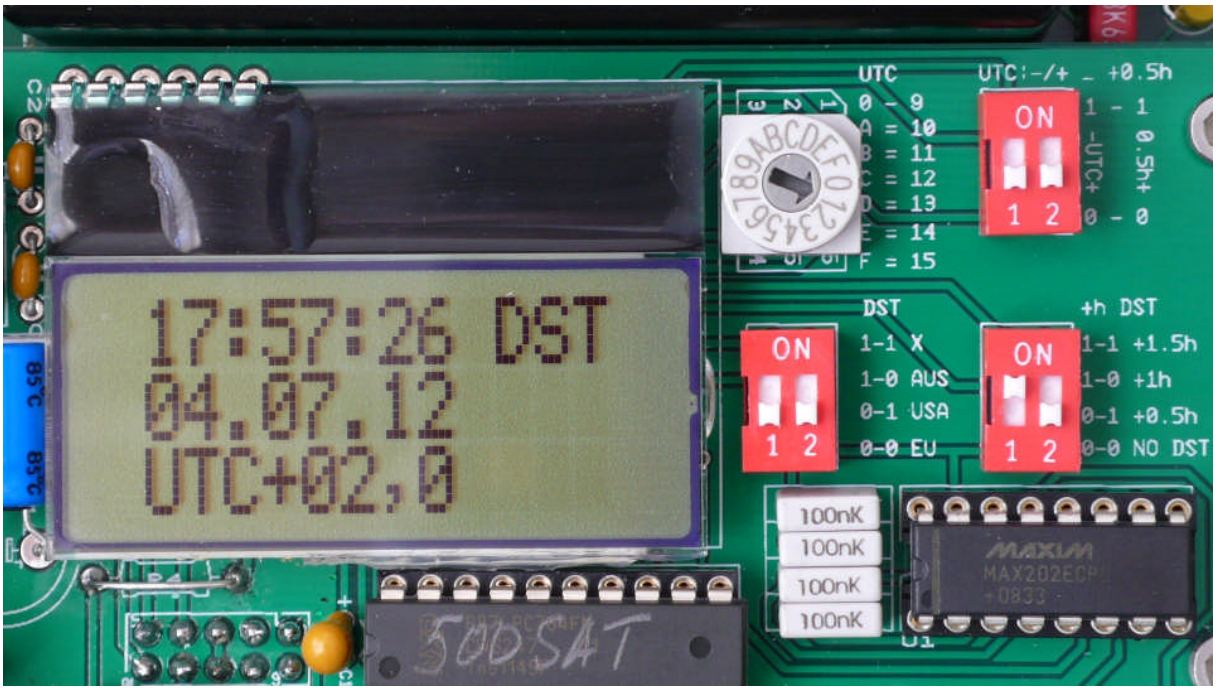
Manual SR 500- xxV with GPS receiver

The SR500 is a low cost GPS master clock. Programming is very easy with switches. The unit has a non volatile memory in case of a mains failure.

Note: UTC is similar to GMT (Greenwich Mean Time).
DST (Daylight Saving Time) is similar to summertime.

The housing can be opened by unscrew the 4 screws at the corners.

Upper PCB:



Display.
Time and date are always related to the time zone offset.
First line: hours-minutes-seconds, followed by DST when active.
Second line: date.
Third line: hour offset UTC/GMT. For Central Europe (CET/MET) UTC+1,
during DST (CEST/MEZT) UTC+2. For Great Britain respectively UTC+0 and UTC+1.

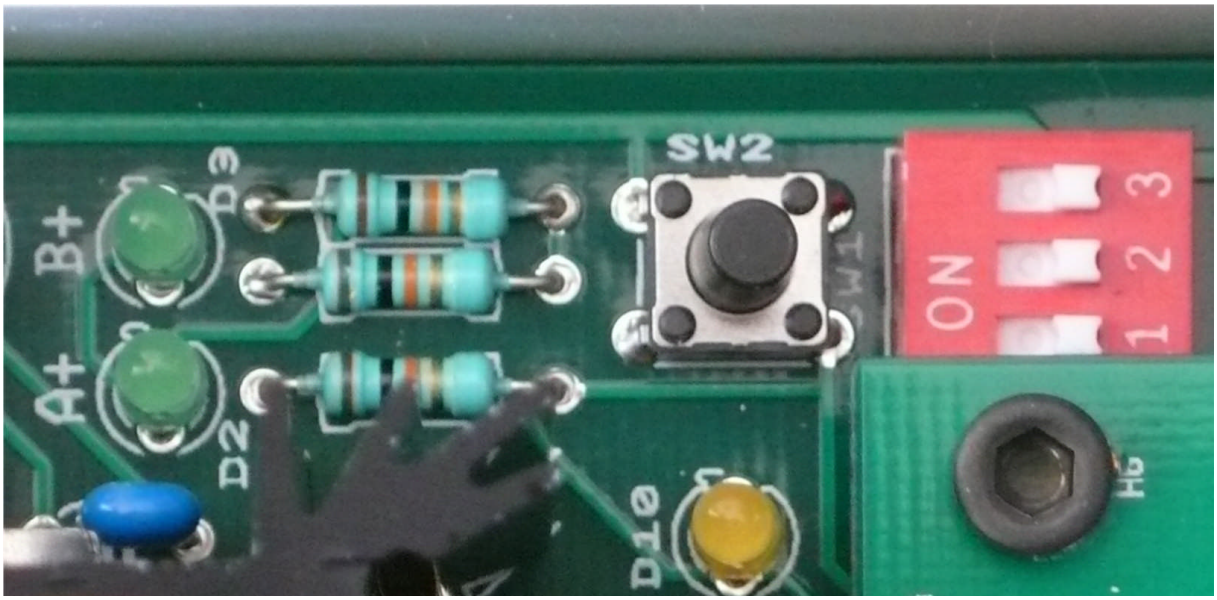
Setting the switches for DST in Central Europe:
- Time zone hour rotory-switch UTC: position “1“, **always refer to the wintertime**.
- Dipswitchblock UTC:-/+:
  Switch 1 “off“ and switch 2 “off“, all hours setted with the rotory-switch will be added.
  Switch 1 “on“ and switch 2 “off“, all hours setted with the rotory-switch will be substracted.
- Dipswitchblock DST:
  Switch 1 “off“ and switch 2 “off“: DST in Europe.
- Dipswitchblock +h DST:
  Switch 1 “on“ and switch 2 “off“: one hour added to UTC during DST.
  (Both switches “off“: no DST).

Example setting the switches for New York (UTC -4):
- UTC: time zone hour rotory-switch: position “4“.
  You can find your local time offset on the internet.
- Dipswitchblock UTC:-/+:

Switch 1 “on“ and switch 2 “off“, 4 hours setted with the rotory-switch will be substracted.
- Dipswitchblock DST:
  Switch 1 “off“ and switch 2 “on“: DST in the USA.
- Dipswitchblock +h DST:
  Switch 1 “on“ and switch 2 “off“: one hour added to UTC during DST.
  (Both switches “off“: no DST).

Note: GPS only gives the UTC/(GMT) time. The DST change is based on the date and time. A table in the software of the SR500 controls the change’s for the next fifty years.

Bottom PCB, right site:



All switches SW1 “off”: minute impulse, slave max. 12.00h indication, impulse time 0,6 sec.
Switch 1 “on”: 30 seconds impulse, impulse time 0,6 sec.
Switch 2 “on”: 24.00h indication of the slave.
Switch 3 “on”: impulse time 2 sec.
Button SW2, text below.
Yellow LED (D10), text below.
Green LED’s A+ B+, indication impulse polairity on the clock line.

To connect:
- Slaves to A and B of the clock line connector J4 (at the left bottom PCB).
  The green LED’s indicate the polairity of the clock line. Lighting of LED A+ means: on A is the “+“ of the clock line voltage.
- GPS receiver to the 6-p. bus at the right on the front of the SR500. The receiver always must have a sky vieuw.
- Connect the mains cable with plug to the mains, mains voltage: 100-240V~, 50/60Hz.
  See the bottom PCB at the left sight, connector J2, AC/N and AC/L. Take care!! Mains voltage.

After connecting the SR500 to the mains, the yellow led first lights 2 sec. Next, during 12,8 sec., two times a sec. When the slave does not indicate 12.00h than push the button SW2 one time and the slave starts fast running. Stop the the save as soon as indicating 12.00h by pushing the button once again.

Now the impulser synchronises to the GPS signal during about 2 minutes. After that the impulser gives the first impulse to the slave, followed by 2 impulses each minute one. After the third impulse the slave usually starts runnung fast to the right time.
After the time period for setting the clock, the yellow LED lights in DCF77 rhythm. Similar to this protocol the impulser, PCB under, receives the time.

When the slave already is on 12.00h, first reset the SR500 after switching on the unit by pushing the SW2 button (LED off) till the LED lights again. After setting the clock by the SR500, reverse polairity slaves can run 1 minute slow. After a change of the wires to the clock, move the minute hand 2 minutes forwards. If not possible repeat setting the clock. When the LED stops lighting two times a sec., it is not possible again to start fast running. If necessary reset the SR500 by pushing the SW2 button during 5 sec. till the yellow LED lights again.

If the slave cannot follow the impulses wen running fast adjust the impulse time to 2 sec. See text above.

When fixed (option): impulses for a bell on the auxiliary output. The load for this output is only for a 12 or 24V relay, depending the SR500 version. Connect the relay-coil to C and +. C is the open collector of a transistor, pulling to GND.

Clock line voltage is 12 or 24VDC/400mA, depending the SR500 version. Connect slaves with a lower voltage than 12VDC via a resistor.