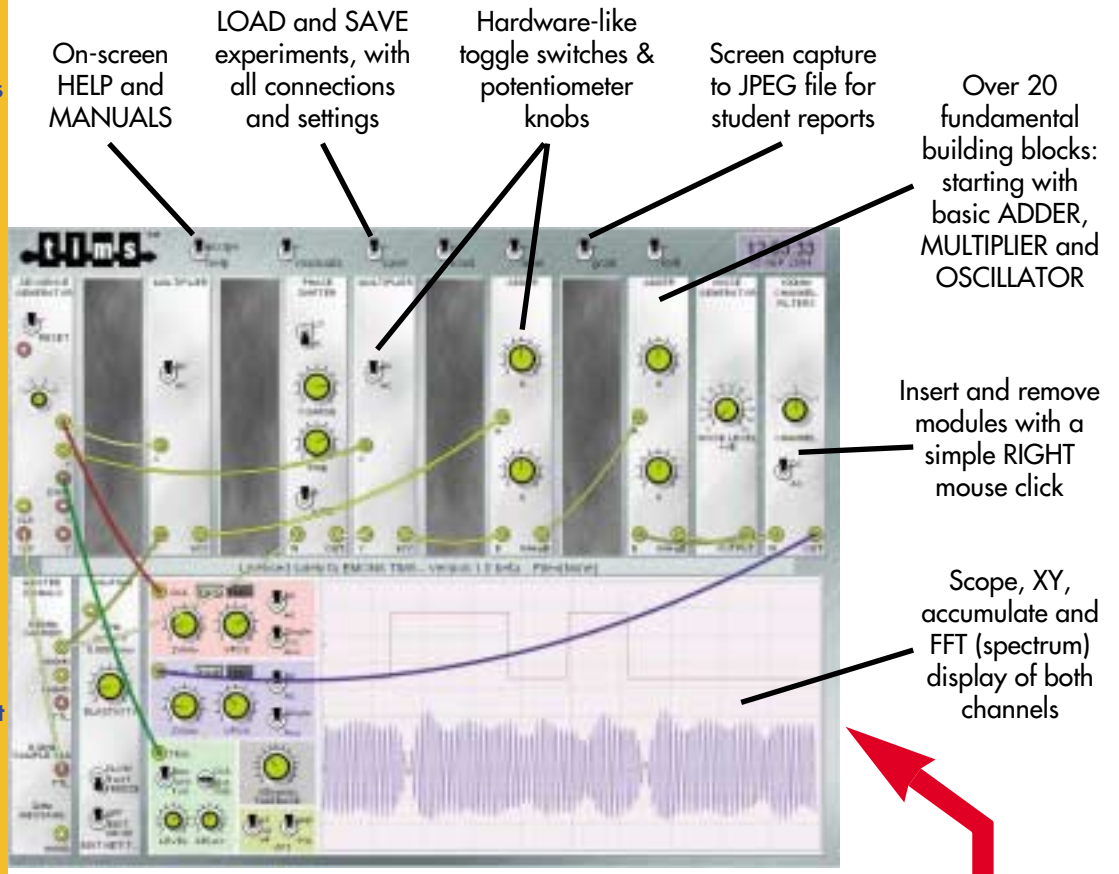


TutorTIMS telecom's software

True point-and-click technology: start patching telecommunications models in minutes.

- Make telecommunications block diagrams and equations come to life, using simple building blocks.
- No programming and no parameters to enter. Hardware-like controls: point-and-click connections, toggle switches and analog knobs.
- Continuously running, instant response simulation engine.
- Front panels mimic TIMS lab hardware system to aid pre-lab learning.

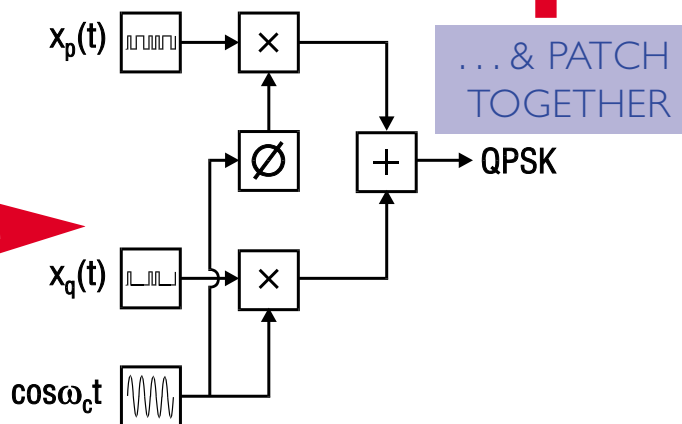
Modeling equations
 Product demodulation
 Superheterodyne principles
 AM & DSBSC
 SSB & ISB
 Armstrong's Phase Mod.
 Envelope detection
 Phase Locked Loop, PLL
 FM & PM
 FSK & ASK
 BPSK, QPSK, DPSK
 Eye patterns
 Sampling & Reconstruction
 Nyquist Theorem
 PAM & TDM
 FDM & PDM
 PWM & PPM
 PRBS messages
 The noisy channel
 Recovery of a noisy data
 Bit Error Rate measurement
 SNR measurement
 Line coding and decoding
 Carrier acquisition
 and much more



A TIMS EXPERIMENT STARTS WITH MATH OR TELECOM'S THEORY . . .

$$x_p(t) \cdot \cos \omega_c t + x_q(t) \cdot \sin \omega_c t = \text{QPSK}$$

where $x_p(t)$ and $x_q(t)$ are alternate elements of a digital sequence.



... & PATCH TOGETHER

... THEN REPRESENTED AS A BLOCK DIAGRAM



Available from:

TutorTIMS Versions

	TutorTIMS - Advanced	TutorTIMS - Basic	TutorTIMS - FreeWare
Release Number	r1.0A	r1.0B	r1.0FW
Unlimited User Site License	•	•	
4 minute student training animation on CD-ROM	•	•	

SIMULATOR FEATURES

Continuous, free running simulation (no outdated "GO"/"STOP" button)	•	•	•
Simple INSERT/DELETE modules	•	•	•
Smart patching wires	•	•	•
FAST and NORMAL simulation processing modes	•		
Number of slots for modules	12	12	5
LOAD experiment file	•	•	
SAVE experiment file	•	•	
net*TIMS file EDIT & SAVE	•	•	
Screen GRAB save to JPEG	•	•	•
On-screen HELP	•	•	•

MEASURING INSTRUMENTS

OSCILLOSCOPE - 2 channels	•	•	•
ACCUMULATE - 2 channels	•	•	
XY display	•		
Waveform FREEZE mode	•		
FFT (spectrum) - 2 channels	•		
FREQUENCY COUNTER	•	•	
TRMS VOLTMETER	•		

USER SUPPORT

On-screen USER MANUALS	•	•	
On-screen EXPERIMENT MANUALS	•	•	
3 month free on-line support	•	•	
12 months free upgrades of new modules and simulation engine	•		

TIMS MODULES

TIMS System Unit modules: includes MASTER SIGNALS, BUFFERS, VAR DC V	•	•	•
TIMS HEADPHONE AMPLIFIER module	•		
TIMS BASIC module set: 12 modules (TIMS-100 series) and Quadrature Utilities	•	•	9 modules
TIMS SPEECH module	•	•	•
Additional TIMS ADVANCED modules (TIMS-400 series)	•		
Special function TutorTIMS modules	•		

STUDENT FRIENDLY TutorTIMS CONVENTIONS

Same module appearance, inputs, outputs, control knobs and switches as TIMS hardware	•	•	•
Same module functionality and specifications as TIMS hardware	•	•	•
Analog hardware style knobs control all variable parameters, same as TIMS hardware	•	•	•
Toggle and rotary hardware-style switches same as TIMS hardware	•	•	•
Easy integration with TIMS-301 hardware and net*TIMS experiments	•	•	•