

**Use SIGNAL VALID as Pulse Sync**

Configures the signal at the [SIGNAL VALID] connector (rear panel):

- "selected" Indicates the validity of the RF signal at the output:
- **high:** while the signal settles.
  - **low:** when it is stable (valid).
- "cleared" Generates a single pulse at the beginning of a pulse sequence, e.g. to synchronize pulse modulation.

Remote command:

`[ :SOURce<hw> ] :PULM:OUTPut:SYNC [ :STATe ]` on page 397

**4.5.4.2 Pulse Train Generation**

In "Pulse Train" mode, the instrument provides the associated parameters for configuring a user-defined pulse train signal.

A pulse train is a sequence of pulses with user-defined on and off times. The "ON Time / OFF Time" value pairs are defined in a pulse train table and can be stored in a file. The currently loaded file is displayed in the dialog. You can export an internally created pulse train list as well as import an externally created one.

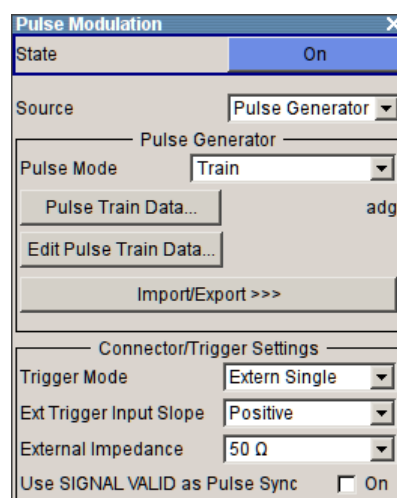


In remote control mode, you must first create a data file, before you switch to pulse train mode. Otherwise you get the error message "No current list" in the "Info" line.

**How to configure a pulse train signal**

To perform pulse train generation, perform the following steps:

1. In the block diagram, select "Modulation > config... > Pulse Modulation".
2. Select "Source > Pulse Generator".
3. Select "Pulse Mode > Train".



The instrument displays the parameters required for configuring pulse train data.

4. Select "Pulse Train Data... > New List / Select List or File Manager".

5. Navigate to the target directory and select an existing file, or create a new file by assigning the "File Name".
6. According to your selection, confirm with "Save" or "Select".  
The R&S SMB automatically uses the new file for further editing. Pulse train data files have the fixed file extension \*.pulstrn.
7. In the "Pulse Modulation" dialog, select "Edit Pulse Train Data... > Edit" to define the on and off time value pairs and the repetition factor for each value pair.
8. When completed, save the file.
9. Starting in the block diagram, perform the following steps to activate signal generation:
  - a) Select "Mod Gen > config... > Pulse Generator > Video/Sync Signal State > On".
  - b) Select "Modulation > config... > Pulse Modulation > State > On".
  - c) Activate RF signal generation in the "RF" block.

The R&S SMB generates an RF pulse sequence signal according to the values specified in the file.

#### Pulse Train Data - Pulse Generator

Opens the "File Select" dialog for selecting and creating a pulse train file, and provides access to the "File Manager".

Remote command:

[\[:SOURce<hw>\]:PULM:TRAI:n:CATalog?](#) on page 399

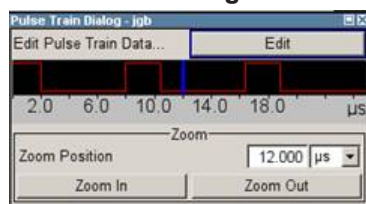
[\[:SOURce<hw>\]:PULM:TRAI:n:SElect](#) on page 403

[\[:SOURce<hw>\]:PULM:TRAI:n:DElete](#) on page 399

#### Edit Pulse Train Data - Pulse Generator

Opens the [Pulse Train Dialog](#).

#### Pulse Train Dialog



Displays the pulse sequence as defined in the file.

"Edit" Opens the pulse train dialog, see [Edit Pulse Train Data](#). The dialog graphically represents the pulse train signal and provides access to the data editor.

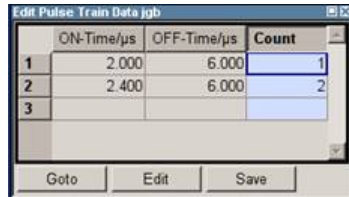
"Zoom Position" Sets the blue marker in the pulse train graph. The marker defines the center of any zoom in or zoom out action.

**"Zoom In / Zoom Out"**

Enlarges the diagram by factor 2 per "Zoom In", or scales it down accordingly when you select "Zoom Out".

**Edit Pulse Train Data**

Opens an editor allowing you to enter the "On-Time / OFF-Time" value pairs in a table. In addition, you can assign a repetition rate to each pair. Based on these values, the instrument then generates the pulse train signal. You can enter any number of value pairs and save your list in a file. The file name is displayed in the header of the dialog.



"ON-Time/μs" Determines the length of the respective pulse (signal is high).

Remote command:

[\[:SOURce<hw>\]:PULM:TRAI:n:ONTime](#) on page 401

"OFF-Time/μs" Determines the time length, the signal level of the pulse remains low.

Remote command:

[\[:SOURce<hw>\]:PULM:TRAI:n:OFFTime](#) on page 400

"Count"

Sets the number of repetitions for each pulse ("ON-Time/μs"/"OFF-Time/μs" value pair).

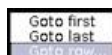
**Tip:** If you set "Count = 0", the corresponding value pair is ignored in the pulse sequence. With this function you can skip value pairs individually, without deleting them from the table. This allows re-enabling a value pair by entering a number unequal to zero.

Remote command:

[\[:SOURce<hw>\]:PULM:TRAI:n:REPetition](#) on page 402

"Goto"

Selects row for editing.



If Goto row is selected, a window opens for entering the requested row.



(it is not possible to change individual positions of the list)

"Edit"

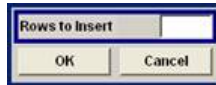
Opens a menu containing editing functions.



"Insert Row"

Inserts a new row before the marked row.

"Insert Range" Inserts new rows before the marked row. The number of rows to be inserted can be defined in an entry window.



"Fill...." Opens a dialog for defining a set of list values to be automatically entered in the list.  
The start line and the number of rows to be filled are defined under "From" and "Range".  
The column to be filled is selected under "Select column to fill".  
Depending on the selection here, the default for start, end, and increment value are set. As the settings are interdependent, a change of one parameter may result in the automatic change of one or more of the other parameters.  
The filling of the column with the selected value settings is started with button "Fill".

"Delete Row" Deletes the marked row.

"Delete Range" Deletes the selected number of rows including the marked row. The number of rows to be inserted can be defined in an entry window.

"Save As" Opens the file dialog to save the list under a new name.  
Each list is saved to the CompactFlash™ card as a separate file with the file prefix \*.pulstrn. The file name and the directory to which the file is saved are user-selectable.

"Save" The list is saved under its current name.

### Import/Export - Pulse Train Mode

Expands the menu with the area for import and export of pulse train files.

Externally edited Excel tables with on/off time and repetition triplets can be imported as text files or CSV files and used for pulse train mode.

On the other hand, internally created pulse train lists can be exported as text files or CSV files.

### Mode - Import/Export Pulse Train Files

Selects if pulse train lists should be imported or exported. The settings offered below depend on the selected mode.

Remote command:

[\[:SOURce<hw>\]:PULM:TRAI:n:DEXChange:MODE](#) on page 408

### Extension - ASCII File Settings

Selects the file extension of the ASCII file to be imported or exported. Selection TXT (text file) or CSV (Excel file) is available.

Remote command:

[\[:SOURce<hw>\]:PULM:TRAI:n:DEXChange:AFIle:EXTension](#) on page 406

**Decimal Point - ASCII File Settings**

Selects the decimal separator used in the ASCII data between '.' (decimal point) and ',' (comma) with floating-point numerals.

Remote command:

`[ :SOURce<hw> ] :PULM:TRain:DEXChange:AFILe:SEParator:DECimal`  
on page 407

**Column Separator- ASCII File Settings**

Selects the separator between the frequency and level column of the ASCII table.

Remote command:

`[ :SOURce<hw> ] :PULM:TRain:DEXChange:AFILe:SEParator:COLumn`  
on page 407

**Select ASCII Source / Destination - Import/Export Pulse Train Files**

Opens the "File Manager" for selecting the ASCII file to be imported into a pulse train list (source) or the ASCII file the pulse train list is exported (destination) in.

Remote command:

`[ :SOURce<hw> ] :PULM:TRain:DEXChange:AFILe:CATalog?` on page 405  
`[ :SOURce<hw> ] :PULM:TRain:DEXChange:AFILe:SElect` on page 406

**Select Destination / Source - Import/Export Pulse Train Files**

Opens the "File Manager" for selecting the pulse train list to be exported (source) into an ASCII file, or the destination for the ASCII file to be imported (destination) in.

Remote command:

`[ :SOURce<hw> ] :PULM:TRain:DEXChange:SElect` on page 409

**Import / Export - Import/Export Pulse Train Files**

Starts the export or import of the selected file.

If import is selected, the ASCII file is imported as pulse train list.

If export is selected, the pulse train list is exported into the selected ASCII file.

Remote command:

`[ :SOURce<hw> ] :PULM:TRain:DEXChange:EXECute` on page 408