

Signal lock detect on Maplin / Comaq SL30 digital receiver

Noel Matthews – G8GTZ

One of the challenges for repeater builders is finding a digital receiver with a reliable (and easy) signal lock detect line to drive the control logic when a digital signal appears.

Last year, when building GB3HV Mark 2, I purchased a couple of Comaq SL30 receivers from Maplin (Part number xxx) to use for 70cms and 23cms DATV reception. The units, as well as being reasonably priced at around £30, are fairly compact and reports from other amateurs who use them at home indicated that they had reasonable RF performance and reliable lock capabilities on a variety of FEC and symbol rates. They also have L band pass through so can be put in line between the antennae / filters and any existing analogue receiver.



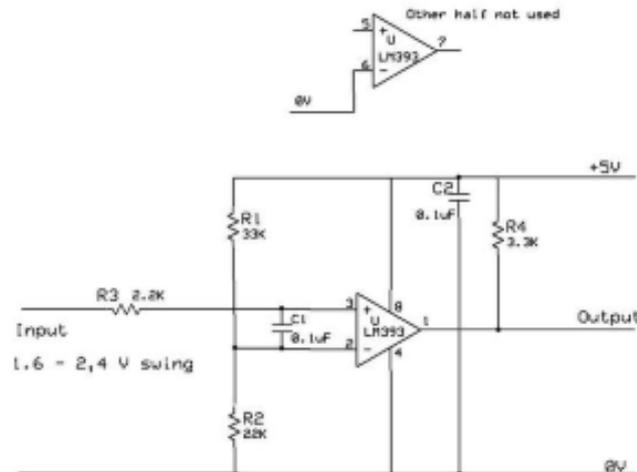
Once the unit was set up and locked to a test signal in the shack, I set about with an oscilloscope and multi meter to find any suitable tests points which may indicate digital lock.



Investigations showed that the left hand end of R6, which is not fitted, goes to the big chip on the left and with no signal lock sits at around 1.8v, with signal applied and locked it sits at 2.4volts.



In order to make this a more useful 0 – 5v level shift, the end of R6 is fed in to a LM 393 comparator circuit which will interface directly in to the repeater controller logic or fed a transistor relay driver for other levels. The value of R1 may need adjusting to give a clean output depending on drive and rail voltage in an individual receiver.



Further investigations showed that the 4th pin along on the tuner module (see picture below) seems to go between 0v and 2.5v depending on signal input. This was not used at GB3HV but could prove to be a useful signal level indicator.



The above modifications have been in use at GB3HV Mk2 for nearly a year and have proved reliable in providing a lock indication for signals with a variety of symbol rate and FEC settings.