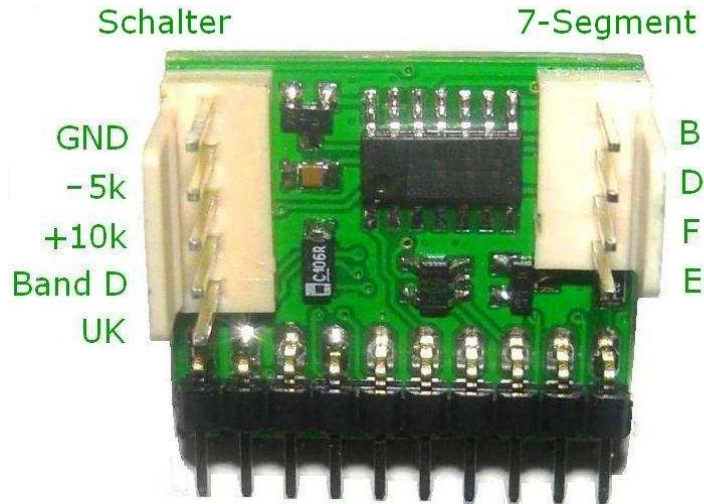# Install PLL-Module 80ch with LED function

## *Version 3 (4-pin)*



*Picture LC7000 (other modules similar)*

**80 channels without changing channel selector** with connectors for some **special functions** (f.e. +10kHz, upper-band 27415-27855, UK-band, -5kHz).

### *Modules are available for these PLLs:*

**LC 7132** (Stabo 4012n, 4000, Albrecht, Team, Kaiser 9050 usw.)
**LC 7131** (Team, Kaiser usw.)
**TC 9106** (Uniden, Astracom MA40)
**TC 9109** (President, Kaiser 9015/40, 9040, usw.)
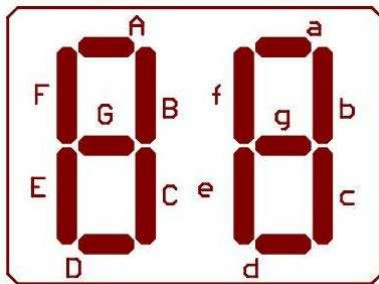**PLL03A** (Stabo 4012, Cybernet)
**SM 5124** (Stabo 3200, 5000, 5012, President Wilson, Harry usw.)

### *Installing:*

The modules are pin compatible and can directly replace the original PLL. A socket or 2 single-row pin headers are recommanded.
**Direction**: white connector looks to the rear side of the radio, not to the channel selector.

## *Changing the LEDs:*



### 1.  Disconnect segments B, D und G

Disconnect segments B, D and G at the side of the channel selector, this means, the resistors are still connected with the LEDs.
Disconnect segment D from A and add a resistor, same value as the others, and name it D for further action. Do not change something on the segment A.
If it was necessary to disconnect also segment A, reconnect it to the channel selector as it was before. You can use the remaining resistor for this.


> ➢ *Attention: Never connect a diode/wire directly to the LED (except the resistor to segment D), always do this after the corresponding resistor, this means at the side connected to the channel selector!*


### 2. Installation of 4 Diodes, f.e. 1N4148:

  ➢ Diode from **F** to **C** (cathode to F)
  ➢ Diode from **F** to **G** (cathode to F)
  ➢ Diode from **D** to **G** (cathode to D)
  ➢ Diode from **D** to **A** (cathode to D)


### 3. Connecting the segments B, D, F and E with the module (4-pin header):

| Segment: | Module (v3) |
|---|---|
| **B:** | orange |
| **D:** | red |
| **F:** | brown |
| **E:** | black |


## *Special funktions:*

The module offers additional bands/frequencies, f.e. upper/lower bands, UK-band (27600-27990), -5kHz, +10kHz.

  ➢ *Special functions (f.e. +10kHz) only connect to ground **(GND)** !*

### Level adaption VCO:

If upgrading from PLL03A, the mixer must be changed to a buffer, details can be found in the docs for PLL03A / Stabo4012/Cybernet.
For all other PLLs use a series resistor (470 R) in the F-in line to avoid unwanted couplings:

**LC7132 / LC7131:** Pin 19
**TC9106 / TC9109 / SM5124:** Pin 9

### Inputs:

> ➢ *If upgrading from* **LC 7131/ PLL03A,** *7 pulldown resistors or an array (10k-100k) are necessary, from the input pins 1-7 to ground.*

### Modification loop filter (optional):

This modification is not absolutely necessary, but should be done, if there is some knocking noise when switching to Tx mode.
The loop filter can be found between 2 pins of the PLL and consists of a R/C/C1 network.
The capacitor (**C**) can consist of 1 or 2 series electrolytic capacitors. The resistor (**R**) is sometimes bypassed with a capacitor (**C1**).
The ideal loop filter for the module should be: **R=68k, C=100nF and C1=10nF**.

**TC 9106 / 09**: Between pin 6 and 7.
**LC 7131 / 32**: Between pin 16 and 17.

### Alignment:

The radio will work after installing the module, sometimes VCO and filters/coils for Rx and Tx must be adjusted fort he new frequencies.
When changing from LC7132 / LC7131 frequency must also be adjusted.
Adjust the VCO voltage on the loop filter (Rx and Tx) to 0,5V (lowest ch.) and Ub-1V (highest ch.).

### Technical Data:

Frequency range: 26965-27405 (1-40), 27415-27855 (41-80), 26515-27990 (total)
Supply voltage: 5.5 - 9.5V
Voltage on the LEDs: max. 15V

### Last not least:

Warranty and general permission of the radio will be void after changing the radio, please note. We take no responsibility for that.