H8DA

MULTI-FUNCTION
DIGITAL COUNTER / TIMER

User's Manual

RESTRICTIONS ON USE

When using this product in applications that require particular safety or when using this product in important facilities, please pay attention to the safety of the overall system and equipment. Install fail-safe mechanisms, perform redundancy checks and periodic inspections and adopt other appropriate safety measures when it is necessary.

SAFETY PRECAUTION This manual uses the following symbols to ensure safe operation of this timer.

⚠ **WARNING** Warnings are indicated when mishandling this product might result in death or serious injury to user.

⚠ **CAUTION** Cautions are indicated when mishandling this product might result in minor injury to the user, or only physical damage to the timer.

⚠ WARNING

- Note this incorrect wiring of this product can damage it and lead to other hazards. Make sure the product has been correctly wired before turning the power ON.
- Before wiring, or removing / mounting the product, be sure to turn the power OFF. Failure to do so might cause electric shock.
- Do not touch electrically charged parts such as the power terminals. Doing so might cause electric shock.
- Do not disassemble the product. Doing so might cause electric shock or faulty operation.

⚠ CAUTION

- Use the product within the operating ranges recommended in the specification (temperature, humidity, voltage, shock, mounting direction, atmosphere etc.). Failure to do so might cause fire or faulty operation.
- Firmly tighten the wires to the terminal. Insufficient tightening of the wires to the terminal might cause fire.

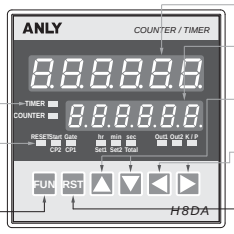
SPECIFICATIONS

Operating voltage	AC/DC : 12～48V / AC/DC : 100～240V
Allowable operating voltage range	85 ~ 110% of rated operating voltage
Rated frequency	50 / 60Hz
Contact rating	250VAC 5A (Resistive load)
Count speed	MAX 30, 1k, 5k or 10k cps
Power consumption	Approx. 3.5VA
Life	Mechanical : 5,000,000 times / Electrical : 100,000 times
Ambient temperature	-10～+50°C
Ambient humidity	MAX 85% RH
Weight	Approx. 260g

NAMES AND FUNCTIONS OF FACEPLATE

LEDs
COUNTER(TIMER): Counting (Timming)indicator
RESET: Reset indicator
Start: Start signal input indicator
Gate: Gate signal input indicator
hr, min, sec: Time unit indicator
Out1, Out2: Control output 1, 2 indicator
K/P: Key protection indicator
CP1, CP2: Signal input 1, 2 indicator
Set1, Set2: 1st, 2nd set value indicator
Total: Total value indicator

FUN key
Switch to the different mode. Hold down for at least 3 seconds to enter setting modes.



Upper display
Display PV values (current values, etc.) or setup items.

Lower display
Display SV values (set values, etc.) and other parameter values.

▲▼ key
Used for incrementing or decrementing numeric values. And show the first set value or second set value.

◀▶ key
Performing arithmetic shift operations and switches the display.

RST key
Reset the output or save the value of setting.(after save than back to the operation mode)

SETTING PROCEDURE

COUNTER OR TIMER'S VALUES RESET	SWITCH TO THE MODE SETTING STATUS	SWITCH TO THE NEXT MODE	SAVE AND BACK TO THE OPERATION STATUS
POWER ON or RST	FUN + 3 Sec	FUN	RST

Counter:

1.INPUT MODE

1-1 UP	1-5 UP/DOWN C	
1-2 DOWN		
1-3 UP/DOWN A		
1-4 UP/DOWN B		

2.OUTPUT MODE

2-1 Mode N	2-5 Mode K	2-9 Mode L
2-2 Mode F	2-6 Mode P	2-A Mode H
2-3 Mode C	2-7 Mode Q	
2-4 Mode R	2-8 Mode A	

2A.UP/DOWN COUNTING RANGE

2A-1 -99999(-99999~999999)
2A-2 0(0~999999)
2A-3 999999(0~999999 cycle)

3.OUTPUT 2 TIME

3-1 0.01S	3-5 0.5S	3-9 10S
3-2 0.05S	3-6 1S	3-A 20S
3-3 0.1S	3-7 2S	
3-4 0.2S	3-8 5S	

4.OUTPUT 1 TIME

4-1 Hold	4-5 0.2S	4-9 5S
4-2 0.01S	4-6 0.5S	4-A 10S
4-3 0.05S	4-7 1S	4-b 20S
4-4 0.1S	4-8 2S	

5.COUNT SPEED

5-1 30 cps
5-2 1k cps
5-3 5k cps
5-4 10k cps

6.MINIMUM RESET TIME

6-1 20mS
6-2 1mS

7.DECIMAL POINT

7-1 999999	7-5 99.9999
7-2 99999.9	
7-3 9999.99	
7-4 999.999	

8.PRESCALE VALUE

8-1 0.0001~99.9999

9.KEY PROTECTION LEVEL

9-1 Lock function key FUN
9-2 Lock reset key RST
9-3 Lock preset value key ▲▼◀▶
9-4 Lock all key

10.POWER OFF MODE

A-1 Power off reset
A-2 Power off memory

11.NPN/PNP INPUT MODE

b-1 nPn
b-2 PnP

12.FUNCTION MODE

C-1 Counter
C-2 Timer

Timer:

1.TIME RANGE

1-1 999.999S	1-5 99M59.99S	1-9 99H59M59S
1-2 9999.99S	1-6 999M59.9S	1-A 9999H59M
1-3 99999.9S	1-7 99999.9M	1-b 99999.9H
1-4 999999S	1-8 999999M	1-C 999999H

2.UP / DOWN MODE

2-1 Count up
2-2 Count down

3.OUTPUT MODE

3-1 Mode A	3-5 Mode B	3-9 Mode D
3-2 Mode A1	3-6 Mode B1	3-A Mode E
3-3 Mode A2	3-7 Mode B2	3-b Mode F
3-4 Mode A3	3-8 Mode C	

4.OUTPUT TIME

4-1 Hold	4-5 5S	
4-2 0.1S	4-6 10S	
4-3 0.5S	4-7 15S	
4-4 1S	4-8 20S	

5.INPUT SIGNAL TIME

5-1 20 mS
5-2 1 mS

6.KEY PROTECTION LEVEL*

6-1 Lock function key FUN
6-2 Lock reset key RST
6-3 Lock preset value key ▲▼◀▶
6-4 Lock all key

7.OUTPUT CONTACT

7-1 2C
7-2 1A1C

8.NPN/PNP INPUT MODE

8-1 nPn
8-2 PnP

9.FUNCTION MODE

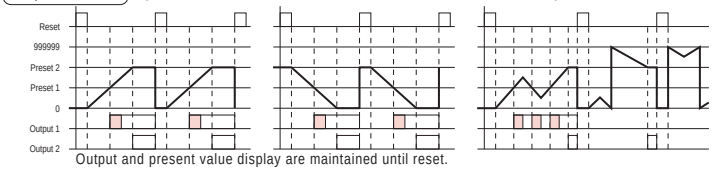
9-1 Counter
9-2 Timer

*Note:
1.In NPN INPUT MODE, PIN 13 should be connect with PIN 8.
2.In PNP INPUT MODE, PIN 13 should be connect with PIN 12.

TIMING CHART(COUNTER)

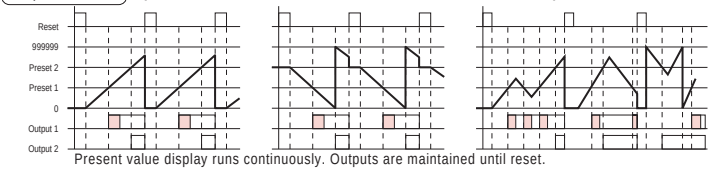
Output : One-shot output from Output 1 / Self-holding output — One-shot output from Output 2 / Self-holding output

Output mode N



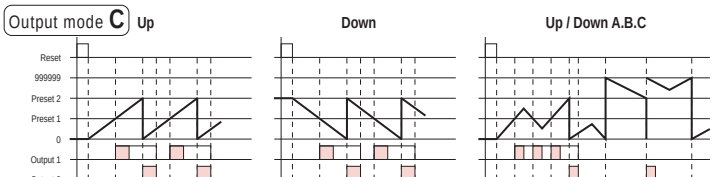
Output and present value display are maintained until reset.

Output mode F



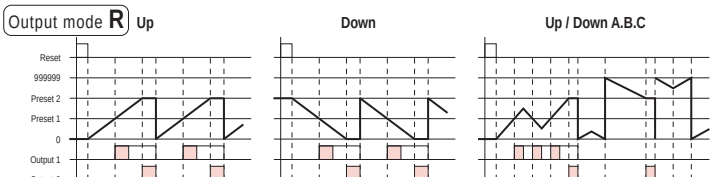
Present value display runs continuously. Outputs are maintained until reset.

Output mode C



Present value is placed in reset start status as soon as count up is reached. The count up is not displayed. Outputs are 1-shot and operate repeatedly. Output 1 is self-holding, and goes off after expiration of the 1-shot period for Output 2. One -shot time periods for Output 1 and 2 are independent.

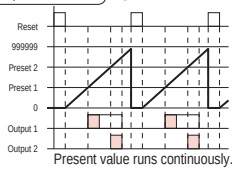
Output mode R



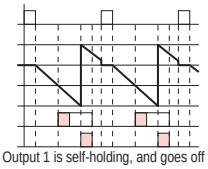
Present value is placed in reset start status as soon as count up is reached. Outputs are 1-shot and operate repeatedly. Output 1 is self-holding, and goes off after expiration of the 1-shot period for Output 2. One -shot time periods for Output 1 and 2 are independent.

Output mode K

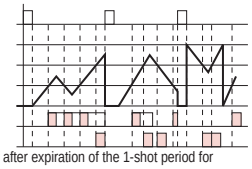
Up



Down



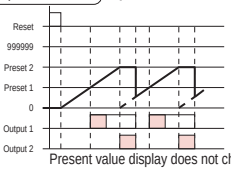
Up / Down A.B.C



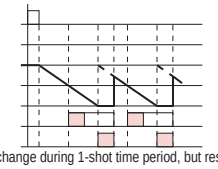
Present value runs continuously. Output 1 is self-holding, and goes off after expiration of the 1-shot period for Output 2. One-shot time periods for Output 1 and 2 are independent.

Output mode P

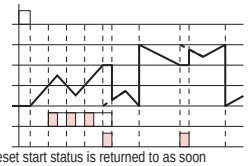
Up



Down



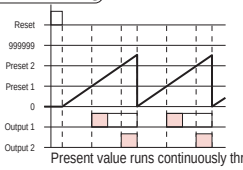
Up / Down A.B.C



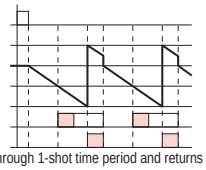
Present value display does not change during 1-shot time period, but reset start status is returned to as soon as count is reached. Outputs are 1-shot and operate repeatedly. Output 1 is self-holding, and goes off after expiration of the 1-shot period for Output 2. One -shot time periods for Output 1 and 2 are independent.

Output mode Q

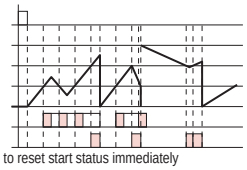
Up



Down



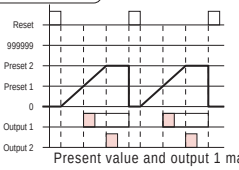
Up / Down A.B.C



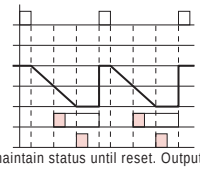
Present value runs continuously through 1-shot time period and returns to reset start status immediately afterward. Outputs are 1-shot and operate repeatedly. Output 1 is self-holding, and goes off after expiration of the 1-shot period for Output 2. One -shot time periods for Output 1 and 2 are independent.

Output mode A

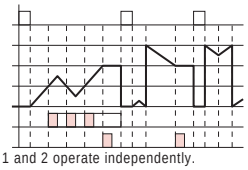
Up



Down



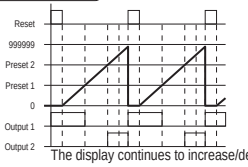
Up / Down A.B.C



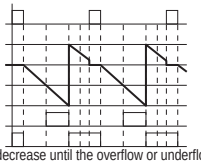
Present value and output 1 maintain status until reset. Output 1 and 2 operate independently.

Output mode L

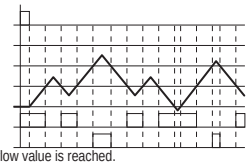
Up



Down



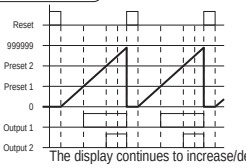
Up / Down A.B.C



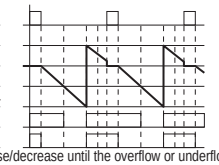
The display continues to increase/decrease until the overflow or underflow value is reached.
Output 1 is held while the present value is less than or equal to Preset 1.
Output 2 is held while the present value is greater than or equal to Preset 2.

Output mode H

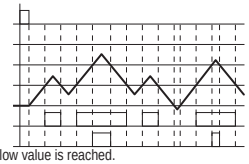
Up



Down



Up / Down A.B.C

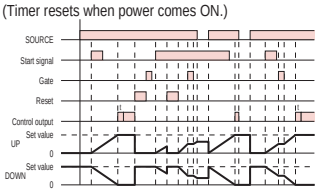


The display continues to increase/decrease until the overflow or underflow value is reached.
Output 1 is held while the present value is greater than or equal to Preset 1.
Output 2 is held while the present value is greater than or equal to Preset 2.

TIMING CHART(TIMER)

A: Signal ON delay 1

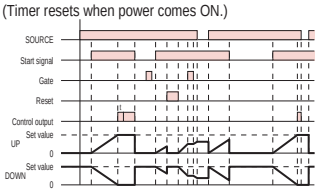
(Timer resets when power comes ON.)



Timing starts when the start signal goes ON. *Note1
The control output is controlled using a sustained or one-shot time period.

A-1 : Signal ON delay 2

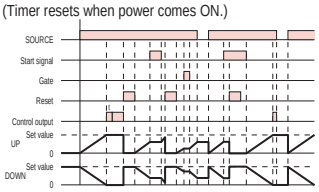
(Timer resets when power comes ON.)



Timing starts when the start signal goes ON, and is reset when the start signal goes OFF. *Note1
The control output is controlled using a sustained or one-shot time period.

A-2 : Power ON delay 1

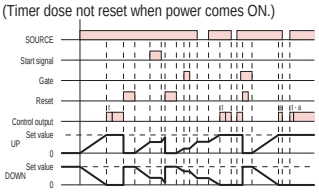
(Timer resets when power comes ON.)



Timing starts when the reset input goes OFF.
The start signal disables the timing function (ie., same function as the gate input).
The control output is controlled using a sustained or one-shot time period.

A-3 : Power ON delay 2

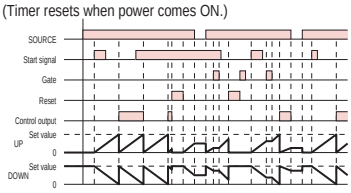
(Timer dose not reset when power comes ON.)



Timing starts when the reset input goes OFF.
The start signal disables the timing function (ie., same function as the gate input).
The control output is controlled using a sustained or one-shot time period.

B : Repeat cycle 1

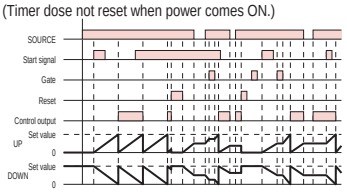
(Timer resets when power comes ON.)



Timing starts when the start signal goes ON. *Note1
The status of the control output is reversed when time is up (OFF at start).

B-1 : Repeat cycle 2

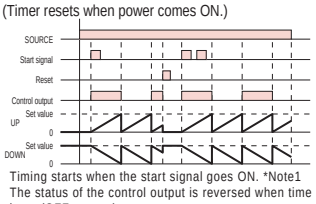
(Timer dose not reset when power comes ON.)



Timing starts when the start signal goes ON. *Note1
The status of the control output is reversed when time is up (OFF at start).

B-2 : Repeat cycle ON start

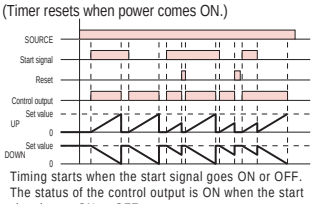
(Timer resets when power comes ON.)



Timing starts when the start signal goes ON. *Note1
The status of the control output is reversed when time is up (OFF at start).

C : Signal ON/OFF delay

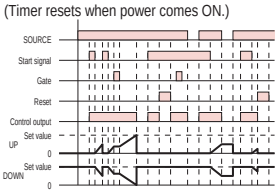
(Timer resets when power comes ON.)



Timing starts when the start signal goes ON or OFF.
The status of the control output is ON when the start signal goes ON or OFF.

D : Signal OFF delay

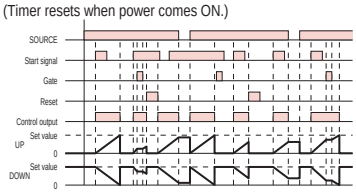
(Timer resets when power comes ON.)



The control output is ON when the start signal is ON (except when the power is OFF or the reset is ON).
The timer is reset when the time is up.

E : Interval

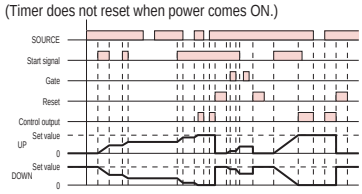
(Timer resets when power comes ON.)



Timing starts when the start signal comes ON. *Note1
The control output is reset when time is up.

F : Cumulative

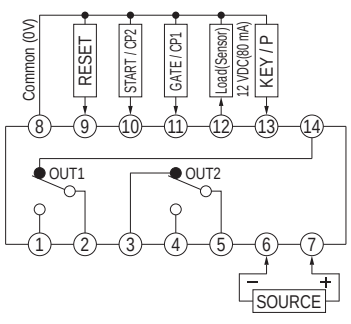
(Timer does not reset when power comes ON.)



Start signal enables timing (timing is stopped when the start signal is OFF or when the power is OFF)
A sustained control output is used.

*Note1. While the start signal is ON, the timer starts when power comes ON or when the reset input goes OFF.

CONNECTION



DIMENSION(mm)