

Synapse v90 Release Notes

Special Notes When Updating

- The LFP gizmo is replaced by the Neural Stream Processor gizmo and the Electrical Stimulation gizmo is replaced by the Electrical Stim Driver gizmo. To see the deprecated gizmos in the list of available gizmos, select the option in Menu > Preferences > Show Deprecated Gizmos.

Changes and Improvements

New Gizmos!

- **Signal Accumulator** - Computes running sums and averages over a defined window, and allows advanced plotting and thresholding of these values. ([PDF link](#))
- **Electrical Stim Driver** - A more powerful version of the Electrical Stimulation gizmo that allows up to 4 independent stim patterns (voices) with built-in channel selector for controlling IZ2 stimulator. ([PDF link](#))
- **Ultrasonic Stimulation** - A stripped down version of the Audio Stimulation gizmo designed to run at higher frequencies on the RZ6 processor. ([PDF link](#))
- **User Input** - Bring external digital inputs (e.g. button press) or software button presses into Synapse for marking timestamp events and controlling logic flow. ([PDF link](#))

Multiple run-time plots and advanced layout saving

- Useful for multi-subject work or splitting the plots across multiple tabs or monitors ([PDF link](#))

New run-time plots added to Strobed Data Storage gizmo

- Add real-time heat maps, bar graphs, and snippet plots to your strobed data storage ([PDF link](#))

Added API access directly to gizmo ports, including RZ inputs and outputs

- Most gizmo outputs can be read directly using the API instead of going through a User Gizmo ([PDF link](#))

Miscellaneous Improvements

- **Parameter Sequencer** - new parameter and sequence generator lets you quickly build out tables of combinations and permutations. ([PDF link](#))
- **Unary Processor** ([PDF link](#))
 - Added a visual schematic to better understand the signal flow and how the parameters are used.
 - When converting to logic signal, the floating point signals before the logic test are also available on the output. Example: If making an RMS threshold detector, you can visualize both the threshold crossings and the RMS value used for the detection.
- **PCA Spike Sorting** - now runs at up to 100kHz sampling rate. RZ6 users can combine high frequency audio stim and low channel count spike recording on one device.
- **Matlab SDK** ([link to SDK page](#))

- Added functions to TDTbin2mat to apply digital filters (TDTdigitalfilter) and threshold continuous streams into snippets (TDTthresh).
- Added 'COMBINE' option to TDTbin2mat which can merge snippets of data that was stored in Strobe Controlled mode using the Strobed Data Storage gizmo back into its constituent streams.
- Expanded STORE option to include cell array of strings.
- **Preferences** - New Compiler Optimizer option in Advanced tab removes unused circuit components during compilation.
- **Parameters** - Added right-click pop up dialog on parameter table values that allows easier parsing of input values, such as E-notation.
- **Epoch Event Storage** - Updated the UI and added 'On Change' mode that stores the value whenever a change is detected on the input value. ([PDF link](#))
- **Selector Gizmo** - Added 'Logical Output' checkbox when selecting bit fields or sort codes. In Bit Fields mode, logic output is 1 if selected field's value equals selected sort code. In Sort Codes mode, logic output is 1 if selected field's value is nonzero. ([PDF link](#))
- **Neural Stream Processor Gizmo** - Output link is now always enabled.
- **Pulse Generator Gizmo** - Added 'Minimum' Duty Cycle option which makes output pulse a single sample.
- **Oscilloscope Gizmo** - Run-time settings are kept when switching to Idle, including threshold(s) and plot range, so your design and run-time interfaces are always synchronized. The new Accumulator gizmo also does this.
- **RS4** - Optionally allocate more DSP memory when streaming very high channel count data. ([PDF link](#))

Bug Fixes

Miscellaneous gizmo and HAL fixes

- Neural Stream Processor high pass filters below 2 Hz were not applied correctly - no high pass filter was applied.
- Fixed 'Save to Disk' option in all gizmos that do data storage so that nothing about the store is saved to disk when this option is disabled.
- Fixed cases where Corpus becomes unresponsiveness
- Tetraode Spike Sorting - Fix when deleting sort codes
- Better handling of very high and very low screen resolutions
- Bug fixes for some lesser used Corpus emulated DSP components
- Fixed Mapper crash bug when using multiple custom maps
- Fixed Unary Processor multi-channel convert to logic