
GETTING STARTED



CHAPTER 1

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Overview of this Publication

Thank you for purchasing an AutomationDirect CTT Series Digital Counter / Timer / Tach. This manual shows you how to install, program and maintain the unit.

Who Should Read This Manual

This manual contains important information for those who will install, maintain, and/or operate the AutomationDirect CTT Series Digital Counter / Timer / Tach. It will provide the information you need to get and keep your system up and running.

Technical Support

On the Web: support.automationdirect.com

Our technical support group is glad to work with you in answering your questions. If you cannot find the solution to your particular situation, or, if for any reason you need additional technical assistance, please call technical support at 770-844-4200. We are available weekdays from 9:00 a.m. to 6:00 p.m. Eastern Time.

We strive to make our manuals the best in the industry. We rely on your feedback to let us know if we are reaching our goal.

We also encourage you to visit our web site where you can find technical and non-technical information about our products and our company. Visit us at www.automationdirect.com.

Special Symbols



When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a warning. This information could prevent injury, loss of property, or even death (in extreme cases).



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0002> for a video on how to skip most of the CTT manual.

For a full set of Demo and Set Up videos for the CTT units please scan the QR code or follow the link below.
<https://www.automationdirect.com/videos/home?t=link&cat1=60>



General Description

The CTT series is an extremely versatile multi-function device that is easily configured for operation as a digital counter, timer, combination timer + counter, or tachometer. Both voltage and non-voltage inputs are accepted from a wide variety of sensor types with NPN, PNP, or dry contact outputs. The first output on the CTT is a single-pole, single-throw relay and NPN transistor that operate concurrently. The second CTT output can be ordered as either a single-pole, double throw relay or NPN transistor. Parameters are easily set using the externally accessible DIP switches or the lockable keypad. The double-line, 6-digit, two-color LCD display shows the counter, timer, or tachometer present values, setting values and menu parameters during set-up. Additional individual indicators are provided for inputs, outputs and functions. The standard 1/16 DIN size, included panel mounting clip and gasket make panel mounting a snap. The CTT is available in 120-240VAC and 24VDC powered models.

Counter Functions	Counter Input Modes	Counter Output Modes
1-Stage	Up	Select from eleven (11) different output modes (F, N, C, R, K, P, Q, A, S, T, D)
2-Stage	Down	
Batch	Up / Command Down	
Total	Up/ Down	
Dual	Quadrature	
	Addition Subtraction	

Timer Functions (Up or Down)	
Signal On Delay 1	Repeat Cycle
Signal On Delay 2	Repeat Cycle Hold
Signal Off Delay	Repeat Cycle 2
Signal On	Signal Cumulate
Power On Delay	Signal Twin On-Start
Power On Delay Hold	Signal Twin Off-Start



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0001> for a short introductory video for the CTT units.

Timer + Counter		
Timer Functions (Up or Down)	Counter Input Modes	Counter Output Modes
Signal On Delay 1	Up	Select from eight (8) different output modes (F, N, C, R, K, P, Q, A)
Signal On Delay 2	Down	
Signal Off Delay		
Signal On		
Power On Delay		
Power On Delay Hold		
Repeat Cycle		
Repeat Cycle Hold		

Tachometer Output Modes
Select from four (4) different output modes
2Lo/1Lo
2Lo/1Hi
2Hi/1Lo
2Hi/1Hi

Features

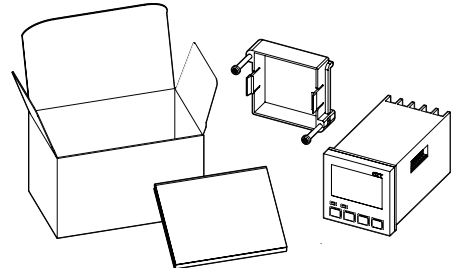
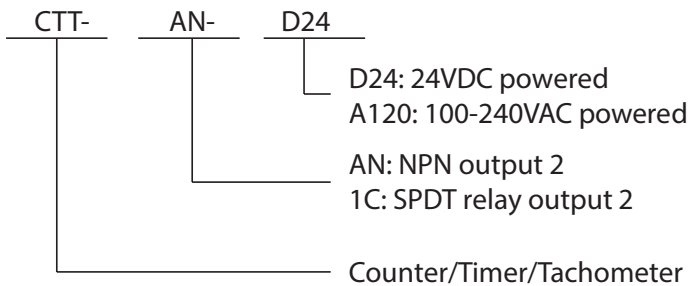
- Can operate as a digital counter, timer, combination timer + counter or tachometer
- Accepts voltage and non-voltage inputs from a wide variety of NPN, PNP, or dry contact sensors
- Selectable counting speeds from 1 to 10,000 cycles per second
- Multiple transistor and relay outputs can operate as momentary or maintained
- Double-line, 6-digit, 2-color LCD display
- Easy configuration with externally accessible DIP switches or the lockable keypad
- Display decimal point selection
- Available in 120-240VAC and 24VDC powered models
- UL508 listed, CE marked

Unpacking

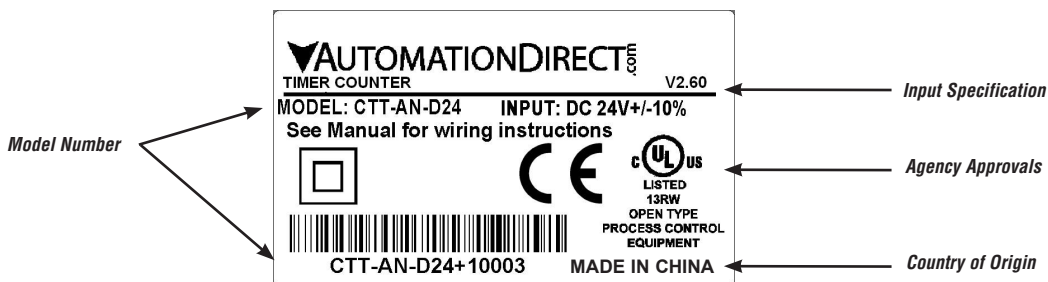
After receiving the CTT Counter/Timer/Tach, please check for the following:

- Make sure that the package includes the CTT Counter/Timer/Tachometer, the mounting bracket and hardware, and the Quick Start Guide.
- Inspect the unit to insure it was not damaged during shipment.
- Make sure that the part number indicated on the label corresponds with the part number of your order.

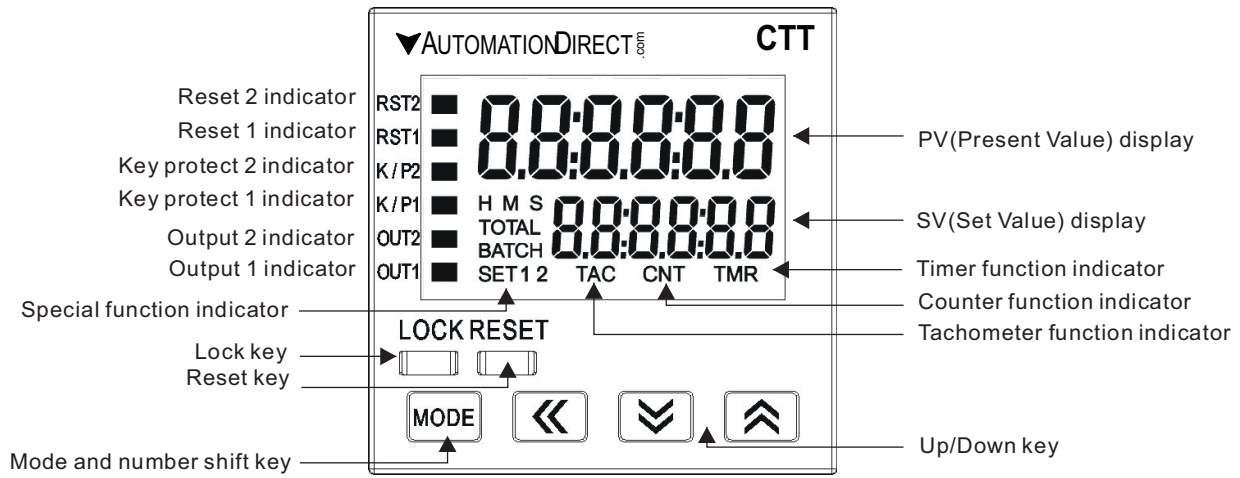
Model Number Explanation



Label Information



Display, Indicators and Keys

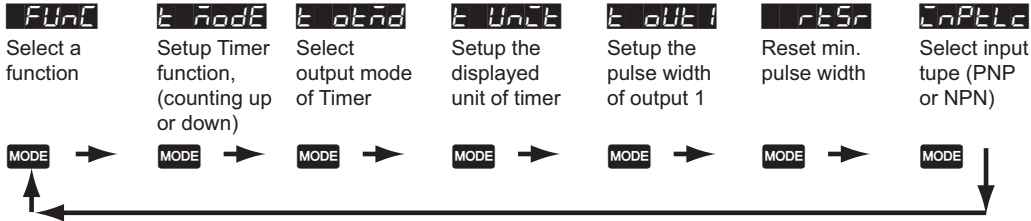


LCD Display and Indicators			
RST 1/2	Light on when reset signal is detected	BATCH	"Batch Counting Mode" in Counter
K/P 1/2	Light on when key-protected mode is enabled	SET 1 2	SV1, SV2 display
OUT 1/2	Light on when output is executing	TAC	Light on in Tachometer function
H M S	Hour, minute, second, unit of timer, displayed in Timer function	CNT	Light on in Counter function
TOTAL	"Total Counting Mode" in Counter function	TMR	Light on in Timer function
Key Operation			
	Increase and decrease SV or change parameter settings		
	Left move 1 digit of the selected digit. The indicator of the selected digit will flash.		
MODE	Save the set parameters or switch among functions.		
LOCK	Prevent settings from being changed. Key-protected mode still works after the power is switched off. Press LOCK to enter key-protected mode. In non-key-protected status, press LOCK to enter Lock 1, press LOCK again to enter Lock 2. Press MODE and at the same time to disable key-protected mode. (Lock 1) disables the functions of all keys. (Lock 2) allows users to change SV and functions of RESET remain. LOCK only functions in non-key-protected status.		
RESET	Clear and reset PV.		
Modes: Operation Mode and Configuration Mode			
Operation	When the power is on, the timer/counter/tachometer is in the operation mode. Press to change SV, or to select digit to change. The indicator of the selected digit will flash. After the change is made, press MODE to save the setting. If SV or parameters are not changed, press MODE once to switch between SET1 and SET2.		
Configuration	Press MODE in operation mode for more than 3 seconds to enter configuration mode. Press MODE once to switch among parameters. To return to operation mode, press MODE for more than 3 seconds.		

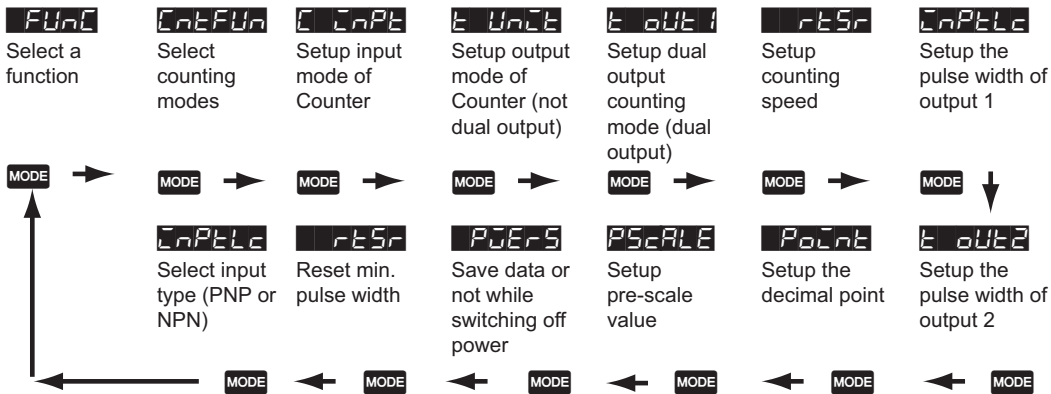
Menu Navigation and Parameters

Press mode in operation **MODE** for more than 3 seconds to enter configuration mode. Press **MODE** once to switch among parameters. To return to operation mode, press **MODE** for more than 3 seconds.

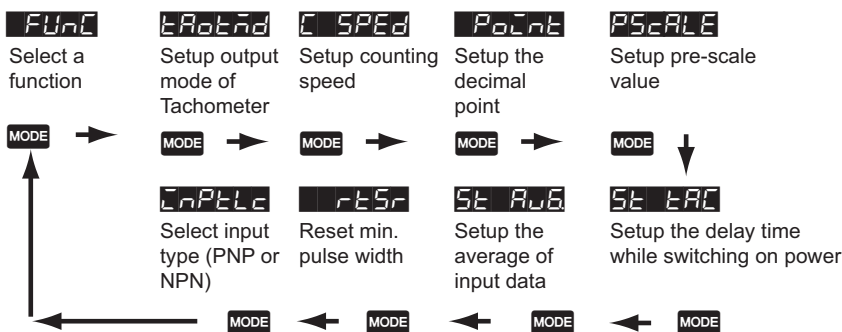
• Timer



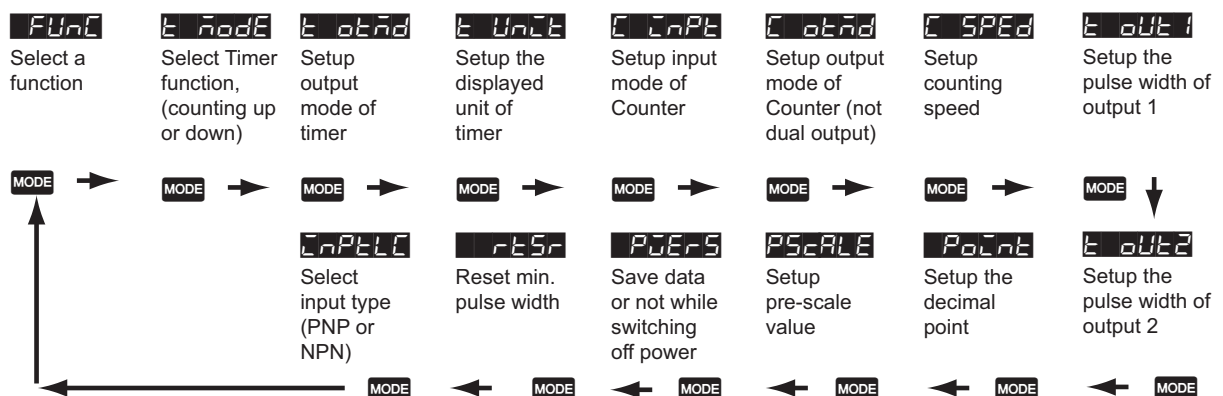
• Counter



• Tachometer



• Timer + Counter

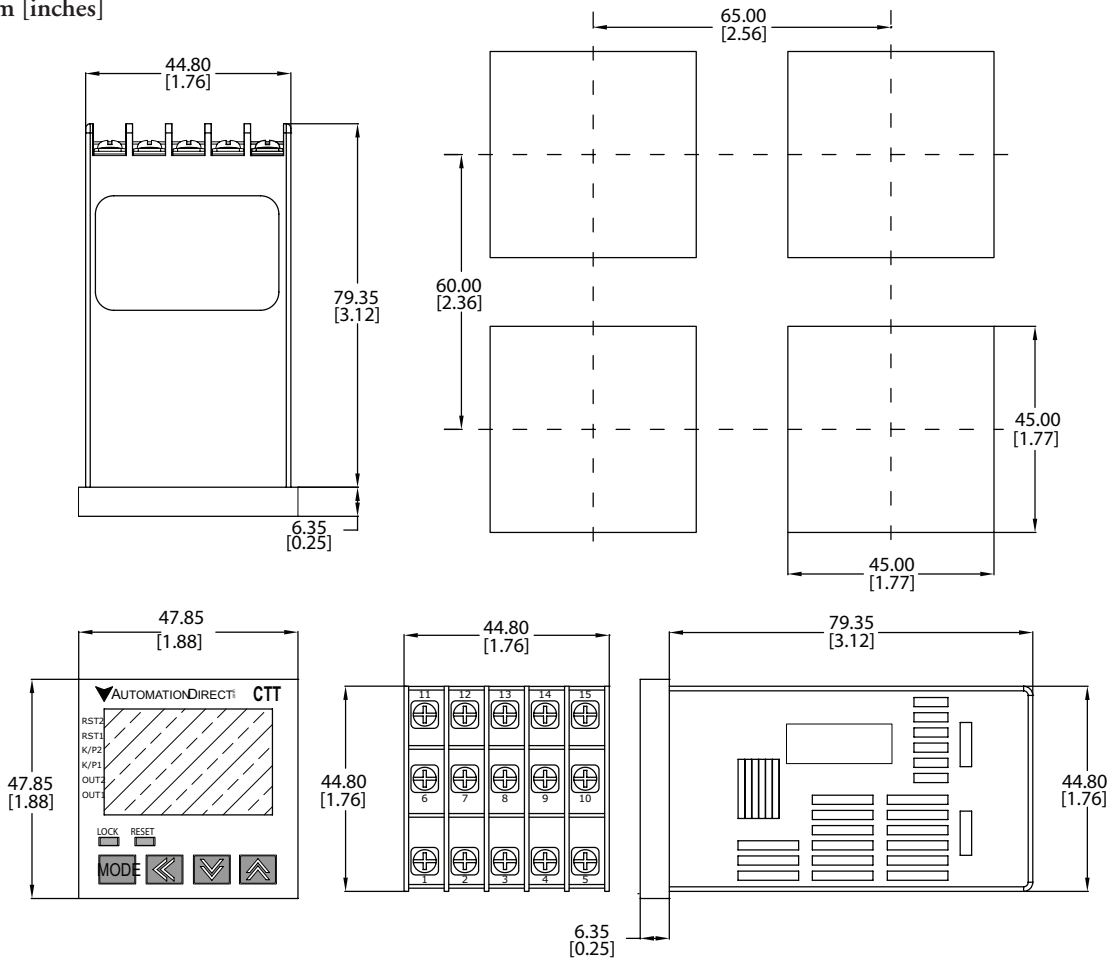


General Specifications

Digital Counter / Timer / Tachometer General Specifications		
Input Power Requirements		100 to 240 VAC 50/60 Hz
Operation Voltage Range		85 to 264 VAC
Power Consumption		24 VDC
Power Source		Less than 10VA
Display		12VDC ±10%, 100mA
Input Signal		Double-line, 6-digit LCD display (SV = 8mm, PV = 6mm)
Output 1		NPN ON impedance 1K ohm max. ON residual voltage: 2V max. PNP 4.5 to 30VDC, low level: 0 to 2VDC
Output 2	CTT-1C-xxx	Relay: SPDT max. 250VAC/30VDC, 5A (resistive load), 4A (inductive load)
	CTT-AN-xxx	Transistor: NPN open collector. When 100mA @ 30VDC residual voltage = 1.5VDC max
Life Expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 900 operations/hr)
Output Duration (where used)		Relay: SPST max. 250VAC, 5A (resistive load), 4A (inductive load); Transistor: NPN open collector. When 100mA @ 30VDC, residual voltage = 1.5VDC max
Output Switching Time		0.00 (latching) / 0.01 to 99.99 seconds
Dielectric Strength		2 milliseconds max
Vibration Resistance		2000VAC 50/60Hz for 1 minute
Shock Resistance		Without damage: 10 – 55Hz, amplitude = 0.75mm, 3 axes for 2 hours
Ambient Temperature		Without damage: drop 4 times, 300m/s ² 3 edges, 6 surfaces and 1 corner
Storage Temperature		+32°F to +122°F (0°C to +50°C)
Altitude		-4°F to +149°F (-20°C to +65°C)
IP Rating		2000m or less
Case Materials		IP 66 (with proper enclosure installation)
Ambient Humidity		Case = ABS Plastic, Lens = Polycarbonate
Memory Backup upon Power Failure		35% to 85% RH (non-condensing)
Terminals	Conforming Wiring	EEPROM writing up to 100,000 times; Memory duration: 10 years
	Permitted Torque	0.25-1.65mm ² (24 to 16 AWG)
Agency Approvals		0.5Nm (0.369 ft/lbs)
		UL508 listed (E311366), cULus, CE marked

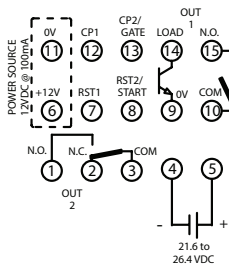
Drawings

mm [inches]

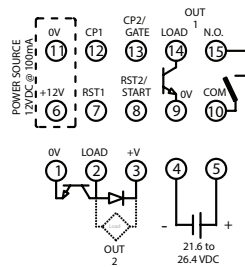


Terminal Layout

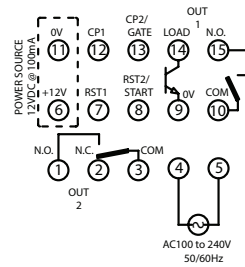
CTT-1C-D24



CTT-AN-D24



CTT-1C-A120



CTT-AN-A120

