Communication System Panel TS-CSP

Easy and fast integration of measuring instruments into production testing

- Acquisition and switching of DUT signals for functional tests and final testing
- Scalable number of channels for multiple-panel board tests as well as simultaneous testing on several modules
- Efficient acquisition of RF signals using RF Switch Matrix TS-RFM
- Integrated analog measurement functions and flexible switching using Universal Switch Matrix TS-USM
- Input and generation of digital signals, adjustable signal levels
- Control via IEC/IEEE bus or high-speed PC card interface

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Applications

- Functional test systems for telecommunication products such as mobile phones, cordless terminal equipment of all kinds and associated base stations
- Production testers for products from automation, sensor technology and telemetry sectors
- Automotive test systems
- EMC/EMI test systems as RF switch matrix
- Lab test sets

Efficient and cost-effective

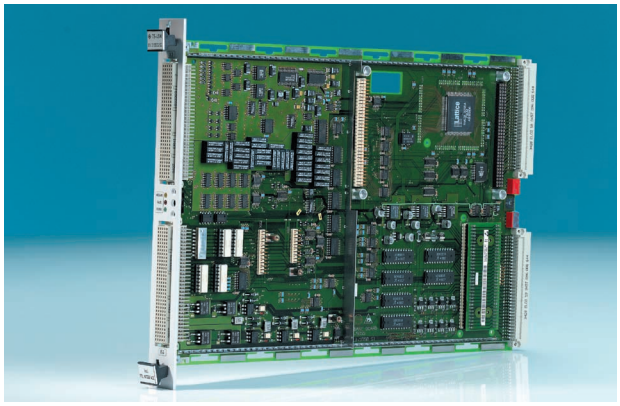
Automatic test systems for functional tests and final testing in the production of electronic products require a large variety of DUT fixtures, power supplies and stimulus signals. Communication System Panel TS-CSP was developed for use in production test systems for efficient and cost-effective transmission of signals between DUTs and measuring instruments.

Simultaneous testing of several DUTs is made possible by flexible scaling and the large number of channels provided by TS-CSP.

Development costs incurred in the configuration, maintenance and modification of test systems can be reduced significantly through the use of TS-CSP.

Instead of a tangle of cables connecting the DUT fixture and the measuring devices, various relay boxes and even data acquisition cards and power supplies, switch matrix modules are used for DUT signal distribution.

Two types of cabinets are available to accommodate either two or five switch matrix modules. This means economical solutions – even for small production test systems – based on TS-CSP plus the required measuring devices.



Compact integration of important functions

Two different RF Switch Matrix Modules TS-RFM are available for efficient acquisition of RF signals. The required number of RF testpoints with signals in the range from DC to 8 GHz can be set on the measuring devices under software control.

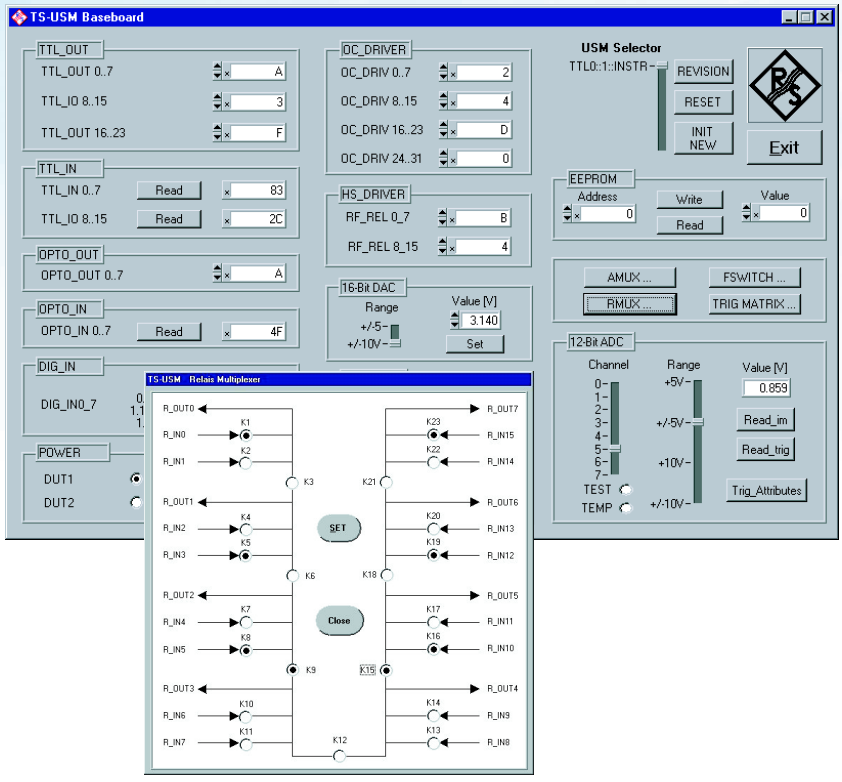
Moreover, node potentials, supply voltages and audio signals which have to be checked as part of the functional testing of electronic communications equipment can also be switched automatically via the Universal Switch Matrix TS-USM.

Measurement functions for analog voltage levels as well as digital signal acquisition are already implemented in TS-USM. Analog output level and digital output ports for DUT stimulation are also integrated. DUT power is switched by power relays also accommodated in TS-USM.

To control the switch matrix modules an IEC/IEEE bus interface is provided as standard. A high-speed TTL interface is available in the form of PC Card Interface PS-B11 from Rohde & Schwarz.

Easy cascading for simultaneous testing

If the TS-USM is fitted with a control interface, it can be used as a baseboard for cascading further switch matrix modules. High-performance systems can then be configured to contain for instance the complete signal switching of a functional tester for mobile phones



which is able to simultaneously test a panel board with four ready soldered PCBs.

Since the TS-CSP modules are optimized for use in industrial systems, a very favourable price/performance ratio per test channel is obtained thanks to the integrated switching technique.

Straightforward cabling

The DUT fixture can be connected directly to Universal Switch Matrix TS-USM with the aid of two 160-pin connectors.

Direct mechanical connection of the DUT fixture to the switch matrix of the TS-CSP is one method.

More often however the DUT fixture is located remotely in an automated contacting station within a production line. In this case the rugged Universal Switch Matrix Fixture TS-USMF can be used to connect the DUT fixture to the TS-CSP panel. The test and supply signal lines are combined in DUT-specific groups and rearranged so that they can be adapted with the aid of lockable edge connectors. This cuts the time required to service and maintain the tester and adapt the DUT fixture.

The RF cable connections to the instruments are made via N connectors. SMA connectors, preferred for test fixtures, are provided to take the signals from the DUT to the RF Switch Matrix TS-RFM.

Easy and fast system integration

Comprehensive driver support for C programming language has been made available under LabWindows/CVI for the TS-CSP system components. The driver software conforms to the international VISA standard drawn up to facilitate the generation of test programs using standardized software modules.

TS-CSP also features the hardware and software selftest functions that are required for use in production environments.

Based on this driver software there is an operating program for the communication system panel which allows the user to control the panel simply by mouse clicks. This reduces familiarization time to a minimum.

As the relay matrix modules too can be controlled via a GUI, the test engineer can put into operation and test the fixture wiring interactively.

Certified Quality System
ISO 9001
DQS REG. NO 1954-04

Specifications

Basic unit

Slots	2, cabinet height of 2 HU 5, cabinet height of 4 HU	
Control interface	GPIB or direct TTL with TTL I/O Interface PS-B11	
Rated temperature range	+5 °C to +40 °C	
Storage temperature range	–40 °C to +70 °C	
Electromagnetic compatibility	meets EN50081-1 and 50082-1 (EMC directive of EU), CE conformity mark	
Power supply	100 V to 120 V 200 V to 240 V 50 Hz to 60 Hz automatic voltage selection 150 VA	
Dimensions in mm (W x H x D)	465 x 109 x 495 465 x 198 x 495	2 HU 4 HU
Weight (TS-CSP with 4 HU + TS-USM + TS-RFM3	10 kg	

Universal Switch Matrix TS-USM

Digital inputs

TTL levels	8 channels
Variable input threshold	8 channels, software-configurable
Isolated by optocouplers	8 channels, TTL or 24 V levels

Digital outputs

TTL levels	16 channels
Isolated by optocouplers	8 channels
Open collector driver	16 channels
TS-RFM control	32 channels

Digital I/O ports

TTL levels	8 channels, can be switched as input/output or tristate

Analog inputs

Test channels, 12 bit resolution	8 channels
Voltage ranges	6 channels with 0 to 5 V, ±5 V, 0 to 10 V, ±10 V 2 channels with 0 to 5 V, ±5 V, 0 to 10 V, ±10 V, 0 to 20 V, ±20 V, 0 to 50 V, ±50 V, 0 to 100 V, ±100 V
Test channels, 16 bit resolution	8 channels with differential measurement and multiplexer 1 channel with direct measurement
Voltage ranges	±2.5 V and ±5 V with multiplexer or ±5 V, ±10 V direct

Trigger inputs for A/D converter

Trigger inputs	4 with separate matrix for crossbar switching, configurable

Analog output with 16 bit resolution

Number of channels	1
Voltage ranges	±5 V, ±10 V

Power relays

	2 DUT supply switches each with 4 semiconductor switches for switching all poles of the force and sense lines
Voltage range	max. 40 V (max. 6 A)

Multiplexers

Relay multiplexer	16 floating reed relays, individually switchable
Configurations	2:1 multiplexer with a connecting relay between each relay pair, 4x 4:1, 2x 8:1, 1x 16:1 multiplexer or other configurations
Analog multiplexer	32 inputs and 8 outputs switched as 4 independent multiplexers
Configurations	2x 4:1 or 4x 8:1multiplexer

Fixed-voltage outputs

	3.3 V, 1 A stabilized, short-circuit-proof 5.0 V, 1 A stabilized, short-circuit-proof ±12 V, 1 A stabilized, short-circuit-proof 24 V, 2 A unstabilized

RF Switch Matrix Module TS-RFM1

RF relays	12
Frequency range	DC to 8 GHz, further specifications on request

RF Switch Matrix Module TS-RFM3

RF relays	4
Frequency range	DC to 8 GHz, further specifications on request

Ordering information

Communication System Panel		
Basic unit 2 HU	TS-CSP	1124.1504.02
Basic unit 4 HU	TS-CSP	1124.1504.04
Accessories supplied	power cable, fuses, operating manual	
Options		
Universal Switch Matrix TTL interface	TS-USM	1113.5503.02
Universal Switch Matrix GPIB interface	TS-USM	1113.5503.05
Fixture for TS-USM	TS-USMF	1124.3007.02
RF Switch Matrix	TS-RMF1	1124.2500.02
RF Switch Matrix	TS-RMF3	1124.2500.06
Recommended extras		
19" Adapter for rackmounting	ZZA-411	1096.3283.00
TTL I/O Interface	PS-B11	1006.7303.04

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