

# How To Simplify The Tracking Function Of The Smart SRO-100 Rb Product In Your System Design

## 1) The SRO-100 must be powered ON continuously

- The SRO-100 contains solid Rubidium that evaporates at each power ON switch. After power OFF, the Rubidium vapor is condensing everywhere, making the device less stable during many days at the next power ON.
- The Rubidium in the SRO-100 is heated with ovens that are regulated by analog devices. This is highly reliable, but there is a drawback. For instance, during the first 1 minute after power ON, the heating is at maximum temperature without control. Thus, it is questionable if it is not possible to overheat the SRO-100 with an "inappropriate" power ON / power OFF cycle. Example: ON: 30 seconds, OFF: 1 second, ON: 30 seconds, and so on.

**Design caution: Check carefully the system software to avoid any power OFF without imperative reason.**

## 2) Use the Reset function with parsimony

Reset can be made by hardware with the pin 17 grounded or by software thru the command "RESET".

- The first reason why a Reset was implemented in the SRO-100 is to update the firmware.
- In the SRO-100, the Reset is not just an innocent command that Reset a microprocessor, but this has an effect on the hardware and the frequency stability.

**Design caution: check carefully the software and take away all the Reset commands, at least during the tracking and/or holdover mode.**

### 3) Commands TR1, TR0, SY1 and SY0 must be well understood

Systems engineers who are programming the interface to the SRO-100 must perfectly understand the commands TR1, TR0, SY1 and SY0.

- TRx is an action. Starting and stopping the tracking
- SYx has in fact nothing to do with the tracking itself
- SYx don't start or stop a tracking
- SYx simply aligns the PSOUT to an internal

PPSINT

SY1 can be sent whenever needed and has the following effects:

- If the SRO-100 is already in tracking, the PPSOUT will be immediately aligned to PPSINT
- If the SRO-100 is in Free Run or Holdover mode, the PPSOUT will be immediately aligned to PPSINT. If later the SRO-100 goes in tracking mode due to the command TR1, then the PPSOUT will suddenly be aligned to PPSINT within 2 seconds after entering in tracking mode. This way, PPSREF, PPSINT and PPSOUT will be all be perfectly aligned.

Regarding SY0:

- SY0 has no effect on the tracking
- SY0 has no effect on the PPSOUT

SY0 means it never moves the PPSOUT.

**Design caution: before managing the commands TR1, TR0, SY1 and SY0, a system engineer must totally understand them.**