

2024.2 Software Release Highlights

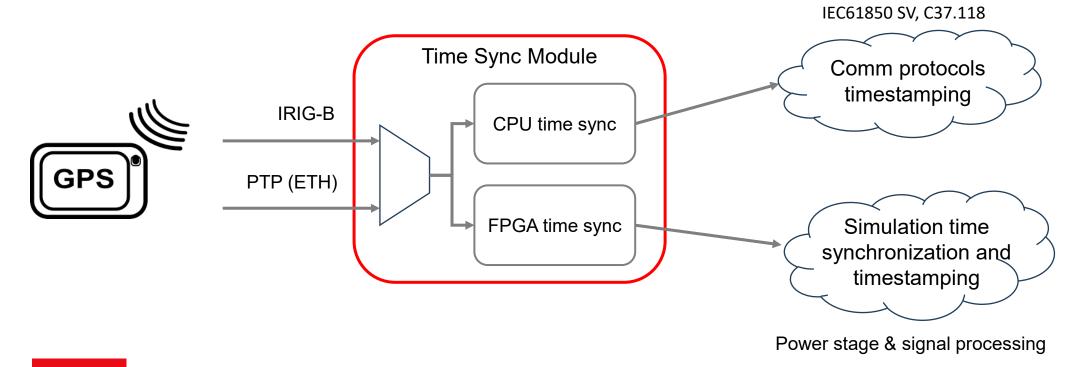
- □ HIL Global Time Synchronization
 - C37.118 time synchronization
- □ Train Real-Time Data Protocol (TRDP)
- □ Six Phase PMSM with saturation effects
- □ Additional Features
 - Up to four execution rates on 4th generation devices
 - Sinusoidal sources API function enhancement
 - Flexible Ethernet port selection
- □ UX Improvements
 - Component Bypassing
 - Add Schematic Area



HIL Global Time Synchronization

Synchronize your HIL device with the World Clock

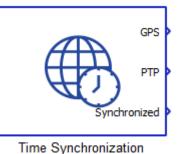
- □ Global time synchronization
- Typically required when other equipment in the setup are also time synchronized
 - Particularly important for power systems applications

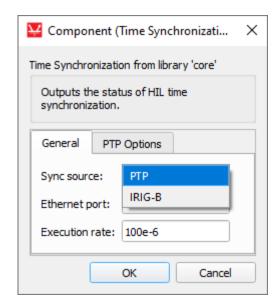


HIL Global Time Synchronization

Set your time synchronization source in one place

- □ Time synchronization component
 - Source selection and configuration
 - Synchronization status
- □ Capture function can now provide absolute trigger time
 - API support
 - GUI support

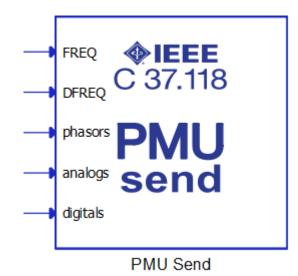




HIL Global Time Synchronization

Support for C37.118 time synchronization enabled

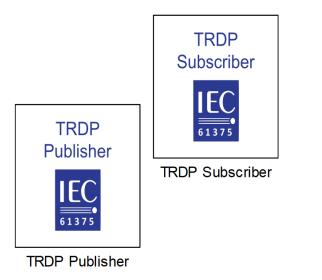
- Data transmission now aligned
 with system time
- Time between messages now optimized to prevent time drift



Train Real-Time Data Protocol (TRDP)

Expanded communication protocol support for rail applications

- □ Communication protocol for IP-based communication in trains
- Based on IEC61375-2-3 Train Communication Network (TCN) communication profile
- □ Realized through dedicated Publisher and Subscriber components



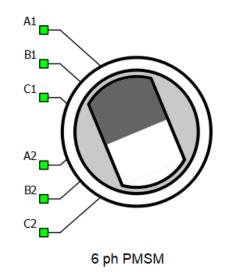
Component (TRD	P Subscriber) properties brary 'core'	>			
Configuration should	be defined with appropriate configuration file.				
Configuration file:	path to configuration file Choose				
	Configuration preview				
Telegram IDs:]			
Host IP:	192.168.20.200]			
Interface ID:	•]			
Source IPs and IDs:	٥]			
Execution rate:	100e-6]			
	OK Cancel				

Typhoon HIL

Six Phase PMSM model with saturation effects

Model 6-phase PMSMs with greater fidelity

- Six Phase PMSM nonlinear model developed, including magnetic saturation effects
- Machine self and mutual inductances, as well as the permanent magnet's fluxes, are functions of
 - d- and q- components of the machine stator currents

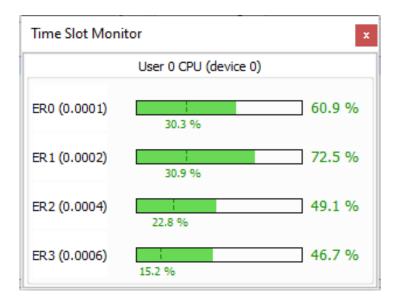


Six Phase Perm	anent Magn	et Synchro	onous Machine	(Double State	r)	
Electrical M	1echanical	Load	Feedback	Advanced	Snubber	Output
Model Type:	nonlinear			•		
Saturation:	absolute	absolute inductance vs current 🔻				
Rs:	0.64	0.64				
id vector:	[0.0, 0.0]	[0.0, 0.01]				
iq vector:	[0.0, 0.0]	[0.0, 0.01]				
Ld table:	[[0.0, 0.0	[[0.0, 0.0], [0.0, 0.0]]				
Lq table:	[[0.0, 0.0	[[0.0, 0.0], [0.0, 0.0]]				
Md table:	[[0.01, 0	[[0.01, 0.01], [0.01, 0.01]]				
Mq table:	[[0.01, 0	[[0.01, 0.01], [0.01, 0.01]]				
Psi_pm_d table	: [[0.0, 0.0	[[0.0, 0.0], [0.0, 0.0]]		Wb		
Psi_pm_q table	: [[0.0, 0.0	[[0.0, 0.0], [0.0, 0.0]]		Wb		
displacement:	0.523598	77559829	9	rad		

Additional Features

Increased maximum number of execution rates on 4th generation devices

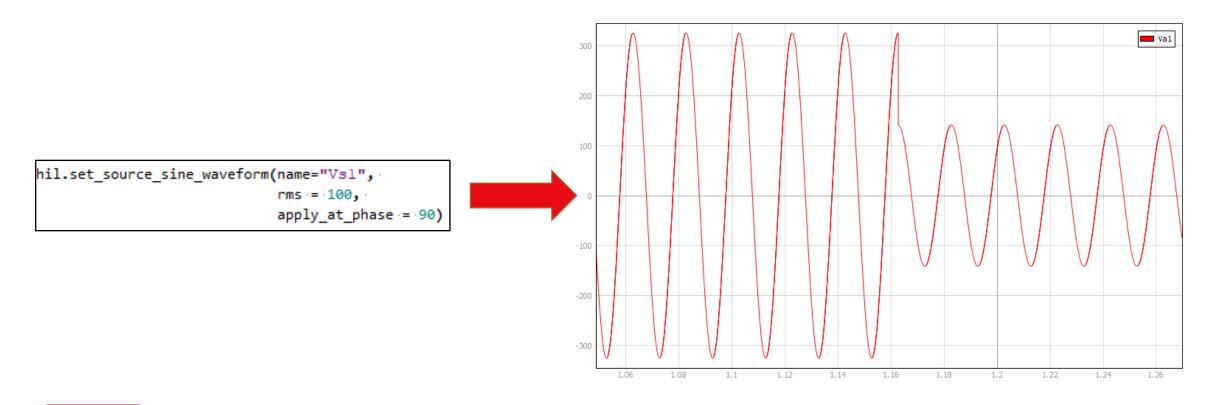
- Number of Execution rates in the model now
 increased from 2 to 4 on HIL404 and HIL606
 User CPUs
- Signal processing-domain modeling now more flexible



Additional Features

Sinusoidal sources API function enhancement

- □ New argument added to the set_source_sine_waveform() HIL API function: apply_at_phase
- □ Triggering transient events (dips, swells etc.) now made more convenient



Additional Features

More options for your communication interfaces

- □ Flexible Ethernet port selection
 - Support for PROFINET added

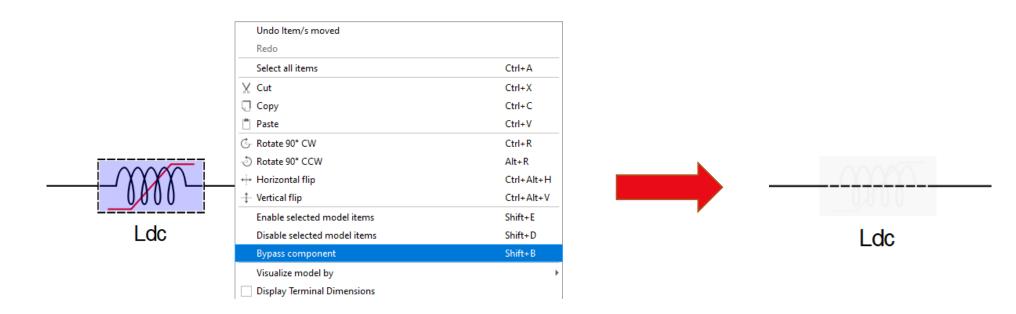




UX improvements

Component Bypassing

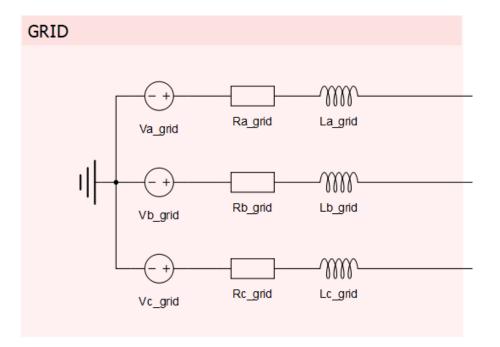
Disable a component, without having to redo the wiring



UX improvements

Add schematic area

- Colored and named rectangular area-box to separate circuit sections
- Circuit sections can be easily dragged as a group throughout the model
- Circuit sections within the box can still be edited normally





Learn More

□ Visit: <u>Software Release Page</u>

Contact Us: info@typhoon-hil.com

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