

THE RIVER IS SMALL

the
STAF

**MULTI-FUNCTION
DIGITAL CLOCK**

**ACTUAL
USEFUL
MANUAL**

The SilentTimer Action Figure multi-function digital clock

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VERSION

This is the manual for the STAF clock with hardware version AC and software version 1.5.

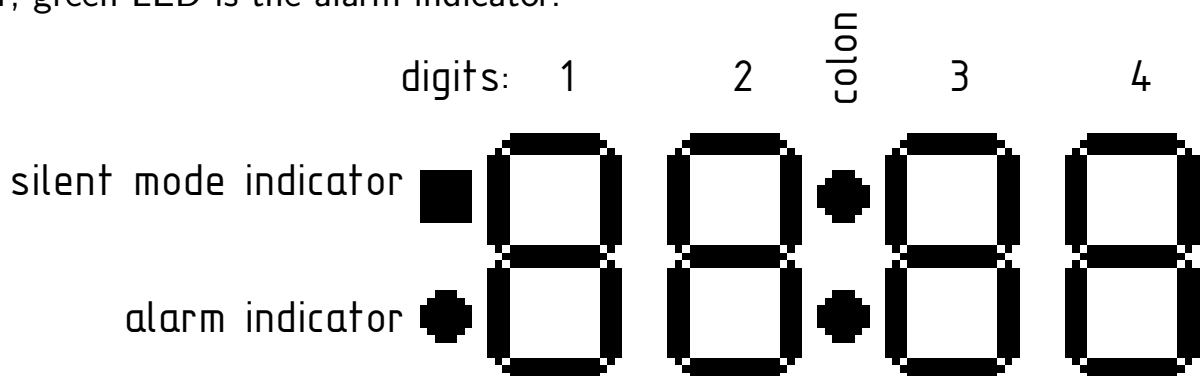
FEATURES

The SilentTimer Action Figure is a multi-functional digital clock. It has the following features:

- Displaying time and date
- Adjusting time and date
- Programmable, silencable alarm
- Countdown timer
- Countup timer
- Calculator (4 operations)

USER INTERFACE

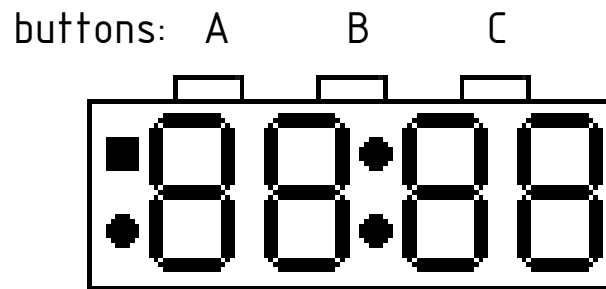
On the front there is a 4 digit, 7 segment red LED display. Between the first and last two digits there are two LEDs forming a colon. There are two LEDs to the left of the digits. The upper, red LED is the silent mode indicator. The lower, green LED is the alarm indicator.



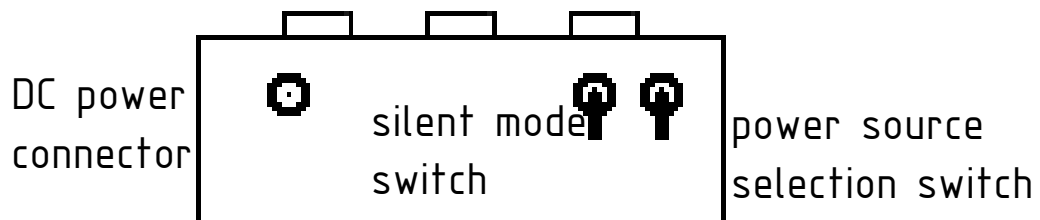
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On the top there are three buttons: A, B and C, counting from left to right.



On the back there is a DC power connector and two switches. The left one is the silent mode switch and the right one is the power source selection switch.



POWER SOURCE

The device can be powered by an external DC power supply or by internal batteries. A 3–3.3V DC power supply with a 2.1/5.5 plug (positive voltage on the pin, negative on the ring) should be connected to the connector on the back of the device.

Two 1.5V AA batteries should be inserted into battery slots inside the device. This requires opening the case.

The power source selection switch on the back of the device determines the power source. High position selects the batteries. Low position selects the external supply.

Inside the device there is a CR2032 battery which makes the clock still count and remember time even if it's not powered for some time.

SILENT MODE

The clock can be set to a silent mode by the silent mode switch on the back of the device. Low position enables silent mode. High position disables silent mode.

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When silent mode is active the silent mode indicator LED is on and the device cannot emit any sound signals.

TIME DISPLAY MODE

After turning on the STAF is in its default mode, the time display mode. In the time display mode the clock displays the hour on the first two digits and the minute on the last two digits. The colon between the digits blinks every second. Button A activates the date display mode, button B starts time setup and button C starts alarm setup.

TIME SETUP MODE

The Time setup mode is activated by pressing button B when the STAF is in time display mode. In this mode it's possible to set the time on the clock. There is one digit selected. All other, non-selected digits are blinking. The colon is displayed without blinking. Button C changes the selected digit's value. Button B selects next digit. If the last digit was selected button B confirms the new time and the clock goes back to time display mode. Button A cancels the time setup and the clock goes back to time display mode.

ALARM

It's possible to set one alarm at a specified time. When the alarm time comes the STAF emits a 4kHz sound signal (if silent mode is not enabled) and „ong” is displayed every second second. When an alarm is set the alarm indicator LED is on. The alarm is not forgotten after turning the device off and on again.

ALARM SETUP MODE

The alarm setup mode is activated by pressing button C when the STAF is in time display mode. In this mode it's possible to set the alarm time. There is one digit selected. All other, non-selected digits are blinking. Additionally, the alarm indicator LED is blinking too. The colon is displayed without blinking. Button C changes the selected digit's value. Button B selects next digit. If the last digit was selected button B confirms the new alarm time, the alarm is activated and the clock goes back to time display mode. If an alarm was already set and no

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digit was modified button B disables the alarm. Button A cancels the alarm setup and the clock goes back to time display mode.

DATE DISPLAY MODE

The date display mode is activated by pressing button A when the STAF is in time display mode. In this mode the clock displays the date for three seconds and the year for one second. The day is displayed on the first two digits and the month on the last two digits. The lower dot of the colon is displayed together with the date. Button A activates the countup mode, button B starts date setup and button C starts year setup.

DATE SETUP MODE

The date date setup mode is activated by pressing button B when the STAF is in date display mode. In this mode it's possible to set the date on the clock. There is one (for the day) or two (for the month) digits selected. All other, non-selected digits are blinking. The lower dot of the colon is displayed without blinking. Button C changes the value of the selected digit(s). Button B selects next digit. The month is selected before the day. If the last digit was selected button B confirms the new date and the clock goes back to date display mode. Button A cancels the date setup and the clock goes back to date display mode.

YEAR SETUP MODE

The year setup mode is activated by pressing button C when the STAF is in date display mode. In this mode it's possible to set the year on the clock. The year can be any number between 0 and 9999. There is one digit selected. All other, non-selected digits are blinking. Button C changes the value of the selected digits. Button B selects next digit. If the last digit was selected button B confirms the year and the clock goes back to date display mode. Button A cancels the setup and the clock goes back to date display mode.

COUNTUP MODE

The countup mode is activated by pressing button A when the STAF is in date display mode. In this mode the STAF works as a timer that counts seconds and

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displays them. The maximal value is 99 minutes and 59 seconds. After reaching this value it goes back to 0. Button B starts and stops the timer. Button C resets the timer. Button A stops and resets the timer. If the timer is already stopped and reset button C starts countdown setup mode.

COUNTDOWN SETUP MODE

The countdown setup mode is activated by pressing button A when the STAF is in countup mode. In this mode it's possible to set the number of minutes and seconds to count down from. The maximal value is 99 minutes and 59 seconds. This mode remembers the previously used value. There is one digit selected. All other, non-selected digits are blinking. Additionally, the colon is blinking. The upper LED blinks earlier than the lower one. Button C changes the digit's value. Button B selects the next digit. If the last digit is selected button B confirms the time and the timer goes to countdown mode. Button A resets the value and selects the first digit. If the first digit was already selected and not modified button A starts time display mode.

COUNTDOWN MODE

The countdown mode is activated by setting up the countdown value in countdown setup mode. In this mode the STAF works as a timer that counts seconds down to 0. When 0 is reached the STAF emits a 4kHz sound signal (if silent mode is not enabled) and the display changes to „0:ng”. Button B starts and stops the countdown. It's not possible to start or stop after reaching 0. Button A starts countdown setup mode again. Button C too.

CALCULATOR FUNCTIONALITY

Everything is better with calculators. This device provides basic calculator functionality. Its limited interface makes it suitable for calculations which require a larger number of digits. But it might be very useful when it's not possible to find a more professional calculator anywhere.

The STAF can perform 4 operations: addition, subtraction, multiplication and division. The operands and the result are numbers between -999 and 9999. For

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numbers between -9.99 and 99.99 there are two digits after the decimal point available. The result is always rounded to the available number of digits.

The calculator functionality is activated by pressing button B while the STAF is being turned on. The STAF enters the calculation result display mode then.

CALCULATION RESULT DISPLAY MODE

In this mode the STAF displays the result of the last calculation. If there were no calculations performed yet 0 is displayed. If the last calculation resulted with an error „E:EE” is displayed. Button C starts a new calculation and the STAF enters operand setup mode (for the first operand). Button B continues the calculation (the last result is used as the first operand in the next calculation) and the STAF enters operation select mode. Button A resets the displayed value. If the value is already 0 button A starts time display mode. When displaying an error („E:EE”) any button will replace the error with a 0.

OPERAND SETUP MODE

In this mode it's possible to select the first or second operand of the next calculation. One digit is selected, all others are blinking. Button C changes the selected digit's value. Button B selects the next digit. The first „digit” to set is the decimal dot (all four digits are blinking then). For the first „actual” digit it's possible to select a minus sign instead of the digit. This makes the operand negative. When the last digit is selected button B confirms the operand. If it was the first operand the STAF enters operation select mode. If it was the second operand the STAF performs the calculation and enters calculation result display mode. Button A cancels the calculation and the STAF enters calculation result display mode (to display the previous result).

OPERATION SELECT MODE

In this mode it's possible to select the operation to perform. The currently selected choice is displayed. There are 4 choices: „Add” (addition), „Sub” (subtraction), „Mul” (multiplication) and „div” (division). Button C selects the next choice. Button B confirms the selection and the STAF enters operand

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setup mode (for second operand). Button A cancels the calculation and the STAF enters calculation result display mode (to display the previous result).

CALIBRATION

If the clock is too fast or too slow it can be calibrated. It can be made slower or faster. Calibration is most likely not required in normal operation.

CALIBRATION VALUE DISPLAY MODE

The calibration value display mode is activated by pressing button A while turning on the STAF. In this mode the calibration value (between -255 and 255) is displayed hexadecimally. Button A starts time display mode. Button B starts calibration value setup mode. Button C has no effect.

CALIBRATION VALUE SETUP MODE

The calibration value setup mode is activated by pressing button B when the STAF is in calibration value display mode. In this mode it's possible to set the new calibration value. One digit is selected. All other are blinking. The first „digit” is the minus sign. The next two are hexadecimal. Button C changes the value of the selected digit. Button B selects next digit. When last digit is selected button B confirms the new calibration value and the STAF enters calibration value display mode. Button A cancels the setup and the STAF enters time display mode.

MEMORY ACCESS MODE (DEBUG)

There is a debug mode which allows to see and modify the RTC chip's memory contents. Not needed in normal operation. This mode is not described in this manual.

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MORE INFORMATION

For more information visit <http://1190.bicyclesonthemoon.info/staf>. In case of questions send e-mails to bicyclesonthemoon@chirpingmustard.com.

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