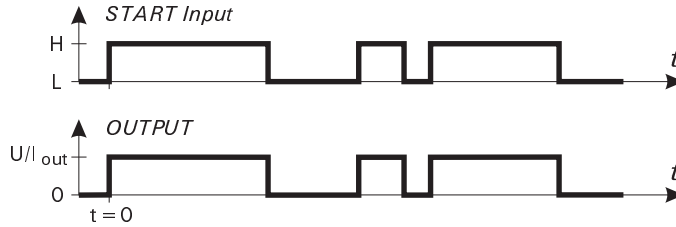
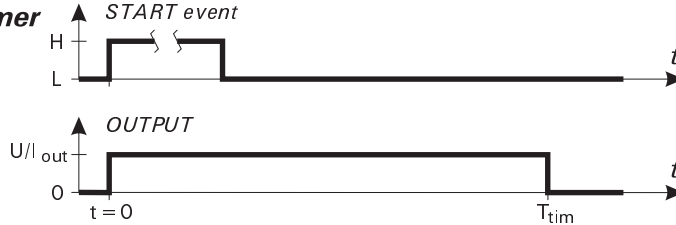


### DC via Control



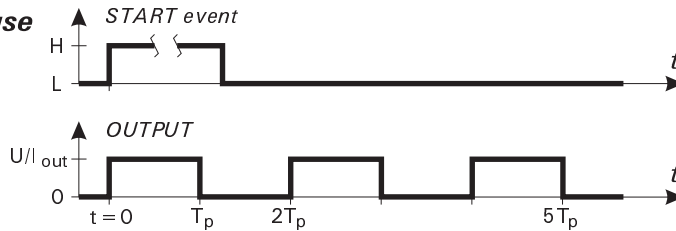
Output is active, while START button is pressed, or TTL high level is applied to START Input. This mode offers free control capability from any other equipment (e.g. another stimulator controller, or a TTL port bit of a computer).

### DC by Long-Timer



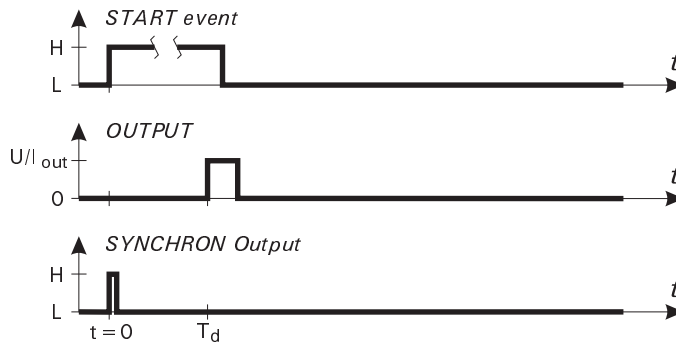
Output is active (constant DC level adjustable by the helical potmeter on the End-stage) in a programmed period, in the range of 10 - 600 sec, with 10 sec of resolution. This period starts at the beginning of the START event.

### Wide Pulse/Pause



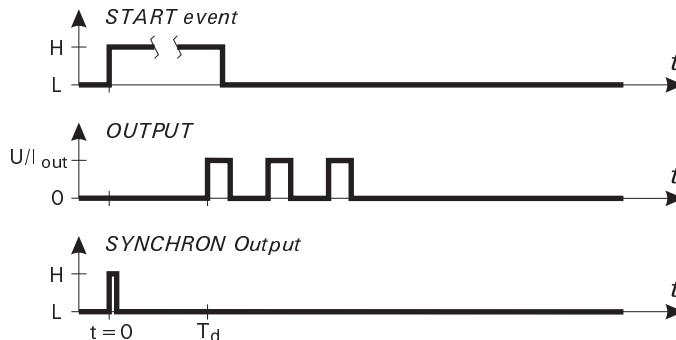
Wide pulses, and pauses (they are equal in width) are generated. The duration of the pulses (and the pauses) can be programmed from 10 - 990 milliseconds, in 10 ms steps.

### Delayed Pulse & Single Pulse



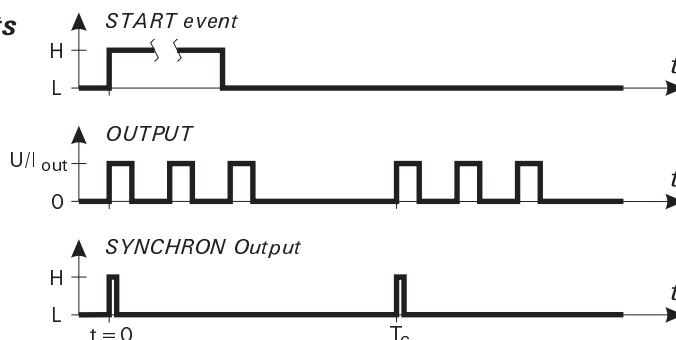
A delay (1 - 250 milliseconds in width, with 1 ms of resolution) is occurring after START event. Just after the delay time an Output pulse is generated (0.1 - 9.9 milliseconds in width, with 0.1 ms of resolution). A Synchron pulse (50  $\mu$ s) is generated at the START event (at the beginning of the delay time period). Single Pulse function is a special case of Delayed Pulse function, when delay time equals to zero.

### Delayed Burst & Single Burst



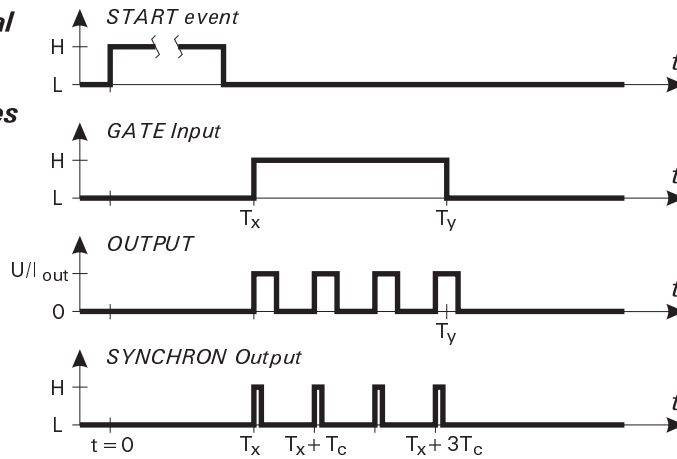
A delay (1 - 250 milliseconds in width, with 1 ms of resolution) is occurring after START event. Just after the delay time a programmed number (2 - 99 pieces) of pulses are generated. The width of the pulses, and the pauses between the pulses can be set in the range of 0.1 - 9.9 milliseconds, with 0.1 ms of resolution. A Synchron pulse (50  $\mu$ s) is generated at the START event (once at the beginning of the delay time period, in every bursts). Single Burst function is a special case of Delayed Burst function, when delay time equals to zero.

### Continual Bursts



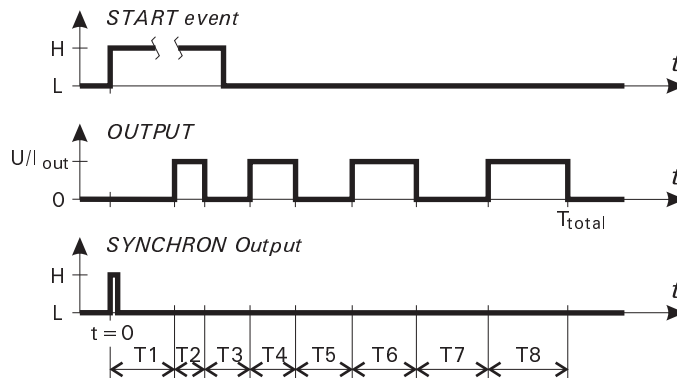
Repetitive bursts of pulses (2 - 99 pulses/cycle) are generated on the Output. The time parameters of the components in the bursts are the same as in the Single Burst, and the Delayed Burst functions. The repetition cycle time ( $T_c$ ) can be set from 10 ms - 60 sec, with 10 ms of resolution. A Synchron pulse is generated at the rising edge of the first Output pulse (once at the beginning in every bursts).

## Gated Continual & Continual Pulses



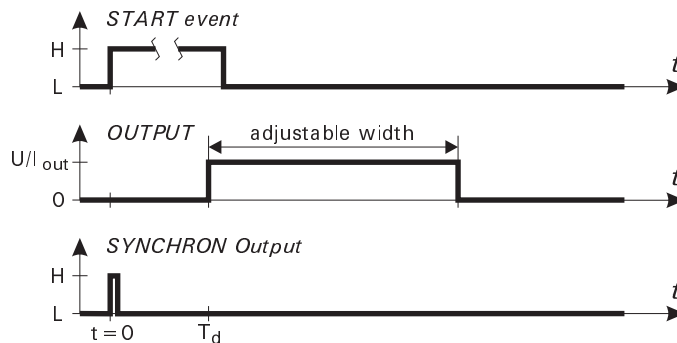
Repetitive pulses (0.1 - 9.9 milliseconds in duration, with 0.1 ms of resolution) are generated on Output. The repetition cycle time ( $T_c$ ) can be set from 10 ms - 60 sec, in 10 ms steps. Synchron pulses are generated at the beginning of every Output pulses. The flow of Output pulses are disabled if TTL low level is applied to the Gate input. The pulses are never broken, because an asynchronous Gate signal is synchronised internally. Remotely controlled bursts can be realised in this function using another stimulator controller, or a computer. Continual Pulses function is a special case of Gated Continual function, when BioStim Controller ignores the Gate signal, resulting continuous flow of pulses, beginning at START event.

## Flexible Burst



A freely defined burst of pulses can be composed in this function. The number of pulses in the burst can be set from 2 to 10. The length of the pauses, and the durations of the pulses can be set independently from each other. The pauses can be programmed from 0.1 ms to 500.0 ms, with 0.1 ms of resolution. The width of pulses can be programmed from 0.1 ms to 25.0 ms, with 0.1 ms of resolution. A Synchron pulse (50  $\mu$ s) is generated at START event at the beginning of the first pause (in other words at the beginning of delay time period).

## Variable Pulse



A delay (1 - 250 milliseconds in width, with 1 ms of resolution) is occurring after START event. A Synchron pulse is generated at the beginning of delay time period. Just after the delay time an Output pulse is appearing. The duration of the Output pulse can be set from 10  $\mu$ s to 20.0 ms, with very fine, 10  $\mu$ s of resolution. The width of the Output pulse can be modified on-the-fly. If you modify the pulse width, the actual pulse will be finished with the last duration, but the next one will be produced with the new duration (at the next START event).

## Programming conventions, and definition of terms

BioStim Controller has got a nonvolatile memory to store all parameters of the functions. If you use the equipment in a fixed application, you should program it one time only. If you switch the BioStim Controller on, it checks, which function was used last time. After it the parameters used by the actual function are checked. If the parameters have got valid values preset, the last used function will be started automatically.

The functions are categorized in two groups. The first group contains the 'single' functions. 'Single' functions are initiated by the START event. After a START event they generate their sequence one time only (an example is Single Burst). The other category is the group of the 'repetitive' functions. They repeat their sequence periodically based on an internal crystal pacer (an example is Continual Bursts).

A subcategory of the 'single' functions is the group of the 'delayed' functions. They are the same as their appropriate 'single' equivalents, but a programmable delay is occurring at the beginning of the sequence before the first Output pulse.

START event means a keypress on START button, or a TTL rising edge appearing on START Input. The two sources of START event can be used together or independently any time (they are in logical OR relation).

You can clear all stored parameters if you press and hold F button down, while BioStim Controller is switched on. During programming actions the equipment checks the validity of the actual value. If you try to accept (with F button) a number out of range, the software will not allow it. If more than one parameters are incoherent, you will be asked to correct them.

UP and DOWN button is used to navigate in menus, and to modify parameter values up or down, respectively. F button is used to select a menu item, or accept a parameter value. Furthermore, F button is used to cancel a function if it is running. If you cancel a function with F button, you will get an access to Function Choice menu. START button is used to start the sequence of pulses, if a 'single' or a 'delayed' function is selected actually. The 'repetitive' functions can be interrupted temporarily with START button (and they can be restarted again with it).