

Autonics COUNTER/TIMER CT SERIES

M A N U A L



CTS Series CTY Series CTM Series

Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

- *Please keep these instructions and review them before using this unit.
- *Please observe the cautions that follow:
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- *The following is an explanation of the symbols used in the operation manual.
- ⚠caution: Injury or danger may occur under special conditions.

Warning

1. In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information required.
It may result in fatal damage, fire or human injury
2. This unit must be mounted on the Panel.
It may cause electric shock.
3. Do not connect terminals when it is power on.
It may cause electric shock.
4. Do not disassemble and modify this unit. Please contact us if it is required.
It may cause electric shock and a fire.

Caution

1. This unit shall not be used outdoors.
It might shorten the life cycle of the product or cause electric shock.
2. When wire connection, AWG 20(0.50mm²) should be used and screw bolt on terminal block with 0.74N-m to 0.90N-m strength.
It may cause malfunction or a fire due to contact failure.
3. Please observe the rated specifications.
It might shorten the life cycle of the product and cause a fire.
4. Do not use the load beyond the rated switching capacity of Relay contact.
It may cause insulation failure, contact melt, contact failure, relay broken, fire etc.
5. In cleaning the unit, do not use water or an organic solvents.
It may cause electric shock or a fire.
6. Do not use this unit at place where there are flammable or explosive gas, humidity, direct ray of the sun, radiant heat, vibration, impact etc.
It may cause a fire or explosion.
7. Do not inflow dust or wire dregs into the unit.
It may cause a fire or mechanical trouble.

Ordering information

CT 6 M - 2P 4 T	
Item	
Communication	Blank None T RS485
Power supply	4 100-240VAC 50/60Hz 2 24VAC 50/60Hz / 24-48VDC
Output	2P Dual preset 1P Single preset I Indicator
Size	S DIN W48×H48mm Y DIN W72×H36mm M DIN W72×H72mm
Digit type	4 9999(4 Digit) 6 999999(6 Digit)
CT	Counter/Timer

*4 Digit type does not exist in the indicator type.

Specifications

Series	CTS	CTY	CTM
Digit	4	6	6
Model	Dual Preset	CT4S-2P□ CT6S-2P□ CT6Y-2P□	CT6M-2P□
	Single Preset	CT4S-1P□ CT6S-1P□ CT6Y-1P□	CT6M-1P□
	Indicator	CT6S-I□ CT6Y-I□	CT6M-I□
Digit Size	Count value	11mm 10mm 10mm	13mm
	Preset value	8mm 7mm 7mm	9mm
Power Supply	AC Power	100-240VAC 50/60Hz	
	AC/DC Power	24VAC 50/60Hz / 24-48VDC	
Allowable voltage range	90 to 110% of rated voltage(AC Power type)		
Power consumption	AC Power	Max. 12VA	
	AC/DC Power	AC: Max. 10VA / DC: Max. 8W	
CPS of INA, INB Selectable 1cps, 30cps, 1kcps, 5kcps, or 10kcps			
Min. input signal width	Counter	Reset signal: Selectable 1ms or 20ms	
	Timer	INA, INH, RESET: Selectable 1ms or 20ms	
Input Selectable voltage input or No-voltage input -Voltage input: input impedance: 5.4kΩ, 'H' level: 5-30VDC, 'L' level: 0-2VDC -No-voltage input: short-circuit impedance: Max. 1kΩ, Residual voltage: Max. 2VDC			
One-shot output Selectable 0.01s to 99.99s			
Control output	Without com.	Contact output	Dual preset: SPST(1a) 2EA Single preset: SPDT(1c) 1EA
		Solid state output	Dual preset: 1NPN open collector Single preset: 1NPN open collector
	Com.	Contact output	Dual preset: SPST(1a) 2EA Single preset: SPDT(1c) 1EA
		Solid state output	Dual preset: 3NPN open collector Single preset: 2NPN open collector
Capacity Contact output: 250VAC 5A resistive load / 250VAC 3A resistive load / 250VAC 5A resistive load Solid state output: Max. 30VDC, Max. 100mA			
External sensor power 12VDC ±10%, Max. 100mA			
Memory retention 10years(When using non-volatile semiconductor memory type)			
Timer Repeat error, set error, voltage error, temperature error—Power ON Start: Max. ±0.01% ±0.05 sec —Signal Start: Max. ±0.01% ±0.03 sec			
Insulation resistance Min. 100MΩ (at 500VDC megger)			
Dielectric strength 2,000VAC 50/60Hz for 1minute			
Noise resistance(AC Power) ±2kV the square wave noise(pulse width:1μs) by the noise simulator			
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz(1 min.) in each of X, Y, Z direction for 1 hour	
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z direction for 10 minutes	
Shock	Mechanical	300m/s ² (Approx. 30G) 3 times at X, Y, Z direction	
	Malfunction	100m/s ² (Approx. 10G) 3 times at X, Y, Z direction	
Relay Life cycle	Mechanical	Min. 10,000,000 times	
	Electrical	Min. 100,000 times	
Protection IP65(Front panel only)			
Environment Ambient temperature: -10 to 55°C, Storage temperature: -25 to 65°C Ambient humidity: 35 to 85%RH, Storage humidity: 35 to 85%RH			
Approval CE, UL			
Unit weight Approx. 159g Approx. 149g Approx. 253g			

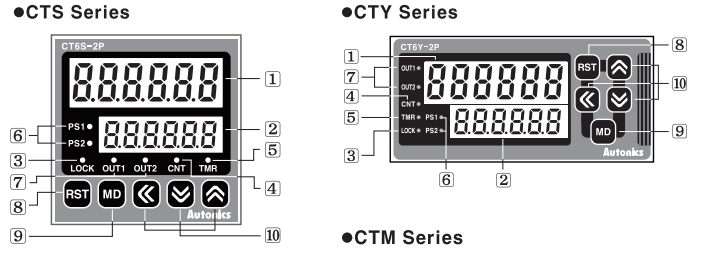
Communication specification

Protocol	Modbus RTU(16bit CRC)
Connection method	RS485
Application standard	Compliance with EIA RS485
Number of connections	31, it is available to set address 1 to 127
Communication method	Half Duplex
Synchronous method	Asynchronous
Communication distance	within max. 800m
Communication speed	2,400/4,800/9,600/19,200/38,400bps(Factory default: 9,600bps)
Response waiting time	5 to 99ms(Factory default: 20ms)
Start bit	1bit(Fixed)
Data bit	8bits(Fixed)
Parity bit	None, Even, Odd(Factory default: None)
Stop bit	1, 2bit(Factory default: 2bit)

Upgraded functions

- Available to set the decimal point position of preset value to 5 decimal place.
- Built-in Modbus communication function. (Communication model)
- Available to set the One-shot output time in 10ms. (0.01sec to 99.99sec)
- Increase contact capacity to 5A(CTS, CTM series).
- Available to set Count Start Point. (Initial value)
- Improved visibility with high luminance LED.
- Selectable memory protection function in the indicator.
- Added BATCH counter function(CTM series)
- Added Counter UP-1(Up-1)/UP-2(Up-2)/dn-1(Down-1)/dn-2(Down-2) input modes.
- Added Counter Total(TOTAL)/Hold d(HOLD) operation modes in the indicator.
- Added Timer Total(TOTAL)/Hold d(HOLD)/on t d(On Time Display) operation modes in the indicator.
- Added Timer Int 2(INT2)/n f d(NFD)/n f d. 1(NFD.1)/n t d(INTG) output modes.
- Added Timer range 999,999s / 9999m59s / 99999.9h.

Front panel identification

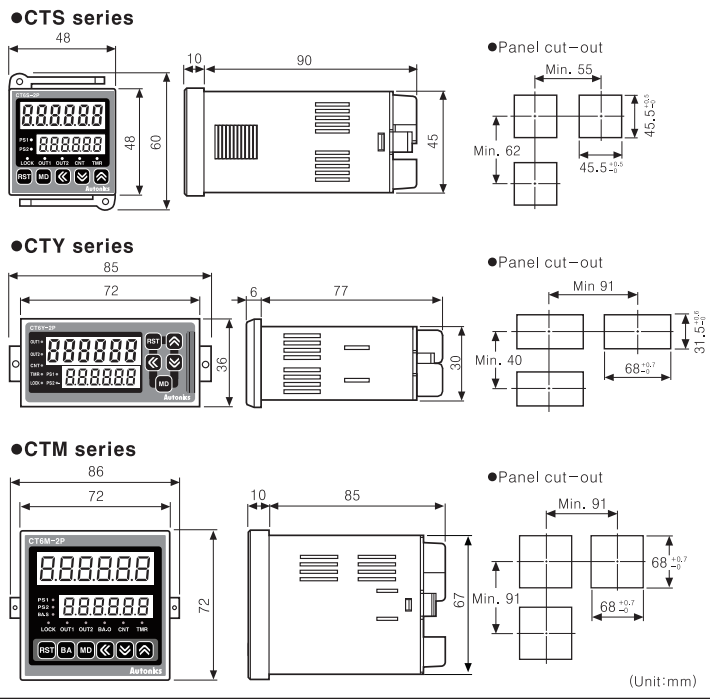


- 1 Count indicator(Red LED)
 - Run mode: Count mode—Indicates count value, Timer mode—Indicates time progressing.
 - Function setting mode: Indicates function setting mode.
- 2 Preset value indicator (Yellow-Green LED)
 - Run mode: Indicates preset value.
 - Function setting mode: Indicates setting value.
- 3 Key Lock: Lights when setting key lock.
- 4 The operation of counter indicator
 - TMR LED flashes when the timer is operating.
 - TMR LED lights when the operating time stops.
- 5 The operation of timer indicator
 - TMR LED flashes when the timer is operating.
 - TMR LED lights when the operating time stops.
- 6 Check preset value and display change of it
 - PS1 LED lights when checking or changing the setting value1.
 - PS2 LED lights when checking or changing the setting value2.
- 7 Output(OUT1, OUT2) indicator
 - OUT1 lights when output1 is ON.
 - OUT2 lights when output2 is ON.
- 8 Reset key
 - By pressing key in Run mode, the count value is initialized and output is returned.
 - By pressing key in BATCH counter mode, BATCH count value resets.
- 9 Mode key
 - By pressing key for 3sec (parameter setting)/ 5sec (communication) in RUN mode, it moves to function setting mode.
 - By pressing key in function setting mode, select function setting mode. By pressing key over 3 sec., it moves to Run mode.
 - By pressing key over 1 sec. in function setting checking mode, it moves to Run mode.
- 10 Set key
 - Ⓒ To enter into setting value(PS1, PS2) change status and shift digit of setting value(PS1,PS2).
 - Ⓓ To decrease setting value in setting value change mode, change setting value in function setting mode, move down checked value in function setting check mode.
 - Ⓔ To increase setting value in setting value change mode, change setting value in function setting mode, move up checked value in function setting check mode. By pressing key over 1 sec. in Run mode, enters into function setting check mode.
- 11 BATCH key
 - By pressing key in run mode to enter into BATCH counter indication mode.
- 12 BATCH output indicator(Red LED)
- 13 BATCH setting value checking and changing indicator(Yellow-Green LED)
 - Lights when checking and changing BATCH setting value.

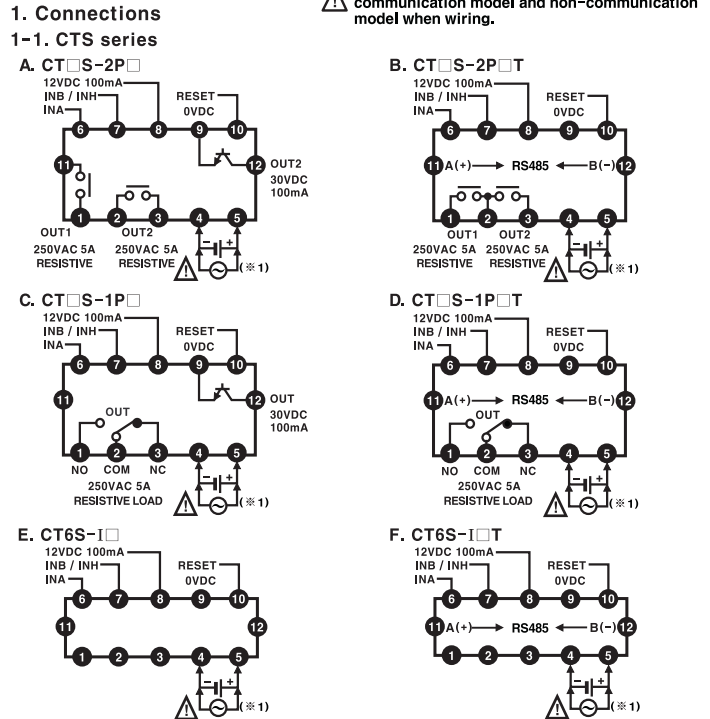
Model	Changed	Notice
CT6Y-1P		
CT6S-1P	PS2→PS	There are no PS1, OUT1 LEDs.
CT4S-1P	OUT2→OUT	
CT6M-1P		
CT6Y-1		
CT6S-1	PS2→PS	There are no PS1, OUT1 LEDs.
CT6M-1		

*The indicator type does not exist in CT4S model.

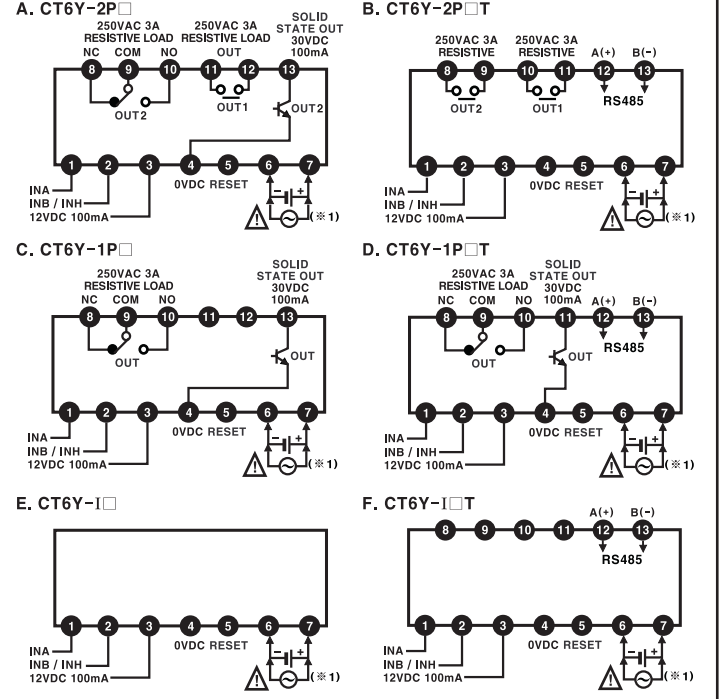
Dimensions



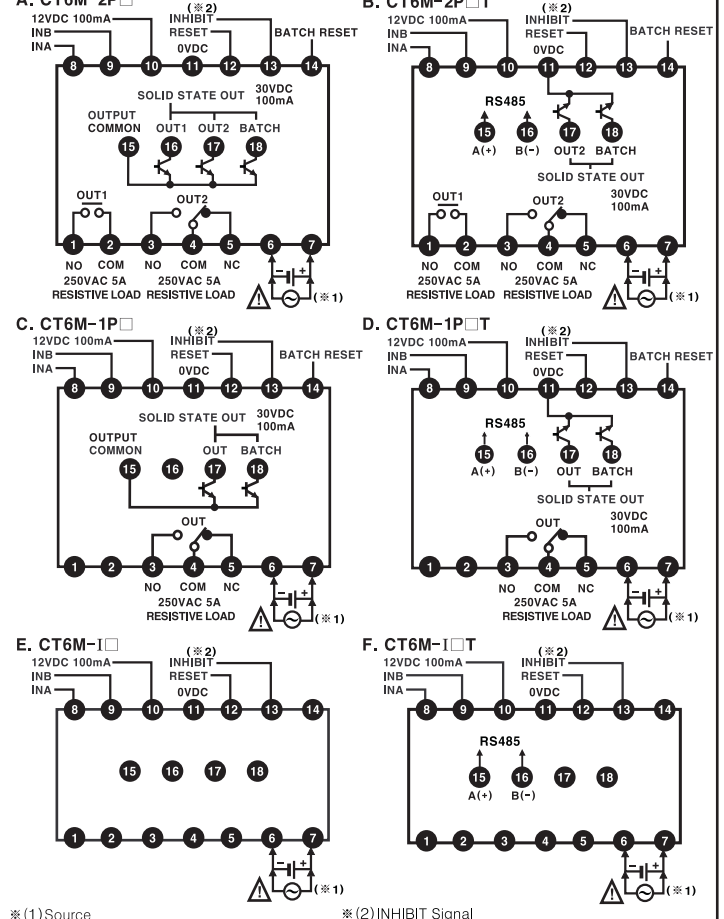
Guide for connection



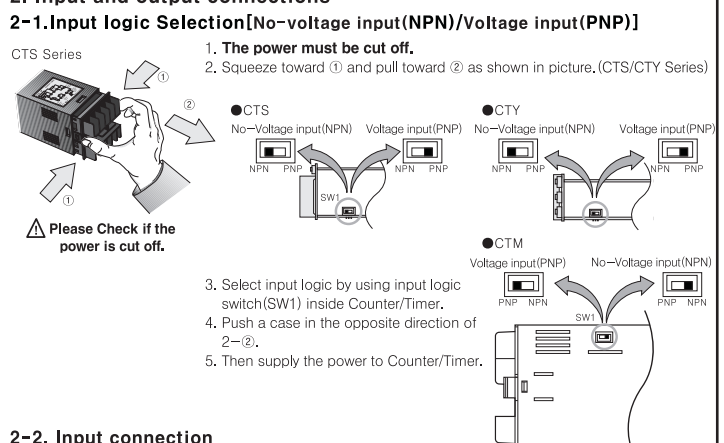
1-2. CTY series



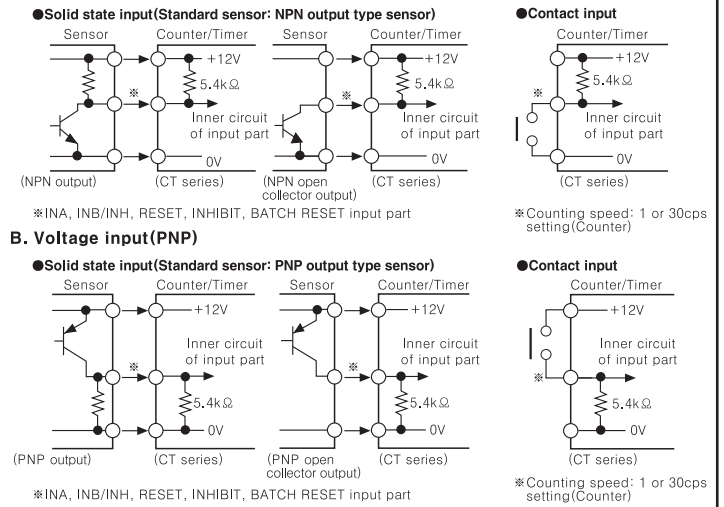
1-3. CTM series



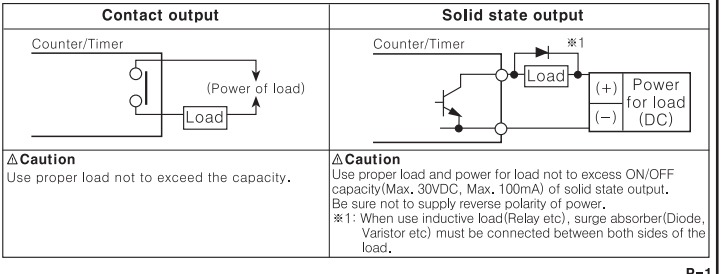
2. Input and output connections



2-2. Input connection



2-3. Output connection



Timer mode	
1. Parameter setting (Key: To select setting mode, Key: To change setting value)	
Setting mode	How to set
Counter/Timer (C-T)	CoUn ← ti nE * CoUn: COUNTER ti nE: TIMER
Timer range (Hour/Min/Sec)	6Digit type
	4Digit type
UP/DOWN mode (U-d)	UP ↔ dn * UP: Time proceeds from 0 to the setting value. dn: Time proceeds from the setting value to 0.
Indication mode (dSPn)	to tRL ↔ HoLd ↔ ont.d * Used for the indicator only. * It is added that the feature which set the setting time when selecting HoLd or ont.d (Refer to 3. Timer operation for the indicator).
Memory protection (dRtR)	CLr ↔ rEC * Used for the indicator only. * CLr: Initializes time value when power is off. * rEC: Memorizes time value at the moment of power off.
Output mode (oUt.n)	and ↔ and.1 ↔ and.2 ↔ FLK.1 ↔ FLK.2 ↔ i nE i nE ↔ nFd.1 ↔ nFd.2 ↔ nFd.3 ↔ i nE.1 ↔ i nE.2
OUT2 output time (oUt.2)	key: To shift flashing digit position of OUT2 output time value. key: To change OUT2 output time value. *Set OUT2 one-shot output time. *Setting range: 0.01 to 99.99sec. *HoLd is displayed by pressing key 4 times.
OUT1 output time (oUt.1)	key: To shift flashing digit position of OUT1 output time value. key: To change OUT1 output time value. *Set OUT1 one-shot output time. *Setting range: 0.01 to 99.99sec., Hold *HoLd is displayed by pressing key 4 times.
Input logic (SiU)	nPN: No-Voltage input * Check input logic value (PNP, NPN). PNP: Voltage input
Input signal time (i nE)	* CTS/CTY: Set min. external INA, INH, RESET signal width. * CTM: Set min. external INA, RESET, INHIBIT, BATCH RESET signal width.
Lock key (LoLk)	* LoFF: Cancellation of the lock mode. (Front Lock LED OFF) LoL.1: Locks key. (Front Lock LED ON) LoL.2: Locks keys. (Front Lock LED ON) LoL.3: Locks keys. (Front Lock LED ON)

2. Output operation mode

Output mode	Time chart	Operation
and (OND)	Signal ON Delay (Power Reset) 	1) Time starts when INA signal turns on. When INA signal turns off, time resets. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) Control output operates as retained or one-shot output.
	Signal ON Delay 1 (Power Reset) 	1) Time starts when INA signal turns on, if INA signal is applied repeatedly, only initial signal is recognized. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) Control output operates as retained or one-shot output.
and.1 (OND.1)	Signal ON Delay 1 (Power Reset) 	1) Time starts when power turns on. (There is no INA function.) 2) Time resets when reset turns on. Time starts when reset turns off. 3) Control output operates as retained or one-shot output. 4) It memorizes display value at the moment of power off.
	Power ON Delay (Power Hold) 	1) Time starts when power turns on. (There is no INA function.) 2) Time resets when reset turns on. Time starts when reset turns off. 3) Control output operates as retained or one-shot output. 4) It memorizes display value at the moment of power off.
FLK (FLK)	Flicker (Power Reset) 	1) Time starts when INA signal turns on. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) Control output operates as retained output, output turns off for the T.off time and turns on for the T.on time repeatedly. Ta + Tb = T.off setting time 4) The T.on time and T.off time must be set individually. 5) In case of using the contact output, min. setting time must be set over 100ms.
	Integration Time (Power Reset) 	1) Time is progressing while INA input is ON. 2) Time progress stops while INA input is OFF. 3) When it reaches the setting time, output is ON.

FLK.1 (FLK.1)	Flicker 1 (Power Reset) 	1) Time starts when INA signal turns on. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) Control output operates as retained output. 4) In case of using the contact output, min. setting time must be set over 100ms.
	One-Shot output 	1) Time starts when INA signal turns on. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) Control output operates as one-shot output. 4) In case of using the contact output, min. setting time must be set over 100ms.
FLK.2 (FLK.2)	Flicker 2 (Power Hold) 	1) Time starts when INA signal turns ON and the display value at the moment when power is off is memorized. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) Control output operates as retained output. 4) Control output will be reversed when it reaches setting time. (At the initial start, OUT2 control output is OFF). 5) In case of using the contact output, min. setting time must be set over 100ms.
	Hold output 	1) Time starts when INA signal turns ON and the display value at the moment when power is off is memorized. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) Control output operates as one-shot output. 4) In case of using the contact output, min. setting time must be set over 100ms.
i nE (INT)	Interval (Power Reset) 	1) Control output turns ON and time starts when INA signal turns ON. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) When it reaches setting time, indication value and control output are reset automatically. 4) Control output is ON when time is progressing.
	Interval 1 (Power Reset) 	1) Control output turns ON and time starts when INA signal turns ON. 2) When INA signal is on: Power ON Time Start is operated Power OFF Time Start is operated 3) When it reaches setting time, indication value and control output are reset automatically. 4) Control output is ON when time is progressing.
i nE.1 (INT.1)	Interval 1 (Power Reset) 	1) Time starts when INA input is ON and resets when INA input is OFF. 2) INA input is ON, OUT1 output is ON during T1 (HOLD) or T1. 3) When it reaches setting time 1, display value resets and OUT2 output is ON during T2 (HOLD) or T2 output time. * Output turns OFF when reaching the setting time even if one-shot time is longer than setting time.
	Interval 2 (Power Reset) 	1) Time starts when INA input is ON and resets when INA input is OFF. 2) INA input is ON, OUT1 output is ON during T1 (HOLD) or T1. 3) When it reaches setting time 1, display value resets and OUT2 output is ON during T2 (HOLD) or T2 output time. * Output turns OFF when reaching the setting time even if one-shot time is longer than setting time.
oFd (OFD)	Signal Off Delay 1 (Power Reset) 	1) If INA is ON, control output remains ON. (except when power is off and reset is on) 2) When INA signal is OFF, time processes. 3) When it reaches setting time, indication value and control output are reset automatically.
	On-Off Delay (Power Reset) 	1) When INA input is ON, output is ON and time is progressing, then output is OFF after On_Delay time. 2) When INA input is OFF, output is ON and time is progressing, then output is OFF after Off_Delay time. 3) If INA input is OFF within On_Delay time, step 2 starts again. 4) If INA input is ON within Off_Delay time, step 1 starts again.
nFd.1 (NFD.1)	On-Off Delay 1 (Power Reset) 	1) When INA input turns ON, time progresses and output turns ON after On_Delay time. 2) When INA input turns OFF, time progresses and output turns OFF after Off_Delay time. 3) If INA input turns OFF within On_Delay time, output will turn ON and step 2 operate. 4) If INA input turns ON within Off_Delay time, output will turn OFF and step 1 operate.
	Integration Time (Power Reset) 	1) Time is progressing while INA input is ON. 2) Time progress stops while INA input is OFF. 3) When it reaches the setting time, output is ON.

*Power Reset: There is no memory protection. (Initializes the display value and the output status when re-supplying the power.)
 Power Hold: There is memory protection. (It memorizes the status of power off. When re-supplying the power, it returns the memorized display value and the output status.)

3. Timer operation for the indicator		
to tRL (TOTAL)	When memory protection setting is OFF 	1) Time starts when INA input is ON. 2) Setting value is initialized when Reset input is ON. 3) Time progress stops when INHIBIT input is ON. 4) Resets when power is OFF.
	When memory protection setting is ON 	1) Time starts when INA input is ON. 2) Setting value is initialized when Reset input is ON. 3) Time progress stops while INHIBIT input is ON. 4) Display value at the moment of power OFF is memorized.
HoLd (HOLD)	When memory protection setting is OFF 	1) Time progresses when INA input is ON. 2) Time progress stops while INA input is OFF. 3) When time reaches setting time, display value will stop and flash. 4) When reset input is applied, display value is initialized. 5) Resets when power is OFF.
	When memory protection setting is ON 	1) Time progresses when INA input is ON. 2) Time progress stops while INA input is OFF. 3) When time reaches setting time, display value will stop and flash. 4) When reset input is applied, display value is initialized. 5) Display value the moment when power is OFF is memorized.
ont.d (On Time Display)	When memory protection setting is OFF 	* ON time indicate mode of INA input 1) Time reset start operates when INA input turns ON. 2) Time progress stops while INA input is OFF. 3) When time progress stops and power is off, the display value is initialized. 4) If progress time is greater than setting time when INA input turns off, display value flashes and operation stops until reset signal is applied.
	When memory protection setting is ON 	* ON time indicate mode of INA input 1) Time reset start operates when INA input turns ON. 2) Time progress stops while INA input is OFF. 3) When time progress stops and power is off, the display value is memorized. 4) If progress time is greater than setting time when INA input turns off, display value flashes and operation stops until reset signal is applied.

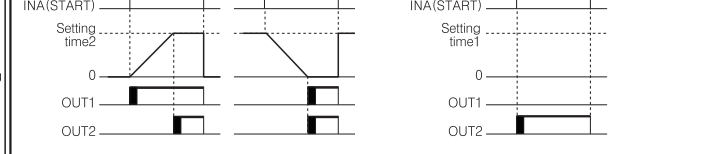
4. Timer '0' time setting

4-1. Available output operation mode to set '0' time setting

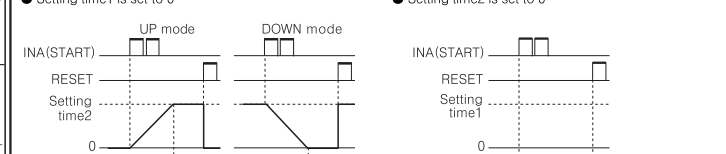
and, and.1, and.2, nFd, nFd.1

4-2. Operation according to output mode (at 0 time setting)

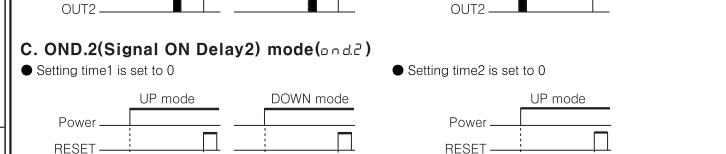
A. OND (Signal ON Delay) mode (and)



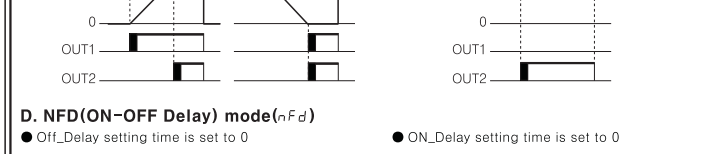
B. OND.1 (Signal ON Delay 1) mode (and.1)



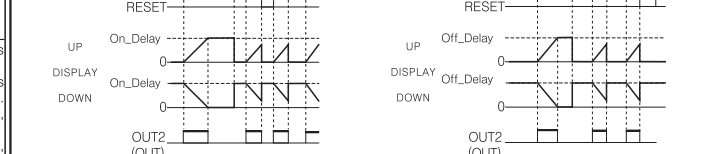
C. OND.2 (Signal ON Delay 2) mode (and.2)



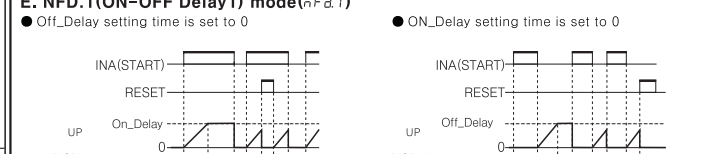
D. NFD (ON-OFF Delay) mode (nFd)



E. NFD.1 (ON-OFF Delay 1) mode (nFd.1)



F. NFD.2 (ON-OFF Delay 2) mode (nFd.2)



5. Setting value1 (PS1) is greater than Setting value2 (PS2)

In OND (and), OND.1 (and.1) or OND.2 (and.2) output mode

-UP mode: When the timer setting value 1 is greater than the setting value 2, OUT1 output does not turn ON.

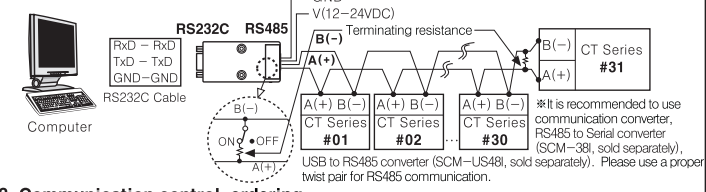
-DOWN mode: When the timer setting value 1 is greater than the setting value 2, OUT1 output does not turn ON. If the setting value 1 is same as the setting value 2 and START signal is applied, OUT1 output turns ON immediately.

Communication mode

1. Parameter setting

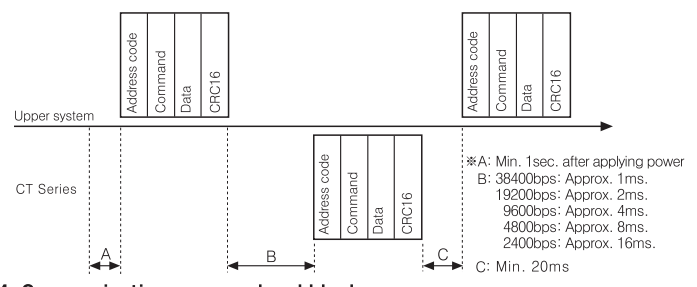
Table with columns: Setting mode, How to set. Includes settings for Com. address, Com. speed, Com. parity, Com. stop bit, Response waiting time, Com. write.

2. Application of system organization



3. Communication control ordering

- 1. The communication method is Modbus RTU(PI-MBUS-300-REV.J.).
2. After 1sec. of power supply into the high order system, it starts to communicate.
3. Initial communication will be started by the high order system.



4. Communication command and block

4-1. Read Coil Status(Func 01 H), Read Input Status(Func 02 H)

Query and response tables for Read Coil Status and Read Input Status, including Slave Address, Function, Starting Address, No. of Points, and Error Check.

4-2. Read Holding Registers(Func 03 H), Read Input Registers(Func 04 H)

Query and response tables for Read Holding Registers and Read Input Registers, including Slave Address, Function, Starting Address, No. of Points, and Error Check.

4-3. Force Single Coil(Func 05 H)

Query and response tables for Force Single Coil, including Slave Address, Function, Coil Address, Force Data, and Error Check.

4-4. Preset Single Register(Func 06 H)

Query and response tables for Preset Single Register, including Slave Address, Function, Register Address, Preset Data, and Error Check.

4-5. Preset Multiple Registers(Func 10 H)

Query and response tables for Preset Multiple Registers, including Slave Address, Function, Starting Address, No. of Register, Byte Count, Data, and Error Check.

4-6. Application

Read Coil Status, Read Input Register, and application examples with query and response data.

5. Modbus Mapping Table

5-1. Reset/Output

Table mapping No. (Address), Func, Explanation, Setting range, and Notice for Reset and Output functions.

5-2. Terminal input status

Table mapping No. (Address), Func, Explanation, Setting range, and Notice for terminal input status functions.

5-3. Product Information

Table mapping No. (Address), Func, Explanation, Setting range, and Notice for product information functions.

5-4. Monitoring data

Table mapping No. (Address), Func, Explanation, Setting range, and Notice for monitoring data functions.

Bit and Word data format tables for monitoring data.

5-5. Preset value setting group

Table mapping No. (Address), Func, Explanation, Setting range, and Notice for preset value setting.

5-6. Function setting mode_Counter group

Table mapping No. (Address), Func, Explanation, Setting range, and Notice for counter function settings.

5-7. Function setting mode_Timer group

Table mapping No. (Address), Func, Explanation, Setting range, and Notice for timer function settings.

5-8. Function setting mode_Communication group

Table mapping No. (Address), Func, Explanation, Setting range, and Notice for communication function settings.

6. Exception processing

6-1. When communication error occurs, the highest bit of received function is set to 1, then sends response command and transmits Exception code.

Table showing Slave Address, Function+80H, Exception Code, and Error Check(CRC16) for exception processing.

6-2. Example

Master reads output status (ON:1, OFF:0) of non existing coil 01001 (03EH) from Slave (Address17).

Read and write of parameter value using communication. 1. Read of the parameter area. 2. Read and write of the parameter area. 3. Read of communication. 4. Communication write.

Software Integrated device management program(DAQMaster) Available to set parameter and monitoring function using the integrated device management program.

Operating system, Processor, RAM, Hard disk, VGA, other specifications for DAQMaster.

Factory default

Table listing parameters and factory default values for Input mode, Output mode, Indication mode, etc.

Caution for using

1. The power ON/OFF. Power voltage rises for 100ms after power on and falls for 500ms after power off.

2. Be sure to use insulated and resistive voltage/current or Class2 supply power device to input 24VAC/24-48VDC power supply model.

3. Input signal line. Use as short a cable from the sensor to this unit as possible.

4. When selecting input logic. Be sure that supply power is off when selecting input logic, then select logic input according to input logic changing method.

5. Contact count input(When it is used as Counter). If apply contact input at high speed mode(1K, 5K, 10K), it may cause miscount by chattering.

6. When test dielectric voltage and insulation resistance of the control panel with this unit installed.

7. Do not use this unit with below environments. 1) Place where there are severe vibration or impact.

8. Installation environment. 1) It shall be used indoor. 2) Altitude Max. 2000m.

9. Please keep the above precautions to avoid malfunction and damages.

Major product list including Photoelectric sensors, Temperature controllers, Fiber optic sensors, etc.

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