

SMART MiniPam ECU Testbed



- ▶ **Integrated test bed for the development of automotive control units**

SMART MiniPam ECU Testbed

Brief description

- MiniPam is a testbed for development-oriented validation and verification of ECU's and system functions for the lab and the vehicle.
- The MiniPam concept is based on the idea of replacing manually adjustable testbeds ("Potibox") by PC-controllable components.
- With its modular design, MiniPam provides the simulation, measurement and communication components for all needs on a scalable basis.
- MiniPam integrates all system functions into one application software and thus ensures easy operation.

Special features

- Interactive testbed operation: System statuses are immediately reported back.
- Macro recorder function for comfortable automation: Manual operation can be transferred directly into automatic sequences (with or without time reference) and can also be edited in script language.
- Various operating levels - not every user has to be an expert:
 - Graphic user interface for the manual operation of system resources.
 - Optional command line interpreter as executable test specification uses the functionality of a method library that can be extended by the customer.
 - "Python" standard script language for creating universal test sequences.
- Optional method library that users can extend: Use simple commands to generate any pre-defined complex test and system status.
- Connection and switching conditions for control units are managed and started as environmental and error scenarios.
- Expansion options:
We would be happy to tell you about currently supported tools.

Customer benefits

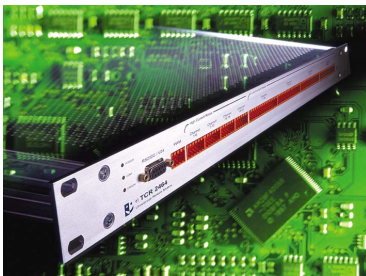
- Automated test runs make regression tests affordable.
- More functionality per investment volume compared to a combination of previously individual "Potiboxes" and universal tools.
- Excellent cost/benefits ratio by focusing on the essential functions: Many work benches can be equipped at attractive prices.
- Reproducible test configurations for regression-capable tests - already in development! Tests are defined and carried out "on the fly" during development and are therefore also available for later development and test steps.
- High operating safety through the use of one single tool.
- Investment protection by simply integrating the customer's existing measurement and simulation components.

System Resources



Everything under control

- The TON3 test system software provides a transparent user interface for each system component. Operating sequences are recorded in the macros with a time reference and can be used recursively as reproducible test cases.
- Sequences can be directly programmed in the standard script language Python.
- For further performance features, see product description.

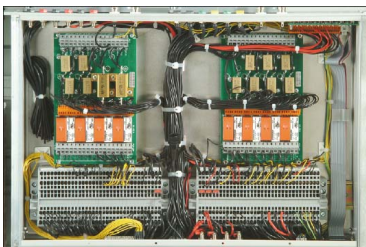


The core

The TCR2464 error and environmental simulation:

- 24 switching channels for connecting loads or power lines
- 64 signal channels error introduction (open circuit, short circuit against $\pm U_{Batt}$) or as load/stimulus circuit
- Firmware for carrying out real-time scenario switchings.
- Extension via sensor simulation modules xSIM:
 - USIM: Module for sensor voltage simulation 8-time voltage source with 16-bit resolution (automotive voltage range)
 - RSIM: Module for sensor resistance simulation 8-time resistance-type sensor 100 Ω ...20k Ω (interruption-free setting)
 - PWMSIM: Module for simulating PWM signals

Additional modules in preparation



All cleaned up

The TCL Interfacebox connects the system resources with the DUT pins and permits

- the addition of dummy loads (actor simulation) via relay switching
- the simple adjustment of cross-connections to measurement instruments

Fail-safe: The patch field permits the connection of simulation, measurement gear and load modules for reproducible test arrangements.



Additional extension options

- Communication cards for CAN, LIN, K Line
- HIL components
- Data acquisition cards
- Rotational speed and increment simulation
- CAN-I/O module

Project-specific extensions



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