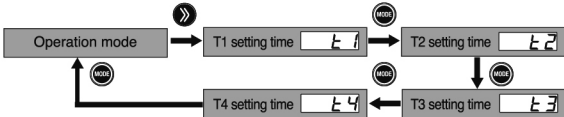Non contact input(case of sensor output is open collector output)
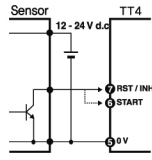
Contact input

■ Initial setting

Model \ List	Output mode	UP/DOWN	Time range	Memory back up for electricity power failure	Start input	RST/INH input	Key lock
TT4–P42A	TN	UP	59 min 59 sec	OFF	OFF	RESET	L.OFF
TT4–P42B	TN	UP	59 min 59 sec	OFF	–	–	L.OFF

■ Modifying setting time

Operation mode → T1 setting time [t1] → T2 setting time [t2]
T4 setting time [t4] ← T3 setting time [t3]

Setting list	Parameter	Contents
	579 12.34	• Operation mode 1) Enter 'T1' time setting mode by pressing ≫ key in operation mode 2) Return to operation mode by pressing ⓡ key in 'T4' time setting mode
T1 / T2 / T3 / T4	t1 12.34	• T1 time setting mode 1) First number of 'T1' setting time will flicker by entering to 'T1' time setting mode 2) Set up 'T1' time by using ≫ / ≫ / ⓡ key 3) Pressing ⓜ key after changing setting time will change setting time of 'T1' and enter to 'T2' time setting mode.
	t2 23.45	• T2 time setting mode 1) First number of 'T2' setting time will flicker by entering 'T2' time setting mode 2) Set up 'T2' time by using ≫ / ≫ / ⓡ key 3) Pressing ⓜ key after changing setting time will change setting time of 'T2' and enter to 'T3' time setting mode.
	t3 345.6	• T3 time setting mode 1) First number of 'T3' setting time will flicker by entering 'T3' time setting mode 2) Set up 'T3' time by using ≫ / ≫ / ⓡ key 3) Pressing ⓜ key after changing setting time will change setting time of 'T3' and enter to 'T4' time setting mode
	t4 456.7	• T4 time setting mode 1) First number of 'T4' setting time will flicker by entering 'T4' time setting mode 2) Set up 'T4' time by using ≫ / ≫ / ⓡ key 3) Pressing ⓜ key after changing setting time will change setting time of 'T4' and return to operation mode
Modifying setting time	10.54 12.34	• Method of changing time value of setting time In case of modifying setting time of T1, T2, T3 and T4, pressing ≫ key will increase time value and pressing ⓡ key will decrease time value. Also, pressing ≫ key will change to desired time value.

• If output mode is one of the following ('TN, TN1, TN2, TN3'), then it only can be set within time of 'T1 and T2'.
• If output mode is 'DU 1', then it only can be set within time of 'T1, T2 and T3'.
• If output mode is one of the following ('TN4 and DU'), then it can be set within time of 'T1, T2, T3 and T4'.
Cautious) Display Err, if setting time is '00 00'
Cautious) No key input for 30 sec, then it automatically return to operation mode
Cautious) While modifying set up time, timer is still operating

■ Function setting method

■ Case of output mode set as TN, TN1, TN2, TN3 and TN4

Operation mode → Output mode [out] → UP/DOWN mode [UPdn] → Channel A time range [RSEC] → Memory back up for electricity power failure [bRcK]
Key lock [LocK] ← RST/INH input mode [E.In] ← START input mode [StR]

■ Case of output mode set as DU, DU1

Operation mode → Output mode [out] → On-delay mode [od.od] → REPEAT mode [rEP] → UP/DOWN mode [UPdn] → Channel A time range [RSEC]
Key lock [LocK] ← RST/INH input mode [E.In] ← START input mode [StR] ← Memory back up for electricity power failure [bRcK] ← Channel B time range [b.SEC]

Set up list	Parameter	Contents
Output mode	out tn	• TWIN output mode If output mode is 'TN', then output A and B repeat (A=off/B=off) =) (A=on/B=on)' operation due to set up time of 'T1 and T2'.
	out tn1	• TWIN 1 output mode If output mode is 'TN1', then output A and B repeat (A=on/B=on) =) (A=off/B=off)' operation due to set up time of 'T1 and T2'.
	out tn2	• TWIN 2 output mode If output mode is 'TN2', then output A and B repeat (A=off/B=off) =) (A=on/B=on) =) (A=on/B=on)' operation due to set up time of 'T1 and T2'.
	out tn3	• TWIN 3 output mode If output mode is 'TN3', then output A and B repeat (A=off/B=on) =) (A=off/B=off) =) (A=on/B=off)' operation due to set up time of 'T1 and T2'.
	out tn4	• TWIN 4 output mode If output mode is 'TN4', then output A and B repeat (A=on/B=off) =) (A=off/B=off) =) (A=off/B=on) =) (A=off/B=off)' operation due to set up time of 'T1, T2, T3 and T4'.
	out du	• DUAL output mode If output mode is 'DU' and On–Dely is id.id, then output A repeats '(A=on) =) (A=off) due to the set up time of 'T1 and T2' and output B repeats '(B=on) =) (B=off) due to the set up time of 'T3 and T4'. Also time range regarding output A and output B can be individually set up.
	out du1	• DUAL1 output mode If output mode is 'DU1' and On–Dely is id.id, then output A repeats '(A=on)=)(A=off)' due to the set up time of 'T1 and T2' and after delaying amount of T3 set up time, output B repeats '(B=on)=)(B=off)' due to the set up time of 'T1 and T2'.
		• Set up output mode using ≫/ⓡ key located at front side • After setting up output mode, pressing ⓜ key will complete set up regarding output mode. • output mode is made of 'TN/TN1/TN2/TN3/TN4/DU/DU1' (7 KINDS)
On – Delay mode	A b id.id	• Output A – Interval Delay, output B If On–Delay mode is 'id.id', then initial operation state of output A and output B become '(A=on/B=on)'.
	A b od.id	• Output A – On Delay, output B If On–Delay mode is 'od.id', then initial operation state of output A and output B become '(A=off/B=on)'.
	A b id.od	• Output A – Interval Delay, output B – On Delay If On–Delay mode is 'id.od', then initial operation state of output A and output B become '(A=on/B=off)'.
	A b od.od	• Output A – On Delay, output B – On Delay If On–Delay mode is 'od.od', initial then operation state of output A and output B become '(A=off/B=off)'.
		• Set up On–delay mode using ≫/ⓡ key located at front side • After setting up On–delay mode, pressing ⓜ key will complete set up regarding On–delay mode. • On–delay mode is made of 'id.id / od.id / id.od / od.od' (4 KINDS) Cautious) On–delay mode used only when output mode is set as 'DU/DU1'.
REPEAT mode	rEP RUto	• AUTO mode Perform with repeating output operation
	rEP nRnU	• MANU mode (MANUAL) Perform output operation only once
		• Set up REPEAT mode using ≫/ⓡ key located at front side • After setting up REPEAT mode, pressing ⓜ key will complete set up of AUTO/MANU mode. • REPEAT mode is made of 'AUTO/MANU' (2 KINDS) Cautious) REPEAT mode used only when output mode is set as 'DU/DU1'.
UP / DOWN mode	UPdn UP	• UP mode when resetting timer, '0' will be displayed and operation time starts to increase from '0'. Also, output occurs when operation time and set up time is equal.
	UPdn dn	• DOWN mode when resetting timer, set up time will be displayed and operation time starts to decrease from set up time. Also, output occurs when operation time is '0'.
		• Set up UP/DOWN mode using ≫/ⓡ key located at front side • After setting up UP/DOWN mode, pressing ⓜ key will complete set up of UP/DOWN mode. • UP/DOWN mode is made of 'UP/DOWN' (2 KINDS)

Set up list	Parameter		Contents
Channel A, B time range	ASEC 5999	ASEC 5999	• Channel A = 59.99 sec Set up channel A time range in between 0.01sec~59.99sec
	ASEC 9999	ASEC 9999	• Channel A = 99.99 sec Set up channel A time range in between 0.01sec~99.99sec
	ASEC 9999	ASEC 9999	• Channel A = 999.9 sec Set up channel A time range in between 0.1sec~999.9sec
	ASEC 9999	ASEC 9999	• Channel A = 9999 sec Set up channel A time range in between 1sec~9999sec
	An.S 5959	An.S 5959	• Channel A = 59.59 min Set up channel A time range in between 1sec~59min99sec
	An.S 9999	An.S 9999	• Channel A = 99.59 min Set up channel A time range in between 1sec~99min59sec
	An.In 9999	An.In 9999	• Channel A = 999.9 min Set up channel A time range in between 0.1min~999.9min
	An.In 9999	An.In 9999	• Channel A = 9999 min Set up channel A time range in between 1min~9999min
	AH.n 9959	AH.n 9959	• Channel A = 99.59 hour Set up channel A time range in between 0.01min ~ 99 hour 59min
	AHor 9999	AHor 9999	• Channel A = 99.99 hour Set up channel A time range in between 0.01hour ~ 99.99 hour
	AHor 9999	AHor 9999	• Channel A = 999.9 hour Set up channel A time range in between 0.1hour ~ 999.9 hour
	AHor 9999	AHor 9999	• Channel A = 9999 hour Set up channel A time range in between 1hour~9999hour

• Set up channel A time range using ⊼/(RST) key located at front side
• After setting up 'A,B' time range, pressing (MODE) key will complete set up of 'A,B' time range.
• Channel 'A,B' time range are made of 12 kinds
• Channel 'A,B' time range can be set up only in between 0.01sec~9999hour
Cautious) channel B time range used only when output mode is set as 'DU/DU1'.

Memory back up mode for electricity power failure	bAck on	• Electricity failure memory back up = ON Memorize operation time just before cutting off power and when power ON, it starts from memorized operation time
	bAck oFF	• Electricity failure memory back up = OFF When power ON, operation time reset

• Set up Memory back up mode using ⊼/(RST) key located at front side
• After setting up memory back up mode, pressing (MODE) key will complete set up of memory back up mode.
• Memory back up mode is made of 'ON/OFF' (2 KINDS)

START input mode	StA oFF	• START input mode = OFF Output A and output B repeat depending on set up time. Not related to START signal input
	StA tr IG	• START input mode = TRIG Output A and output B repeat depending on set up time when START signal is 'ON'. Only first signal is valid. (it does not recognize reentered signal)
	StA Hold	• START input mode = HOLD Output A and output B repeat depending on set up time when START signal is 'ON'. And output A and output B become 'OFF' when START signal is 'OFF'.

Set up START input mode using ⊼/(RST) key located at front side
After setting up START input mode, pressing (MODE) key will complete set up of START input mode.
START input mode is made of 'OFF/TRIG/HOLD' (3 KINDS)

RST / INH input mode	E.In InH	• RST / INH input mode = INH Timer stops when RST/INH signal is 'ON'
	E.In rSt	• RST / INH input mode = RST Timer resets when RST/INH signal is 'ON'

• Set up RST/INH input mode using ⊼/(RST) key located at front side
• After setting up RST/INH input mode, pressing (MODE) key will complete set up of RST/INH input mode
• RST/INH input mode is made of 'RST/INH' (2 KINDS)

KEY lock mode	Lock L.oFF	• KEY lock mode = L.oFF Cancel key lock state
	Lock Loc.1	• KEY lock mode = Loc.1 (RST) key become lock state
	Lock Loc.2	• KEY lock mode = Loc.2 ≫ key become lock state
	Lock Loc.3	• KEY lock mode = Loc.3 (RST) / ≫ key는 잠금 상태가 됩니다.

• Set up 'key lock mode using ⊼/(RST) key located at front side
• After setting up KEY lock mode, pressing (MODE) key will complete set up of KEY lock mode.
• KEY lock mode is made of 'L.oFF/Loc.1/Loc.2/Loc.3' (4 KINDS)

※ Pressing (MODE) key more than 3 seconds in timer operation mode will stop timer and change to function set up mode.
※ Pressing (MODE) key more than 3 seconds in function operation mode will reset timer and return to operation mode.

■ Output mode

● Output mode : TN (TWIN)

TN (start = off)	TN (start = trig)	TN (start = hold)
When supplying power, output A and B repeat operation ('OFF→ON') depending on set up time of T1 and T2.	When inserting START signal, output A and B repeat operation ('OFF→ON') depending on set up time of T1 and T2. But START signal approved only once at the very beginning.	When inserting START signal, output A and B repeat operation ('OFF→ON') depending on set up time of T1 and T2 and when START signal is cancelled, then output A and B become 'OFF'.

● Output mode : TN1 (TWIN 1)

TN1 (start = off)	TN1 (start = trig)	TN1 (start = hold)
When supplying power, output A and B repeat operation ('ON→OFF') depending on set up time of T1 and T2.	When inserting START signal, output A and B repeat operation ('ON→OFF') depending on set up time of T1 and T2. But START signal approved only once at the very beginning.	When inserting START signal, output A and B repeat operation ('ON→OFF') depending on set up time of T1 and T2 and when START signal is cancelled, then output A and B become 'OFF'.

● Output mode : TN2 (TWIN 2)

TN2 (start = off)	TN2 (start = trig)	TN2 (start = hold)
When supplying power, output A and B repeat operation ('OFF/OFF→ON/OFF→ON/ON→ON/ON') depending on set up time of T1 and T2.	When inserting START signal, output A and B repeat operation ('OFF/OFF→ON/ON') depending on set up time of T1 and T2. But START signal approved only once at the very beginning.	When inserting START signal, output A and B repeat operation ('OFF/OFF→ON/OFF→ON/ON') depending on set up time of T1 and T2 and when START signal is cancelled, then output A and B become 'OFF'.

● Output mode : TN3 (TWIN 3)

TN3 (start = off)	TN3 (start = trig)	TN3 (start = hold)
When supplying power, output A and B repeat operation ('OFF/ON→OFF/OFF→ON/OFF') depending on set up time of T1 and T2.	When inserting START signal, output A and B repeat operation ('OFF/ON→OFF/OFF→ON/OFF') depending on set up time of T1 and T2. But START signal approved only once at the very beginning.	When inserting START signal, output A and B repeat operation ('OFF/ON→OFF/OFF→ON/OFF') depending on set up time of T1 and T2 and when START signal is cancelled, then output A and B become 'OFF'.

● Output mode : TN4 (TWIN 4)

TN4 (start = off)	TN4 (start = trig)	TN4 (start = hold)
When supplying power, output A and B repeat operation ('ON/OFF→OFF/OFF→OFF/ON→OFF/OFF') depending on set up time of T1, T2, T3 and T4.	When inserting START signal, output A and B repeat operation ('ON/OFF→OFF/OFF→OFF/ON→OFF/OFF') depending on set up time of T1, T2, T3 and T4. But START signal approved only once at the very beginning.	When inserting START signal, output A and B repeat operation ('ON/OFF→OFF/OFF→OFF/ON→OFF/OFF') depending on set up time of T1, T2, T3 and T4 and when START signal is cancelled, then output A and B become 'OFF'.

● Output mode : DU

START input setting mode 'OFF'	Standard operation	Output mode : DU (start = off, On-Delay = id.id)
		1. Supplying power makes 'output A=ON/output B=ON' 2. State of output A is maintained until T1 setting time, state of output B is maintained until T3 setting time. 3. Once set up time of output A reaches T1, 'output A = OFF' and maintain this state until T2 setting time. 4. Once set up time of output B reaches T3, 'output B = OFF' and maintain this state until T4 setting time. 5. While supplying power, output A repeats operation using set up time of T1 and T2. Also, output B repeats operation using set up time T3 and T4 just like given chart. 6. Inserting RESET signal resets operation time. And output A and output B become OFF 7. When RESET signal is cancelled, output A repeats operation from set up time T1 and output B repeats operation from set up time T3.

START input setting mode 'TRIG'	Standard operation	Output mode : DU (start = trig, On-Delay = id.id)
		1. Inserting START signal within power ON makes 'output A=ON/output B=ON'. 2. State of output A is maintained until T1 setting time, state of output B is maintained until T3 setting time. 3. Once set up time of output A reaches T1, 'output A = OFF' and maintain this state until T2 setting time. 4. Once set up time of output B reaches T3, 'output B = OFF' and maintain this state until T4 setting time. 5. While supplying power, output A repeats operation using set up time T3 and T4 just like given chart. 6. START signal get approval only once at the beginning. (repeat of Inserting START signal does not affect anything at all) 7. Inserting RESET signal resets operation time. And output A and output B become OFF 8. When RESET signal is cancelled and insert START signal, output A repeats output operation from T1 setting time and output B repeat output operation from T3 setting time.

START input setting mode 'HOLD'	Standard operation	Output mode : DU (start = hold, On-Delay = id.id)
		1. Inserting START signal within power ON makes 'output A=ON/output B=ON'. 2. State of output A is maintained until T1 setting time, state of output B is maintained until T3 setting time. 3. Once set up time of output A reaches T1, 'output A = OFF' and maintain this state until T2 setting time. 4. Once set up time of output B reaches T3, 'output B = OFF' and maintain this state until T4 setting time. 5. While supplying power, output A repeats operation using set up time of T1 and T2 and output B repeats operation using set up time T3 and T4 just like given chart. 6. output is generated only during inserting START signal, operation time get reset when START signal is cancelled and output A/B become OFF 7. Inserting RESET signal resets operation time. And output A and output B become OFF 8. When RESET signal is cancelled and insert START signal, output A repeat output operation from T1 setting time and output B repeat output operation from T3 setting time.

● Output mode : DU1

START input setting mode 'OFF'	Standard operation	Output mode : DU1 (start = off, On-Delay = id.id)
		1. Supplying power makes 'output A=ON/output B=OFF' 2. State of output A is maintained until T1 setting time, state of output B is maintained until T3 setting time. 3. Once set up time of output A reaches T1, 'output A = OFF' and maintain this state until T2 setting time. 4. Once set up time of output B reaches T3, 'output B = ON' and maintain this state until T1 setting time. 5. Once set up time of output B reaches T1, 'output B = OFF' and maintain this state until T2 setting time. 6. While supplying power, output A repeats operation using set up time of T1 and T2 and output B repeats operation after delaying T3 setting time using set up time of T1 and T2 just like given chart. 7. Inserting RESET signal resets operation time and output A and output B become OFF 8. If RESET signal is cancelled then output A repeats output operation from set up time T1 and output B repeats output operation from set up time T1 after delaying of T3 setting time.

START input setting mode 'TRIG'	Standard operation	Output mode : DU1 (start = trig, On-Delay = id.id)
		1. Inserting START signal within power ON makes 'output A=ON/output B=OFF'. 2. State of output A is maintained until T1 setting time, state of output B is maintained until T3 setting time. 3. Once set up time of output A reaches T1, 'output A = OFF' and maintain this state until T2 setting time. 4. Once set up time of output B reaches T3, 'output B = ON' and maintain this state until T1 setting time. 5. Once set up time of output B reaches T1, 'output B = OFF' and maintain this state until T2 setting time. 6. Just like given chart, when START signal inserted, 'output A repeats output operation depending set up time of T1 and T2' and output B repeats output operation depending set up time of T1 and T2 after delaying amount of T3 set up time. 7. START signal get approval only once at the beginning. (repeat of inserting START signal does not affect anything at all) 8. Inserting RESET signal resets operation time and output A and output B become OFF 9. When RESET signal cancelled and insert START signal, output A repeat output operation from set up time T1 and output B repeat output operation from set up time T3 after delaying amount of T3 set up time.

START input setting mode 'HOLD'	Standard operation	Output mode : DU1 (start = hold, On-Delay = id.id)
		1. Inserting START signal within power ON makes 'output A=ON/output B=OFF'. 2. State of output A is maintained until T1 set up time, state of output B is maintained until T3 set up time. 3. Once set up time of output A reaches T1, 'output A = OFF' and maintain this state until T2 set up time. 4. Once set up time of output B reaches T3, 'output B = ON' and maintain this state until T1 set up time. 5. Once set up time of output B reaches T1, 'output B = OFF' and maintain this state until T2 set up time. 6. Just like above chart, when START signal inserted, 'output A repeats output operation depending set up time of T1 and T2' and output B repeats output operation depending set up time of T1 and T2 after delaying amount of T3 set up time. 7. output is generated only during inserting START signal, operation time get reset when START signal is canceled and output A/B become OFF 8. Inserting RESET signal resets operation time and output A and output B become OFF 9. When RESET signal cancelled and input START signal, output A repeat output operation from set up time T1 and output B repeat output operation from set up time T3 after delaying amount of T3 set up time.

※ Individual setting is possible for set up time of T1, T2, T3 and T4

※ Individual output A/B On-Delay set up is possible within Du/Du1 output mode

※ From DU output mode, time RANGE of output A/B can be individually set up so it can be used as 2 independent timer

※ If REPEAT mode is selected as 'MANU', output A/B within Du and Du1 output mode can operate only once without repetition.

※ Model TT4-P42B operates 'START=OFF' output operation without relating to input