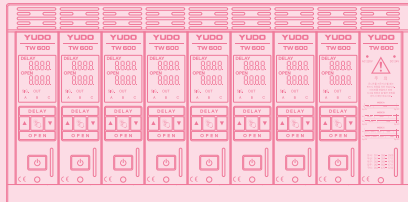


User Manual

English



MODEL : TW 600

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► We reserve the right to change specifications without notice.

TW 600

User Manual

Thank you for using YUDO product.

Please be noted of this manual to avoid problems by any misuse, before you use YUDO product.
You can contact YUDO Headquarter or regional sales office for technical advice.

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1. Uses

YUDO Sequence Injection System is to provide a means of controlling the mould filling sequence when Valve Gate Hot Runner System. The sequence injection Timer enables the Valve Gates of a Hot-Runner System to be individually controlled to provide the following benefits.

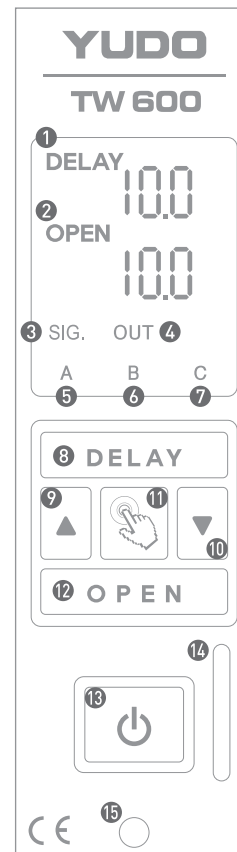
- 1) Removal or Positioning of Weld Line
Quality of the Molded part can be improved by removing or re-positioning of weld lines on visual surfaces, or sections where a weld line would cause a weakness.
- 2) Regulation of the Injection Quantity by Gate operation
Injection balance can be adjusted in Family mould application.
- 3) Improvement on Flash and short-shot
By Gate open control in an orderly manner, it can eliminate Flash and short-shot problem.

2. Power Supply

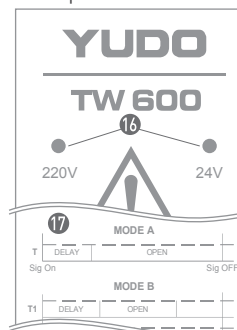
- ✓ Main Power Supply (Timer Case) AC(85~264VAC), 50/60 Hz
- ✓ Injection Signal Input Power DC 24V, AC 110V, AC 220V
Free Voltage
- ✓ Solenoid Valve output voltage DC 24V, AC110V, AC220V
*AC Solenoid Valve output must be same with AC input power .
- ✓ Operating temperature 0°C~50°C
- ✓ PCB Structure

① Power board	Power PCB
② Relay board	Relay (Solenoid Valve on/off)
③ CPU board	MPU, out signal Input/Output, Display, Switch Signal input
④ Front board	Solenoid Valve output display (24V or 220V)
⑤ Mother board	DC Main Power distribution and Connector

3. TW 600 Parts name



Blank panel



- ① DELAY The time until gate is started to be opened after receiving injection signal. Mode A, Mode B, Mode C operates in the same way. (Basic setting value : 3 sec.)
- ② OPEN The time when gate is being opened. Counting continues in mode A until injection signal ends. Gate opens only during setting time in Mode B and Mode C. (Basic setting value : 3 sec.)
- ③ SIGNAL LED Lamp is turned on, as injection signal is input.
- ④ OUT LED Lamp is turned on, as Gate is open. ⑪ In manual mode, it operates in the same way.
- ⑤ MODE A LED Lamp is turned on when it is set as A type (Refer to 5-page, Mode setting)
- ⑥ MODE B LED Lamp is turned on when it is set as B type (Refer to 5-page, Mode setting)
- ⑦ MODE C LED Lamp is turned on when it is set as B type (Refer to 5-page, Mode setting)
- ⑧ DELAY SET Key A key to set gate opening time after injection signal. ("SAVE" is displayed 3 seconds after setting, and then setting value is saved. If signal is turned on before "save" display, it operates with the changed value. If input power is turned off and then turned on, setting value is not saved).
- ⑨ UP Key A key to set up tim by pressing DEL or OPEN SET Key simultaneously .
- ⑩ DOWN Key A key to turn down time setting by pressing DEL or OPEN SET key simultaneously.
- ⑪ Manual Output Key A Key to open Gate manually. It operates only when the key is being pressed.
- ⑫ OPEN SET Key A key to set the time when gate is being opened. This is used by pressing key or key simultaneously. (Save function is the same as DEL SET key)
- ⑬ Main power switch
- ⑭ Unit take-out Bar
- ⑮ Unit fixing Bolt
- ⑯ Solenoid Valve output power supply display The Voltage must be same as Solenoid Valve input Voltage in mold. (AC 220V / DC 24V)
- ⑰ MODE operation Specification

4. Function

1) Main power input - operation



- (1) Version and Segment (from 0 ~ 9) counts up by 0.3 seconds when Power Supply inputs.
- (2) LED blinks successively.
- (3) The final operation indication appears after a self-inspection.

2) Mode and time setting

- (1) Press "Delay + Open" key simultaneously to make setting menu change during operation.
 - ① "SET" appears in Delay Segment.
 - ② Time unit appears in Open Segment
- (2) Press the manual output key to make MODE change. (Mode A→B→C→A)
- (3) Press ▲UP key to make Press Up key to make Time unit change below decimal point. (0.01→0.1→1→0.01)
- (4) ▼ Down key is to down the value.
- (5) The value is saved if there is no response for 3 seconds.
- (6) All Input & Output operation are not available during setting time.

3) Time setting

(1) Delay time setting.

- ① Press Delay key to make value change, then use ▲ UP and ▼ DOWN key.
- ② To make the first Delay time setting in MODE C, follow ① instruction during "A" kept in display. → 
- ③ To make the second Delay time setting in MODE C, follow ① instruction during "p" kept in display. → 
- ④ Delay time setting is available all in MODE A, B, C.
- ⑤ The value is saved, unless there is any response for 3 seconds.
- ⑥ Manual operation can be done under Open key input during the set time.
- ⑦ Continual input is available under UP/DOWN key being pressed.
- ⑧ If saved as 999 sec in 1 sec. setting, 99.9 sec. is displayed in 0.1 sec. setting. (9.99 sec. is displayed in 0.01 sec. setting)

-The saved value is converted by multiple value)

	1 Sec setting	0.1 Sec setting	0.01 Sec setting
Setting range	0 – 999 Sec	0 – 99.9 Sec	0 – 9.99 Sec

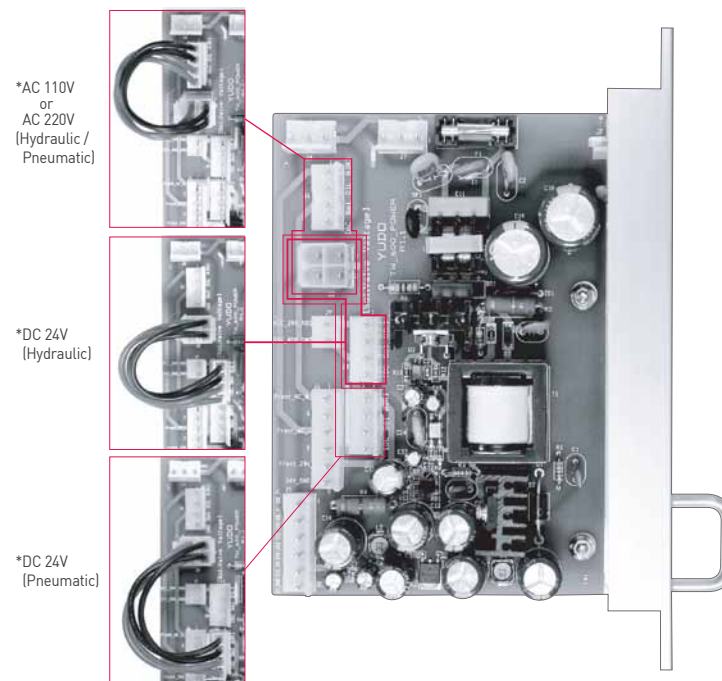
(2) Open time adjustment

- ① Press Open key to make value change, then use ▲ UP and ▼ DOWN key.
- ② To make the first Open time setting in MODE C, follow ① instruction during "A" kept in display.
- ③ To make the second Open time setting in MODE C, follow ① instruction during "p" kept in display.
- ④ Open time setting is available only in MODE B, C.

(3) How to set Solenoid output Voltage

Disassemble TW600 blank panel under Power supply turn off. After remove M4 x 5mm bolt, connect blank panel power B/D's connector to jumper cable that needed(J8[DC24V Hydraulic], J3[DC24V Pneumatic], J1[AC110V, AC220V]). (Factory setting : AC220V)

* Output Voltage must be same with Solenoid Valve Input Voltage in mold. (Unless, it causes malfunction in operation)



*Note : Sequence timer controller Unit card is interchangeable without regard for Pneumatic or Hydraulic, but the Controller case has to be fit in according to a type.

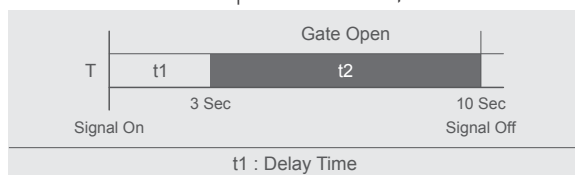
5. MODE Operation

YUDO Sequence Timer(TW 600) has 3 types of MODE.
The user can adjust Gate open/close/delay time for the optimal injection application in a convenient way.

1) MODE A

Selection Mode A - After the injection signal has been received, the gate remains closed during the DEL time. After the Del time has elapsed, the gate Opens and remains open until the end of the injection signal.

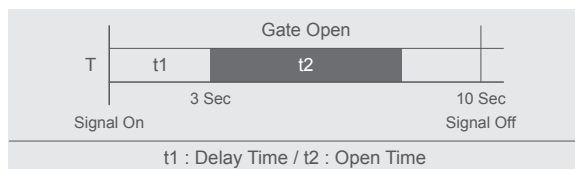
Ex1) Injection time : 10 seconds DEL Time (T1) : 3 second setting
Operation : Gate opens 3 seconds after receiving the injection signal, and remains open for 7 seconds, and then closes.



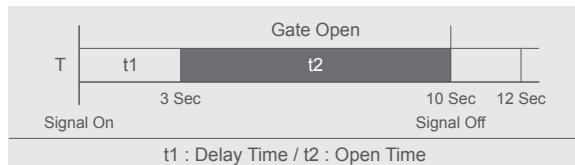
2) MODE B

Selecting Mode B - After the injection signal has been received, the gate remains Closed during the Del time. After the Del time has elapsed, the gate Opens for the Open time setting. After the Open time has elapsed, the gate closes and remains closed.

Ex1) Injection time : 10 seconds / DEL Time : 3 second setting
/ Open time : 4 second setting
Operation : Gate opens 3 seconds after receiving the injection signal, and remains in the open condition for 4 seconds, and then closes.



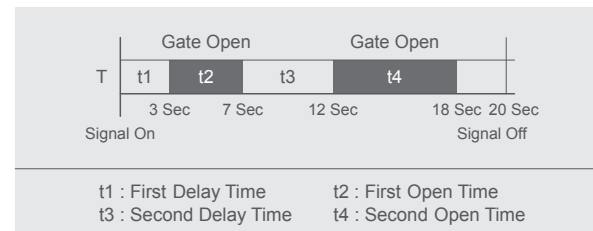
Ex2) Injection time : 10 seconds. / Del Time : 3 seconds
/ Open time : 9 seconds.
Operation : After 3 seconds delay, the Gate opens 7 seconds after receiving the injection signal, and then closes.
*Note : The gate closes as soon as the injection signal ends, regardless of Open time setting Value.



3) MODE C

In MODE C, Users can carry out MODE B operation twice successively.

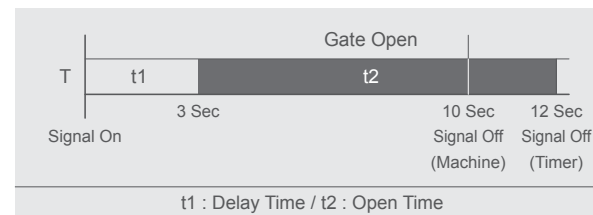
Ex1) Injection time : 20 seconds.
The first Del. time : 3 seconds / The first Open time : 4 seconds
The second Del. Time : 5 seconds / The second Open time : 6 seconds
Operation : After 3 sec. delay, the Gate opens for 4 seconds.
Successively after 5 sec. close, the Gate opens for 6 seconds.



4) Injection signal extension function

Generally a valve Gate closes, when injection signal ends. But in some cases, the valve Gate should be kept open even though the injection signal ends. Users can actualize this operation by setting MODE B with (-) open time. Then the Timer controller itself keeps the injection signal in an open condition. This function is specially used for controlling Extension Nozzle in Stack-mold which needs to make a Gate close after HRS inner channel pressure becomes reduced enough.

Ex1) injection time : 10 sec. / Delay time : 3 sec. / Open time : (-) 2 sec.
Operation : Gate opens 3 seconds after receiving the injection signal, and still remains in the open condition for 2 seconds after injection signal ends.



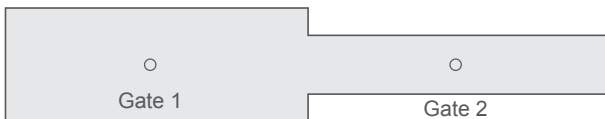
6. Sequence system application

1) MODE A application

- (1) In case of short shot on product
Open Gate 1 first to enlarge filling area, then Open Gate 2 later to fill up well.

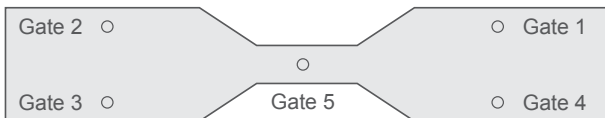


- (2) To inject products which have a big dimensional difference per cavity, open G1 first to fill up the big size and then open G2 later to make the balance. It can optimize the injection precision.



2) MODE B application

- (1) To inject complicated products which have a big dimensional difference, apply MODE 1 for Gate 1~4, and MODE B only for Gate 5. It is used to fill up the very small sized dimension just before the injection ends.



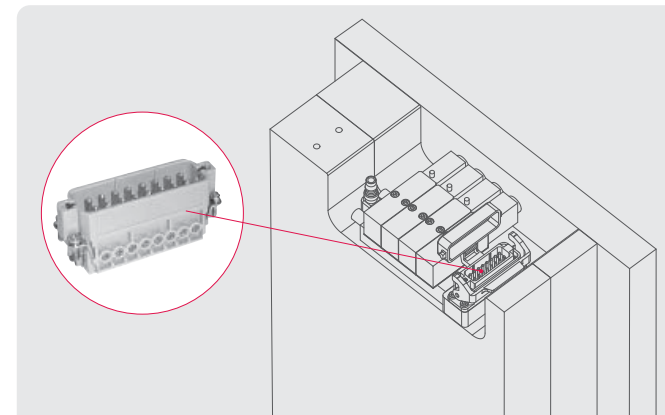
3) MODE C application

- (1) It is used to apply 'one and after' injection signal control. Opening the gates first which could have fill-up Unbalance if Users open the all gates at the same time, and then close the gates keeping time with fill up. It is designed to avoid the excessive filling pressure. Although this is also possible in MODE B operation, the function to keep up the holding pressure in channel by opening the Gate [The Timer controller itself keeps the injection signal in an open condition] is possible only in MODE C. MODE C is a new type of output pattern which is able to optimize the various sequence controls to match the product feature and injection peculiarity.



7. Connector position and Assembly

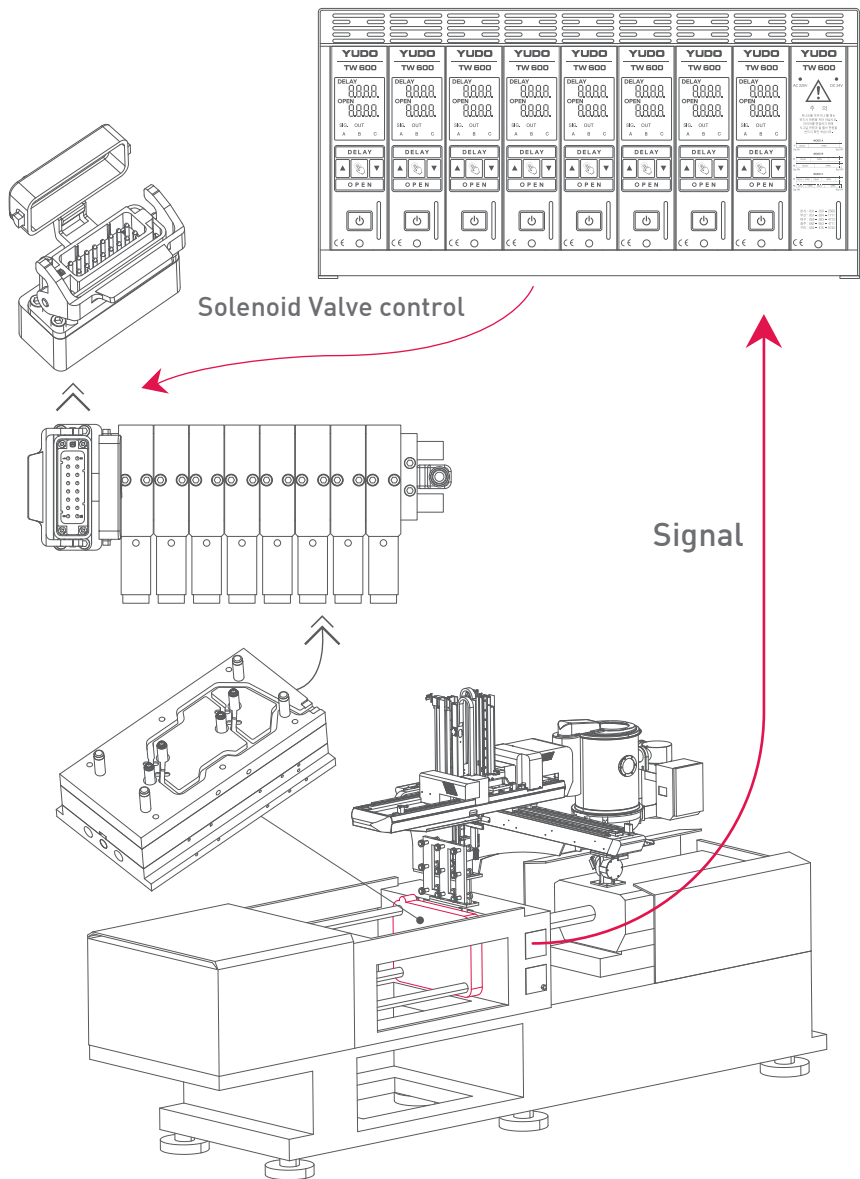
- 1) Connector is installed to Solenoid Block Assembly in mold.



2) Connector Assembly

Sol Valve No	Connector Pin No	Connector 사양
No. 1	1, 2	<p>HAN 16A (250V 16A) Mold : Male Insert [09 20 016 2612] Cable : Female Insert [09 20 016 2812]</p>
No. 2	3, 4	
No. 3	5, 6	
No. 4	7, 8	
No. 5	9, 10	
No. 6	11, 12	
No. 7	13, 14	
No. 8	15, 16	

8. Sequence Timer Connection



MEMO



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- ◊ Plant
- Subsidiary
- ▲ Sales Office
- Agency

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