SELENA
PULSE SPEED MONITOR
(Option # 738SPD)
Rev. S807

The Pulse Speed monitor function is an optional feature. It allows connecting an external dry contact sensor, like a relay contact for example, that closes and opens once per each event, whose speed of occurrence is to be measured.
This monitor function will display the rate of the "contact open" events per hour.
To activate the Pulse Speed monitor option enable the functions **Fn 105** and **Fn 7**.
The hardware option # 738SPD should also be installed in the clock.
If any other functions between Fn 0 thru Fn 6 are also enabled, the display will alternate between the corresponding other screens as well (see the List of Functions).
NOTE, that when the Pulse Speed monitor is enabled, the timer functions should not be operated.

The maximum (theoretical) speed is appx. 360,000 ev/hr, but for 4 digits display the max. indication is 9,999.
Any speed higher than that will only show the youngest 4 digits.
The minimum speed is appx. 120 ev/hr, because the standard max. test period is 30 seconds.
However, on request this limit may be extended.
The average maximum test error is appx. 0.15% within the display range.

Settings:
For proper operation these functions should also be enabled: **Fn 38, 39**.
When the supply power is **AC**, the functions **Fn 22 and Fn 104** should also be **enabled**.
When the supply power is **DC**, the functions **Fn 22 and Fn 104** should be **disabled**.

1. **Idle state decay of readings (Minimum Idle Period)**
   When the speed of the incoming events is gradually or suddenly decreasing, there is a need to display a decreasing speed readings rather than hold onto the most recent reading while waiting for the next event. Normally the display is updated per each appx. 0.5 to 1 second. However, when the current speed is lower than 3,600 ev/hr and the next coming event is expected to be even slower, the display will gradually decay its readings in order to anticipate the next, slower test result. In such case the display will be updated at appx. 1 reading per second and will wait up to 30 seconds for an event to come to be tested. If within a 30 seconds period no event is received, the display will indicate "00". From this moment on, the input must receive at least two events within less than 30 seconds in order for the system to update its readings again.
   Sometimes however there may be a need to display even slower than 3,600 ev/hr readings without gradual decay. In order to achieve that, there is a possibility to set the minimum time period, in seconds, that the system will wait until the gradual decay will be executed. This **Minimum Idle Period** can be preset by the user by pressing the SET key on the remote control and setting any value between 0 to 30 seconds (in the seconds location of the display).
   Note, that this preset value will be stored in the clock's memory for up to appx. 4 weeks without the supply power, in clocks with the standard self-recharging backup.

2. **Averaging of Pulse Speed test results**
   This feature is activated by enabling the function **Fn 98**.
   When enabled, this option will cause the system to calculate and display an arithmetic average of each group of 4 readings, but only for speeds higher than 3,600 events/hour.

3. **Pulse sensing input**
   The recommended input signal should be a momentary, dry contact.
   Input resistance: appx. 10 kohm
   Input bouncing less than 2.5 ms.
   Input contact ON and OFF period minimum: 5 ms each.
   Recommended twisted pair cable for connection to the input terminals.

   However, the input hardware can allow for an active voltage signal as long as it does not exceed the specs listed below:
   Input voltage max: +40VDC   (On request this voltage may be upgraded to up to +1,000VDC)
   Input voltage min: -20VDC   (On request this voltage may be upgraded to up to – 45VDC)
   Input ON signal threshold: > + 4.5VDC (operational equivalent of "dry contact open")
   Input OFF signal threshold: < + 2.5VDC (operational equivalent of "dry contact closed")

   NOTE: DO NOT ground any of the input terminals. If a shielded cable is used, the shield should be connected to the negative terminal, which may be found by testing the input voltage, while nothing is connected to the terminals.

1