

6 or 7 digits Pinball Display Clock. Newly designed!

Thanks for purchasing my 6 or 7 digits Pinball Display Clock.

I have tried to create a stylish, reliable, accurate and easy to use Clock/Counter and I hope you love it and this Clock/Counter is what you are really expected to see when you were looking for.

Please read carefully the information below as it helps you to use your Clock/Counter efficiently and in a proper way and hopefully will avoid any negative moments which could arise in case of incorrect or careless use.

Clock key features:

6 or 7 18mm high digits (Beckman panaplex 7-segments display)

Displays modes: Time , 2 Alarm clock sets, Date, Blank/7 or 6 digits data via serial port.

Accurate time clock source from internal crystal (not 50/60Hz from mains).

Integrated 2 Alarm Clocks

Easy control with only 2 buttons

Now you can control and setup Date, Time and alarms from your PC via serial interface

Uses standard 12V DC wall plug Power Supply

Precision Seconds setup

Internal battery for data protection in case of main power failure

Will generate alarm buzz even if mains power is off !!!

Internal buzzer for Alarm1 and Alarm2

2 external outputs trigger on Alarm1 and Alarm2 events

Blank Mode – all digits switched off, but alarms set and clock running.

RS232 serial port connection to display or count 8 digits information from PC or other device.

The Clock functions in two main modes:

Display Mode and **Setup mode**, but it also has special **Config Mode**, where some clock parameters can be changed

Display mode:

In Display Mode the Clock indicates the following information:

Time in format HHMMSS (6 digits clock) , HHMM SS (7 digits clock)

where HH is Hours (00-12 or 00-23), MM is Minutes (0-59), SS is Seconds (00-59)

Alarm1 in format HHMM 1, where number 1 indicates Alarm1

Alarm2 in format HHMM 2, where 2 indicates Alarm2

Date in format : DDMMYY,

where DD is day (1-31), MM is Month(1-12), YY is Year (00-70)

Time and Date in format HHMM SS (HHMMSS) and DDMMYY with 10 seconds interval

Blank/Serial Port Info, all digits are switched off or

More detailed description of buttons use:

In the **Display mode** you can do:

Button1. Normal push changes information to display:

– Time , Alarm1, Alarm2, Date or Time/Date, Blank/RS232_Info and back to Time.

Button1. Long push leads to Setup Mode, where you can modify the appropriate values.

Button2. Normal push shuts alarm buzzer off, if it was buzzing at this moment or change clock's display brightness level.

Button2. Long push changes time **Display Mode** from 24h to 12 hours scale. Second long push will change it back from 12h to 24 hours scale.

Button1 & Button2 together. Long push leads to Frequency Test Mode. Clock will display 200000, which means 200kHz frequency output has been activated.

Please note, that the only way to leave this mode and come back to the normal **Display mode** is to switch your Clock off and disconnect backup battery. All your current time, date, alarms settings or loaded RS232 info will be lost, so you'll need to load or set it up again.

In **Setup Mode** you can do:

Button1. Normal push changes the position of the highlighted digit

Button1. Long push goes back to Display Mode, where Clocks displays the current Time, Date, Alarm1 or Alarm2 sets.

Button 2. Normal push increments the value of highlighted digit.

Button2. Long push switches off Active Alarm (works only in Alarm1 or Alarm2 Setup modes).

How to setup Time, Date and Alarms

To set or adjust the **Current Time**, push Button1 repeatedly until Clock displays current time.

Now push and hold Button1 until Seconds Ones digit starts to flash.

Release Button1. You are now in the Setup Mode.

Seconds Ones digit is highlighted by flashing, so Seconds value can be reset by pushing Button2 now.

Push Button1 to highlight next digit. Push Button1 and it highlights Seconds Tens digit. You can push Button2 to reset seconds value.

Push Button1 to highlight the next left digit. Now Minutes Ones is flashing.

Use Button2 to set correct value. Every Button2 push will increase value by one.

Push Button1 to choose next digit to set. Minutes Tens will be flashing.

Push Button1 again if you don't need to change Minutes Tens value

Use Button2 to set correct value.

Push Button1 to choose next digit to set. Hours Ones digit should be flashing.

Use Button2 to set correct value.

Push Button1 to choose next digit to set. Hours Tens should be flashing.

Use Button2 to set correct value.

Now you set the current Time.

Push Button1 and it will highlight Seconds Ones again. Push Button2 to reset seconds value when you need to synchronize the seconds.

Push and hold Button1 until Digit stops flashing. You have left Setup Mode.

To set the current date push Button1 until clock displays Date.

Using the same technique to set up Date:

Push and hold Button1 until Years Ones start to flash.

Use Button2 to set correct value.

Push Button1 to choose next digit to set. Year Tens will be flashing.

Use Button2 to set correct value.

Push Button1 to choose next digit to set. Month Ones will be flashing.
(note: this example assumes the clock is in DDMMYY Mode – see [Config Mode](#) below)

Use Button2 to set correct value.

Push Button1 to choose next digit to set. Month Tens will be flashing.

Use Button2 to set correct value.

Push Button1 to choose next digit to set. Day Ones will be flashing.

Use Button2 to set correct value.

Push Button1 to choose next digit to set. Day Tens will be flashing.

Use Button2 to set correct value.

If some digits still don't have the correct value, push Button1 until this digit is highlighted again.
Use Button2 to correct the value.

To leave Setup mode push and hold Button1 until Digit stops flashing.

Use the same technique to **set Alarm1 or Alarm2.**

To go to the Alarm setup mode, just choose the Alarm Time to display then push and hold Button1 for 5 seconds. You are in the alarm setup mode now.

In this case only 4 digits can be set up and first digit is to be highlighted is Alarm Minutes Ones.

In the Alarm setup mode, when digit is flashing, as soon as you change Alarm digit Value by pressing Button2, left or right dot separator lamp starts blinking and this Alarm will be activated.

To de-activate Alarm, go to the Alarm Setup mode, then push and hold Button1 for 3-5 seconds.
To leave Alarm setup mode, push and hold Button2 until digit stops to flash. You are now in the **Display Mode.**

How to change from 24 to 12 or from 12 to 24 Hours displaying

I recommend you this procedure sometime after lunch, when PM time is started. It gives you clear sign that you have changed the time scale.

Please make sure you are in Display Mode with Current Time indicated.

Push and hold Button2 until Clock/Counter changes time from 24h to 12 hours scale. If you do it after lunch, hours indication value will be changed from 13 to 01 for example.

Release Button2. Check that Clock/Counter is displaying time correctly.

Second long push will change it back from 12h to 24 hours scale.

Release Button2. Check that Clock/Counter is displaying time correctly.

Using Backup battery

Just put jumpers on the Backup battery connector J1 to activate your current time and Alarm settings power failure protection.

How to load data and control Clock/Counter via RS232 serial port

Component layout diagram contains clocks RS232 pin out diagram. 3 wire TTL levels serial port cable should be used for Clock – PC interconnection.

We recommend to use USB to TTL serial cable, which you can buy from us or on eBay.

Please use the following parameters to configure PC serial port:

Bits per second: 9600

Data bits: 8

Parity: None

Stop bits: 1

Flow control: None

Clock/Counter will automatically switch into Blank/RS232_Info Mode and display data as soon it receives and recognises the first byte.

Information on the display can be updated as quickly as above data bit rate allows.

Always send 6 or 7 bytes of data packets or one command byte.

Clock/Counter accepts standard ASCII symbols, which could be sent to clock by Terminal or any other program via serial Communication port.

To prevent incorrect digit indication and increase the reliability, a limited set of ASCII symbols can be sent to the clock. Any symbols not in the table below are invalid and will be ignored by the clock.

Send 0-9 ASCII characters to display 6/7 digits of information on the clock display

Send “Space” ASCII character to switch off display digit place

Send “i” ASCII character as command to increment decimal number displayed in Blank/Rs232_Info Mode

Use “t” ASCII character as command to switch into Time Display Mode

Use “d” ASCII character as command to switch into Date Display Mode

Use “a” ASCII character as command to switch into Alarm1 or between Alarm1 and Alarm2 Display Modes

Use “u” ASCII character as command to update Time, Date or Alarms previously loaded in Blank/Rs232_Info Mode.

How to set current Time, Date or Alarms using your PC:

Connect your PC to the clock using three wires TTL serial port cable. We recommend to use USB to TTL serial cable, which you can buy from us or on eBay.

Open Windows HyperTerminal or other terminal SW and configure port setting as following:

- Bits per second: 9600
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

Check that communication between Clock and your PC established by sending test numeric message to the clock – type 123 on the keyboard and 123 number should appears on your Clock display.

Type the time you would like to clock set. For example 203445 (for 6 digits clock) or 2034 45 (for 7 digits clock) This info should be displayed on your clock now.

Switch your clock to Time Display Mode by sending “t” command.

When current time reaches 20:34:45 push “u” button on your PC keyboard to update your clock.

Now the time, your clock is displaying, should be updated. Please note, that valid values for hours is 0-23, for minutes and seconds -0-59. All values above these ranges will be ignored during update.

Type the date you would like to clock set. For example 050412. This info should be displayed on your clock now.

Switch your clock to Date Display Mode by sending “d” command.

Push “u” button on your PC keyboard to update your clock

Now the date your clock displaying should be updated. Please not that valid values for day is 1-31, for month is 1-12, for year - 00-70. All values above or below these ranges will be ignored during update.

Please use the same technique to set you Alarm1 and Alarm2 values.

Another way to understand Button1 and Button2 usage:

Button1 in **Display Mode**:

Normal push – switches between Display Modes

Long push - go to the Setup mode

Button1 in **Setup Mode**:

Normal push – choose digit to change

Long push - go back to the Display mode

Button2 in **Display Mode**:

Normal push – cancel alarm if buzzing or changes display brightness

Long push – change time display mode 12 or 24 hours

Button2 in **Setup Mode**:

Normal push – change parameter value

Long push - switch off selected alarm

Button1 and Button2 together:

In **Display Mode**:

Normal push – not defined yet

Long push - go to Frequency test Mode

In **Setup Mode**:

Normal push – not defined yet

Long push - go to Frequency test Mode

How to change parameters in Config Mode:

Change display mode to Blank/RS232 mode. In **Display Mode** Using Button 1 set your clock to indicate RS232 info or when digits are blank.

Push and hold Button 2 until clock enters **Config Mode** and displays digit 1 to 8 in the far left position. You are now in **Config Mode**.

Use Button 1 to choose Config parameter 1 to 8. At the moment only 4 parameters are available to set there

Parameter 1 displays and is available to set when far end left digit indicates 1

Parameter 2 displays and is available to set when far end left digit indicates 2 and so on.

Parameter 1 defines format of Date to display. Far right digit can be set to 0 or 1.

When it set to 0, Date displays in **DD.MM.YY** format

When it set to 1, Date displays in **MM.DD.YY** format

While your Clock is in **Config Mode** and Parameter 1 has been chosen, press and hold Button 1 until parameter value digit starts blinking. You are now in **Config Setup Mode**. Use Button 2 to set this parameter to 0 or 1.

Leave **Config Setup Mode** by pushing and holding Button 1 until digit stops blinking. You now have left Config Setup Mode, but still in **Config Mode**.

Push Button 1 to choose next parameter to set.

Parameter 2 defines Tube Sleep Mode Off time. It's the time when your tubes will be switched off or has low brightness, but clock continues to run.

Four digits value represents time in HHMM format, where HH – hours (00-23), MM is for Minutes (00-59)

While your Clock is in **Config Mode** and Parameter 2 has been chosen, press and hold Button 1 until Minutes Ones digit is highlighted by flashing. You are now in **Config Setup Mode**.

Use Button 2 to set correct value. Every Button 2 push will increase value by one.

Push Button 1 to choose next digit to set. Minutes Tens will be flashing.

Push Button 1 again if you don't need to change Minutes Tens value

Use Button 2 to set correct value.

Push Button 1 to choose next digit to set. Hours Ones digit should be flashing.

Use Button 2 to set correct value.

Push Button 1 to choose next digit to set. Hours Tens should be flashing.

Use Button 2 to set correct value.

Now Tube Sleep Mode Off time has been set.

Leave Config Setup Mode by pushing and holding Button 1 until digit stops blinking. You now have left **Config Setup Mode**, but still in **Config Mode**

Push Button 1 to choose next parameter to set.

Parameter 3 defines Tube Sleep Mode On time. It's time when your tubes will be switched on coming back to normal Display Mode from Tube Sleep Mode or has a higher brightness.

Four digits value represents time in HHMM format, where HH – hours (00-23), MM is for Minutes (00-59)

While your Clock in Config Mode and Parameter 3 has been chosen, press and hold Button 1 until Minutes Ones digit is highlighted by flashing. You are now in **Config Setup Mode**.

Use Button 2 to set correct value. Every Button 2 push will increase value by one.

Push Button 1 to choose next digit to set. Minutes Tens will be flashing.

Push Button 1 again if you don't need to change Minutes Tens value

Use Button 2 to set correct value.

Push Button 1 to choose next digit to set. Hours Ones digit should be flashing.

Use Button 2 to set correct value.

Push Button 1 to choose next digit to set. Hours Tens should be flashing.

Use Button 2 to set correct value.

Now Tube Sleep Mode On time has been set.

Leave **Config Setup Mode** by pushing and holding Button 1 until digit stops blinking.
You now have left **Config Setup Mode**, but still in **Config Mode**

Push Button 1 twice to choose Parameter5 to set.

Parameter 5 defines Tube Sleep Mode On/Off brightness levels. It's brightness when your clock display within Sleep On or Off time intervals

Four digits value represents 2 brightness values: two left digits are for day time (Sleep Mode Off) brightness and two right digits are for night time (Sleep Mode On) brightness. Both brightness levels can be set in 00 to 05 value, where 00 is brightness=0 (display is off) and 05 is the maximum brightness.

Please use the same procedure as above to set this parameters.

Parameter 8 is not configurable and shows clock's current SW and HW releases.

Leave Config Mode by pushing and holding Button 2 until your clock comes back to RS232_Info/Blank Mode and all digits are off.

You now have left Config Mode. Check that you are back in Display Mode by pushing Button 1. Clock should be switching between Display Modes –Time, Alarm1, Alarm2, Date. modes

Notice:

Please do not use this clock outside; it's not for use in bathroom nor in any wet condition.

Use only good quality, certified Wall Plug Power Supply, which can provide regulated, not less than 350mA Direct Current at 12V.

Do not leave clock without main power for more than 24 hours, as it discharges your backup battery and you will need to replace it.

Some internal components are under High Voltage (about 180V DC) , so before handling or do any maintenance work, be sure that power supply is switched off.

I do not accept any liability caused by improper or care less use of this Clock.

Due to constant improvement, your clock design could be slightly different from the sale description, but technical parameters and functionality will be the same or better.

The latest User Manual and other related information can be found on my WEB site at www.kosbo.com