

MIGHTY-6

Nixie clock user manual

Proudly made in Georgia

CAUTION! This clock uses high voltage, 180VDC, which can be (and will be) lethal, if not handled properly. There are no user serviceable parts inside, do not open the clock cabinet!

TECHNICAL SPECIFICATIONS

Clock type: Static driven segments, 6-digit nixie tube clock with alarm, adjustable RGB backlighting, LCD screen and MP3 ringtones (Optional)

Features: 12/24-hour mode selection, calendar, alarm with weekend adjustment, customizable tube backlight with alarm sync, automatic/manual tube brightness, mp3 files as a ringtone (optional), built-in diagnostic menu.

Timekeeping: Precision TCXO RTC (DS3231), supercap clock backup (24-72 hours)

Tube type: IN-14 (Default, direct plug-in). IN-16, IN-8-2, Z574M (These are optional types of tubes)

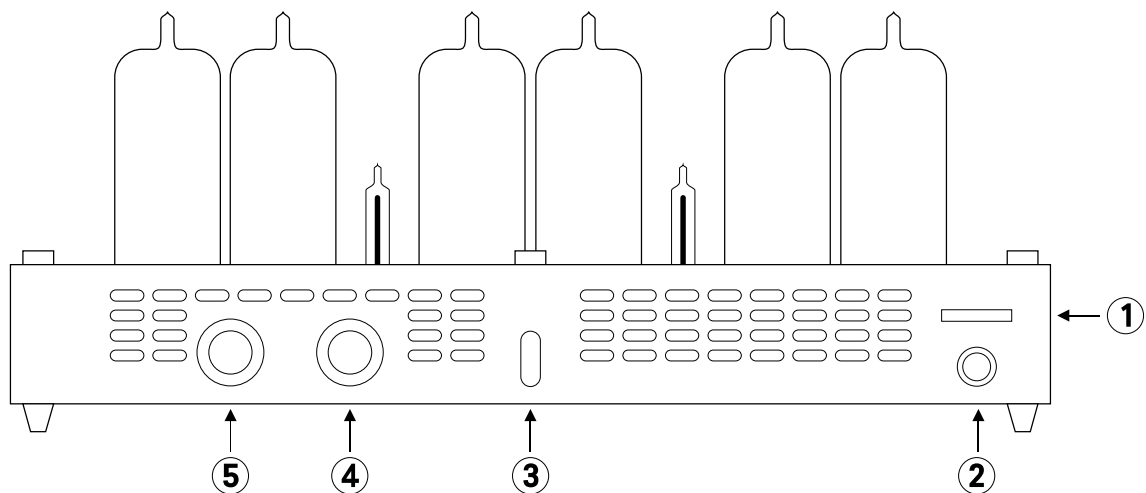
Power supply: USB Type-C PD 2.0/3.0. Max. power consumption $\leq 5W$ (7W with MP3 option). 12-15VDC (optional)

Additional features of the MP3 version: Playback of MP3 (8-320kbit) and WAV files (8-44khz) from the MicroSD card (128mb card bundled). Cards up to 32GB, formatted in FAT16/32 are supported. Folder navigation and folder playback not supported (all files should be in a root folder of MicroSD card, only first 32 files will be accessed). Output power (mono) $\leq 2W$ @ 4 Ohm load. Stereo line output.

LCD Screen and setup menu: 2x16 digits alphanumeric LCD display with backlight, two button control, English language. Optional languages: French, Italian, Chinese.

Dimensions: 187 x 77 x 25-55mm. (Actual dimensions depending on the cabinet style)

CONTROLS AND CONNECTIONS (Rear view)



1. MicroSD card slot (available in MP3 version only)
2. Line out for audio output (available in Enhanced MP3 version only)
3. DC power connector. Either USB Type C or barrel connector
4. Left button – Enter setup/Next setup item
5. Right button – Display calendar/Mute alarm/Change setup item value

OPERATION

Startup: This clock requires no special care and is “ready to run” directly – just connect the power supply. Power supply compatibility is tested on startup (all zeros are shown on the clock for 2 seconds) – if there is not enough voltage or power, LCD screen will display the message “**Power supply is not USB PD type!**” and clock operation will be halted. If power supply is ok, clock will continue booting.

Normal mode: In this mode, clock displays the time, according to the user settings (12- or 24-hour mode). Pressing the bottom (or right) button will enter the setup menu, pressing the top (or left) button will display the calendar – year/month/date and if alarm is enabled, alarm time will be also displayed (with dot separators blinking). Pressing top (left) button when alarm is ringing, will mute the alarm.

Setup menu: This clock has intuitive and user-friendly setup menu, which is used in the following way – pressing the bottom (right) button will change the menu item, and pressing the top (left) button will change the selected value. Setup is done via built-in LCD screen, which is located at the bottom of the clock and the menu has the following items:

Item name	Available choices	Remarks (if any)
SET REGION/MODE	12 HOUR/F 24 HOUR/C	This is used to set the hour display mode for the clock
SET YEAR	2022-2099	
SET MONTH	January-December	
SET DATE	1-31	Warning: setting illegal date, like February 31th, will cause improper operation of alarm and calendar.
SET DAY OF WEEK	Monday-Sunday	This is important for proper alarm operation.
SET HOURS	0-23 or 0-12 with AM/PM	Time setting format depends on region setting.
SET MINUTES	0-59	
SET ALARM	OFF (Default), ON ALL WEEK, ON WORKDAYS ONLY	If you set this menu item to OFF, the other alarm related settings won't appear in setup sequence.
ALARM HOURS	0-23 or 0-12 with AM/PM	
ALARM MINUTES	0-59	
ALARM DURATION	1-3 Minutes	
ALARM SOUND	1-32 (Selected sound will play)	There are two hardware versions of this clock, one with mp3 and one without. Version without the mp3 will just play annoying beep as

		alarm, regardless of number selection in this menu item. Version with mp3 will play the files from the included MicroSD card according to their number.
ALARM COLOR SYNC	OFF (Default), ALL TOGETHER, RANDOM FLASH	It is possible to sync tube backlight colors to the alarm. "All together" changes all colors at once and "random flash" just does random flashes.
TUBE BRIGHTNESS	1-8, AUTO	There are 8 tube brightness levels and "Auto" mode too. These settings apply to backlight brightness as well. When "Auto" is enabled, tubes and backlight will gradually dim at evening and come back to full power in the morning.
SUPER SAVER	ON/OFF	Enabling this option will completely turn off the tubes and backlight from 00:00 to 06:00. Alarm operation won't be affected.
REFRESH MODE	DIGIT SEQUENCER / COUNTER / OFF	As some people believe, there is a need to refresh tube displayed data, to reduce cathode poisoning. While we do believe this is just complete b/s, we've implemented two cool looking visual options for that, since people demanded them.
TUBE BACKLIGHT	OFF / FIXED COLOR / COLOR EFFEX	Tube backlight can be customized in a several ways – you can either turn it off, adjust color individually or set some "effex" – gradient colors or fading. If you select "effex" at this point, "individual color" and "backlight color tube xx" won't appear – clock will directly go into "effex" selection mode.
INDIVIDUAL COLOR	OFF/ON	If you enable this option, on the next step, you will be able to customize backlight colors for each tube (including dot separators). If not, single color setting will be applied to all tube backlights.
BACKLIGHT COLOR TUBE XX	15 Backlight colors total	In this mode, pressing the bottom button will select tube numbers from left to right, and the top button will change the color for the selected tube. If individual color is set to OFF, there will be only one setting, which will adjust backlight color for all tubes.

BACKLIGHT EFFEX	15 Backlight effex available	Here you can select from various preset backlight color options, some of which are gradient, some are discrete and so on – have to see them all by yourself.
CLOCK FINE TUNE	15-45	This is a factory calibration setting and should not be adjusted by the user. Leave it on a default value of 30.
BEEP ON KEYPRESS (Available only in models without the MP3 function)	ON/OFF	Clock beeps on keypress, for better feedback, but if you find this annoying, you can turn it off in this setting.
ALARM VOLUME (Available only in models with the MP3 function)	1-10	There are 10 volume levels for alarm sound playback. This menu item won't appear, if your clock has no MP3 as alarm feature, or if you have disabled your alarm.
DIAGNOSTIC MODE	The screen like one below will be shown (This is for geeks and “normal” users have no need for this): HV=180V V DC=5.0V DCin=12.0V	In this mode, the input voltage, high voltage and 5V voltage will be measured and readings provided on the screen. Kindly note, these readings are only approximate values, with 3-5% measurement error possible. If some parameter is critical, you will get the corresponding notification.
FIRMWARE	2.32 EN (Depends on your clock actual build)	Displays current version of the firmware.
SETUP COMPLETE! EXIT OR RESTART?	Pressing the top button exits setup, bottom button restarts the setup	

PLEASE NOTE: During the setup or startup sequence, some digits of nixie tubes may come on randomly. Also, during the normal use of the clock, LCD screen might show question marks or other symbols. All this is completely normal and does not affect proper clock operation.