Component RPC® Pro Software

Affordable simulation test software, streamlined for component applications

be certain.

EASY-TO-USE **COMPONENT RPC PRO SOFTWARE** ACCURATELY AND EFFICIENTLY SIMULATES THE OPERATING ENVIRONMENT OF YOUR AUTOMOTIVE COMPONENTS. IN ADDITION, THE SOFTWARE'S MODULAR DESIGN ALLOWS FOR AN AFFORDABLE AND SCALABLE SOLUTION TO MEET YOUR SPECIFIC SIMULATION REQUIREMENTS.

Component RPC Pro Software Helps You Make the Most of Simulation Testing

The Affordable Testing Solution

Because Component RPC Pro (cRPC Pro) software is specifically designed, and ideally suited, for low channel-count applications and component testing, it does not include some of the more costly components needed for more complex testing. In addition, its modular design and flexible bundling lets you buy just what you need and add capabilities as your needs change, making it the most affordable choice for component simulation testing.

Guidance Features to Ensure Correct Use

Component RPC Pro software is easy for experienced or novice users alike to employ correctly. A variety of helpful features guide the user through the testing process. These include:

- » Preconfigured templates
- » Interactive wizards
- » Informative graphical displays
- » Integrated data management
- » Context—sensitive online help

In operation, a process-sensitive, step-by-step task list guides the user through the simulation process. This tool incorporates knowledge gained over decades of simulation and testing by experienced engineers and test consultants and lets users add their own supplementary information to create an operation-specific knowledge database.
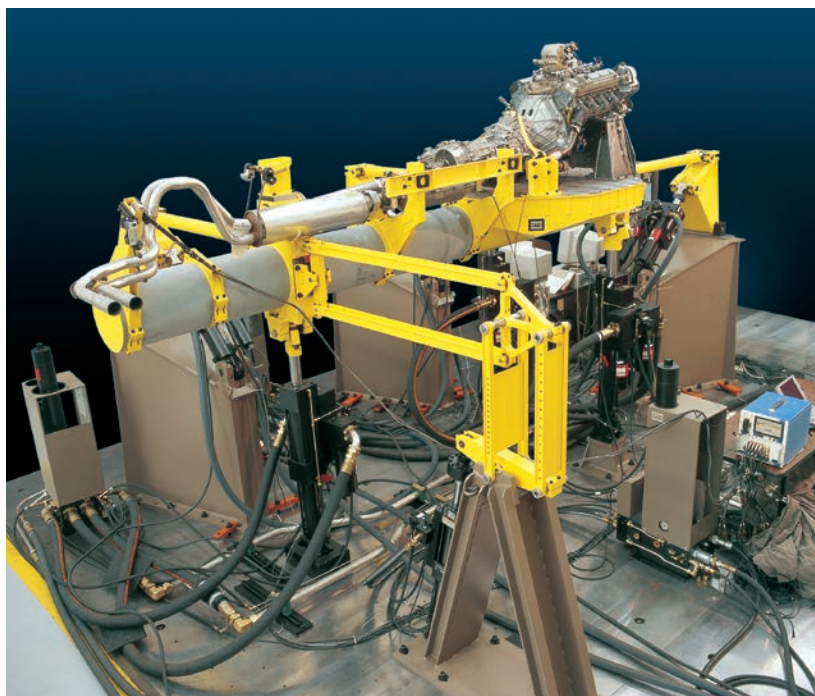
FAST, RELIABLE INFORMATION
The advanced editing and analysis capabilities of Component RPC Pro software help reduce testing time while still providing the thorough, reliable, detailed information you need. This cuts costs, increases laboratory throughput and helps speed products to market.

Laboratory Testing Brings the Loading Environment to You

Component RPC Pro software is the ideal tool for testing the durability of ground vehicle components in the controlled environment of the laboratory. This kind of testing lets design and product engineers observe the environment to which components are subjected, replicate it in the laboratory and closely examine any failures that occur. They can, for example, replicate the acceleration of a vehicle spindle by controlling the displacement of a tire or reproduce the strain on a part by controlling a force into the part.

Accurate Results

MTS has a long history of working with automotive OEM and supplier engineers to build accurate force and motion simulation systems. Our process has become a common component of almost all vehicle simulation systems, allowing engineers to replicate the real-world environment while providing tools to accurately assess the levels of correlation achieved.

A Robust Application for Accurate Simulation

Component RPC Pro software was developed from the outset to be a high-quality, robust and reliable application. In addition to ensuring stability of the application software, great attention has been paid to the details of the core RPC calculations to make them more robust than ever before. cRPC Pro includes many features that contribute to the robustness of the application, including:

AUTOMATIC SCALING
Non-square inverse calculations can be extremely sensitive to the relationship of units and the relative scaling of response transducers. This sensitivity can compromise the robustness of a calculated result, but cRPC Pro software uses an automatic scaling feature to resolve this problem and generate a more robust, more accurate inverse.

MORE EFFICIENT FRF CALCULATIONS
Advanced matrix smoothing provides a dual benefit of a less noisy system model and reduces the number of required averages, hence allowing for quicker measurements.

UNCONTROLLED ERROR SUPPRESSION
Although engineers often observe only the frequencies of interest where convergence criteria are evaluated, uncontrolled frequencies can contribute to convergence problems. cRPC Pro software prevents the system from generating errors in the out-of-control
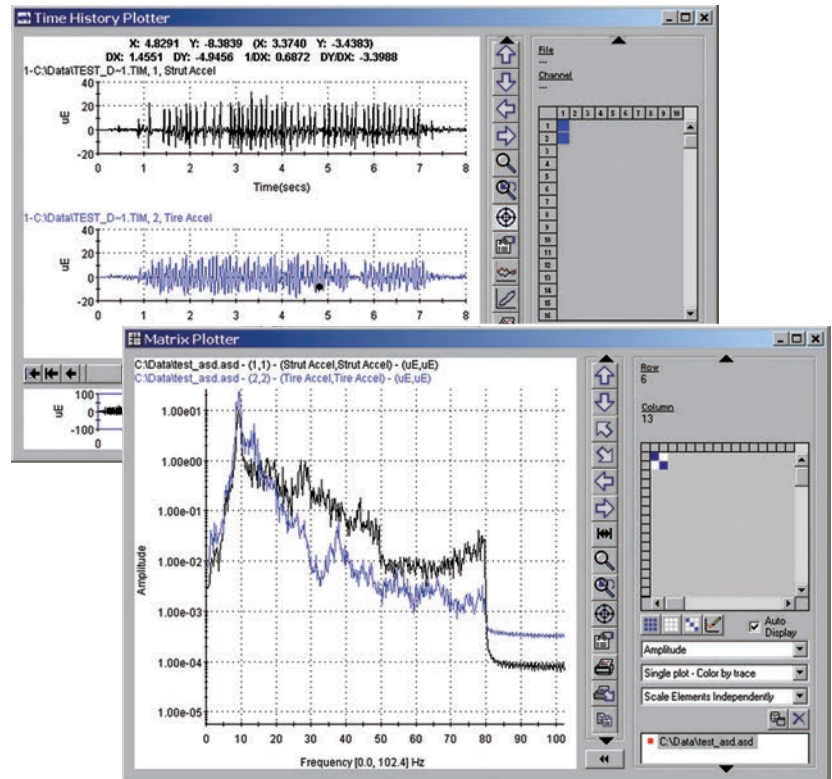
band frequencies by using a technique that automatically suppresses potential errors and facilitates better quality control band convergence.

True Integration

Component RPC Pro software allows for seamless integration of all steps of the simulation process. Integrated test data management provides automatic file naming, standardized project structures and user-definable templates. Data and user inputs are managed throughout the process, simplifying and streamlining program operation.

The software is also tightly integrated with the MTS family of digital controllers. Powerful event actions allow you to incorporate many of the control features, such as park and ride and digital input triggering, into your RPC tests.

The Bottom Line: a Better System Means Better Information

Component RPC Pro software is simply the most affordable, flexible and accurate application software for simulating the field service of automotive components on low channel-count systems. It is ideal for use with four-poster, motorbike simulator and component simulation systems, allowing engineers to replicate the real loading environment and make accurate design, performance, NVH and durability decisions about their products.

Component RPC Pro software incorporates advanced simulation techniques, which contribute to the accuracy of your results. Component RPC Pro software helps you maximize the productivity of your laboratory, increase the value of your tests and optimize your simulations. Its flexible options will help you cut development time and accelerate your time to market.

Integrated Data Management, Efficient Analysis and Built-in Diagnostics
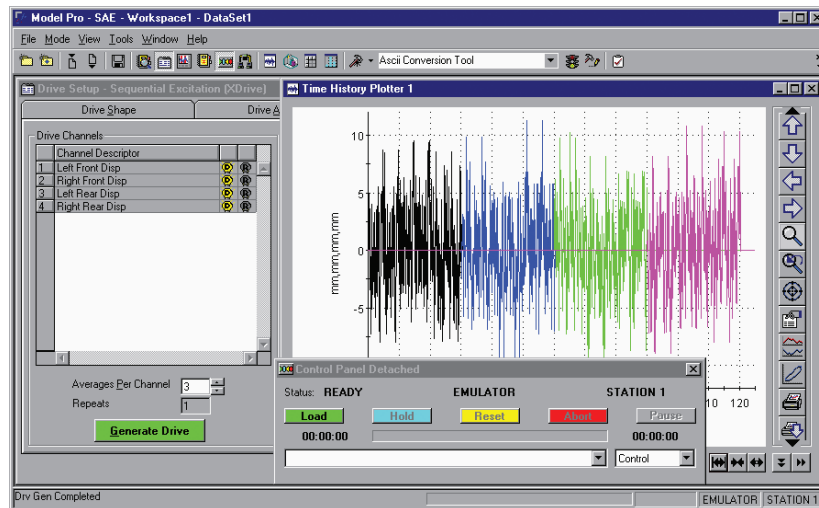
Key Product Features

BUILT FOR TIME

In operation, Component RPC software makes measurements in the time domain, resulting in multiple channel files. All channels are synchronized with an important phase relationship that is maintained throughout the process to ensure that the final drive files developed for your test represent the original field measurements.

PROJECTS STRUCTURE

All data is managed by a standardized project structure, enabling users to quickly become familiar with the software's data management features.

TEMPLATES

Templates are predefined software configurations that define the behavior of the software and define the parameters used in calculations. Once you have configured your software environment, you can store this information in a user template, simplifying subsequent setup tasks.

EFFICIENT ANALYSIS

Component RPC Pro software efficiently analyzes and processes multichannel data, presenting results in a concise, understandable manner.

BUILT-IN DIAGNOSTICS

Finding problems early saves time and cuts costs. Throughout the software, wizards can query inputs from the user and help manage parameters. Wizards also work in the background to validate the compatibility of data selection.

RPC Pro Data Manager for Efficient Test Lab Information Management

RPC Pro Data Manager is built into Component RPC Pro software, providing easy information access and effective data management. The software's robust database engine delivers the functionality you need to successfully leverage the valuable information your laboratory produces without the cost and complexity of ordinary data management solutions. RPC Pro Data Manager:

» Supports all data regardless of format

» Utilizes a central data server for project archival

» Provides flexible keyword management with user-definable keywords

» Includes RPC Product Driver for auto-recognition of RPC Pro projects and data

» Features flexible search and retrieval capabilities

» Employs a robust security model for user-based security

» Facilitates network-based information sharing

Tight Integration, Streamlined Access

Optimizing test information management can significantly improve your development processes. RPC Pro Data Manager lets you leverage test information by making data directly available from the RPC Pro tool menu. A single interface lets you identify, retrieve and load relevant data into the current program, saving time and allowing easy sharing of information.

Ease-of-Use

RPC Pro Data Manager is easy to use, eliminating the complexities of interacting directly with a database system.

Supports All Data Formats

The software works with any data that is accessible from Windows® Explorer via a network. A typical project archive can include test data, photographs, test logs, video clips, system configuration details, process information and analysis results. Additional information could include test specimen details, operator information and miscellaneous notes. When additional information is generated, it can be easily associated with the archive.

Flexible, Secure Archival and Search

Entries for each item are archived in a central data server, while associated keyword/value pairs are kept in the RPC Pro database. This ensures quick and efficient interface with the RPC Pro database, and allows the flexibility of storing large archived data sets on a separate computer in a different location. RPC Pro Data Manager can require specific keywords in all archives, can define a default value for keywords, and can define a limited set of valid values for keywords. This helps enforce consistency in data archival and guarantees that data can be easily and comprehensively searched in the future.

The software also offers flexible search and retrieval capability, letting you search for specific archives, and data within them, using simple or complex user-defined queries. These are written within RPC Pro and can be saved and made available to all users.

User-Based Security

The software's robust security model protects the RPC Pro database and manages access granted to users. The RPC Pro administrator can define each user's level of access, ranging from simply viewing information to creating archives to performing administrative tasks.

Cost-Effective Data Management

RPC Pro Data Manager optimizes test information management and promotes increased sharing of critical information. Its robust data engine, broad functionality and ability to support all data formats let you streamline RPC test information management, enhance lab efficiency and accelerate your development processes.

Model Pro - SAE - Workspace1 - DataSet1

File Mode View Tools Window Help

Ascii Conversion Tool

Drive Setup - Sequential Excitation (XDrive)

Drive Shape   Drive A

Drive Channels

	Channel Descriptor		
1	Left Front Disp		
2	Right Front Disp		
3	Left Rear Disp		
4	Right Rear Disp		

Averages Per Channel   3
Repeats   1

Generate Drive

Time History Plotter 1

STATION 1

Control Panel Detached   EMULATOR

Status: READY   Hold   Reset   Abort   Pause
                                                      00:00:00
Load   Control
00:00:00

EMULATOR   STATION 1

Drv Gen Completed

HP LP2465

Modular Software that Grows to Meet Your Needs

Flexible Bundling Helps Control Costs

Component RPC Pro software options include bundled solutions that let you buy what you need when you need it. Whether your needs are relatively simple—reproducing existing drive files, leveraging drive file development done by others, or simulating data provided by a customer—or more complex, requiring a tool set that covers the entire RPC process, you can select the modules that meet your exact requirements. You can also expand your testing capabilities and ability to meet your organization's needs by leveraging the rich set of RPC options, such as fatigue analysis, ride comfort, Turbo RPC and many other advanced simulation and analysis tools. And as needs continue to grow, the RPC family of tools will help support nontraditional testing applications like noise and vibration studies, ride and handling evaluations, model correlation and virtual testing.

Component RPC Pro Application Review

Component RPC Pro covers a broader spectrum of component tests than any other single software product. It addresses all of the fundamental components of Remote Parameter Control™, but also provides an extensive analysis and advanced simulation toolkit. These additional capabilities include:

DATA VALIDATION PACKAGE
Used for data viewing, data validation, automatic defect detection and simple analysis.

EDIT AND ANALYSIS PACKAGE
Supports graphical and statistical editing with an interactive editor that simplifies the process of reducing data and generating spectral and statistical information.

DRIVE FILE DEVELOPMENT PACKAGE
Allows users to edit and reduce data, develop a system model by calculating an FRF and simulate desired data using iterative techniques.

DURABILITY TEST PACKAGE
Used to construct and execute tests from within Component RPC Pro software with test monitoring techniques including time history monitoring, statistical trend monitoring, spectral monitoring and fatigue monitoring.

DRIVE FILE DEVELOPMENT AND TEST PACKAGE
Brings together editing and analysis, drive file development and durability test functionality to provide a complete, cost-effective solution for the RPC process.

RIDE COMFORT ANALYSIS
Helps evaluate the relative comfort of competitive systems or rate the discomfort index of various designs.

FATIGUE ANALYSIS
Included in modular packages with bundles available for time history fatigue analysis, histogram-based fatigue analysis, fatigue sensitive editing and component test generation.

VIRTUAL TESTING
Supported by Component RPC Pro software through interface with CAE analysis applications, enabling RPC techniques for use with virtual modeling.
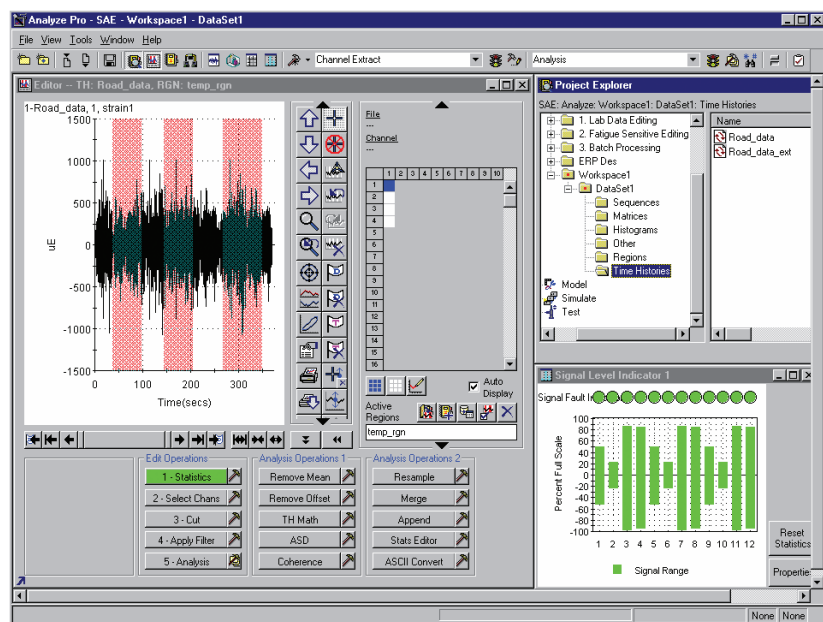
Component RPC Pro Product Bundling

Bundle Name	Function/Feature	Description
Edit and Analysis	User templates	Allow user reconfiguration of tools and applications
	Data management	Project based test data management
	Automatic file naming	Automatically generate output file name
	Online help	Context-sensitive help
	cRPC project convertor	Convert cRPC III project to cRPC projects
	Import data into the project	Convert cRPC III projects to cRPC Pro projects
	Time history data conversion	Convert from nCode DAC, Somat SIF, ASCII time history data
	ASCII/RPC matrix conversion	Convert to and from ASCII matrix data
	Edit - graphical	Graphical editing
	Edit - statistical	Editing based on RMS, Max, Min
	Spectral analysis	Calculate spectral densities
Drive File Development	Statistical analysis	Statistical generation
	Network licensing/Additional users	Share licenses across network of client computers
	Data validation	Automated data validation, spike removal, etc.
	Processes	Create processes by combining sequences of tools
Drive File Development and Test	Batch processing	Automatically process multiple files with tools or processes
	Fatigue analysis	Damage calculations, rain flow counting and life predictions
	Region analysis	Region-based analysis of time histories
	Setup	Configure controller/RPC channels
	Model - sequential mode	FRF calculation with channel by channel excitation
	Model - non square	Use more response transducers than actuators
	Simulate	Perform iterations
Simulation	Computed channels	Calculate virtual channels using mathematical expressions
	Model - simultaneous mode	FRF calculation with multichannel excitation
	Model - diagnostics	Evaluation of FRF stability, SVD analysis
	Turbo RPC	Adaptive iterations (non-linear correction)
	Test	Durability test setup and execution
	Automatic drive	Identification Automatic linking to final iteration drives
	Test log	Log events automatically and record limit trips
Durability Test	Resume feature	Track test progress and automate restarting aborted tests
	Point by point monitoring	Time history monitoring
	Trend monitoring	Statistical monitoring
	Fatigue monitoring	Damage based monitoring (cumulative and per pass)
	Spectral monitoring	Frequency domain monitoring
	Material property editor	Define and modify material properties
	Time history fatigue	Calculate damage and life of multichannel time history data
	Fatigue sensitive editing	Automated time history editing based on damage
Fatigue Analysis	Histogram analysis	Generate histograms and calculate damage from histogram data
	Component teste generation	Perform cyclic reduction and regeneration of component test data
	Rain flow generation	Calculate rain flow histograms: Range Mean, From To, Max Min
	Range air calculation	Calculate range pair histograms
	Histogram editing	Edit rain flow histograms for component test generation
	Frequency editing	Edit matrices
	Ride comfort analysis	Evaluate ride comfort with NASA and ISO models
Options	Modulation analysis	Evaluate modulation in WFT signals, correction of 4N modulation
	MDA sequence builder	Matrix depletion algorithm for distributing loads during a test

Denotes a feature that is optional in cRPC Pro

Microsoft Interface

As a Microsoft® Certified Partner, MTS has designed Component RPC Pro software using Microsoft user interface guidelines. The use of Microsoft Office automation tools, such as Excel spreadsheet software, is heavily leveraged in Component RPC Pro software, ensuring a familiar software environment for users.

Maintenance, Enhancement & Support

MTS is committed to maintaining your RPC system at peak performance. The software is continually enhanced as a result of feedback from our large user community, the hundreds of engineers involved with RPC products on a daily basis. Our unique Software Maintenance, Enhancement and Support (ME&S) program provides you, the user, with software at the latest technology level.

You will be provided with one year of coverage when you purchase your new cRPC Pro licenses. As long as you keep your ME&S contract current you can renew it annually for a nominal fee. If you let the contract lapse, MTS has a "catch-up" program so you can renew coverage.

ME&S FEATURES

» MTS will provide you with regular software updates, as they become available, for the duration of the contract.

» You may contact our technical support staff via the MTS Web site, telephone (toll-free in the USA), e-mail or fax for help with challenges you encounter.

» MTS will ship updated documentation and media, formatted for your system, with installation procedures and release notes.

For More Information

For more information on how cRPC Pro software can improve your productivity and shorten your product development cycles:

» Contact your local MTS field sales engineer or

» E-mail MTS directly at info@mts.com

Typical Applications	Bundle	Notes
Data validation at collection time	Data Validation	Ensure that your data is valid the first time it is taken, with powerful, automated data validation tools.
Data analysis and reduction	Edit and Analysis	Reduce your overall test time, with signal processing tools that perform spectral analysis, filtering and data editing.
Complete solution, data reduction and test development	Drive File Development and Test Package	Improve your efficiency by combining all aspects of the standard RPC process, including data editing, simulation and testing.
Test development - use controller for testing	Drive File Development	After developing your drive files, use an MTS FlexTest® Controller to generate a test sequence and play out the durability test.
Test development - replication of OEM data	Simulation Package	Develop test drive files from existing, pre-edited data files obtained from your customer. Execute durability tests with the Component RPC Pro Test option or with a FlexTest controller.
Test execution - reuse of existing drive files	Durability Test Package	Define, execute, and monitor tests from Component RPC Pro.

Typical Applications	Bundle	Notes
Non-linear system correction (adaptive inverse modeling)	Turbo RPC	Improve the accuracy of your results with new control methods that compensate for non-linear behaviors.
FRF diagnostics and troubleshooting	FRF Diagnostics	Leverage an advanced set of tools to improve your understanding of system modeling issues.
Fatigue analysis	Various Fatigue bundles	Enhance your analysis capabilities by adding modular fatigue analysis packages.
Ride comfort analysis - motorcycle applications, 4-poster applications, seat testing	Ride Comfort	Perform ride comfort tests with the analysis tool in a stand-alone mode or in conjunction with a physical simulator.