

PROGRAMMABLE COUNTER



Technical specifications:

- Code: MC 400.
- Model :

AP-410	AP-420	AP-430
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- Range: 0 ~ 9999
- Programming via front panel keys
- Power supply: 220 Vac 50 Hz +/- 10%.
- Output: Relay (capacity : 250 Vac 5A).
- Ambient temp: -10~+50 Celsius degrees.
- Dimensions : 72*72 mm for panel mounting.

Features:

- **P.V. saved** in memory at power cuts.
- **Auto reset** by watch dog timer if ever hanged .
- **Online** parameter value editing.
- **Multifunction.** Manual , Semi automatic , Automatic .
- **Output relay timer** ,for automatic operation mode, adjustable (0 ~99.9 sec.) through “Au.dt.” parameter
- **Input pulse selectable**, Fast pulses given by electronic circuits , Slow pulses given by micro switch and etc.
- **UP** and **DOWN** counting capability.

Unit description :

A: Front panel.

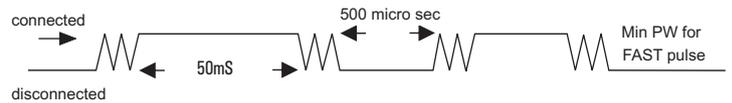
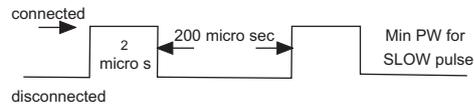
- 1- “Set” key : this key is used in the following cases,
 - View and edit “set value”.or other parameters.
 - Transfer to programing parameter mode .
- 2- “ \wedge ” key : this key is used in the following cases,
 - Increase parameter values .
 - Choose next parameter.
- 3- “ \approx ” key : same as “ \wedge ” but in reverse mode,
- 4- “R” key is used ,to reset the count to “0”.
- 5-LED-OUT1: relay1 status indicator. (on = relay1 active)
- 6-LED-OUT2: relay2 status indicator. (on = relay2 active)

B:Back panel:(Input and Outputs)

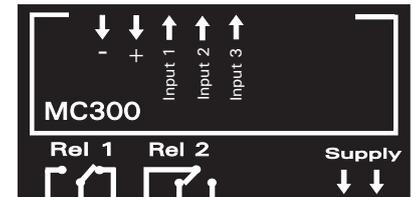
Inputs:

- 1-**Supply**:power supply terminals.(220Vac , 50Hz) +/- 10%
- 2-**Input1** :terminal for input puls , connecting and then disconnecting the “-” terminal will increment the count.

- 3- **Input2** :Reset terminal ,connecting and then disconcerting the “-” terminal will reset the count to “0” .
- 4- **Input 3** : down counting terminal , connect the “-” terminal to “input3”, the unit goes to down counting mode.



Electric connections



Outputs:

- 1-**Sensor supply** : 15 ~18 Vdc 50 mA max.
- 2- **Output relays** : (Capacity 250Vac / 5A).

Operating instructions:

- This unit can operate in two display modes .
- Normal mode displays process value (COUNT)
- Parameter mode displays programming parameters.
- Apply power and the unit starts in normal (COUNT) mode
- To enter parameter programming mode press the “SET” after 4 sec the unit enters para mode by displaying “Func.” (only relevant parameters are displayed)
 - When in para mode ,press “ \wedge ” or “ \approx ” key to select the desired parameter , Press the “SET” key to view the value and while pressing the “SET” key usin “ \wedge ” or “ \approx ” key edit the value.(do not get confused with para menu and para values e.g. the para “Func” has values “Auto”,”HAnd” and “Au.hd”,note “Func” is a menu and “Auto” is a value.
 - To enter parameter programming mode while holding the “SET” key switch the power OFF and ON again,after 4 sec the unit enters para mode by displaying “ U_D” release “SET” key.

Available Parameters and their range

Para	Range
U - D	up - dn
Func.	Auto-HAnd - Au.Hd
AU.dt	0 - 99.9
PuLS	Slo - FAST
SLo.n	0 - 20
SAUE	YES - NO

Parameter description

U-D : Choose UP or DOWN counting by this parameter.

UP : Incrementing from "0" up to "set value".

DOWN: decrementing from "set value" down to "0".

Func.: choose "auto", "semi auto" or "manual" mode.

Auto : (automatic mode).when the "count" = "set value" in UP or "count" = "0" in DOWN counting mode ,
1-Relay1 and LED1 are activated and stay so for a period specified by the "Au.dt." parameter ,and then deactivate.
2-The "count" is reset to either "0" in UP or "set value" in DOWN counting mode, and the process is repeated.

Note1 : If the unit is set for revers operation i.e. decrementing in UP mode or incrementing in DOWN mode ,when the "count" ="0" in UP or "set value" in DOWN mode, the "count" will freeze , to start counting again the "-" must be removed from "Input 3" to end revers operation.

"HAnd": (Manual mode) When the "count" = "0" or "S.V."

- 1- Counting stops and relay1 and LED1 are activated.
- 2- To deactivate relay1 and LED1 and start counting again, the unit must be RESET by pressing "R" key or connect the "-" to "Input3" and then disconnecting it.

Note 2: "note1" applies for this mode too.

"Au.Hd": (Semiautomatic),When the "count" = "0" or "S.V."

- 1- Relay1 and LED1 are activated and stay so until the unit is RESET, counting is NOT stopped if an input pulse occurs it will be counted .

Note 3: For all situations (i.e. normal , reverse ,up , down) in this mode , input pulses are counted, even if "count" is equal to "set value" or "0".

This mode of operation is included for situations when the "count" = "set value" and the output relay is activated and applied to a break to stop the counting system, using this mode the number of pulses after break application can be found and accounted for .

"OVER" is displayed when the count is >9999 or <-1999 press "R" key to reset to "0" and cancel the "OVER" display.

Au.dt. :(Automatic delay time) , Set the active time for output relay in "Auto" operating mode (in deci SEC).

PULS: Select the input puls by this parameter.

SLO: Slow pulses given by micro switch and etc. counting speed in this mode is Max 20 P/Sec and is adjustable via the "SLO.n" parameter.

FAST: Fast pulses given by electronic circuits or sensors Max counting in this mode is 5000 P/Sec .

SLO.n: Select the number of P/SEC for slow counting mode. choose a number for best debonce rejection.

SAUE : Selecting "YES" for this parameter will save the P.V. the "count" to memory at power cuts.

Description of the additional parameters in AP420.

CE.op.: (Count Edit OPeration) Select edit oper. as below.

n._.1 : " many to 1" . For the number of counts specified in "CE_n." parameter the P.V. "count" is incremented by 1, (divide by "CE_n") .

1._.n : " 1 to many " . For every single puls the P.V. the "count" is added by the number specified in "CE_n." parameter , (multiply with "CE_n")

CE_n.: (Count Edit number) . The number by which the "count" will be divided or multiply with, see "CE.op."

cod: select "YES" if parameter programming is allowed through a PASSWORD.

PAS1: Parameter for setting the PASSWORD .

PAS2: Parameter for entering the PASSWORD.

Description of the additional parameters in AP430.

Parameter	Range
tot.1	9999
tot.2	9999

tot.1 (TOTAL 1) Select tot.1 parameter and press "SET" key to view the low 4 digits of the count **9999**

tot.2 (TOTAL 2) Select tot.2 parameter and press "SET" key to view the high 4 digits of the count **9999**

NOTE: The TOTAL count is only saved if you select "YES" for the "SAUE" parameter.

To clear the TOTAL count, frst select the "tot.1" parameter while pressing the "SET" key to view the value , press the "R" key for 5 seconds . repeat for "tot.2"

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