



User Manual for Diagnostic kaka transmitters V1.2

1.0 Background

“Diagnostic” transmitters for female kaka have been developed to assist in the development of an “Egg Timer” transmitter for kaka.

The “Diagnostic” transmitter developed for kaka has an 8 hour on, 16 hour off duty cycle, and logs and reports fidget information whilst the bird is alive and mortality if it dies.

2.0 Turning a transmitter on or off

Over view

The radio output of a transmitter can be turned on and off using a magnet. At the time of turn on the user may set the time of day in hours after midnight, but this is not compulsory. If the time of day is set correctly then the transmitter will automatically adjust itself so that it rolls over each 24 hour period at 1000 in the morning. If the time is not set at turn on then the transmitter will roll over the 24 hour periods in synch with the time that the transmitter was turned on. Setting the time at turn on will sync the duty cycle so that the radio output comes on at 1000 and off at 1800.

Note that it is only possible to set the number of hours after midnight not minutes as well and this means that a transmitter turned on at 1430 and told that the time in hours after midnight is 1400 will start and end the duty cycle at 1030 and 1830 respectively. Also note that the time of turn on is the time the turn on procedure is completed (ie the last time the transmitter is exposed to the magnet) not the start of the turn on procedure.

Turn on with no time set

A magnet is used to turn the transmitters on and off. When a magnet is placed in the correct location the transmitter will sound a tone (heard on a suitable receiver) for approximately 1 second. The magnet must be held in place until the continuous tone turns itself off. To complete the turn on or off sequence the magnet must then be moved away from the transmitter within a further 2 seconds after the tone turns itself off. This is a “simple” turn on and will start the transmitter with no time set, and under these conditions the 24 hour days will roll over every day at the time that the transmitter was turned on.

The turn on or off sequence is aborted if the magnet is not held in place long enough for the continuous tone to turn off by itself. The turn on or off sequence is also aborted if the magnet is not moved away within 2 seconds after the continuous tone turns off.

Turn on with time set

If the time is to be set the procedure is to start off as above but rather than moving the magnet away at the end permanently, move the magnet away briefly and return it to the transmitter. The transmitter will start to output pulses at a rate of one every 1.5 seconds. Each pulse represents one hour after midnight. Count the pulses as heard and remove the magnet when the count gets to that desired. If the time of turn on was 3pm the time would be set as 15 hours after midnight, therefore requiring the magnet to be held in place until 15 pulses had been counted. Once the required number of pulses has been heard the magnet must be removed and the turn on sequence is complete.

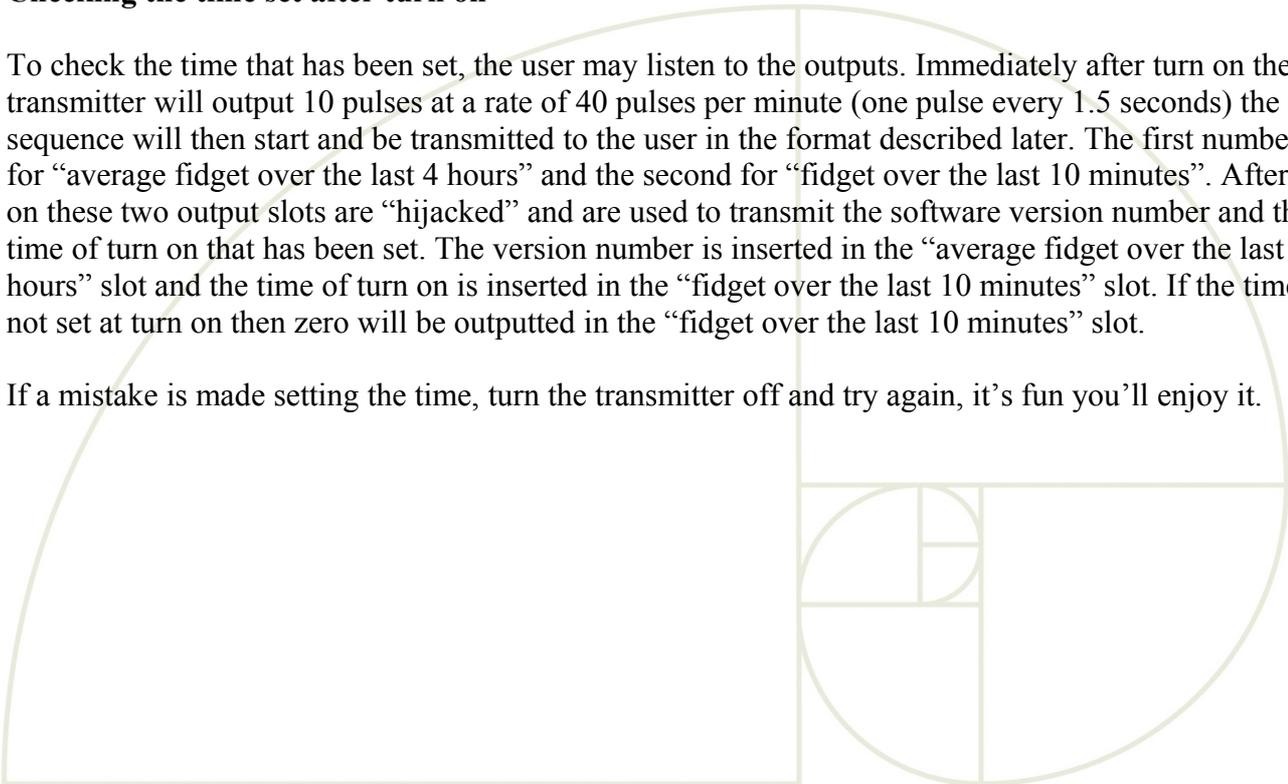
A transmitter that has had the time set will enable the radio output for 10 minutes at 40ppm and then revert to the appropriate part of the duty cycle for the current time of day. If a transmitter is turned on at 0900 with the time set as 9 hours after midnight the user will hear 10 minutes of 40ppm pulsing before the transmitter falls silent for the 50 minutes before 1000.

If a transmitter is turned on at midnight then the time should be set as 24 hours after midnight since it is not possible to set zero hours after midnight.

Checking the time set after turn on

To check the time that has been set, the user may listen to the outputs. Immediately after turn on the transmitter will output 10 pulses at a rate of 40 pulses per minute (one pulse every 1.5 seconds) the output sequence will then start and be transmitted to the user in the format described later. The first number set is for “average fidget over the last 4 hours” and the second for “fidget over the last 10 minutes”. After turn on these two output slots are “hijacked” and are used to transmit the software version number and the time of turn on that has been set. The version number is inserted in the “average fidget over the last 4 hours” slot and the time of turn on is inserted in the “fidget over the last 10 minutes” slot. If the time is not set at turn on then zero will be outputted in the “fidget over the last 10 minutes” slot.

If a mistake is made setting the time, turn the transmitter off and try again, it's fun you'll enjoy it.



3.0 Pulse rates

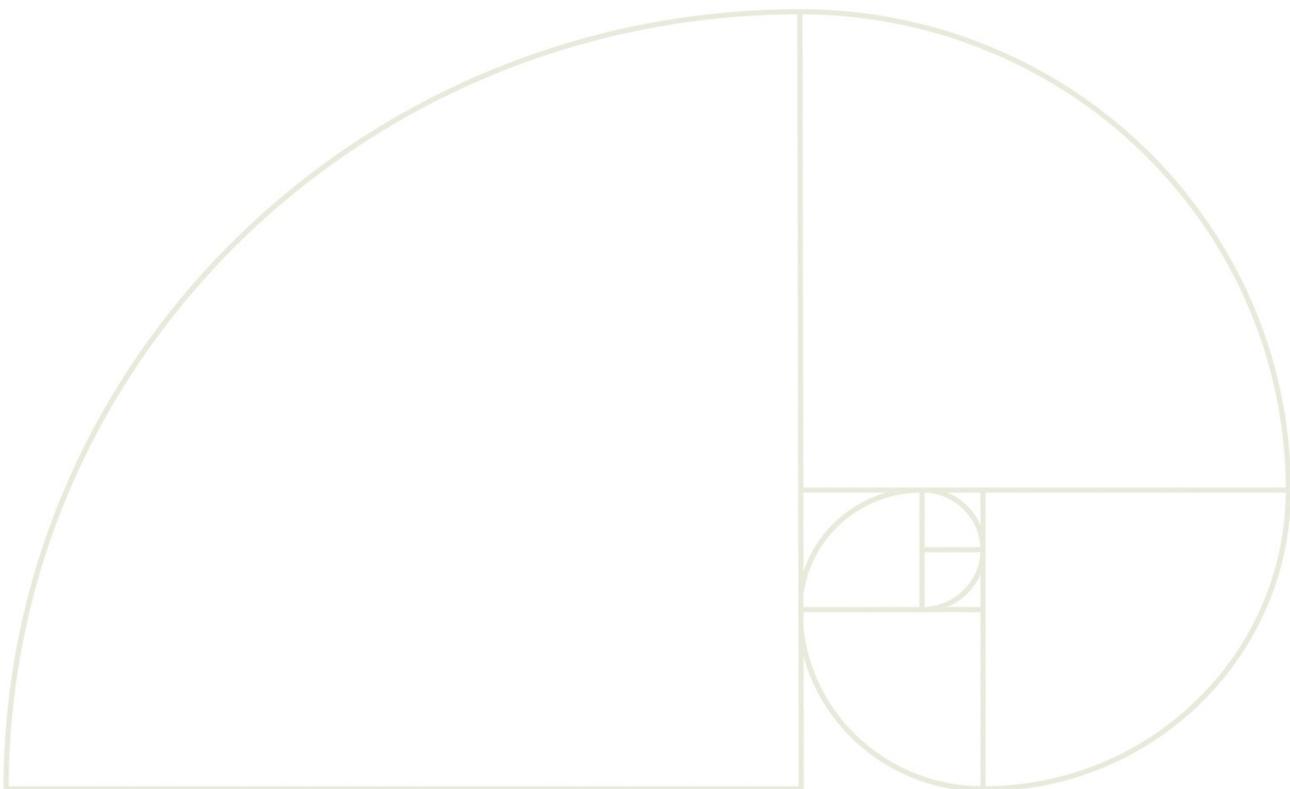
Diagnostic kaka transmitters can output 3 different pulse rates.

3.1 Duty Cycle when not in mortality

Time of day	Action
1000hrs	Radio output on at 20ppm for 2 hours with fast telemetry but no slow outputs
1200hrs	Radio output on at 40ppm for 4 hours with fast & slow telemetry outputs
1600hrs	Radio output on at 20ppm for 2 hours with fast telemetry but no slow outputs
1800hrs	Radio output off for 16 hours

3.2 Duty Cycle when in mortality

Time of day	Action
1000hrs	Radio output on at 80ppm for 8 hours with fast & slow telemetry outputs
1800hrs	Radio output off for 16 hours



4.0 Outputs

4.1 Over view and explanations

When audible telemetry outputs are enabled the background pulse rates (as described above) are broken every 10 minutes by a series of 2 outputs.

1. average fidget over the last 4 hours
2. fidget over the last 10 minutes

The transmitters will not start to give accurate information about the bird until at least 4 hours after turn on.

Average fidget over the last 4 hours

The “average fidget over the last 4 hours” gives a measure of how active or fidgety the bird has been over the last 4 hours, we are expecting to see higher numbers for not incubating birds compared with incubating birds. The maximum theoretical average is 240 which would represent 100% activity for the entire 4 hour period, this is probably unlikely.

Fidget over the last 10 minutes

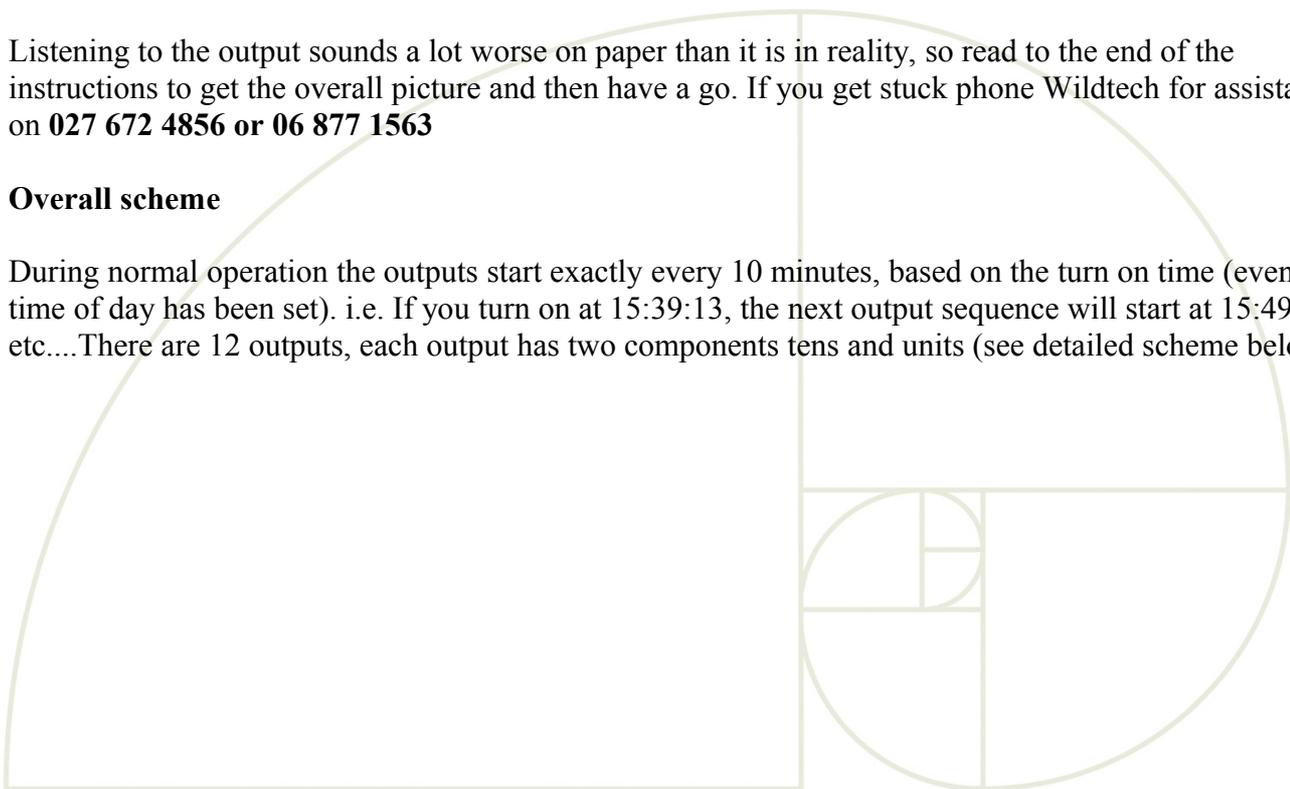
The “fidget over the last 10 minutes” gives a measure of how active or fidgety the bird has been over the last 10 minutes, this number will be quite erratic but will give you a snap shot of recent fidget levels . The maximum theoretical value is 240 which would represent 100% activity for the entire 10 minute period, this may be witnessed in rare cases.

4.2 Listening to the outputs

Listening to the output sounds a lot worse on paper than it is in reality, so read to the end of the instructions to get the overall picture and then have a go. If you get stuck phone Wildtech for assistance on **027 672 4856 or 06 877 1563**

Overall scheme

During normal operation the outputs start exactly every 10 minutes, based on the turn on time (even if the time of day has been set). i.e. If you turn on at 15:39:13, the next output sequence will start at 15:49:13 etc....There are 12 outputs, each output has two components tens and units (see detailed scheme below).



Detailed scheme

Using the first output for “average fidget over the last 4 hours” as an example

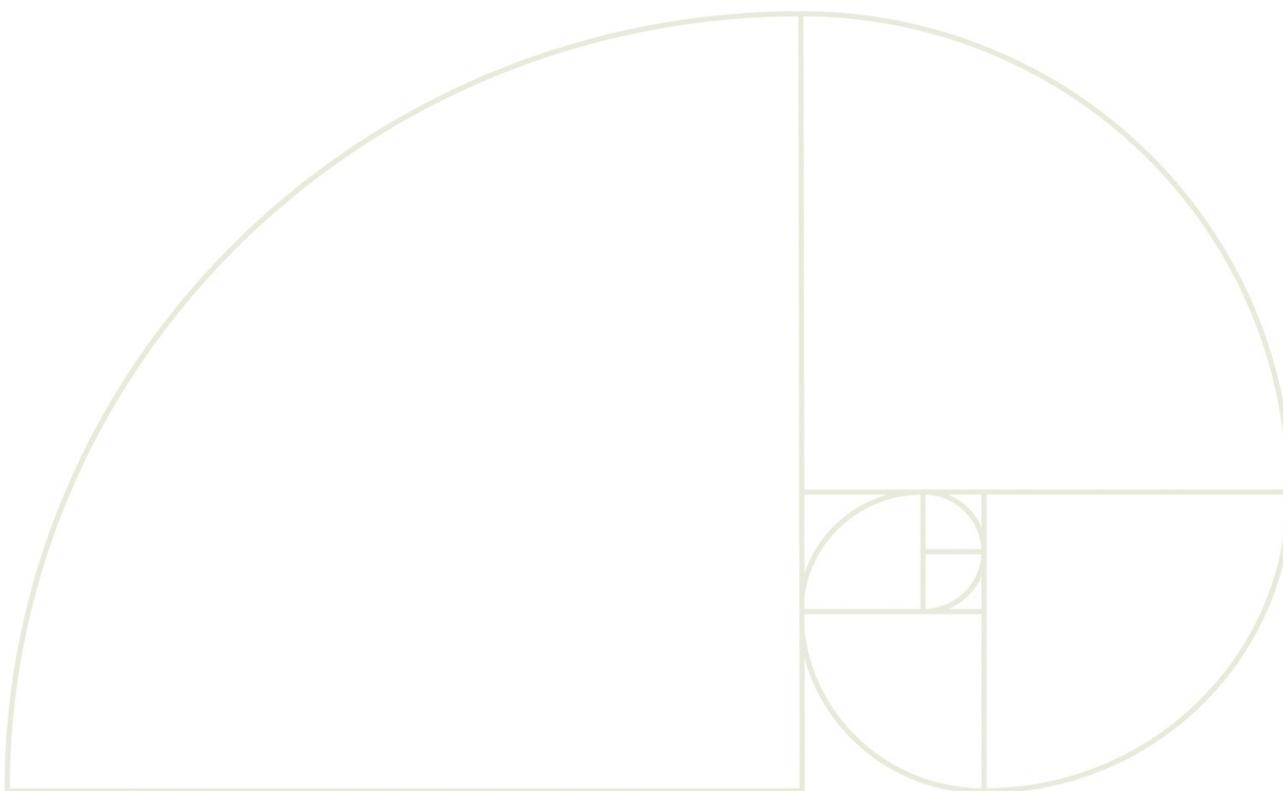
Standard pulsing... (3sec gap) ●●●●●●● (3sec gap) ●●●● (3sec gap) ...5 standard pulses before next output

/ 7 Pulses / 4 Pulses

To record this output;

1. Wait for the 3 second gap.
2. Count the pulses.
3. Wait for the three second gap
4. Count the pulses.
5. Wait for the three second gap.
6. Write down the two numbers obtained.

Following that five standard pulses (at either 40, or in the case of mortality 80ppm) will be heard before the next output comes in exactly the same format.



4.2 Recording the information

When recording information in the field it is recommended that you write down what you hear and work out the answers later. Using a transmitter just after turn on with the time of turn set to 3pm as an example the following should be recorded.

3,4/3,7

The comma separated numbers are the tens and units for each output.

4.3 Working out what the numbers mean

The example above gives the following result, 3 pulses followed by 4 pulses.

To obtain the true decimal value it is necessary to subtract 2 from each individual number. This yields **1** and **2**. The first number is the number of tens and the second number the number of units, therefore the final answer is 12.

The first output immediately after turn on is hijacked to relay the software version. In this case 1.2. and the second is to allow the user to check the time set in this case 3,7 = 15 ie 15 hours after midnight.

4.4 Working out the fidget outputs

The principle for working out the fidget numbers is exactly the same as the example above, subtract 2 from each digit and put them together. Ie

13,11/2,7

13,11=119 and 2,7=05 ie the bird's average fidget over the last 4 hours is 119 out of a theoretical maximum of 240 (~50% active or fidgety) but the bird only scored 5/240 in the last 10 minutes implying it did not move much in the last 10 minutes.



5.0 Mortality

The transmitters will also output the number of days since the start of mortality. Mortality “latches” and will be activated after 24 hours of zero movement. The first output gives the number of days since the last movement.

The **time since death** output will keep counting every day until the transmitter is turned off and restarted. The mortality pulse rate is set at 80 pulses per minute.

It should be noted that death may not necessarily result in zero movement of the transmitter, the carcass can be moved intermittently, presumably by scavengers for a number of days (and in some cases in the region of 2 weeks). Consequently mortality cannot be relied upon as a true measure of time since death.

If a mortality signal is heard with no number outputs the transmitter is likely to have a hardware fault that (may go away) but is more likely to become chronic and result in transmitter failure. In such a case it is recommended that the transmitter be replaced immediately. However other forms of management may also be appropriate depending on the circumstances. Eg choosing to mark the nest of a known incubating bird rather than disturbing it so that it can be found later in the event the transmitter fails.

5.1 Listening to the number output

The output format in mortality is similar to that in normal operation the only difference is that all the pulses will sound fast. The start of the output sequence will be at the same time as normal. **If you get stuck leave your transmitter going** and phone Wildtech for assistance on **027 672 4856 or (06) 877 1563**.

When in mortality the days since change of state output will tell you how many days since mortality started. If the day counter was giving 2,9 then the time since death (or more accurately the time since the transmitter stopped moving) would be 7 days.

Note

The maximum number output is 256 days. In such a case the output for days would have given 27 pulses followed by 8. After 256 days the counter rolls over and restarts from 1. However mortality pulse rates are 2-4 times that of the standard output pulse rates. Consequently it is unlikely the output will get to 256 days before the transmitters battery goes flat.

