

## Specifications

Time Periods per Channel	10, programmable
Period Duration Range	0.01 s...9999 min
Start/Stop Inputs:	2
Passive contact from PNP/NPN sensor	NO contacts, max. frequency 30 Hz powered by CT12, max. frequency 500 Hz
Voltage	3...40 VDC, max. frequency 500 Hz
- IN1	<input type="checkbox"/> contact, <input type="checkbox"/> PNP/NPN, <input type="checkbox"/> voltage
- IN2	<input type="checkbox"/> contact, <input type="checkbox"/> PNP/NPN, <input type="checkbox"/> voltage
Outputs:	up to 2
Electromechanical relay	5A/250VAC with NO/NC contact
SSR	1A/250VAC
MOS gate	0.1A/60V, optically isolated
Transistor gate	open collector NPN 40mA/40V
Output for external SSR	12/24 VDC, 30 mA
- K1	<input type="checkbox"/> relay, <input type="checkbox"/> SSR, <input type="checkbox"/> MOS, <input type="checkbox"/> open collector, <input type="checkbox"/> ext. SSR
- K2	<input type="checkbox"/> relay, <input type="checkbox"/> SSR, <input type="checkbox"/> MOS, <input type="checkbox"/> open collector, <input type="checkbox"/> ext. SSR
Power Supply	<input type="checkbox"/> 230 VAC, <input type="checkbox"/> 90...250 VAC/DC, <input type="checkbox"/> 24 VAC, <input type="checkbox"/> 12...24 VAC/DC, <input type="checkbox"/> .....
Consumption	less than 3 VA
Measurement Error	≤ ± 0.7%
Operating Temperature / Humidity	-10...65 °C / 0...85% RH
Protection Class: front / terminals	IP54 / IP20

## Warranty and Support

.....  
serial number

.....  
manufacturing date

QC check mark .....(passed)  
(stamp)

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QD-8.2.4-WC

### Warranty

COMECO warrants this product to be free from defects in materials and workmanship for 2 years. If your unit is found to be defective within that time, we will promptly repair or replace it. This warranty does not cover accidental damage, wear or tear, or consequential or incidental loss. This warranty does not cover any defects caused by wrong transportation, storage, installation, or operating (see 'Specifications').

### Technical support

In the unlikely event that you encounter a problem with your COMECO device, please call your local dealer or contact directly our support team.

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## 2-CHANNEL PROGRAMMABLE TIMER

# CT12

## OPERATION MANUAL



Please read this Operation Manual before mounting and operating!  
Save the Manual for future references!

## TIMING MODE

Action	Sub-action	Keyboard	Display
Start/Stop timing program	Start/Stop Channel 1 (CH1)	+	9999
	Start/Stop Channel 2 (CH2)	+	
	Start/Stop both channels		
Select displayed channel			9999
Change display mode alternatively	Set to display period number and relay state		ty - x
	Set to display time left		1234

Table 1

Result	Note
Alternatively starts and stops Channel 1	
Alternatively starts and stops Channel 2	
Alternatively starts and stops both channels	
Selected timer channel is displayed	LEDs 'CH1' and 'CH2' indicate selected channel.
Number of current period and relay state are displayed	y = 0 ... 9 - time period x = 0 (off) or 1 (on) - relay state
Time left out of current period is displayed	See 'PROGRAMMING MODE' for time-unit setup

## CONFIGURATION MODE

Action	Sub-action	Keyboard	Display
Enter Configuration mode		+  +	RS - x
Set automatic start	Change channel	+	RS - x
	Disable/enable automatic start		RS - 0 RS - 1
Set cyclic mode	Enter adjustment mode		rP - x
	Change channel	+	rP - x
	Disable/enable cyclic mode		rP - 0 rP - 1
Set active edge	Enter adjustment mode		EG - x
	Change channel	+	EG - x
	Select active edge		EG - 0 EG - 1
Set restart	Enter adjustment mode		rL - x
	Change channel	+	rL - x
	Disable/enable restart		rL - 0 rL - 1
Exit Configuration mode			

Table 2

Result	Note
The device is in Configuration mode	
Selects timer channel for configuring	LEDs 'CH1' and 'CH2' indicate selected channel.
Automatic start is disabled	Timer waits for manual (key) or external start.
Automatic start is enabled	Timer(s) starts at power-on.
Cyclic mode is to be configured	defines the execution of the timing program
Selects timer channel for configuring	LEDs 'CH1' and 'CH2' indicate selected channel.
Cyclic mode is disabled	single execution of timing program
Cyclic mode is enabled	cycling (looping) execution of timing program
Active edge is to be configured	sets the active edge of the input signal, applied to IN1 and/or IN2 start/stop inputs
Selects timer channel for configuring	LEDs 'CH1' and 'CH2' indicate selected channel.
RISING edge is active	
FALLING edge is active	
Restart is to be configured	defines whether the timing program can be restarted externally
Selects timer channel for configuring	LEDs 'CH1' and 'CH2' indicate selected channel.
External restart is disabled	Timing program does not restart at external signal.
External restart is enabled	Timing program restarts at external signal.
The device exits Configuration mode	The device returns to Timing mode.

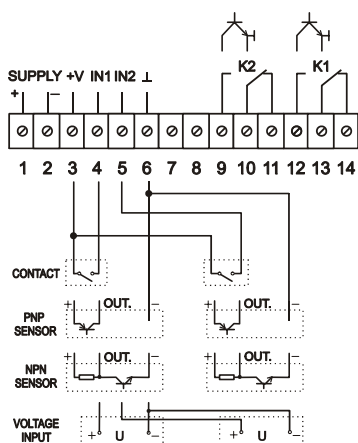
## Overview

CT12 is a programmable device for timing control incorporating 2 independent timers in one case. Two relay outputs (one per channel) control electrical actuators by switching them on and off. A time sequence that may consist of up to 10 ON or OFF periods, each with different duration, may be programmed for each output (channel). The device may be used as a single channel timer with up to 20 period time sequence. After a start command from the featured external input or the front-panel keyboard, the time sequence may be run once or repeated endlessly.

Table 3

Result	Note
The device is in Programming mode	end of program
Selects timer channel for programming	LEDs 'CH1' and 'CH2' indicate selected channel.
Relay is OFF	
Relay is ON	alternates relay state
	0000 ends program and defines final relay state.
Selects digit	Selected digit blinks.
Adjusts digit value	
Time in minutes	
Time in seconds x 0.1	
Time in seconds x 0.01	
Time in seconds	
Relay is OFF	from period-duration adjustment mode
Relay is ON	alternates relay state
same as for period '0'	
same as for period '0'	
Relay is OFF	from period-duration adjustment mode
Relay is ON	alternates relay state
same as for period '0'	
same as for period '0'	
The device exits Programming mode	The device returns to Timing mode.

## Mounting and Wiring



### Mounting

Place CT12 into a 93x45 mm panel cut-out and tighten into place using the enclosed mounting brackets.

### Wiring

Connect CT12 to a power supply source and to input and output external circuits via the respective terminals on the device rear panel.



### Important notes:

- ◆ Power supply must be turned off during the wiring!
- ◆ Some NPN sensors may require an appropriate (1...30 kΩ) external resistor between terminals 3(+V) and 4/5(IN1/2) for proper timer functioning!

## PROGRAMMING MODE

Action	Sub-action	Keyboard	Display
Enter Programming mode	after power reset		----
	at normal timer stop		
	at forced timer stop	START STOP	
Change channel		◀ + ▶	----
Program period '0'	Enter adjustment mode	◆	0-0
	Set relay state	⏮	0-1
	Enter adjustment mode	◆	999
	Set period duration	⏮	999
		⏭	999
	Set decimal point position (time unit)	◀ + ▶	990.9 990.9 990.9 990.9
Program period '1'	Enter adjustment mode	◆	1-0
	Set relay state	⏮	1-1
	Set period duration		same as for period '0'
	Set decimal point position (time unit)		same as for period '0'
Program period '9'	Enter adjustment mode	◆	9-0
	Set relay state	⏮	9-1
	Set period duration		same as for period '0'
	Set decimal point position (time unit)		same as for period '0'
Exit Programming mode		START STOP	

## Operating Modes and Parameters

- ◆ After power-on, the unit checks its non-volatile memory for correct set of parameters.
- ◆ If all the parameters are correct, CT12 enters its Timing mode and begins executing preliminarily entered timer program (see Table 1).
- ◆ If the required set of parameters is not correct or complete, CT12 enters Programming mode, during which the main parameters can be adjusted. The timer also enters this mode automatically when timer program ends or after forced timer stop (see Table 3).
- ◆ The important CT12 configuration parameters can be reached during a 'hidden' Configuration mode (see Table 2), access to which – to prevent unauthorized change – is more difficult.

## Electro-Magnetic Interference (EMI) Issues

- ◆ All signal wires must be shielded. They must not be packaged together with power cables!
- ◆ Never lay the signal wires close to inductive or capacitive noise sources, such as relays, contactors, motors, etc.!
- ◆ All shields have to be grounded ONLY at one end, as closer as possible to the timer terminals!
- ◆ Avoid sharing supply lines with powerful consumers, especially with inductive loads, switched on and off.
- ◆ To stop unwelcome interference signals entering through the power supply lines, use shielded 1:1 isolation transformer!
- ◆ Short all switched (not only those switched by the timer) inductive consumers with special suppression networks: RC group and varistor - for AC loads, or diode - for DC loads.
- ◆ If the timer operates in a very powerful EMI area, it has to be mounted inside a grounded metal shielding box!