



T20v2 user Guide

Modes: 7

- 1:- Random Letters (In 5 figure groups)
- 2:- Random Numbers (In 5 figure groups)
- 3:- Random Mix of Letters, Numbers (5 figure groups)
- 4:- Random Prosigns
- 5:- International Callsigns,
- 6:- Common Words and abbreviations.
- 7:- Contest mode, In this mode the pitch and the speed change by approx. +/- 15% to add to the realism and to make things less tiring for longer sessions.



Controls:

Adjustable Volume

Adjustable Speed (approx. 8 to 30 WPM) Adjustable Gap (approx. upto 4 seconds)

Practice Oscillator Modes:- Straight Key/lambic A or B

Straight Key Input for use as a practice oscillator (3.5mm mono plug on key needed) and now a lambic Paddle key practice oscillator (user selectable lambic A or B , and Left/right handed paddle via jumpers on main board), of course the paddle key needs a stereo plug!

Automatic 10 Minute session timer LED

Aux output

Low Level fixed sine wave output for connecting to a PC running decoding software or for use over Zoom etc.

External Connections:

DC Power (2.1mm Power Socket centre positive)

(7 to 15V although the tutor normally runs from a standard PP3 internal 9v battery) external 10v PSU is a good choice if using external power but make sure its regulated

Headphones / Speaker out socket (3.5mm mono or stereo) (Internal Speaker included)



Using the T20 The T20 is refreshingly simple to use, no menus!

Turn the power/Volume control to start the tutor and that's it your away, adjust the gap and speed control to your preference and start improving your code speed. To change modes press and release the mode push button and you will hear a higher pitch Morse letter. L for Letters Mode, N for numbers mode, P for Prosigns, M for Mixed , C for Callsign modes, & CT for ConTest Mode.

The internal battery is a standard PP3 9v type and to replace it remove the two screws holding the case together and lift of the lid.

To use the tutor as practice oscillator

To increase the tutor value it can also act as useful Practice Oscillator.

To use this feature plug your key into the rear connector, **hold the key down and turn on the tutor**. The microcontroller looks at the key input at power on and will detect the key now. It will automatically switch to straight key oscillator mode. If you're using a paddle then hold the **left** hand paddle when turning on the unit and it will start up in Iambic practice oscillator mode, the speed control on the front of the tutor will adjust the Iambic speed. There is also a jumper on the main board that will allow Iambic A or B modes (B jumper on by default) and another marked DEV1 that selects left or right handed paddle.

Word of warning....

The tutor uses an internal 30mm PCB speaker, this is great for normal personal use but some people would like to use headphones, if you do use headphones be careful with the use of the volume control. It can be very loud. There is a jumper on the main board marked H/S (headphones/Speaker), with the jumper off the volume level is limited to protect your hearing. Put the jumper on if you intend to use an external speaker.

Changing the pitch of the tutor is very simple. Turn it off, press and HOLD the mode push button while turning on the tutor. Do not release the button. You will now here a steady tone. Adjust the GAP control to change the pitch of the tone. When happy release the push button and the new tone will be saved and used from now on. You can change the pitch at any time you wish.

Tips for improving your code speed.

It's very easy to fall into a common trap that can cause you problems with listening to real life Morse. Do not try to count Dits and Dah's to work out the letters. Start to learn the 'sound' of the letters from day one. Set the speed control to a realistic speed (I find setting the SPD control at the 12 O'clock position is about right to start with, about 14 WPM), adjust the GAP control to give you more thinking time. This way you will learn the characters at the right sound and although it may seem hard at first it will be easier when you listen on air (which is the point of learning the code isn't it). Spend about 10 minutes a session listening to code, much more than this isn't helpful.



Take a break between sessions and you will come back fresh and ready to learn. The T20v2 has a 'Running' LED, This LED is also used as the session timer indicator, ever 10Mins the LED will change to bright green and remain so for about 10 seconds, this is an indication that it's time to take a break, spending too much time in one session is not going to help. A couple of sessions a day would be great and will really help you learning of the code.

Future expansion.

There is an unused jumper, an internal trimmer position, and an I2C connection point on the main board to allow for future software upgrades. These are not being used in this current release.

Above all, enjoy it and enjoy using the T20v2 tutor. Good luck with learning Morse.

73 Paul M0BMN Kanga-products

Morse Code

Letters

A	● ■■	N	■■ ●
B	■■ ●●●	O	■■ ■■ ■■
C	■■ ● ■■ ●	P	● ■■ ■■ ●
D	■■ ●●	Q	■■ ■■ ● ■■
E	●	R	● ■■ ●
F	●● ■■ ●	S	●●●
G	■■ ■■ ●	T	■■
H	●●●●	U	●● ■■
I	●●	V	●●● ■■
J	● ■■ ■■ ■■	W	● ■■ ■■
K	■■ ● ■■	X	■■ ●● ■■
L	● ■■ ●●	Y	■■ ● ■■ ■■
M	■■ ■■	Z	■■ ■■ ●●

Numbers

1	● ■■ ■■ ■■ ■■
2	●● ■■ ■■ ■■
3	●●● ■■ ■■
4	●●●● ■■
5	●●●●●
6	■■ ●●●●
7	■■ ■■ ●●●
8	■■ ■■ ■■ ●●
9	■■ ■■ ■■ ■■ ●
0	■■ ■■ ■■ ■■ ■■

Prosigns

(.)	● ■■ ● ■■ ● ■■	(,)	■■ ■■ ●● ■■ ■■
(?)	●● ■■ ■■ ●●	(/)	■■ ●● ■■ ●
(=)	■■ ●●● ■■	(AR)	● ■■ ● ■■ ●
(BK)	■■ ●●● ■■ ● ■■	(CT)	■■ ● ■■ ● ■■
(VA)	●●● ■■ ● ■■	(KN)	■■ ● ■■ ■■ ●