H5DA
MULTI-FUNCTION DIGITAL COUNTER / TIMER
User's Manual

ANLY

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.

=== 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. This product is rated at Class Ⅱ □.

⚠ 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 and etc.). Failure to do so might cause fire or faulty operation.
- Firmly tighten the wires to the socket. Insufficient tightening of the wires to the socket 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. 2.5VA
Life	Mechanical : 5,000,000 times, Electrical : 100,000 times
Ambient temperature	-10～+50℃
Ambient humidity	MAX 85% RH
Weight	Approx. 118g

NAMES AND FUNCTIONS OF FACEPLATE

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

Reset key
Reset the output, or save the set value then back to the operation mode

Upper display
Display present value or setup items

Lower display
Display set value or parameters

< key
Shift cursor or switch mode

∧∨ key
Increment and decrement numeric values, and switch betwen Set1/Set2 display

SETTING PROCEDURE

COUNTER OR TIMER'S VALUES RESET	SWITCH TO THE MODE SETTING STATUS	ON / OFF Key protect	SWITCH TO THE NEXT MODE	SAVE AND BACK TO THE OPERATION STATUS
POWER ON or Reset	< + 3 Sec	∧ + ∨ + 3 Sec	<	Reset

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
2-2 Mode F	2-6 Mode P
2-3 Mode C	2-7 Mode Q
2-4 Mode R	2-8 Mode A

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
7-2 99999.9
7-3 9999.99
7-4 999.999

8.PRESCALE VALUE
8-1 00.001~99.999

9.KEY PROTECTION LEVEL
9-1 Lock function key < + 3Sec
9-2 Lock reset key Reset
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 99H99M59S
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 < + 3Sec
6-2 Lock reset key Reset
6-3 Lock preset value key ∧∨<
6-4 Lock all key

7.OUTPUT CONTACT (Only for H5DA-11 and H5DA-11D)
7-1 2C
7-2 1A1C

8.NPN/PNP INPUT MODE
8-1 nPn
8-2 PnP

9.FUNCTION MODE
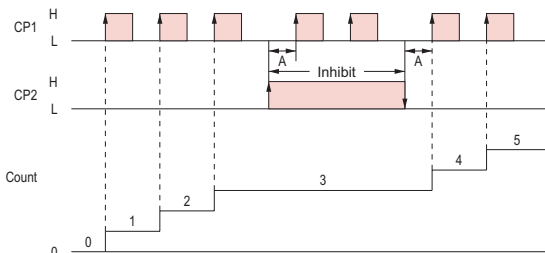| |
|---|
| 9-1 Counter |
| 9-2 Timer |

Input Modes and Count Value

Please note: 1. "A" indicates minimum signal width; "B" indicates 1/2 of minimum signal width. Signals may not be counted if the minimums for A and B are not met.
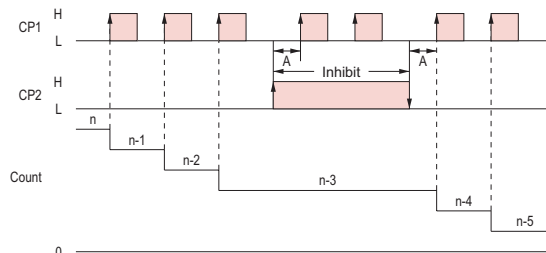
2. H and L

Signal	No-voltage input	Voltage input
H	Short circuit	4.5 ~ 30 VDC
L	Open circuit	0 ~ 2 VDC

Up (increment) mode - Count at rising edge
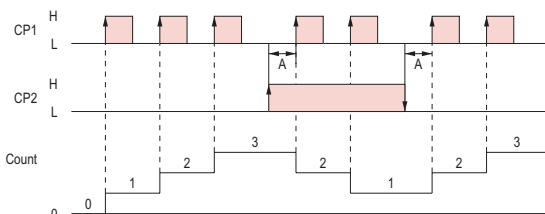

Down (decrement) mode - Count at rising edge

Up (increment) mode - Count at falling edge
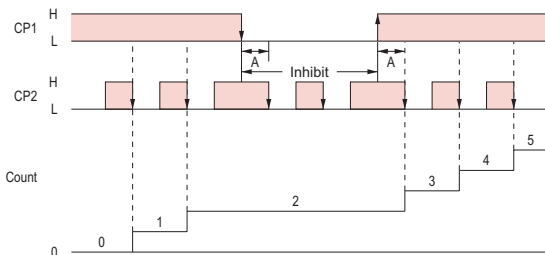
Down (decrement) mode - Count at falling edge
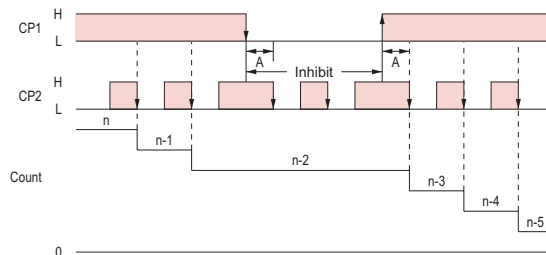
Up/Down A Command input mode

Up/Down B Individual input mode
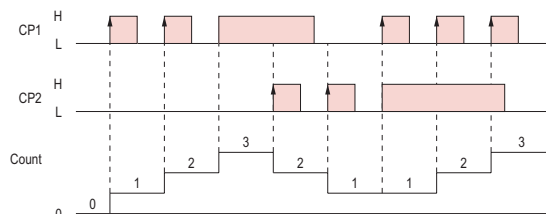
Up/Down C Phase difference input mode (See note 1.)
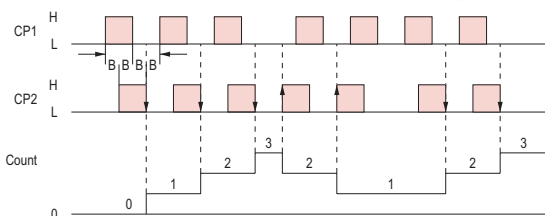
Note 1. Set the same counting speed for CP1 and CP2 when in Up/Down C mode.

Output :

One-shot output from Output 1

Self-holding output

One-shot output from Output 2

Self-holding output

Mode **N** Output and present value display are maintained until reset.
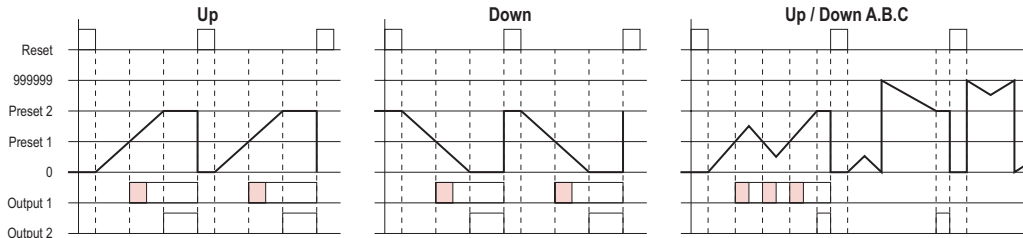
Mode **F** Present value display runs continuously. Outputs are maintained until reset.
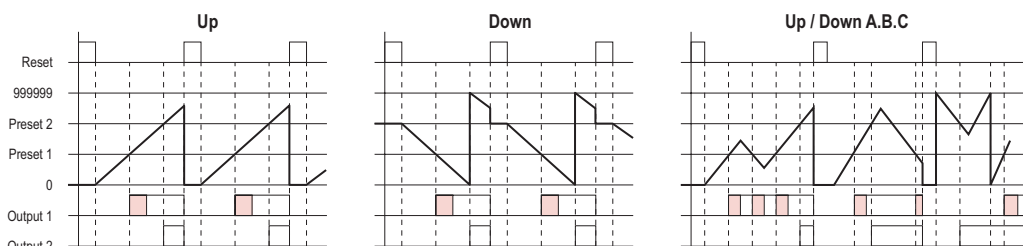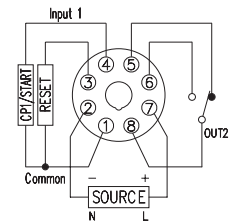

CONNECTION

N type(Surface Mounting):
Use only P2CF-08(8-pin), PF085A(8-pin) or PF113A(11-pin) Socket
Y type(Flush Mounting):
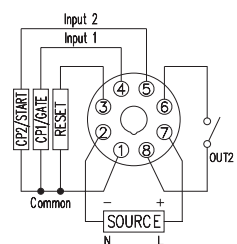Use only Y50 Frame & US-08(8-pin), P3G-08(8-pin) or P3G-11(11-pin) Socket

Note 1: For NPN input, select b-1 for Counter and 8-1 for Timer, Common = 0V
Note 2: For PNP input, select b-2 for Counter and 8-2 for Timer, Common = +V

H5DA-8

H5DA-8B

TIMING CHART(COUNTER)	CONNECTION

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.
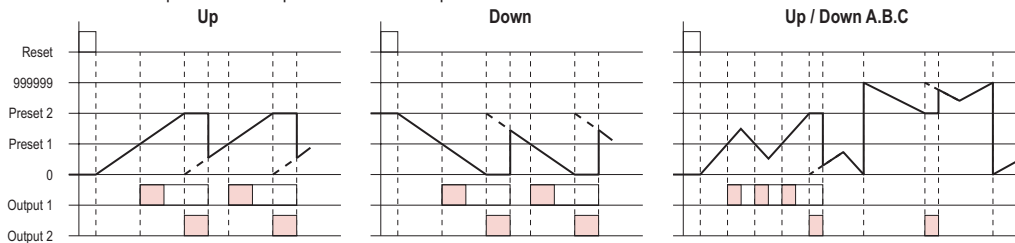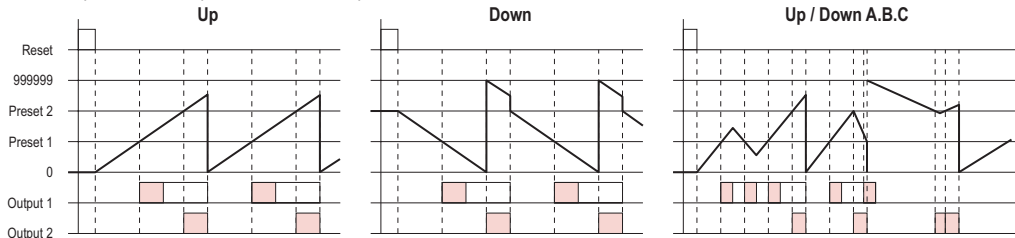
Up | Down | Up / Down A.B.C

Reset
999999
Preset 2
Preset 1
0
Output 1
Output 2

H5DA-8M
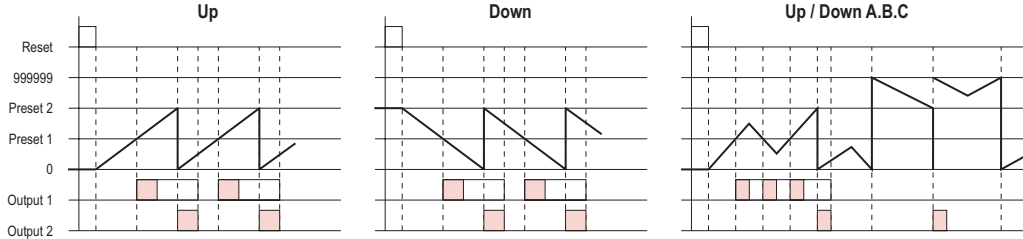
Mode R — Present value is placed in reset start status as soon as count up is reached. Outputs are 1-shot and operate repeatedly. Output 1 is self-holding, and goes off after expiration of the 1-shot period for Output 2. One-shot time periods for Output 1 and 2 are independent.
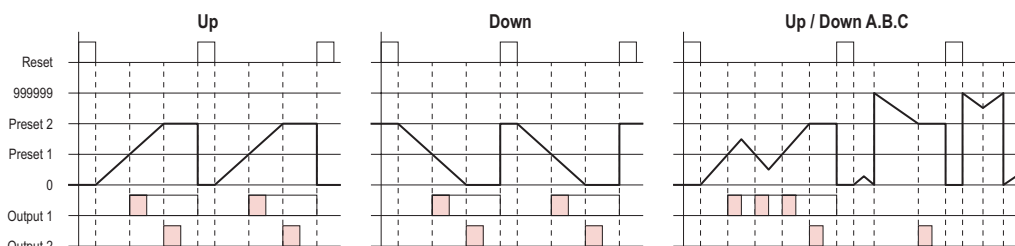
Up | Down | Up / Down A.B.C

Reset
999999
Preset 2
Preset 1
0
Output 1
Output 2

H5DA-11
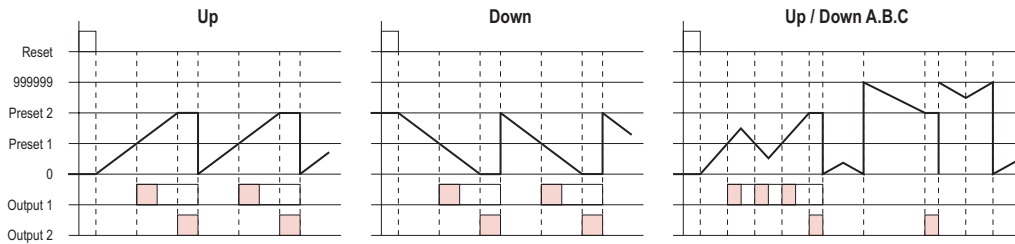
Mode K — Present value runs continuously. Output 1 is self-holding, and goes off after expiration of the 1-shot period for Output 2. One-shot time periods for Output 1 and 2 are independent.

Up | Down | Up / Down A.B.C

Reset
999999
Preset 2
Preset 1
0
Output 1
Output 2

H5DA-11D
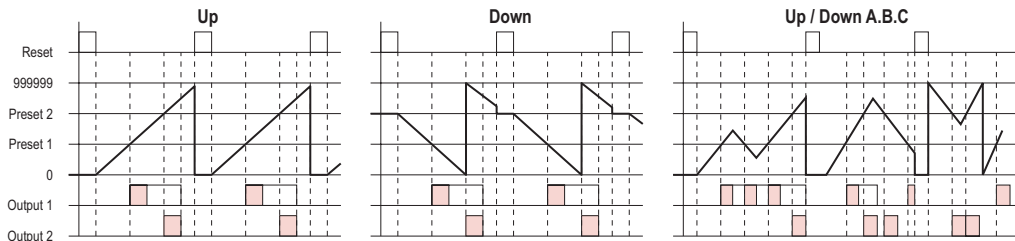
Mode P — Present value display does not change during 1-shot time period, but reset start status is returned to as soon as count is reached. Outputs are 1-shot and operate repeatedly. Output 1 is self-holding, and goes off after expiration of the 1-shot period for Output 2. One-shot time periods for Output 1 and 2 are independent.
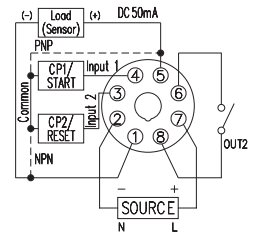
Up | Down | Up / Down A.B.C

Reset
999999
Preset 2
Preset 1
0
Output 1
Output 2

H5DA-11M

K / P : Key Protection

Mode Q — 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.

Up | Down | Up / Down A.B.C

Reset
999999
Preset 2
Preset 1
0
Output 1
Output 2

Schematic of H5DA-8M & H5DA-11M with sensor or contact.

NPN type

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

Up | Down | Up / Down A.B.C

Reset
999999
Preset 2
Preset 1
0
Output 1
Output 2
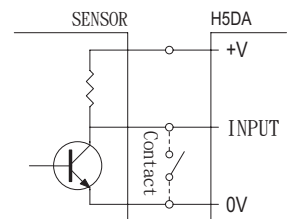
PNP type
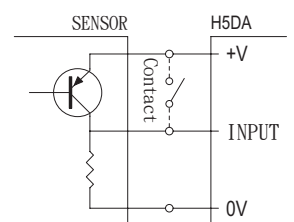
TIMING CHART(TIMER)

A — Signal ON delay 1
(Timer resets when power comes ON.)
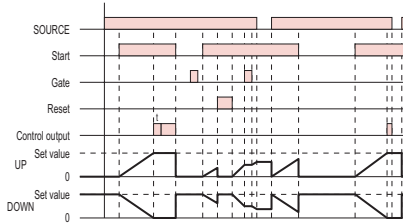

SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)
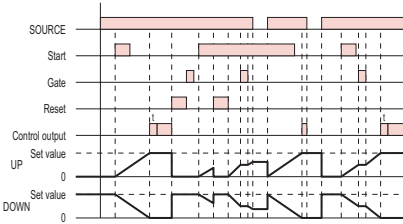
Timing starts when the start signal goes ON. *Note1
The control output is controlled using a sustained or one-shot time period.
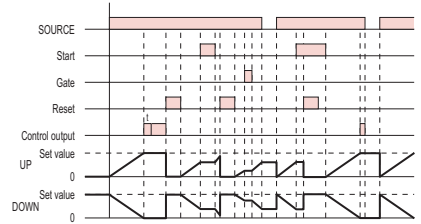
A-1 — Signal ON delay 2
(Timer resets when power comes ON.)

SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)

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.)

SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)

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.)
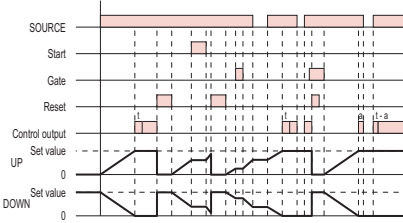
SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)

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.)
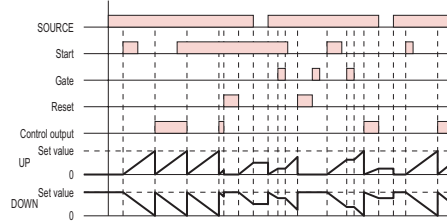
SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)

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.)
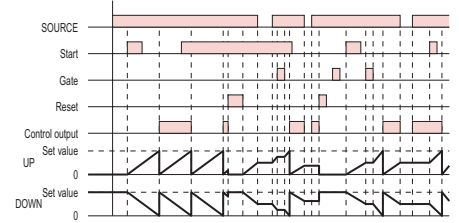
SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)

Timing starts when the start signal goes ON. *Note1
The status of the control output is reversed when time is up (OFF at start).
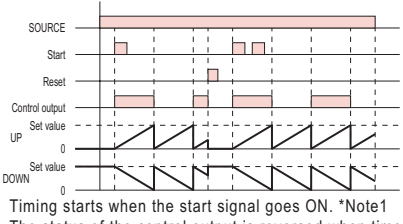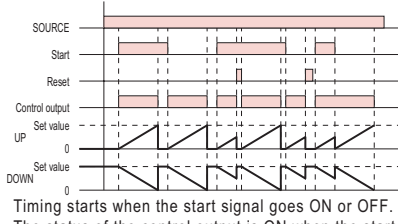
B-2 — Repeat cycle ON start
(Timer resets when power comes ON.)

SOURCE, Start, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)

Timing starts when the start signal goes ON. *Note1
The status of the control output is reversed when time is up (OFF at start).
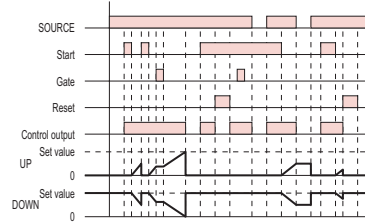
C — Signal ON/OFF delay
(Timer resets when power comes ON.)

SOURCE, Start, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)

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.)

SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)

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.)

SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)
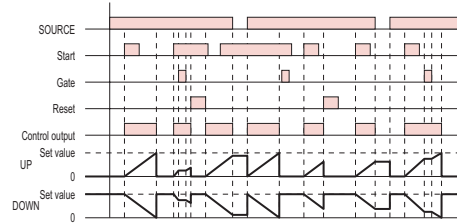
Timing starts when the start signal comes ON. *Note1
The control output is reset when time is up.

F — Cumulative
(Timer does not reset when power comes ON.)

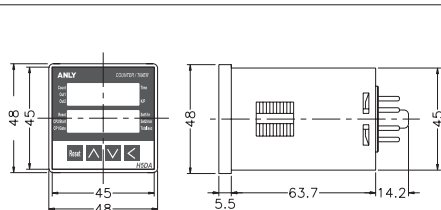SOURCE, Start, Gate, Reset, Control output, UP (Set value / 0), DOWN (Set value / 0)
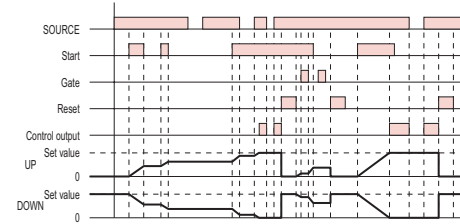
Start signal enables timing (timing is stopped when the start signal is OFF or when the power is OFF)
A sustained control output is used.

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

DIMENSION(mm)

H5DA

48, 45, 48, 45
5.5, 63.7, 14.2
45, 48
$45^{+0.5}_{0}$
$45^{+0.5}_{0}$

H5DA + Y-50 + US-08

ø 3.3 X 2
48, 48
48, 51, 59
5.5, 15, 48.7, 35.7
13, 30, 45
$45^{+0.5}_{0}$
$45^{+0.5}_{0}$