

# TS-5040 Compact Functional Test System

Compact, versatile, all in one automotive functional test system

## Introduction

The Keysight TS-5040 automotive functional test system provides manufacturers a complete, versatile, and customized test solution tailored to your needs. It is designed to be just enough test coverage at a lower cost and equipped with measurement hardware, switching, a test executive and automotive-tuned library of routines perfect for your test development needs.



# TS-5040 Compact Turnkey Functional Test System

The TS-5040 automotive electronics functional test system aims to provide an all-in-one manufacturing end of line test solution for low to medium pin count automotive electronics such as ECU, sensors, etc. The solution achieves this by combining Keysight's world class test and measurement equipment and test automation software while providing a customizable approach to fit your manufacturing needs.

The TS-5040 compact design allows for easy integration into manufacturing processes, whether placed under conveyers or part of a COBOT system in manufacturing. It offers flexibility to meet diverse needs, whether your application demands the high-density switch/measure capabilities of the 34980A, the compact footprint of the U8989B PXI base instrumentation, the configurable switching and loading from the Switch Load Unit E6198B, customizable modular power supply of the N6700C series. The TS-5040 has been qualified with a large list of options ensuring you get the functionality you need and quality you deserve.

To better suit the industry and requirements, the TS-5040 offers versatile integration options, featuring either tabletop or rear-mounted interface connectors. Whether you opt for a tabletop-mount interface connector for convenient accessibility or a rear-mounted configuration for space optimization and cable management. The TS-5040 empowers you to tailor your testing setup to meet your specific workflow requirements, ultimately enhancing productivity and delivering reliable results.

On the software side, the TS-5040 is setup with two different software options such as the KS8400A PathWave Test Automation (TAP) with KS8328A PathWave Test Executive for Manufacturing (PTM) which provides powerful, flexible, and extensible test sequencing and test plan creation with additional capabilities that optimize your test software development and overall performance. Alternatively, Test Exec SL & TS-5000 equipped with over 900 pre-developed functions empowers test developers with a fully customizable operator interface, open architecture for multiple instrument integration, flexible test sequencing, easy debugging tools, and provisions for line integration in most manufacturing test environments.



**Figure 1.** The TS-5040 system integrated with a U8989B, and top mounted ICA paired with Test Exec perfect turnkey for a COBOT system.



**Figure 2.** The TS-5040 fully equipped with 34980A, top mounted ICA paired with Test Exec SL for a full turnkey solution.

## Key features

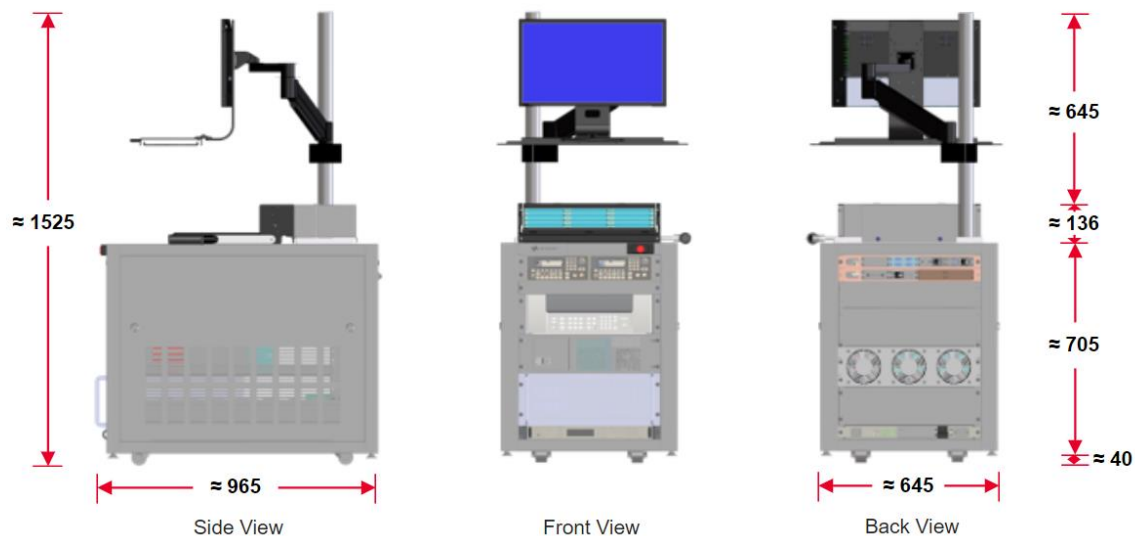
- Mass interconnect interface available in either top or rear mounted with its interface connect assembly (ICA) and interface test adapter (ITA).
- Customizable to include either a U8989B or a 34980A as the core to fit your manufacturing needs.
- U8989B enables PXI based instruments with 6 PXI-H slots available integrated with E6198B SLU.
- 34980A measurement switching, additional modules can be added and configure every pin matrix card up to 4x128 to support up to 480 pins total.
- 34980A in built 6 ½ DMM with an accuracy of 0.004% in DC voltage measurement, complete with channel alarm and math functions.
- Mini Switch Load Unit (SLU) 6 slots, available in a variety of different load cards from 8 to 48 channels per card and 2.5 A to 30A.
- Fixture support up to 100kg.

# General Characteristics

Line power	
Power Supply	Universal 100 Vac to 240 Vac
Power Line Frequency	50/60 Hz
Environment	
Maximum Altitude	2000 meters
Temperature (Operation)	5°C to 40°C
Maximum Relative Humidity	The test system is designed to operate in the range from 50% to 80% relative humidity. (non-condensing).
Pollution Degree	2
Installation Category	2
Regulatory	
Safety and EMC Regulatory	Refer to Declaration of Conformity for the latest revisions of regulatory compliance at: <a href="http://www.keysight.com/go/conformity">http://www.keysight.com/go/conformity</a>

## Mechanical specification

Top mount ICA	
Dimensions (H x W x D)	2020 x 600 x 905 mm (79.5 x 23.6 x 35.6 in.)
Weight	185.97 kg (410 lb)
Rear mount ICA	
Dimensions (H x W x D)	745 x 610 x 1050 mm (29.3 x 24.0 x 41.3 in.)
Weight	185.97 kg (410 lb)



**Figure 3.** Nautilus Top Mount ICA with swing arm

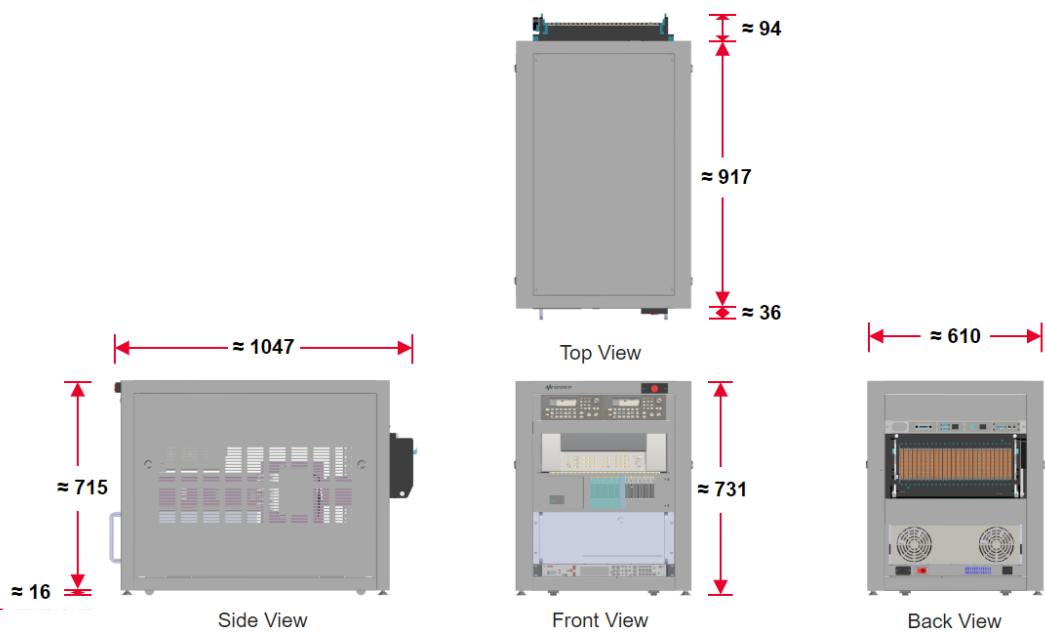


Figure 4. Nautilus Rear Mount ICA

## TS-5040 Options / Upgrades

Upgrades	Description
34980A plug-in modules	Family of multiplexers, matrices, RF modules, digital IO, D/A, breadboard
N67XX series power modules	Family of power modules
LXI instruments	<ul style="list-style-type: none"><li>34465A 6.5-digit DMM</li><li>53220A 350Mhz Counter</li><li>33522B 30MHz Waveform generator</li></ul>
Switch Load Unit (SLU)	E6218A / U8989B with family of load cards
PXI	Family of PXI cards DMM, DAC, Source, DIO

### For more information

For more configuration options please consult your local Keysight representative

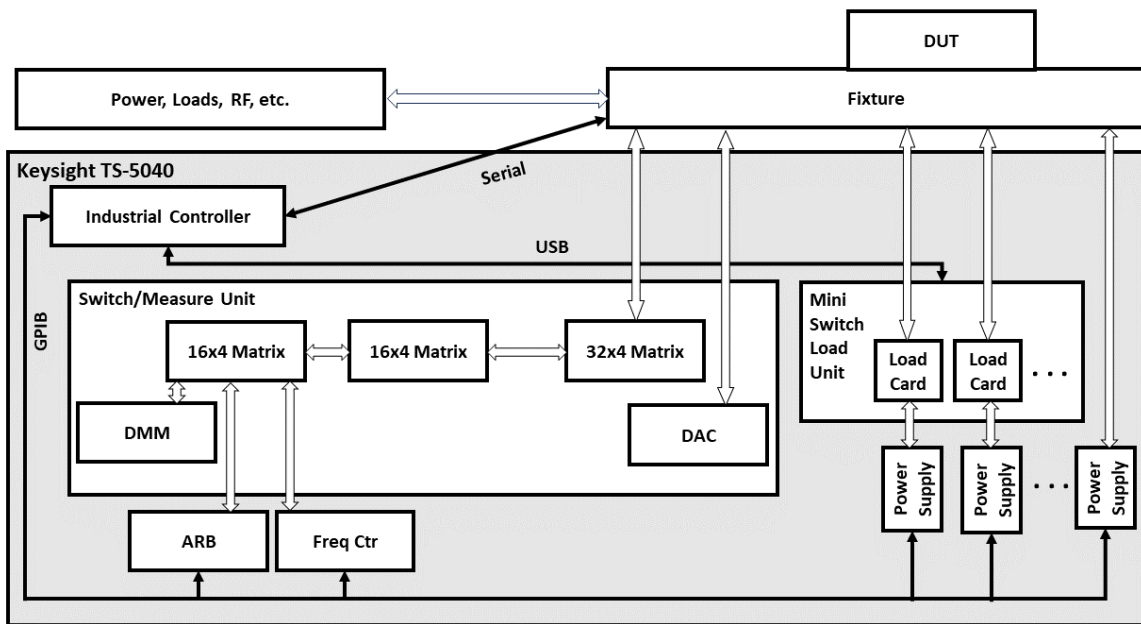


Figure 5. Typical system block diagram

## Test Exec SL 8.3

Environment which allows to focus on UUT specific application.

- Standard test sequencer with focus to re-use existing code
- 900 pre-developed libraries of functions
- Complete topology (system hardware and wiring) defined and known to the software, which allows very efficient program development and documentation test debug tools.
- Test time optimization tools
- Throughput multiplier for multi-UUT testing
- Customizable, open-source operator Interfaces
- Comprehensive code and sequence libraries
- Standard documentation and training

Test Exec SL supports all message-based instruments on the following interfaces: LAN; USB; GPIB; serial; Firewire-VXI

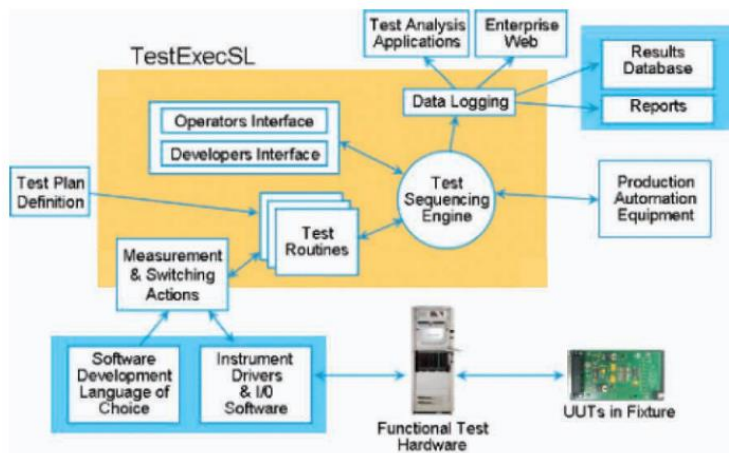


Figure 6. Typical environment for TxSL 8.3

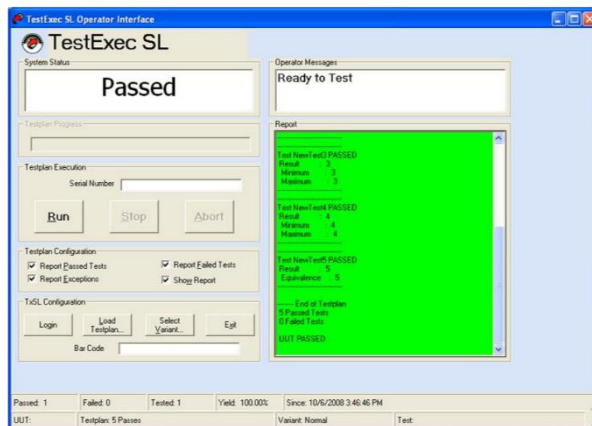


Figure 7. Typical environment for TxSL 8.3



# PathWave Test Automation (TAP) with PathWave Test Executive (PTEM)

PTEM is a plug-in that enhances the user experience in developing automated test programs using TAP.

- Minimize programming and coding effort, promote code reusability.
- Create high-level steps, share them, and gain the benefit of test standardization for repeatable use case.
- Graphical switch manager visualizes instrument and switch connects.

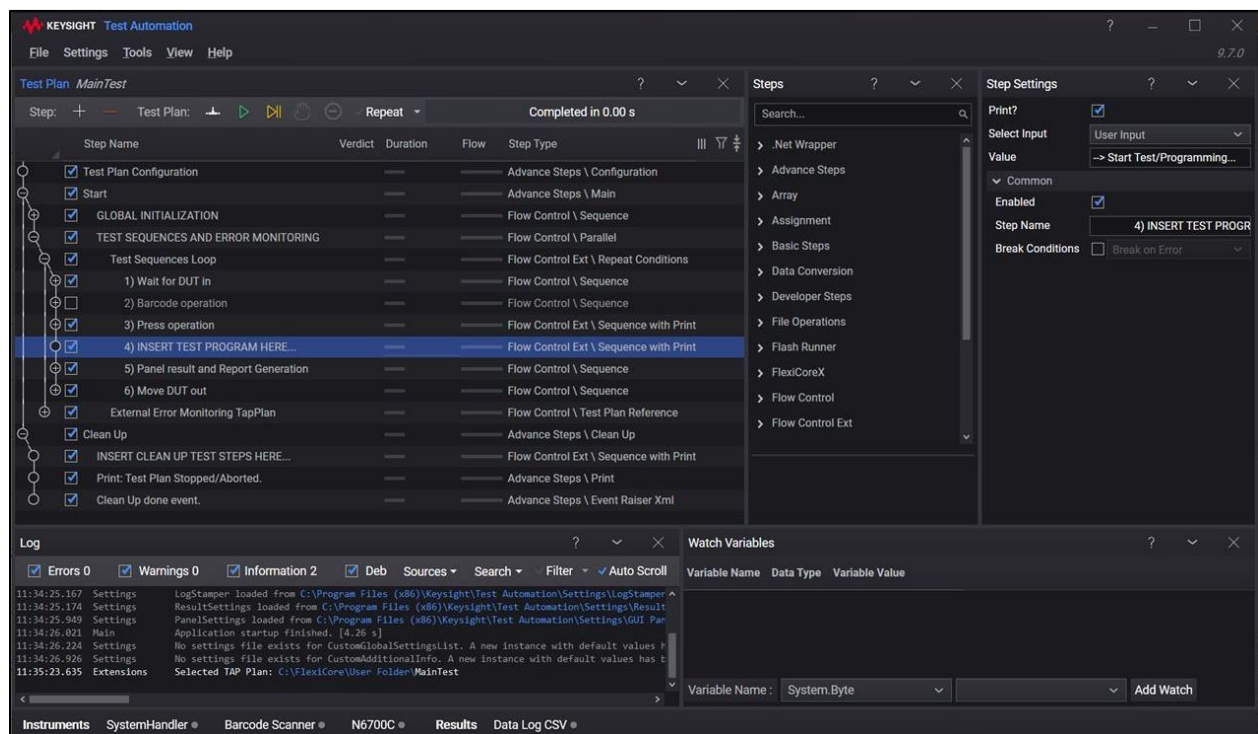


Figure 8. PathWave Test Automation (TAP) with PathWave Test Executive (PTEM) GUI

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at [www.keysight.com](http://www.keysight.com).



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