ATS-UKMFT 727 Test System for In-Circuit-, Function and EOL-Test of electronic PCBs

Function Test

DUT

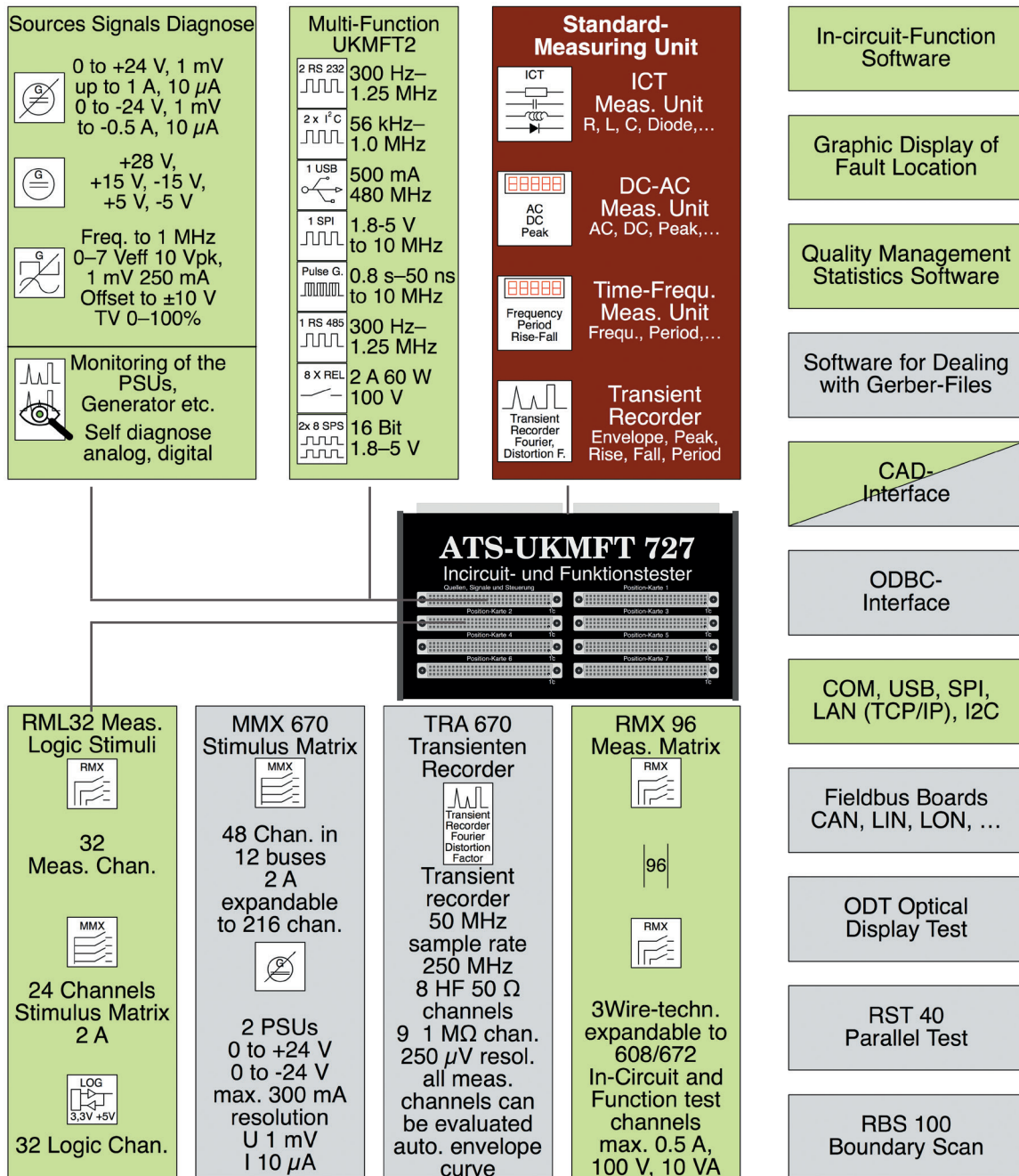Programmer

ICT

Data-base
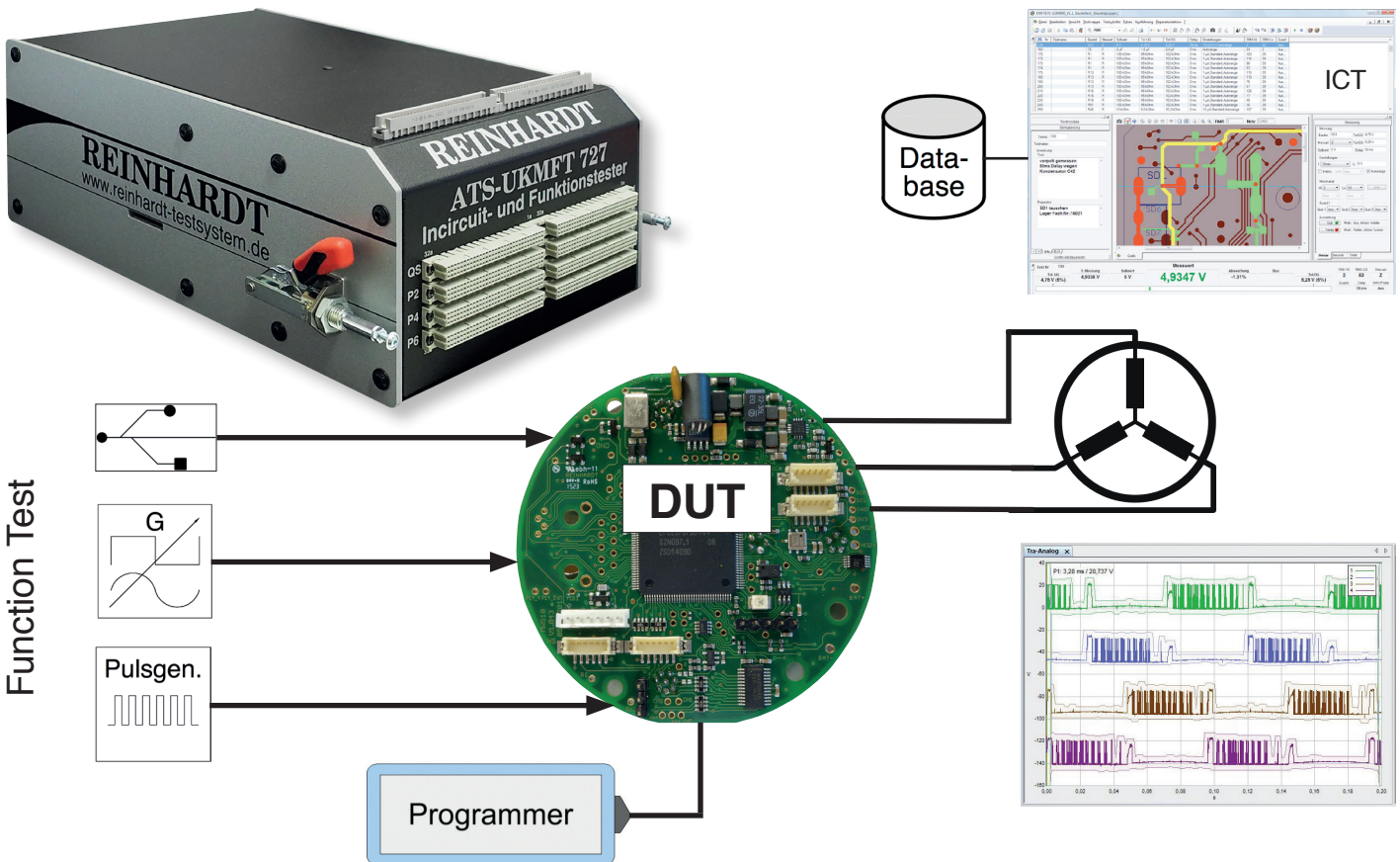
Automatic Test System for

➢ Function test, In-Circuit Test, Boundary Scan Test, Inline-Test

➢ the electronic manufacturing industry, incoming inspection test as well as repair and development

➢ the series test of electronic PCBs, designed for small batches up to high-volume products

➢ Automotive, medical engineering, avionics, power producing industry, defence and military technology, environmental technology, housing technology, white and brown goods,…

Some Features

➢ On-board programming

➢ RBS100 REINHARDT-Boundary Scan

➢ USB-, RS232-, RS485-, I²C-interface, CAN, Profibus, GPIB, TCP/IP,… some of them optional

➢ Parallel test (RST 40), max. 2,688 meas. channels

➢ Transient recorder (maximal 4 channels)

➢ In-Circuit Test: Pin contact, solder defects, component test

➢ Windows programming, APG and auto learn

➢ CAD-interface RUDC10

➢ Statistics and fault evaluation, QS-Management

➢ Package for independent system calibration

Diagram

Sources Signals Diagnose

0 to +24 V, 1 mV
up to 1 A, 10 µA
0 to -24 V, 1 mV
to -0.5 A, 10 µA

+28 V,
+15 V, -15 V,
+5 V, -5 V

Freq. to 1 MHz
0–7 Veff 10 Vpk,
1 mV 250 mA
Offset to ±10 V
TV 0–100%

Monitoring of the PSUs,
Generator etc.
Self diagnose
analog, digital

Multi-Function UKMFT2

2 RS 232	300 Hz–1.25 MHz
2 x I²C	56 kHz–1.0 MHz
1 USB	500 mA 480 MHz
1 SPI	1.8-5 V to 10 MHz
Pulse G.	0.8 s–50 ns to 10 MHz
1 RS 485	300 Hz–1.25 MHz
8 X REL	2 A 60 W 100 V
2x 8 SPS	16 Bit 1.8–5 V

Standard-Measuring Unit

ICT Meas. Unit
R, L, C, Diode,...

DC-AC Meas. Unit
AC, DC, Peak,...

Time-Frequ. Meas. Unit
Frequ., Period,...

Transient Recorder
Envelope, Peak,
Rise, Fall, Period

ATS-UKMFT 727
Incircuit- und Funktionstester
Quellen, Signale und Steuerung — Position-Karte 1
Position-Karte 2 — Position-Karte 3
Position-Karte 4 — Position-Karte 5
Position-Karte 6 — Position-Karte 7

RML32 Meas. Logic Stimuli

32 Meas. Chan.

24 Channels Stimulus Matrix 2 A

32 Logic Chan.

MMX 670 Stimulus Matrix

48 Chan. in 12 buses 2 A expandable to 216 chan.

2 PSUs
0 to +24 V
0 to -24 V
max. 300 mA
resolution
U 1 mV
I 10 µA

TRA 670 Transienten Recorder

Transient Recorder Fourier Distortion Factor

Transient recorder
50 MHz
sample rate
250 MHz
8 HF 50 Ω channels
9 1 MΩ chan.
250 µV resol.
all meas. channels can be evaluated auto. envelope curve

RMX 96 Meas. Matrix

96

3Wire-techn. expandable to 608/672 In-Circuit and Function test channels max. 0.5 A, 100 V, 10 VA

Right column boxes:

In-circuit-Function Software

Graphic Display of Fault Location

Quality Management Statistics Software

Software for Dealing with Gerber-Files

CAD-Interface

ODBC-Interface

COM, USB, SPI, LAN (TCP/IP), I2C

Fieldbus Boards CAN, LIN, LON, ...

ODT Optical Display Test

RST 40 Parallel Test

RBS 100 Boundary Scan

ATS-UKMFT 727 is a combined In-Circuit-Function Test System. Expansions are grey.

REINHARDT-Test systems are based on empirical values made in more than 4 decades. Hard- and software come from a single source; needless to say, there is systems responsibility and qualified service by the developer.

Its low price, its comfortable menu-driven software, its low follow-up cost in fixturing, in programming and maintenance o create economical test solutions even for smallest series (5 to 500 units) as well as for high-volume series.

Programming REINHARDT-Test Systems

CAD-import, menu forms and automatic program generators (APG) reduce inputs to a minimum. The created test step can be tested immediately with the DUT.

Basic Version of ATS-UKMFT 727

1 combined In-Circuit-Function measuring unit
128 In-Circuit-Function measuring channels
1 Sine-square wave generator
4 programmable voltage sources
32 Stimulus matrix channels
32 bi-directional logic channels
5 more free positions
comprehensive menu-driven software (WIN®-based)

Programming is done in menu forms so that programs are created rapidly and can be expanded, modified, corrected or optimised, even by trainees.

In-Circuit-Test

The In-circuit test recognises solder defects such as short-circuits or breaks (cold joint) or open pins. A special measuring method even finds SMT-solder defects of fine-pitch ICs, BGAs. Components such as e. g. IC-insertion and resistors, capacitors, diodes, Zener diodes, FETs, operational amplifiers etc. are tested for values and polarity. A special autoguarding method and automatic finding of delay times reduce the programming time to a minimum. Programming data can be transferred from CAD-data.

In both in-circuit and function test, you just move the mouse-cursor in the graphic display and click on the resp. component pin to show the measuring channel of the test system; you determine if it is the High- or the Low-channel. Then you decide if you execute an analog measurement such as e. g. UDC, UAC, UPk, distortion factor or a digital one.

Editing form with online display and input field

RBS 100 REINHARDT Boundary Scan

With RBS 100 Boundary Scan Test- and editing module you can test connections and interrups on a PCB. An integration in the Function test is possible. Among others, parallel, serial signals can be stimulated and measured, e. g. an analog-to-digital-converter. All this is programmed in the comfortable test system menu. When you create the test program, you need the Gerber files and the BSDL-data of the ICs. They are reqired for the graphical display of fault location and the connections of the ICs.

Function Test

Function test is divided in analog, digital, pulse. microprocessor-, power electronics and power supply test. The modules are developed and produced in the latest technologies and in the best possible way designed for high speed test and for reliability in a three-shift operation.

Programmable Voltage Sources

2 programmable voltage sources 0 to +24 V, 1 mV, max. 1 A, 50 μA and another 2 from 0 to -24 V, 1 mV, 0.5 A, 50 μA resolution come with the basic version plus 5 fixed voltage sources.

Function Generator

Sine-square wave-generator: Frequency max. 1 MHz, maximum current 0.25 A. Max. amplitude wit sine is 7 V_{eff} (1 mV resolution) and 10 V_{pp} with square wave. Offset is programmable ±10 V and duty cycle from 0.001 to 100 %.

Function and Arbitrary Generators

The optional function and arbitrary generators for frequencies up to 20/80 MHz offer sine, square wave, triangle, sawtooth, noise, pulse signals and ramps. Arbitrary functions are for generating any curve forms. Frequency ranges from 1 μHz to 20/80 MHz with 1 μHz resolution. Amplitudes can be programmed between 20 mVpp and 20 Vpp

Supporting Modules – Built into the Test Fixture

Pulse generator module, max. 1 MHz, 0.2 μs pulse. **High Frequency Generator Module** max. frequency 30 MHz TTL. **High Frequency Divider** up to 1 GHz division rate 64 or 128. **Impedance Transformer** input impedance: 8 TΩ at 8 pF. **Module for Measuring Peak Voltages** up to 100 MHz. **FARBMod** and **16FARBMod** evaluate and test colours (e. g. of keys) and LEDs incl. colour and intensity from 300 to 700 nm. **Activator-Module** activates keys and switches. **Start Stop Steuerung USB-Module.**
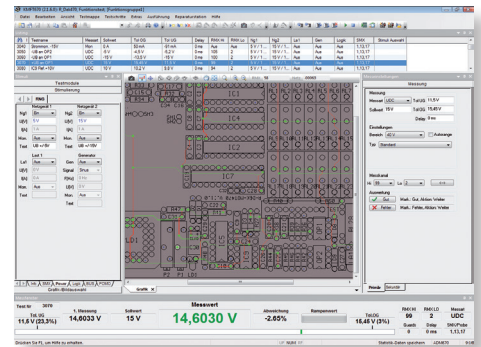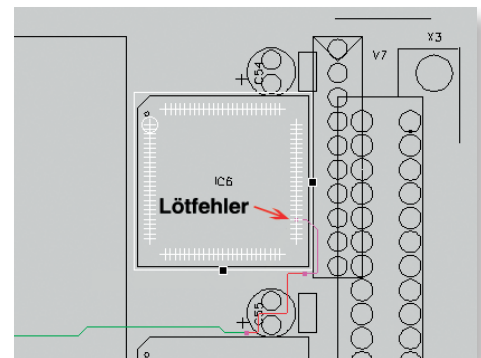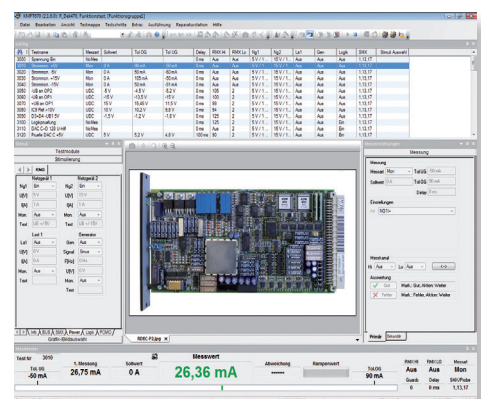
With only 1–2 days training, 90 % of our customers use the test system for production in the first week after installation!
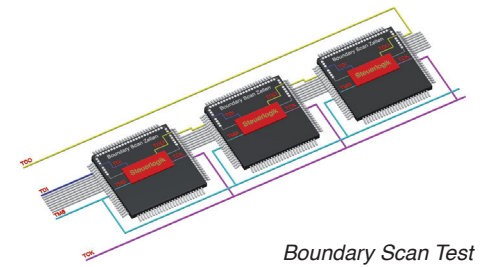
Boundary Scan Test

Pin-exact graphical display of fault location

Function test editor

RML 32 Combined Measuring-Logic-Stimulus Matrix

The standard combined measuring-logic-stimulus matrix is made up of 32 measuring channels in three-wire technique for in-circuit- and function test with an open Guard channel. The High- and Low-channels can be switched individually 10 VA, 200 V or 500 mA, 24 stimulus matrix channels in one-wire technique, 500 V or 2 A, and 32 digital logic channels. The driver levels can be set to 5 V or 3.3 V.

MMX Stimulus Matrix

The optional stimulus matrix **MMX670** offers 48 channels in 12 bus systems, the optional **MMX72** offers 72 channels in 18 bus systems in one-wire technique for 2 A max. current or 500 V. The two 16 bit precision PSUs of MMX670 can be programmed in 1 mV-steps from 0 V +24 V, max. 300 mA. Current is programmed in 10 μA-steps from 30–300 mA.

Measuring Matrix

The measuring matrix has measuring channels in relay technique for both in-circuit and function test incl. time measurements. Expansion is in groups of 96 to up to 608/672 channels. For guarding in the in-circuit test, the measuring matrix is made up in three bus technique.

Measuring Unit for In-Circuit and Function Test

The 16 bit measuring system measures: DC, AC, True RMS up to 100 kHz, peak voltage, current, AC current, resistance, resistance four-terminal, frequencies, periods, pulse widths, rise and fall times, phases, pulse duty factor, events, intervals between two channels, transient recorder, sample rate 100 kHz, distortion factor and Fourier analysis

TRA670 Transient Recorder (Oscilloscope)

The 64 k deep REINHARDT-transient recorder with 12 bit resolution offers a bandwidth of 50 MHz with max. 250 MHz sample rate. Max. input voltage is 100 V at min. 250 μV resolution. Out of the curve forms it measures parameters such as frequency, period, rise time, fall time, pulse widths, peak voltage, distortion factor, Fourier analysis etc. Curve forms are learnt via editable envelope curves and evaluated automatically. 8 HF-input channels and 9 NF-input channels are available, but the transient recorder can also be used on the standard measuring bus provided by the test system. An external trigger input is also available.
Max. 4 transient recorder can be cascaded.

Power Electronics

If you need operating voltages and currents above those provided by the standard version of the ATS-UKMFT-family, REINHARDT offers a number of sources for DC-voltage (up to 300 VDC and 40 ADC), AC-voltage and electronic loads (up to 40 A).

POMO80 Power Module

The linear controlled DC-module can be programmed in current (4 mA step) and voltage (25 mV) and works in the three ranges 0–30 V, 14 A, 30–65 V, 7 A, 65–80 V, 4 A. The load module can be programmed in two current ranges: 0–30 A with incr. from 10 mA or 1 mA and 0–40 A with 10 mA or 1 mA resolutions. Max. input voltage is 100 V, max. loading of each module 400 V/A. In modulation to over 50 kHz you can modulate from 0 to 100 % but program a basic current or a current curve (arbitrary) as well.
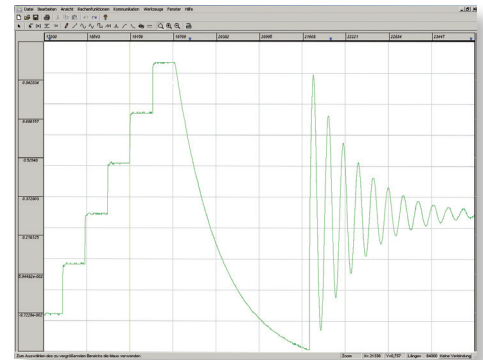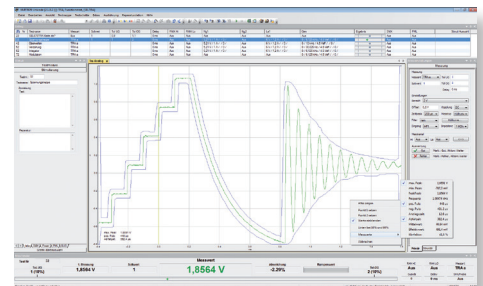

Arbitrary Editor
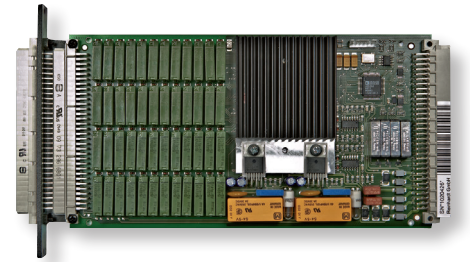
MMX670 with PSUs

*fastest In-circuit test measuring unit (Measuring speed and measuring accuracy)*

Analog transient recorder with envelope curve (blue lines)

Logic Test

The Logic board (32 channels, max. 2 boards) stimulates and measures logic conditions. Logic is tested with the bi-directional drivers between 0 and 23 V. With several logic boards, you can apply and evaluate several different logic families such as 1,5 V, 3 V, 5 V-Logic up to 24 V-Logic at a time.

The programming form grants a full view of the program depth. There is a number of tools, e.g. programming components with serial interfaces with comfortable inputs such as LSB and MSB. Transducers or converters can be stimulated and/or read out. You create bus systems with automatic program generators. Autolearn also helps in creating programs.
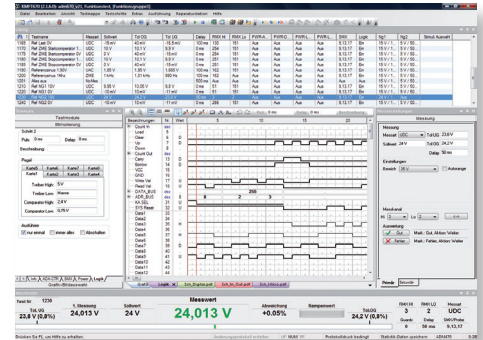
Form for Programming Logic

LOG96 Logic Board

The 96 logic channels of this optional logic board (max. 2 boards) stimulate and measure logic signals in the 3.3 V and 5 V-technologies.

PML670 – HighSpeed-Measuring Unit, Precision-DC-Source, Measuring Unit 16 Channels and Logic

The PML670-module combines the function of a parallel DC-voltage measuring unit (16 channels 0–24 V, resolution 0.5 mV) with a 16fold DC-source (max. 50 mA) and is also used for stimulating and evaluating logic conditions. Each of the 16 channels can be programmed individually from step to step in the driver and comparator levels; each channel can be programmed with different levels (resolution 0.5 mV).
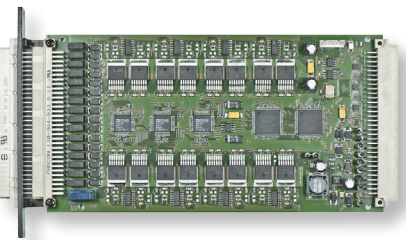

PML 670-Module

Statistics / Quality Management

All test results needed for quality management are recorded as is the good or bad status of the test item. For assessing histograms of test steps, you can check all measured values.

With the **Reference Test** the function of the test system and the fixture is checked and documented after a specified number of test runs or after a specified time interval.
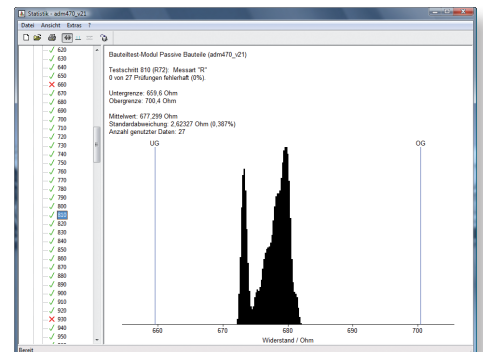
*Statistics – Histogram*

RDR Offline Repair Station

With the optional offline repair station, defective loaded PCBs can be repaired independent of the test system. The test system remains free from repair so higher throughput is possible

Offline Programming Station

This optional software can be used on any standard PC for offline program generation.

RST 40 REINHARDT-Synchro Test

The RST 40 software package is for network-based remote control, control and parallel operation of up to 4 REINHARDT-test systems (further ones are optional).
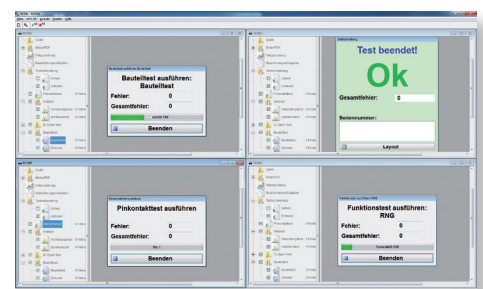
Form REINHARDT-Synchrotest RST40

ODBC-Interface

The optional ODBC-interface helps to integrate the REINHARDT-test system in an existing quality management or in production procedures with data base management (Open Database Connectivity).

ODT Optical Display Test

The ODT-software is used for automatic testing of LCD, LED, dot matrix, mask display, seven segment displays etc. The software evaluates fields, symbols,

special characters, algebraic signs, decimal points, unit positions and seven segment displays for intensity, contrast and function.

RUDC10 CAD-Interface

The RUDC10 Universal Data-Converter RUDC10 helps in the very fast creation of a test program. Out of Gencad or assembly lists, it creates the components test semi-automatically. There is also an adaptation with the Gerber data. Thus the components channels can be detected automatically. With EAGLE-Data you can also generate Gerber data with net information as well as an import-capable BOM (Bill of Materials).

Optical Display Test

RUM REINHARDT User Management

Not every operator of the test system has all access rights such as e.g. changes of the test program, system calibration,... Therefore, user groups with different access rights can be defined: The operators must register on the system with their user name and their password.
The group rights of the resp. operator define the software mode (e.g. tester or developer mode,…).

Manual and Pneumatic Test Fixtures

REINHARDT is the only manufacturer of test systems who provides both test systems and the complete fixtures from one single source. In order to change your fixture for another PCB, you only change the fixture drawer (bed of nails) and the universal retention system. This takes only a few seconds.
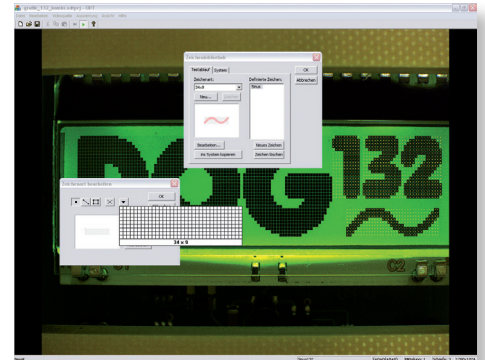

Data-Converter

Fixture Production System for our Customers

The ATSGERBII-software for creating fixtures re-calculates the Gerber data to layouts. The graphical data are taken for fault location and used for calculating the positions of the test pins automatically. A drilling file is created out of those points. This file drills the fixture for test pins and reference pins. The CNC-drilling machine has a clamping device for our fixtures and uses the data for drilling. The contact pins, 75 mil and 100 mil, with receptacles are automatically placed into the drilled positions with very high accuracy. The magazines can hold different types of heads. They are placed according to the developed drilling file. Test fixtures are drilled in typically 4 to 5 hours and wired in a wire-wrap procedure. Fixtures are built in an extremely cost-effective way, just-in-time and at your own site.

Fixture Type 42A-2

For more details please see our homepage on the Internet under http://www.reinhardt-testsystem. de or contact us for the more detailed salient features.

Some of the listed positions are options and do not come with the basic equipment.
All prices are net prices and nonbinding – change in price subject to change.

E & OE – Specifications subject to change without prior notice.   10/2022

Fixture Production System