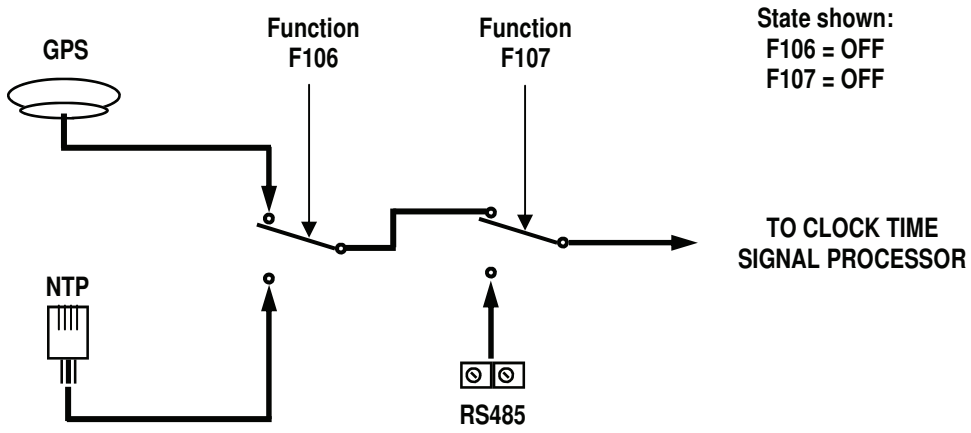
TIME REFERENCE SOURCE SWITCHING FOR GPS-NTP-RS485

Sometimes there is a need to switch the input time reference in synchronized clock systems in order to chose between GPS, NTP, RS485, RS232 or another source.

Clocks with the above capabilities must have a dedicated hardware installed inside.

Two functions **F106 and F107** are dedicated to control the input source switching selection.
See the drawing below explaining the logic.



Note 1:
In some applications only one switch may be needed. In such case the function F107 is used only and the source reference connections may have to altered, as required for a particular clock hardware build.

Note 2:
When the GPS time reception is required, the function F70 must also be enabled, while the switch is set for GPS as the source.
For all other sources the function F70 should be disabled. Also see the function F12.

Note 3:
Depending upon whether the GPS, NTP or other source time reception is required, the functions F50 and F51 may also have to be enabled in order to be able to set the required Time Zone Offset.

Note 4:
Depending upon the reference source signal type and protocol some additional functions may have to enabled/disabled. For instance for the Selena standard protocol the functions F32, 33, 34, 50 and 51 may have to be appropriately setup.

Note 5:
If the clock with the reference source switch is used as the Master or re-transmitter of the timer data, some additional functions may have to enabled/disabled. In particular review the settings of the functions F32, 33, 34, 53, 54 and 55.

Note 6:
Note, that the functions F88 and F89 are used to select the RS485 (or other serial communication) speed between the clocks. The highest setting is 9600 baud when F88=F89=OFF. This is also the most often used speed in wired communication. Note, that the system Master (transmitter) and the Slaves (receivers) must have the same communication speed settings.
However, the GPS receiver uses its own, independent speed at 4800 baud. This can not be changed.

Note 7:
When the clock system has a Master clock, Sub-Master clock and Slave clocks, the sync communication may become more complicated than just a simple retransmission of the sync data. This is due to the fact that there is usually only one Semi-Duplex communication medium, like only one RS485 network cable for instance.
In such networks Selena clocks may be setup to transmit and receive at different time periods (time multiplexing).
In the Selena system such periods are called “channels” and are assigned by a combination of several functions:
F32, 33, 34, 53, 54 and 55.
For instance the GPS receiver updates its time between 50th and 00th second of each minute. Then it can retransmit the data at the next 5-th second. Then the receiver of such data can retransmit it further at the 15th second, etc.. etc…
This operation is called a “ repeater “ function. Se the manual for more detail.