

COMECO Inc., P.O.Box 378, Plovdiv 4000, BULGARIA, tel: +359 32 646523, 646524, fax: 634089
e-mail: info@comeco.org, WWW.COMECOGROUP.COM

6-DIGIT MULTIFUNCTIONAL COUNTER WITH ANALOG INPUT

CT34

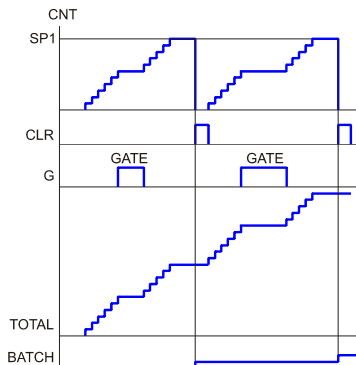
OPERATION MANUAL



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

CT34 with analog input is a fully programmable totalizing counter / rate (RPM) meter that can be adapted to a wide variety of counting, measuring, and controlling applications. It is equipped with two 6-digit LED displays and 2 control inputs. Up to 4 outputs may be installed, enhancing the counter to an integral part of your control application.

Functionality



COUNTER

CT34 is a resettable counter that integrates current count into the COUNTER variable.

TOTAL

As a totalizer, CT34 integrates the input to the variable TOTAL.

BATCH

The device integrates total batches, counted from 0 to the set point, to the variable BATCH.

RATE

CT34 can act as RMP or flow meter depending on the parameters linked to the variable RATE.

Waste Disposal



Do not dispose of electronic devices together with household waste material!

If disposed of within European Union, this product should be treated and recycled in accordance with the laws of your jurisdiction implementing Directive 2012/19/EU on waste electrical and electronic equipment (WEEE).



The undersigned hereby declares, on behalf of COMECO Inc., that this multifunctional counter model CT32CR has been manufactured in compliance with standards EN 61010-1 and EN 61326-1, and meets the requirements of Directives 2004/108/EC and 2006/95/EC.

Krasimir Darakchiev, CEO
COMECO Inc.

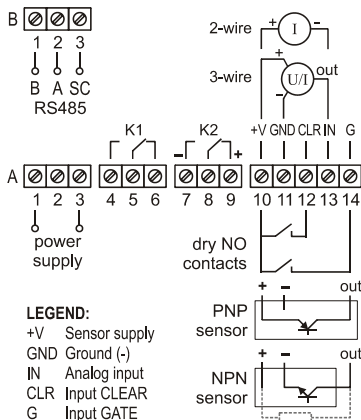
Electro-Magnetic Interference (EMI) Issues



Important note:

A built-in RC noise suppression circuit may be connected in parallel with relay contacts. Full AC voltage isolation may NOT be provided when relay contacts are open. Small AC current (≈ 1.5 mA at 230 VAC) may still flow through the RC circuit!

- ◆ 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 counter 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!
- ◆ Shunt all switched (not only those switched by the counter) inductive consumers with special suppression networks: RC group and varistor - for AC loads, or diode - for DC loads.
- ◆ If the counter operates in a very powerful EMI area, it has to be mounted inside a grounded metal shielding box!



Mounting

- ◆ Place CT34 into a 90x42 mm panel cut-out.
- ◆ Tighten it into place using the enclosed mounting brackets.

Wiring

- ◆ Connect CT34 in accordance with the wiring diagram on the left.
- ◆ If analog output is installed instead of relay output K2 (see '**Specifications**'), wire it via terminals 7(-) and 9(+).



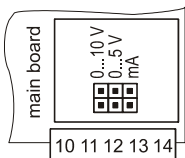
Important notes:

- ◆ Power supply must be turned off during mounting and wiring!
- ◆ Each control input may be either dry contact or electronic.
- ◆ Sensor voltage may be taken from inside or from an external source.
- ◆ If the NPN sensor does not have a resistor, add an appropriate one (1...30 kΩ)!



More detailed wiring schematics are available at comecogroup.com under 'Support' tab.

Analog Input Setting



To be carried out before programming!

- ◆ Remove the electronic block from the housing and find the configuration jumpers located on the main board.
- ◆ To set the desired analog input type, short out the respective jumper.





Some parameters are accessible only when the respective functionality is installed. (see 'Specifications').

●* - *Changing DP Position RATE value reflects on all the parameters linked to RATE, and DP Position TOTAL value – on those linked to TOTAL!*

E.g.: changing DP Position TOTAL value from (x1) to (x0.1) would change a COUNTER value of 100 to 10.0!!!








When adjusting the Scale TOTAL parameter, use  +  to move the decimal point.





Device parameters

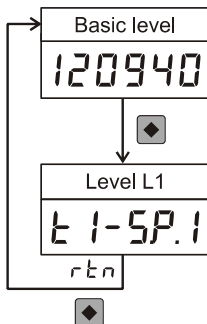
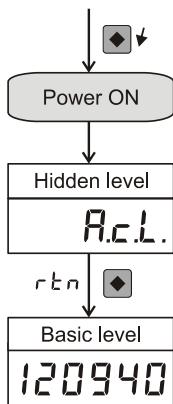
CT34 is a programmable device whose service behavior is determined by a set of parameters. All the parameters, along with their names, symbols, and value ranges, are given in Table 1.

Setting numerical parameter value

- ◆ Enter parameter value adjustment mode (see 'Program Levels').
- ◆ The whole part of the value together with the left zeroes appears on the display, and the rightmost digit blinks.
- ◆ To select another digit, press .
- ◆ The 5 rightmost digits can accept values from 0 to 9, and the leftmost digit can also accept the values - and +.
- ◆ To increase or decrease the blinking digit value, use respectively  or .
- ◆ Confirm the adjusted value by pressing simultaneously  + .
- ◆ If the new value is within the limits, CT34 accepts it and goes on to the next parameter. Otherwise, it displays the same parameter and waits for a correct value to be set.
- ◆ If the new value has not been confirmed and no key has been pressed for a certain period of time, value adjustment automatically ceases, and the parameter retains its initial value.

Setting symbolic parameter value

- ◆ Enter parameter value adjustment mode (see 'Program Levels').
- ◆ Read the blinking parameter value.
- ◆ To change the value, use  or , and to confirm, press  + .
- ◆ If the new value has not been confirmed and no key has been pressed for a certain period of time, value adjustment automatically ceases, and the parameter retains its initial value.



Access control (Hidden level)

- ◆ Hold while turning the power supply on and until **A.C.L.** appears.
- ◆ Set access level according to Table 1.
- ◆ To return to Basic level, select **rtn** and press .

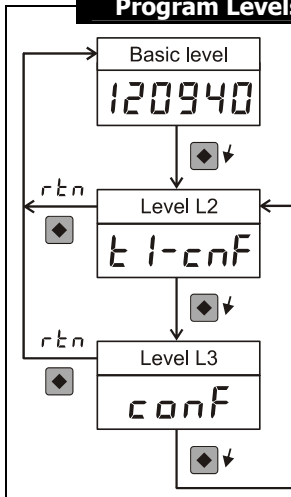
Basic level

At power-on, CT34 enters Basic level. At this level, the device may display up to 4 variables according to the values set to the parameters **Display 1 Link**, **Display 2 Link**, **Display 1 Alternative Link**, **Display 2 Alternative Link**.

- ◆ The upper display shows the current value of the variable assigned to it via **Display 1 Link**.
- ◆ The lower display shows the current value of the variable assigned to it via **Display 2 Link**.
- ◆ Pressing + shows the names of the variables being displayed.
- ◆ To read the alternative variable linked to the upper display, press . Its current value appears on the upper display, and its name – on the lower.
- ◆ To view the alternative variable linked to the lower display, press .
- ◆ If no variable has been assigned to a given display, it shows - - - - -.
- ◆ When the counter overflows (value > 999999), CT34 displays the leftmost value part (starting with **c**) and the rightmost value part alternatively at an interval of 2 s.

Set-point adjustment (Level L1)

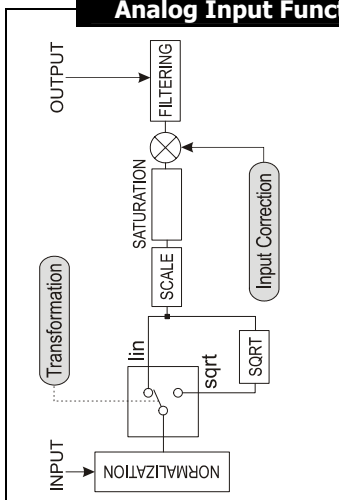
- ◆ Enter from Basic level by pressing briefly .
- ◆ The upper display shows the symbol of the first parameter and the lower – its current value.
- ◆ To select another parameter, use or .
- ◆ To enter value adjustment mode, press .
- ◆ To return to Basic level, select **rtn** and press , or press + .
- ◆ If no key has been pressed for a while, the device automatically returns to Basic level, storing all confirmed changes.



Configuring (Levels L2 and L3)

- ◆ Enter from Basic level by pressing and holding **ENTER**.
- ◆ To access and adjust the parameters from level L2, release the key while **t1-conf** is displayed. To enter level L3, release the key when **conf** appears on the display.
- ◆ Choose a parameter using **UP** or **DOWN**.
- ◆ To enter parameter value adjustment mode, press **ENTER**.
- ◆ If no key has been pressed for a while, the device automatically returns to Basic level, storing all confirmed changes.
- ◆ For quick exiting and saving, use key combination **UP** + **DOWN** or select **RETURN** and press **ENTER**.

Analog Input Function



- ◆ **NORMALIZATION** generates an output within the 0...1 range.
- ◆ **SQRT** gives an output by the formula:

$$y = \begin{cases} x \leq 0, 0 \\ x > 0, \sqrt{x} \end{cases}$$
- ◆ **SCALE** generates an output within the **Input Low...Input High** range.
- ◆ **SATURATION**

$$y = \begin{cases} x \leq Sat.Low, Sat.Low \\ Sat.Low < x < Sat.High, y = x \\ x \geq Sat.High, Sat.High \end{cases}$$



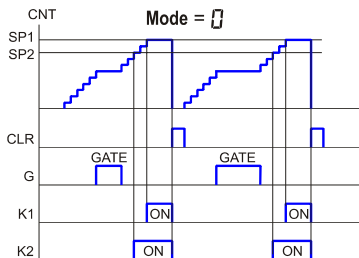
Parameter	Symbol	Description
Parameters of Level L3		
Baud Rate	$bAud$	Serial interface rate
Address	Adr	Device address
Parameters of Level L2		
Mode	$t1_Mod$	Counting mode
Save	$t1_SAJ$	Saves COUNTER value at power-off
Clear Algorithm	$t1_cRG$	Function of CLEAR input (key)
DP Position RATE 	$t1_dPr$	RATE display decimal point position
Input Type	$t1_i_nP$	Analog input signal type
Input Low	$t1_i_Lo$	RATE value at low limit of the input range
Input High	$t1_i_Hi$	RATE value at high limit of the input range
Display Offset	$t1_oFS$	Constant to be added to the measured input value
Filter Time	$t1_Ft$	Relative time constant of the input filter
Filter Band	$t1_Fb$	Zone around the measured value, within which the filter is active
DP Position TOTAL 	$t1_dPt$	TOTAL display decimal point position
Scale TOTAL	$t1_ScL$	TOTAL scaling coefficient
Time Base RATE	$t1_tbS$	(Flow) RATE time base
Low Flow Cutoff	$t1_coF$	Minimum flow rate limit
Linear Transformation	$t1_Li_n$	Input value transformation after measurement
One-shot Time	$t1_oSt$	Duration of the one-shot output
Display Direction	$t1_ddr$	Display counting direction
Display 1 Link	$t1_d1L$	Variable displayed on upper display
Display 2 Link	$t1_d2L$	Variable displayed on lower display
Display 1 Alternative Link	$t1_d1A$	Variable displayed alternatively on upper display
Display 2 Alternative Link	$t1_d2A$	Variable displayed alternatively on lower display
Relay 1 Link	$t1_r1L$	Variable linked to output K1
Relay 1 Direction	$t1_r1d$	Control action direction of output K1
The same 2 parameters, but with indices 2, 3, and 4 - respectively for outputs K2, K3, and K4		
Analog Output Low	$t1_oLo$	RATE value at low limit of the output range
Analog Output High	$t1_oHi$	RATE value at high limit of the output range
Calibration mode	$t1_cAL$	Controls the access to Calibration mode
Parameters of Level L1		
Set Point 1	$t1_SP1$	Set-point value of output K1
The same parameter, but with indices 2, 3, and 4 - respectively for outputs K2, K3, and K4		
Access-Control Parameter (parameter of Hidden level)		
Access Control Level	ACL	Controls the access to device parameters

Table 1

Value	Unit	Notes
1200, 2400, 4800, 9600	bps	
1...254	-	
0 ... 6	-	see 'Counting Modes'
<i>no, YES</i>	-	Value 'YES' saves COUNTER current value in non-volatile memory.
0 ... 3	-	see 'CLEAR Functions'
x1, x0.1, x0.01, x0.001, x0.0001	-	Affects all parameters linked with RATE and with the same unit.
<i>0, 4, 10, 25</i>	-	0...20 mA, 4...20 mA, 0...10 V, 0...5 V (see 'Analog Input Setting')
-10000 ... 30000	ISU	ISU = input-signal measurement unit (e.g.: l/min)
-10000 ... 30000	ISU	
-10000 ... 10000	ISU	
0 ... 255	-	higher value for better filtration
0 ... 3000	-	
x1, x0.1, ..., x0.00001	-	Affects all parameters linked w/ TOTAL and COUNTER and w/ same unit.
0.00000 ... 999999	-	TOTAL = RATE * Scale TOTAL (allows displaying TOTAL in other units)
<i>SEc, m, n, hour, DAY</i>	-	<i>SEc</i> - e.g.: l/s, <i>m</i> , <i>n</i> - e.g.: l/min, <i>hour</i> - e.g.: t/h, <i>DAY</i> - e.g.: m ³ /day
-10000 ... 30000	ISU	All values below the limit will be accepted as '0'.
<i>L, n, Sqrt</i>	-	<i>L, n</i> - linear; <i>Sqrt</i> - further square-root transformation
0.0 ... 6000.0	sec.	for modes 2, 3, and 6 (in mode 6, value > 0 is auto-restart time)
<i>uP, dn</i>	-	<i>uP</i> - from 0 to Set Point 1; <i>dn</i> - from Set Point 1 to 0
<i>none, cnt, total, batch, rate, time</i>	-	<i>none</i> - none; <i>cnt</i> - COUNTER (current count) - can be zeroed/manipulated in different modes; <i>total</i> - TOTAL (total count) - requires special zeroing only; <i>batch</i> - BATCH (batch count) - requires special zeroing only; <i>rate</i> - RATE ((flow)rate / RPM); <i>time</i> - TIME (time passed after COUNTER zeroing)
<i>_J_-, _L_</i>	-	<i>_J_-</i> - activates over set point, <i>_L_</i> - activates under set point
<i>no, YES</i>	-	Value 'YES' enables Calibration mode.
-99999 ... 999999		see Relay 1 Link
<i>FULL, L1, no</i>	-	<i>FULL</i> - full access, <i>L1</i> - access only to L1 parameters, <i>no</i> - no access

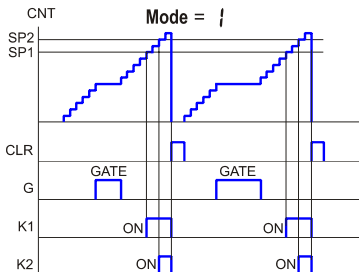


Counting mode 0

- ◆ CT34 counts up to SP1, stops, and initializes at receiving CLEAR command.
- ◆ Output K1 activates when counter reaches SP1 and stays ON until initialization.
- ◆ With **Relay 2 Link** set to cnt and **Relay 2 Direction** – to -- , output K2 activates when SP2 is reached.



This mode is feasible only if Relay 1 Link is set to cnt !

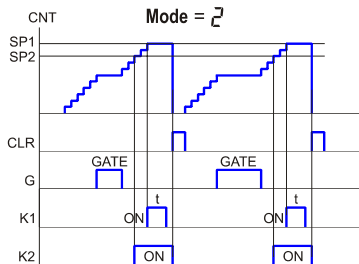


Counting mode 1

- ◆ CT34 counts up and initializes at receiving CLEAR command.
- ◆ Output K1 activates when counter reaches SP1 and stays ON until initialization.
- ◆ With **Relay 2 Link** set to cnt and **Relay 2 Direction** – to -- , output K2 activates when SP2 is reached.



This mode is feasible only if Relay 1 Link is set to cnt !

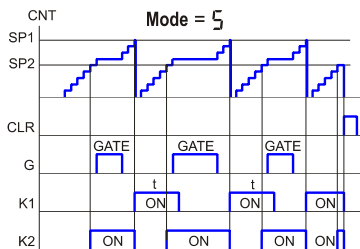
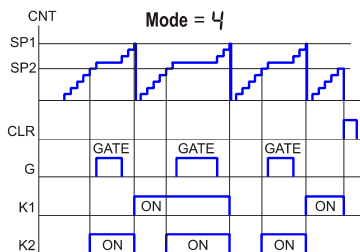
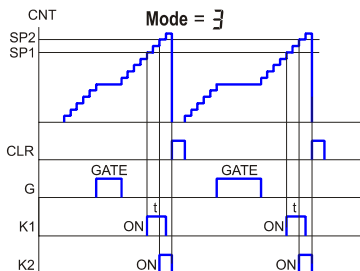


Counting mode 2

- ◆ CT34 counts up to SP1, stops, and initializes at receiving CLEAR command.
- ◆ Output K1 activates at SP1 and stays ON for a period set with **One-shot Time** or until initialization (one-shot).
- ◆ With **Relay 2 Link** set to cnt and **Relay 2 Direction** – to -- , output K2 activates when SP2 is reached.



This mode is feasible only if Relay 1 Link is set to cnt !



Counting mode 3

- ♦ CT34 counts up and initializes at receiving CLEAR command.
- ♦ K1 activates at SP1 and stays ON for a period set with **One-shot Time** or until initialization.
- ♦ With **Relay 2 Link** set to CNT and **Relay 2 Direction** – to -- , output K2 activates when SP2 is reached.



This mode is feasible only if Relay 1 Link is set to CNT !

Counting mode 4

- ♦ CT34 counts up to SP1, automatically initializes, and starts a new cycle.
- ♦ K1 switches ON/OFF alternatively when counter reaches SP1.
- ♦ With **Relay 2 Link** set to CNT and **Relay 2 Direction** – to -- , output K2 activates when SP2 is reached.



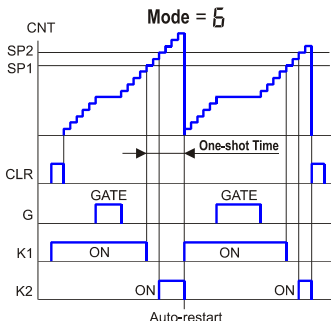
This mode is feasible only if Relay 1 Link is set to CNT !

Counting mode 5

- ♦ CT34 counts up to SP1, automatically initializes, and starts a new cycle.
- ♦ K1 activates at SP1 and stays ON for a period set with **One-shot Time**.
- ♦ With **Relay 2 Link** set to CNT and **Relay 2 Direction** – to -- , output K2 activates when SP2 is reached.



This mode is feasible only if Relay 1 Link is set to CNT !



Counting Mode 6 (Dosing mode)

- ◆ CT34 counts up and initializes at receiving CLEAR command or – when the value of **One-shot Time** is other than '0' – after the auto-restart time.
- ◆ Output K1 activates with CLEAR command or after auto-restart and stays ON until counter reaches SP1.
- ◆ With **Relay 2 Link** set to **CNT** and **Relay 2 Direction** – to **-**, output K2 activates when SP2 is reached.










*This mode is feasible only if Relay 1 Link is set to **CNT**!*



CLEAR Functions

- ◆ When **Clear Algorithm** is set to **0**, both CLEAR key and input are enabled to clear the counter.
- ◆ When **Clear Algorithm** is set to **1**, only CLEAR input is enabled to clear the counter.
- ◆ When **Clear Algorithm** is set to **2**, CLEAR input enables CLEAR key to clear the counter.
- ◆ If **Clear Algorithm** is set to **3**, both CLEAR key and input are disabled.
- ◆ To clear TOTAL, make sure **Display 1 Alternative Link** is set to **total**, press and hold **≡**, and press **START CLEAR** or use CLEAR input.
- ◆ To clear BATCH, make sure **Display 2 Alternative Link** is set to **batch**, press and hold **≡**, and press **START CLEAR** or use CLEAR input.

Input calibration

- ◆ Set Calibration mode to **4E5** to enable calibration.
- ◆ Press and hold . Release the key while **1-0, n** is displayed.
- ◆ The upper display shows the calibrated input type and the lower display shows **- - - - -**.
- ◆ Set jumpers for 0...10 V range.
- ◆ Simulate 0 V input. Confirm calibration point **1-0,0** with  +  or pass along with .
- ◆ Simulate 10 V input. Confirm calibration point **1-0,10** or pass on to the next one.
- ◆ Set jumpers for 0...5 V range.
- ◆ Simulate 0 V input. Confirm calibration point **1-0,0** or pass on to the next one.
- ◆ Simulate 5 V input. Confirm calibration point **1-0,5** or pass on to the next one.
- ◆ Set jumpers for mA range.
- ◆ Simulate 0 mA input. Confirm calibration point **1-0,0** or pass on to the next one.
- ◆ Simulate 4 mA input. Confirm calibration point **1-0,4** or pass on to the next one.
- ◆ Simulate 20 mA input. Confirm point **1-0,20** with  +  or return to the first one with .

Analog output calibration

- ◆ Depending on the type of analog output installed (see '**Specifications**'), connect either a mA-meter or a voltmeter to the device output (see '**Wiring**').
- ◆ Enable calibration.
- ◆ Press and hold  until **1-0,00** shows up.
- ◆ The upper display shows the low limit of the analog output and the lower display shows a respective calibrating value.
- ◆ Adjust the value until getting an output signal at the low limit of the output range.
- ◆ Press  to proceed to the other calibration point.
- ◆ The upper display shows the high output limit and the lower one – a respective calibrating value.
- ◆ Adjust the value to get an output signal at the high limit of the output range.



To exit calibration,
use key combination




or select **1-0, n**
and press .

Table 2

Parameter	Symbol	Value
Read/Write Parameters		
Mode	t-mode	0...6
Save	t-save	no, yes
Clear Algorithm	t-c.a	0...3
DP Position RATE	t-r.pnt	0...4
Input Type	t-input	0...20mA, 4...20mA, 0...5V, 0...10V
Input Low	t-in.low	-10000...30000
Input High	t-in.hi	-10000...30000
Display Offset	t-in.off	-10000...10000
Filter Time	t-r.f.t	0...255
Filter Band	t-r.f.b	0...3000
DP Position TOTAL	t-t.pnt	0...5
Scale TOTAL	t-scale	0.00000...999999
Time Base RATE	t-t.base	second, minute, hour, day
Low Flow Cutoff	t-c.off	-10000...30000
Linear Transformation	t-lin	lin, sqrt
One-shot Time	t-time	0...6000.0
Display Direction	t-d.dir	up, down
Display 1 Link	t-d1.lnk	none, cnt, total, batch, rate, time
Display 2 Link	t-d2.lnk	
Display 1 Alternative Link	t-a1.lnk	
Display 2 Alternative Link	t-a2.lnk	
Relay 1 Link	t-r1.lnk	
Relay 2 Link	t-r2.lnk	
Relay 3 Link	t-r3.lnk	
Relay 4 Link	t-r4.lnk	
Relay 1 Direction	t-r1.dir	over, under
Relay 2 Direction	t-r2.dir	over, under
Relay 3 Direction	t-r3.dir	over, under
Relay 4 Direction	t-r4.dir	over, under
Set Point 1	t-s.p.1	-99999...999999
Set Point 2	t-s.p.2	-99999...999999
Set Point 3	t-s.p.3	-99999...999999
Set Point 4	t-s.p.4	-99999...999999
Baud Rate	baud	1200, 2400, 4800, 9600
Address	addr	1...254
Access Control Level	access	no, l1, full

Protocol architecture

- ◆ The protocol is based on UART protocol with:
 - Baud Rate - as defined by parameter **Baud Rate**;
 - Data bits - 8;
 - Parity Control - Even;
 - Stop bit - 1.
- ◆ ASCII protocol is used for communicating, and the information is exchanged in frames.
- ◆ Each frame consists of 1, or 2 words separated by byte 32 (SPACE), and ends with bytes 13 (CR) and 10 (LF). The first word in the frame denotes the parameter 'Symbol' as taken from Table 2 and the second word (if needed) is the parameter 'Value', both spelled with only small Latin letters, digits, dots, and/or the '-' sign.

Device activating

- ◆ To respond to commands, the device should be active.
- ◆ For a device to be activated, it must receive a Ux command, where 'x' is the value of the parameter **Address** or the value '255' (if device address is unknown), and respond to it with ok..
- ◆ If a device does not respond even to U255, check the UART protocol settings, chiefly **Baud Rate** value.

Table 2 cont'd

Parameter	Symbol	Value
Read Only Values		
Counter Total	total	-2147483648 ... 2147483647
Counter Count	cnt	
Counter Batch	batch	
Rate	rate	
Time	time	
Commands		
Clear Register	clear	total, cnt, batch

**Notes:**

- ◆ #13 (CR) is byte 0x0D;
#10 (LF) is byte 0x0A.
- ◆ The U255 command should be used only in case just 1 slave is presented.

**Protocol examples:**

PC or other device: CT34 response:

activating device number 10

U10#13#10 ok.#13#10

reading TOTAL

total#13#10 total 9999#13#10

clearing TOTAL

clear total#13#10 clear ok.#13#10

writing counting mode 6

t-mode 6#13#10 t-mode 6#13#10

invalid command.	command not recognized
parity error.	parity error detected
not a number.	attempt to write symbols for numerical parameter
point error.	value resolution greater than parameter's one
out of range.	value out of range
read only.	parameter is read-only

- ◆ The device remains active until it receives another Ux command, but with different device address, a F R, L error, or with reset.
- ◆ Any Baud Rate value change through the communication interface also deactivates the device.

Reading from a device

- ◆ If the frame consists of only 1 word, it is recognized as a command for reading.
- ◆ The device responds to it by returning the same word and its value, according to Table 2.

Writing in a device

- ◆ If the frame consists of 2 words, it is recognized as a command for writing.
- ◆ With writing, transferred are the same 2 words that would have been received at the respective command for reading from the device.
- ◆ After successful writing, the device responds with the respective command for reading, except for the baud command.

Other device responses

CT34 responses in case of incorrect protocol use are given on the left.

Analog Input	0(4)...20 mA, 0...5(10) V; programmable none
Input Isolation	dry NO contact or from NPN/PNP sensor
Digital Inputs (CLEAR, GATE)	12...24 VDC, 40 mA
Sensor Supply Output	up to 4
Relay Outputs:	5A/250VAC with NO/NC contact
Electromechanical relay	0.1A/60V, optically isolated
MOS gate	open collector NPN 40mA/40V
Transistor gate	5...24 VDC, 30 mA
Output for external SSR	<input type="checkbox"/> relay, <input type="checkbox"/> MOS, <input type="checkbox"/> open collector, <input type="checkbox"/> ext. SSR
- K1	<input type="checkbox"/> relay, <input type="checkbox"/> MOS, <input type="checkbox"/> open collector, <input type="checkbox"/> ext. SSR
- K2	<input type="checkbox"/> relay, <input type="checkbox"/> MOS, <input type="checkbox"/> open collector, <input type="checkbox"/> ext. SSR
- K3	<input type="checkbox"/> relay, <input type="checkbox"/> MOS, <input type="checkbox"/> open collector, <input type="checkbox"/> ext. SSR
- K4	<input type="checkbox"/> relay, <input type="checkbox"/> MOS, <input type="checkbox"/> open collector, <input type="checkbox"/> ext. SSR
Analog Output	<input type="checkbox"/> 0...20 mA, <input type="checkbox"/> 4...20 mA, <input type="checkbox"/> 0...10 V
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 6 VA
Operating Temperature / Humidity	-10...65 °C / 0...85% RH
Protection Class: front / terminals	<input type="checkbox"/> IP65, <input type="checkbox"/> IP54 / IP20

Warranty and Support

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.

.....
article number

.....
serial number

.....
manufacturing date

QC check mark(passed)
(stamp)

88 Slavyanska Str.
P.O.Box 378
Plovdiv 4000, BULGARIA
tel: +359 32 646523, 646524
fax: +359 32 634089, 646517
e-mail: support@comeco.org