Quick start Guide Potentiometer

Welcome to your *Patented* **DC Co-Pilot!**

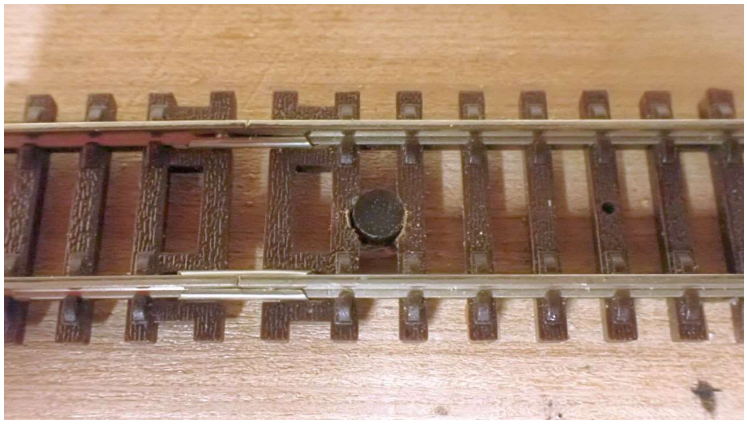
VERY quick start – connect the 2 RAIL wires to the track and plug in the power supply and the handheld.
After the flashing and 2 beeps drive your loco up and down to get the feel of the movement. The * button switches to reverse.
Press A to record, wait for the 2 beeps and drive up and down back to where you started.
Press C (Manual mode) Press B and watch your recording playback. Long beep = finished.

This is all very well but you need checkpoints and magnets to make the playback accurate.

1)
Fit a magnet to the underside of a non DCC loco so that the magnet passes less than 4mm above the sleepers.
The best place is between the front bogeys if possible.



2)
Decide where the datum checkpoint is to go, a good place is 150mm beyond the main platform of a mainline station. To start with just fit one checkpoint. In the photo a sleeper is cut and a 4.5mm hole drilled. Poke the checkpoint up from underneath so that the top of the checkpoint is level with the top of the sleepers. Fix with glue.



Note, We use Rising-Clamp connectors you need to fully turn the screws anticlockwise to open the jaws before inserting the wires.

3) The checkpoints, all in parallel, connect to the CKP terminals – either way round.

4) Connect the rail to the RAIL connections, you have to reverse these if the loco goes backwards. Leave the 12v out terminals disconnected at this stage, the points and signals are covered in the downloadable main manual.

5) Plug in the Handheld unit.

6) Place the loco on the track in the mainline station facing the checkpoint.
7) Turn the speed control to 0 – fully anticlockwise. Plug in the power supply to switch on. The lights on the handheld should flash for about 8 seconds and then 2 beeps right hand (FORWARD) LED green flashing.

8) Enter 203 (beep) 21 - this loads the default settings. You only need to do this once.

9) Press C there should be a beep. (C = Manual mode)

10) Slowly turn up the speed control. If your loco goes backwards stop the loco, unplug and swap over the two wires that connect to the rails.

11) Notice the speed of the loco is subject to the acceleration and deceleration rates we have built in. This is to make it all look realistic. They are adjustable.

12) Stop the loco down the track and press * this toggles between forward and reverse . If the loco is stopped and the system is in reverse you will see the white light in the handheld flash. This tells you that you are in reverse and if you turn up the speed control you will go backwards. The LED to the right of the speed control = Forward, and to the Left = Reverse.

13) Have a go at driving back and forth a few times to get a feel for driving the loco. Notice the slow speed performance.

14) Return the loco to the mainline station facing the Checkpoint. Now is the time to do a simple recording.

15) With the speed control at zero, Press A – Record (beep) and **WAIT** until you hear the 2 beeps. LEDs will be Red. This period gives the points a chance to reset when they get connected. Drive the loco over the checkpoint and you will hear a beep when the checkpoint is activated by the magnet, drive on a bit then stop.

16) Press * (reverse) turn up the speed control and reverse back into the station. As the magnet passes over the checkpoint again you will hear another beep. Stop in the station and press * again to set the system into Forward mode.

17) Press C (Manual) to finish the recording. Remember. Always finish a recording so that the loco is in the same zone between checkpoints that it was when you started the recording. The first checkpoint encountered on Record is DATUM and that must be the same checkpoint encountered on Playback.

18) Press B and stand back and admire your effort! Your recording will playback automatically. At the end of playback you will hear a long bleep that indicates the end of the routine. Press 125 and your routine will automatically play over and over until you press C.

19) Press C to return to manual operation. Get into the habit of Pressing C.

Now consider adding more checkpoints they all go in parallel, the more checkpoints the better the stopping accuracy. 1 to 2 metres between them is good and just outside stations makes sense. Place one at the focal point of a fiddle yard to cover all the sidings.

For fitting and using points and signals see the main manual.
If you hear 3 beeps it means the speed control is turned up but there is no loco present.
If you hear a continuous beep it means the loco is fitted with a DCC ready dummy pcb and C2 needs to be removed from it. - See main manual.

List of Handheld commands

A	Record
B	Playback
C	Manual
D	Toggle between Points and Signals control. Long beep = Points, Short = signals
*	Toggle between Forward and Reverse
#	Emergency Stop (# to cancel)
111	Switch ON the reverse beeper notifier (beep and white flash when stationary)
110	Switch OFF the reverse beeper notifier (white flash only)
119	Normal range of speed control.
120	Shunting mode – Useful for slow speed control
121	Sets the point or signals addresses see the Video Tutorials on the wesite. Push and hold the button on the points or sigs board to light its LED
121	In points mode (D=long beep) Set Points board address eg 121 beep 6, = set the lit points board as Nbr 6
121	In signals mode(D=short beep) Start Sigs board address eg 121 beep 1 = set the lit sigs board as 1. LED now flashes once per second. Then 122 and set the number of **flashing** signals associated with that board to 0,1 or 2. If set to 1 the flashing signals will be Ch-1
125	Repeat ON. The recorded routine repeats until you press C
127	Master Reset. Same as switching on from cold. The last routine is retained
128	Wipe the signals memory. Press 128 and wait for the long beep.
129	wipe a single signal memory. 129 beep 2 wipes the setting of signal number 2
130	Record Signals. The routine will play and you embed signals data.
131	Set acceleration and deceleration rate. Values 1 to 20 default = 10
133	write the maximum number of points in your system to memory. This speeds up the reset procedure.
135	Protect recording (disables button A)
136	Unprotect recording Software (enables button A)
200	sets the feedback from 1 to 20 (default 4) see main manual
201	201 beep 1 sets the sampling to 400uS (normal) 201 beep 2 sets it to 1mS this makes some Bachmann locos more stable a low speeds but you do get a bit more PWM noise.
202	202 beep 1 feed back ON (normal) 202 beep 2 = feedback off. Quiet but locos less responsive at low speed
203	203 beep 21 sets default values
204	1=bias ON. sets a ‘wetting’ voltage to help with track connections 2= bias OFF

Use only the 12 volt power supply supplied with this product
Use the power supply in open space and do not cover it
Switch off at the mains when not in use. The last recording will be retained.
Not intended for persons under the 16 years. Take care not to swallow the magnets.
If any part of this product become damaged do not use and contact us for a replacement

Safety of your models
Digital systems like these can occasionally do the unexpected. Always provide

buffers at the end of lines to prevent trains running off the end of the track.
Ensure your tracks are not too close to the edge where if the train comes off the rail it could fall and become damaged.
Ensure when putting your engine on the track the speed control is set to zero.

