

## RL30 PC Interface instructions

RL30 can interface to your PC via its **LPT** (parallel) port if fitted or via its **USB** port.

For interfacing via the **LPT** port you will need **CSM interface cable** (part no. **CSM0015**). This was supplied with ICG360, ICG540, and early SL560 and SL720 gyros and is available as a separate item. If you already have one of these cables you need only download the RL30 interface software from our website ([www.rcmodels.org/csm](http://www.rcmodels.org/csm)) to make use of the PC interface capability of RL30 - no further purchase will be necessary.

For interfacing via your computer's **USB** port you will need the **CSM USB interface adapter** (part no. **CSM0049**). This adapter is also compatible with the SL560 (Rev. 4) & SL720 gyros, RL20 and CycLock.

CDs with the necessary software and installation instructions are supplied with the cable and the adapter.

### Software installation

To install the RL30 interface software simply run "**install RL30\_111.exe**" either as downloaded from our website or from the CD supplied with the interface cable or USB adapter, and follow the on screen instructions. The installation program will place a shortcut to the interface application on your desktop.

### Basic instructions for using the interface software.

**Please note:** in the interests of safety to prevent adjustment of the parameters with the engine running, **the RL30 will only communicate with the PC during the sensor test time (with the sensor test light flashing).**

Double click on the **RL30 shortcut** on your desktop.

Power up the governor.

Connect the 3 pin connector of the interface cable or the USB adapter to the PC port of RL30 (make sure the black wire is closest to the bottom edge of the unit.)

Select the appropriate **PC to governor port** (LPT 1 to 4, USB fast or USB slow).

Click on the **"Read from Governor"** button to download the current settings to the PC and display them.

Edit the parameters as required.

Click the **"Write to governor"** button to upload the new values to the unit (or quit to ignore changes).

If needed click the **"Reset to default"** button to restore the unit to the factory default settings.

**Note:** the parameters set during the basic setup procedure are displayed in the centre panel of the interface window but cannot be edited via the PC interface and are not affected by the "Return to default" button.

### RL30 Tuning quick reference guide (use in conjunction with main RL30 manual and PC interface).

Where RL30 is fitted to a well set up helicopter the only adjustments needed are to the responsivity control to avoid hunting at light loads and the increase in the collective pitch range to make use of the collective management facility. This guide gives a more comprehensive test sequence to optimise the engine/governor/collective system of a glow or petrol (gas) helicopter. For further information see also **"RL20/RL30 advanced guide"** at [www.rcmodels.org/csm](http://www.rcmodels.org/csm)

**Flight test:** For the first series of test flights the collective management should be inhibited by setting the collective pull-off limit to zero and the collective pitch range set to that which you would use with a conventional governor. Engage governor at desired headspeed\*. Fly a series of full collective climbs followed by sustained steep descents lasting perhaps 4 or 5 seconds. Fly the tests as near as possible at constant range to aid assessment of engine speeds by ear (avoiding Doppler effects).

**Using the table:** Where there are multiple problems (e.g. hunting and underspeed in climb) rectify the problems in the order they appear in the table (i.e. hunting first). Also check the possible causes in the order they appear in this table (e.g. check idle mixture before adjusting Minimum Control Point).

RESULT	POSSIBLE CAUSE	ACTION
Engine hunts	Responsivity too high or Integral Gain too high**	If responsivity above half then reduce responsivity. If responsivity below half then reduce Integral Gain by 10%
Engine overspeeds throughout sustained descent.	Idle mixture too lean	Richen idle mixture
	Minimum Control Point too high**	Reduce Minimum Control Point by 5%
Engine falters at start of climb	Idle mixture too rich	Lean idle mixture
	Minimum Control Point too low**	Increase Minimum Control Point by 5%
Engine underspeeds throughout sustained climb	Main needle mixture too rich	Lean main needle
	Max. collective pitch too high	Reduce maximum collective pitch by 0.5 degree***
Engine speed OK in climb but climb rate poor	Max. collective pitch too low	Increase collective pitch by 0.5 degree***
Excessive rev up at top of climbs or excessive dip at the end of descents.	Responsivity too low or Integral Gain too low**	If responsivity below half then increase responsivity. If responsivity above half then increase Integral Gain by 10%
	Servo too slow	If servo slower than 0.15s/60 degrees then replace

\* Where multiple headspeeds are used make tests at each speed and adjust the appropriate parameter for the Mode in use at that speed setting.

\*\* Parameter accessed via PC interface.

\*\*\* Negative collective pitch may also require equal change (or apply separate inverted flight test).

### Additional flight tests to assess Collective Management

Having performed the above tests with the Collective pull-off range set to zero, the same pattern of test flights should be flown with the Collective pull-off range set to 25% and the Collective range increased by about 15% from that used with a conventional governor.

Engine underspeeds throughout sustained climb (Collective management active)	Narrow engine power-band	Increase collective pull-off range and/or increase collective pull-off gain
Engine speed OK in climb but climb rate poor (Collective management active)	Max. Collective pitch too low	Increase collective pitch by 0.5 deg.***
	Making poor use of engine power-band	Reduce collective pull-off range and/or reduce collective pull-off gain