When initially plugged in, or after a long power outage, the clock will flash “12” until the time has been set. The clock has several minutes of reserve power, so a brief outage or moving the clock to a different outlet is not a problem.

Press the SET (center) button to enter setting mode, starting with the hours. Additional presses of the SET button will step through the settable values in the table below. The value currently being set is indicated by a label (composed of two overlapped digits) on the left Nixie tube. Pressing the large buttons on the top of the clock will increase (right) or decrease (left) the displayed value. Pressing both at the same time increases the value by 20. All three buttons auto-repeat at a rate of twice per second if held down.

LABEL	DESCRIPTION		RANGE	ORIG. VALUE	YOUR VALUE
01	Hours	Always entered in 24 hour format - add 12 to hours after noon	0-23		
02	Minutes	Changing the minutes will reset the seconds to zero	0-59		
03	Month		1-12	Settings from Month on down are non-volatile	
04	Day		1-31		
05	Century		20-99		
06	Year		0-99		
12	Normal display mode	Add together any of the following values: 1 - hours & minutes 2 - seconds 4 - month & day 8 - year 16 - test/demo mode	0-16	3	
13	Display mode when right button pressed		0-16	8	
14	Display mode when left button pressed		0-16	4	
15	Display options	Add together any of: 1 - 24 hour time format 2 - day before month 4 - year before date 8 - lead zero blanking	0-15	8	
23	Duration of digits	Units are 1/120 second	25-240	85	
24	Gap between digits	Units are 1/120 second	0-60	5	
34	Dekatron mode during AM hours	Choose one of the following: 0-7 - spin clockwise 8-15 - spin counterclockwise 16-18 - pendulum	0-18	10	
35	Dekatron mode during PM hours		0-18	2	
36	Dekatron position	Adjust so that the lit spot is at the top center	0-29	1	

Pressing the SET button one more time will exit setting mode.
The clock will also exit setting mode automatically after several minutes of inactivity.

This is the label on the back of the clock:

Nixie/Dekatron Clock type 21a #1
http://pobox.com/~JasonHarper/ND21a.html
JasonHarper@pobox.com

These labels go on the connector on the power cable:

ND21a #1 CLOCK ONLY!

ND21a #1 CLOCK ONLY!

This is the label on the power supply:

DANGER
HIGH VOLTAGE

- 120 volt 60 Hz AC only.
- Connect to ND21a #1 clock only.
- Do not plug in if cable is not connected to the clock, or the clock case is open.

This is the label on the bottom of the clock:

0	Hours	TIME SETTING SUMMARY Left - Lower Right - Raise Both - Add 20
1	Minutes	
2	Month	
3	Day	
4	Century	
5	Year	
6	Normal	1 hours & mins 2 seconds 4 month & day 8 year 16 test/demo
7	Right	
8	Left	
9	Options	1 24 hour time 2 day < month 4 year < date 8 leading zero blanking
10	Digit time	
11	Gap time	
12	Dek AM	0-7 spin CW 8-15 spin CCW 16-18 pendulum
13	Dek PM	
14	Dek center	

This chart shows the 19 possible settings for options 34 and 35, which specify the Dekatron tube's behavior during AM and PM hours, respectively (of course, you can set them both to the same thing if you don't want an AM/PM distinction).

Spin CW	Spin CCW	Moves	Completes revolution every
0	8	every 1/120 second	1/4 second
1	9	every 1/60 second	1/2 second
2	10	every 1/30 second	second
3	11	every 2/15 second	4 seconds
4	12	3 positions each second	10 seconds
5	13	every second	30 seconds
6	14	every 2 seconds	minute
7	Slow random spin - changes position once per second		
15	Fast random spin - moves continuously		
16	Large pendulum		All pendulum modes have a period of 2 seconds, and cross the bottom center position exactly on the second.
17	Medium pendulum		
18	Small pendulum		

Mode 4 is the most authentic: it skips over the intermediate positions that a traditional Dekatron counter circuit would not use.

Mode 6 spins once per minute, synchronized with the minute, so it acts like the second hand of an analog clock. This mode is automatically used when setting the minutes (option 02), to aid in synchronizing the time with another clock.

When the left or right button is pressed to select an alternate Nixie display mode (as set by options 13 and 14), the Dekatron is stationary in its left or right center position, respectively, for the duration of that display.. This also happens when setting options 13 and 14.

When setting the AM/PM Dekatron modes (options 34 and 35), the Dekatron shows the mode being set, regardless of the current hour.

When setting any other option, the Dekatron is stationary at the top center position. Option 36 allows this position to be adjusted: it may need to be changed slightly after replacing the tube, due to manufacturing differences between tubes. You could also change this setting to achieve special effects, such as an upside-down pendulum mode.

If the Dekatron has not visited its reset position (just left of top center) in over two minutes, it will quickly move to the reset position and then back to where it was. This assures that the actual Dekatron position matches what the software thinks it is, and is only likely to occur in modes 17 or 18 (all other modes visit all positions at least once a minute).

After a detected power failure, the Dekatron will briefly spin clockwise at maximum speed in order to resynchronize its position. The two minute timeout described in the previous paragraph will ensure that the Dekatron position will eventually be correct even if a power glitch occurs that is not detected by the clock.