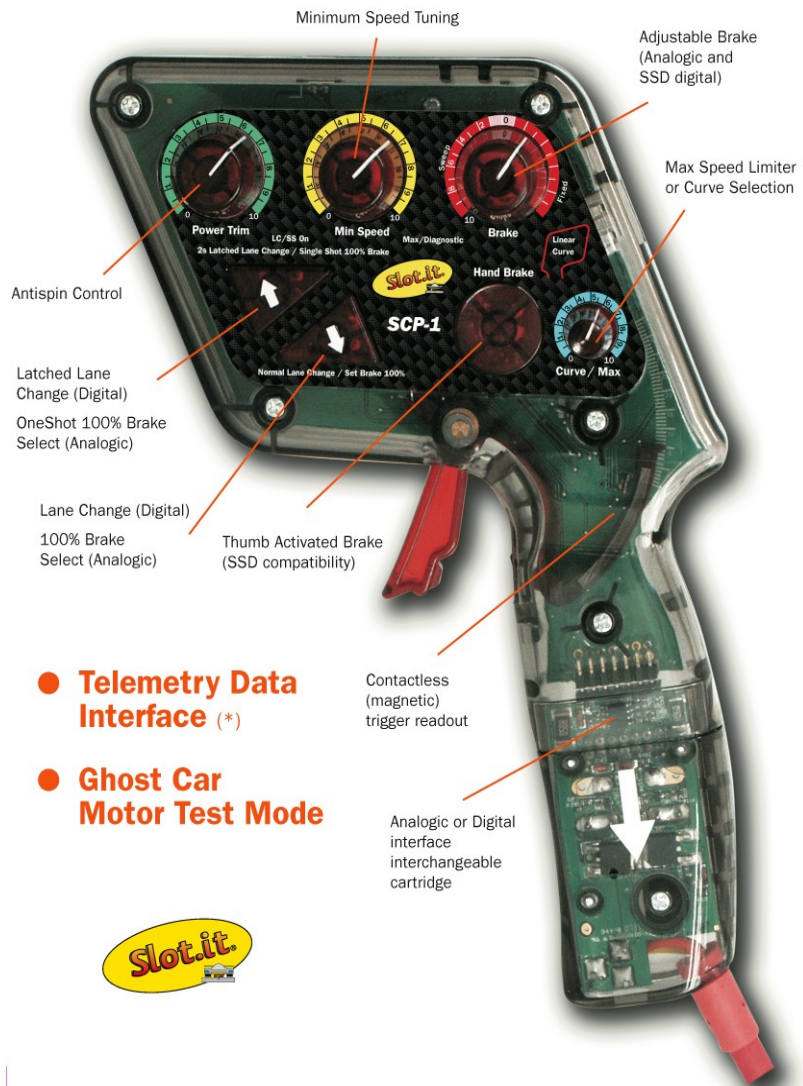


SCP-1



- Telemetry Data Interface (*)
- Ghost Car Motor Test Mode

Reprogramming the SCP-1 1.1

The SCP-1 1.1 eeprom

The SCP-1 reads the trigger position from a magnet housed in the trigger itself. The magnetic field is read by a Hall sensor, whose output is fed to the microcontroller (the CPU). The readout is linear, and there's a patent pending on a couple of technical aspects of this matter. What makes it interesting for the user though, is that, being there no end of run switches or mechanical contacts, there is no friction between the trigger and the cursor as in a traditional controller, which means no wear out, no dust, no change in characteristics.

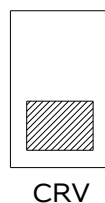
The SCP-1 comprises a sophisticated software which can detect the end-of-run positions and self calibrate during normal operation. It comes precalibrated from factory so that it works as expected as soon as it is powered up.

Version 1.1. of the controller (November 2010) adds an important new feature: it is now possible to reprogram the factory-set base relationship, which links the physical position of the magnet (trigger position, in degrees) to the logical point on the mapping. In other words: underneath all the operating modes of the controller, lays a base mapping through which the controller knows that a certain readout of the magnetic field corresponds to a certain position of the trigger. It is this 'base' relationship which makes it possible, for the software, to create all the curves of the SCP-1. A small change of the 'base' map, which is normally hidden from the user, can radically change the behaviour of the controller. The base mapping is set during production, but a rewrite of the mapping *must* be performed every time the trigger magnet is replaced.

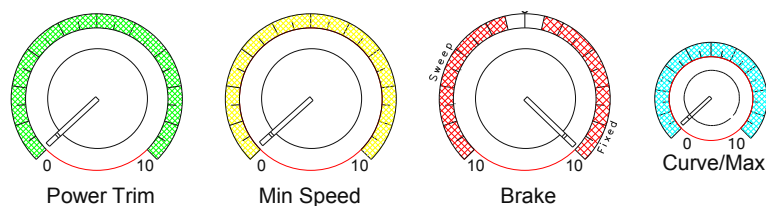
For the user, then, it is now possible to alter the *base* setting, as if he was using a completely different magnet.

Setting up the SCP-1 for programming mode

Power off the SCP-1, and put the LIN/CRV switch on CRV ('Curve' mode).



Set the knobs according to this image.



(Actually, the only knob of concern is the small, blue one (Curve/Max). This knob sets the width of the 'dead bands', that is, the width (in bits) of the areas that define the 'zero' and 'max' areas, that is, the areas where the red and green LED turn ON to indicate that either Min or Max has been reached. The default is 3, which is also what you get if you turn it to zero as suggested. If you want to enlarge such areas, set the blue knob to 4, 5... I would not recommend it anyway. The only other sensible possibility is to reduce the width to '2' only, which carries the risk of being too narrow. *If this sounds complicated, and unless you understand what is being said here and really know what you are doing, set the blue knob to zero (default).*)

Enter programming mode

Make sure the controller is unplugged. Press all three buttons (arrow up, arrow down, round buttons) and fully pull the trigger. Keeping the buttons pressed and the trigger pulled, plug the controller in ... make sure the track is powered.



If the SCP-1 is in programming mode, all the LEDs should be ON now: green left, bi-color (red and green, which seems orange) on the right. If this is not the case, repeat this step until all LEDs are ON as described. The reference points can be written if and only if all the LEDs are ON, which means the controller is in 'programming' mode.

Recording the zero (min) point

The 'zero' (min) point is where the controller's trigger lays when braking: to record such point, completely release the trigger,



Release trigger as in braking

then press and release the round button: the green left LED light stays ON, the green light of the bi-color LED goes OFF, the RED light of the bi-color LED stays ON:

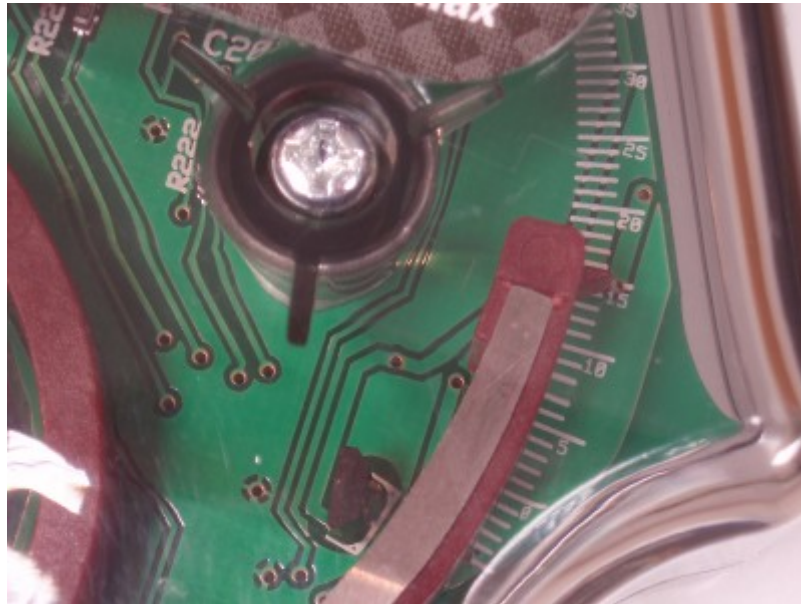


Left LED green, right LED red

Note: do not try to vary the 0° point mapping - it must be recorded in the 'zero' position, that is, trigger fully released. You can, however, vary the width of the area which is detected as zero, by setting the blue knob to a position other than 'zero'. This affects *both* the Min and Max areas, that are the zones where the controllers understands that it has to brake or give max power. Anything lower than '2' in this case would lead to a malfunctioning controller, 2 *might* work quite well, 3 is the standard (default for blue knob set to zero), greater than 3 depends on your driving style and we'd not recommend going above 4. *If this sounds complicated, and unless you understand what is being said here and really know what you are doing, set the blue knob to zero (default).*

Recording the 15° point

This is the second of the four points to be entered. Press the trigger until the small plastic arrow indicating the angular position reaches mark '15' on the white scale.



Press trigger to 15°

Keeping the trigger in this position, press and release the round button. The green left LED stays ON, the green light of the bi-color LED turns ON, the RED light of the bi-color LED goes OFF:



All LEDs are green

Note: you can vary the 15° point mapping by keeping the small plastic arrow at a value other than 15° during this phase. Note that a greater value (e.g. 16°, 17°) leads to a softer response in the bottom part of the trigger's run, whereas the opposite is true for a smaller value (14°, 13° - can't get any lower than 13°).

Recording the 25° point

This is the third of the four points that can be entered. Press the trigger until the small plastic arrow indicating the angular position reaches mark '25' on the white scale.



Press trigger to 25°

Keeping the trigger in this position, press and release the round button. The green left LED turns OFF, the green light of the bi-color LED stays ON:



Left LED off, right LED green

Note: you can vary the 25° point mapping by keeping the small plastic arrow at a value other than 15° during this phase. Note that a greater value (e.g. 26°, 27°) leads to a softer response in the middle part of the trigger's run, whereas the opposite is true for a smaller value (24°, 23°...).

Recording the 'max' point

The 'max' point is the 'full throttle' position: to record such point, press the trigger fully



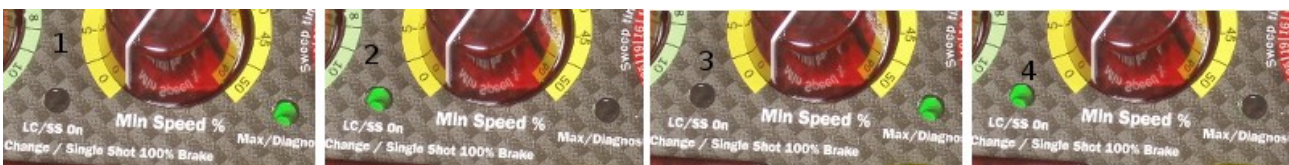
Press trigger to the maximum

then press and release the round button: the right RED LED will turn ON for 1”:



Left LED stays off, right LED turns RED for 1", then...

after which the green LEDs will start blinking indicating that the programming is finished:



... LEDs start blinking green

Programming is now complete and you can power off the controller.

This procedure can be repeated in order to readjust the base mapping, and it *must* be performed if the magnet is replaced. Once this reprogramming technique is mastered, if so necessary your SCP-1 1.1. can be adjusted at will.

As an aside, for the bleeding edge adopters, it is also now possible to change the run of the controller's trigger. In particular, spacers might be inserted, or plastic filed away, to create a shorter run trigger, as long as the controller is reprogrammed once the modifications are done. Before attempting any such hardcore modification, which will certainly void your trigger's warranty, make sure you understand this document, and be proficient with the controllers' programming.

In any case....



press the above button and contact



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