

R&S®TS-PSM4

Power Switching Module

Power multiplexer and DUT power switching module



R&S®TS-PSM4 Power Switching Module At a glance

The R&S®TS-PSM4 is the innovative implementation of a rugged, modular switching device for integrating supply current switching into your test system.

The R&S®TS-PSM4 power switching module was developed to add high-current switching up to 16 amps to the standard functionality of the R&S®TSVP test system versatile platform.

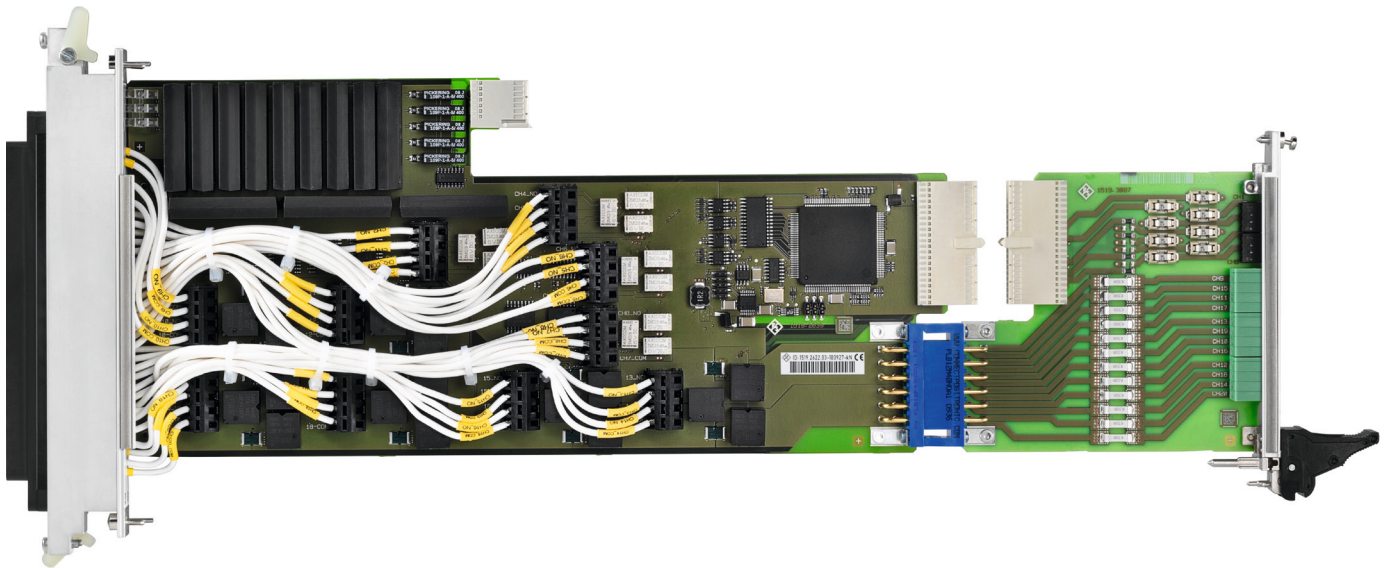
Powerful and flexible switching capabilities are combined with ruggedized signal connection and high availability secured by switching cycle monitoring. The R&S®TS-PSM4 can be used in both the R&S®CompactTSVP (R&S®TS-PCA3) and the R&S®PowerTSVP (R&S®TS-PWA3).

A switch cycle counter for reliable operation and monitoring strain of the relays is implemented by an FRAM accessible by the on-board microprocessor. Readings can be retrieved from the module via the IVI switch driver.

Key facts

- Twelve power channels for currents up to 16 A
- Eight medium-power channels for currents up to 2 A
- Switching voltage up to 30 V
- Integrated current measurement via shunt resistors and analog bus coupling
- Rear I/O access to the power signals for unique flexibility during system integration and seamless adaptation to power supplies and loads within a system paradigm based on R&S®PowerTSVP
- Unique comprehensive selftest and measurement of relay contact resistance
- Support by the R&S®TS-LSRL signal routing library provides intelligent and secure switch path computing

R&S®TS-PSM4 power switching module with VPC connector bracket connected to R&S®TS-PRIO2 rear I/O module.



R&S®TS-PSM4 Power Switching Module

Benefits and key features

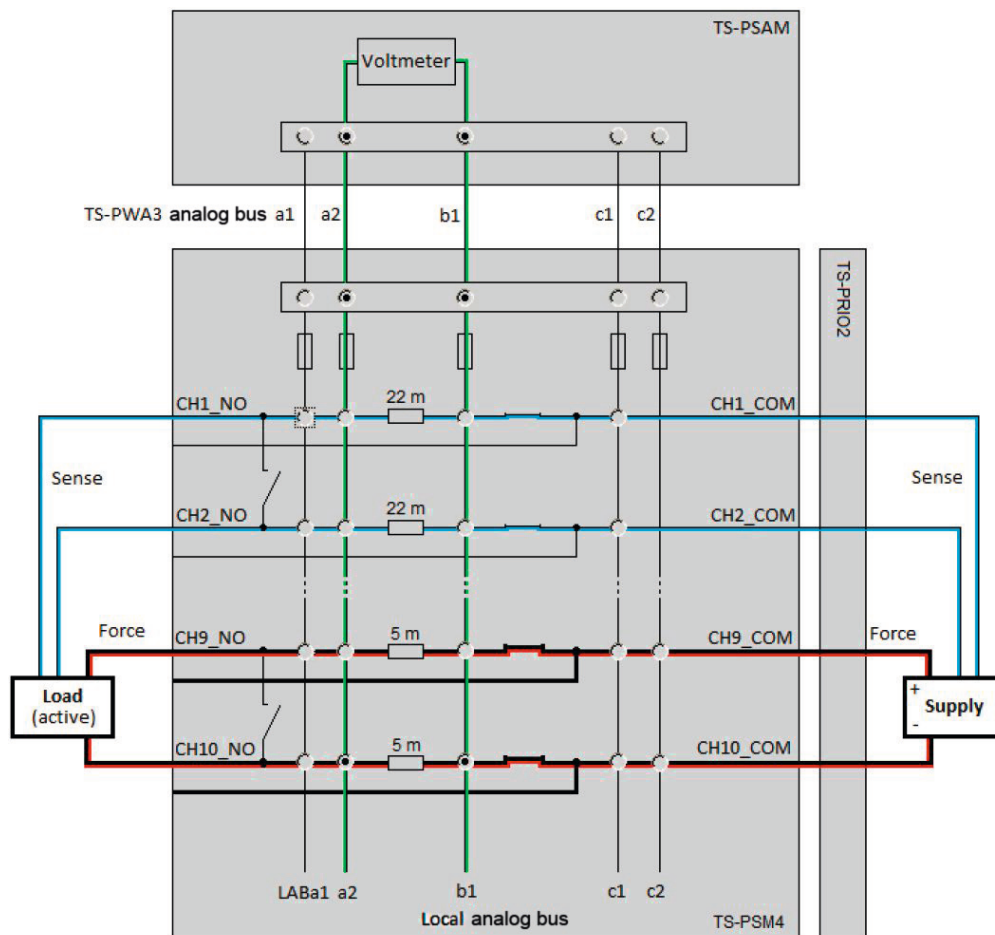
Key features

- ▮ Ruggedized mechanical construction
- ▮ Industrially approved Virginia Panel Corp. power connector available for sophisticated test receiver deployment
- ▮ Suitable Virginia Panel Corp. GEMINI test receivers available for the R&S®TSVP chassis
- ▮ High-quality cage clamp terminal blocks for reliable power cabling and convenient dismantling
- ▮ Switch cycle counter

Typical applications

- ▮ Distribution of a power supply to multiple DUTs
- ▮ Flexible distribution of power supplies to DUTs including sense lines via medium-power relays
- ▮ Switching of DUT supplies and loads with optional current measurement via shunt resistors
- ▮ Routing of measurement signals to adjacent modules via analog measurement bus
- ▮ Automotive and general purpose switch simulation

Application example: measuring high current through an active load involves sensing the supply voltage



Sophisticated software framework for ease of use

Use the module's soft front panel (SFP) to interactively control and evaluate test scenarios and verify DUT adaptation.

The SFP provides sophisticated access to the full scope of functions.

The R&S®TS-PSM4 power switching module is supplied with a IVI-style driver that supports the IVI switch class to control the module.

All additional hardware functions are supported by specific driver extensions. All driver functions are documented extensively in the help files and on the LabWindows/CVI function panels.

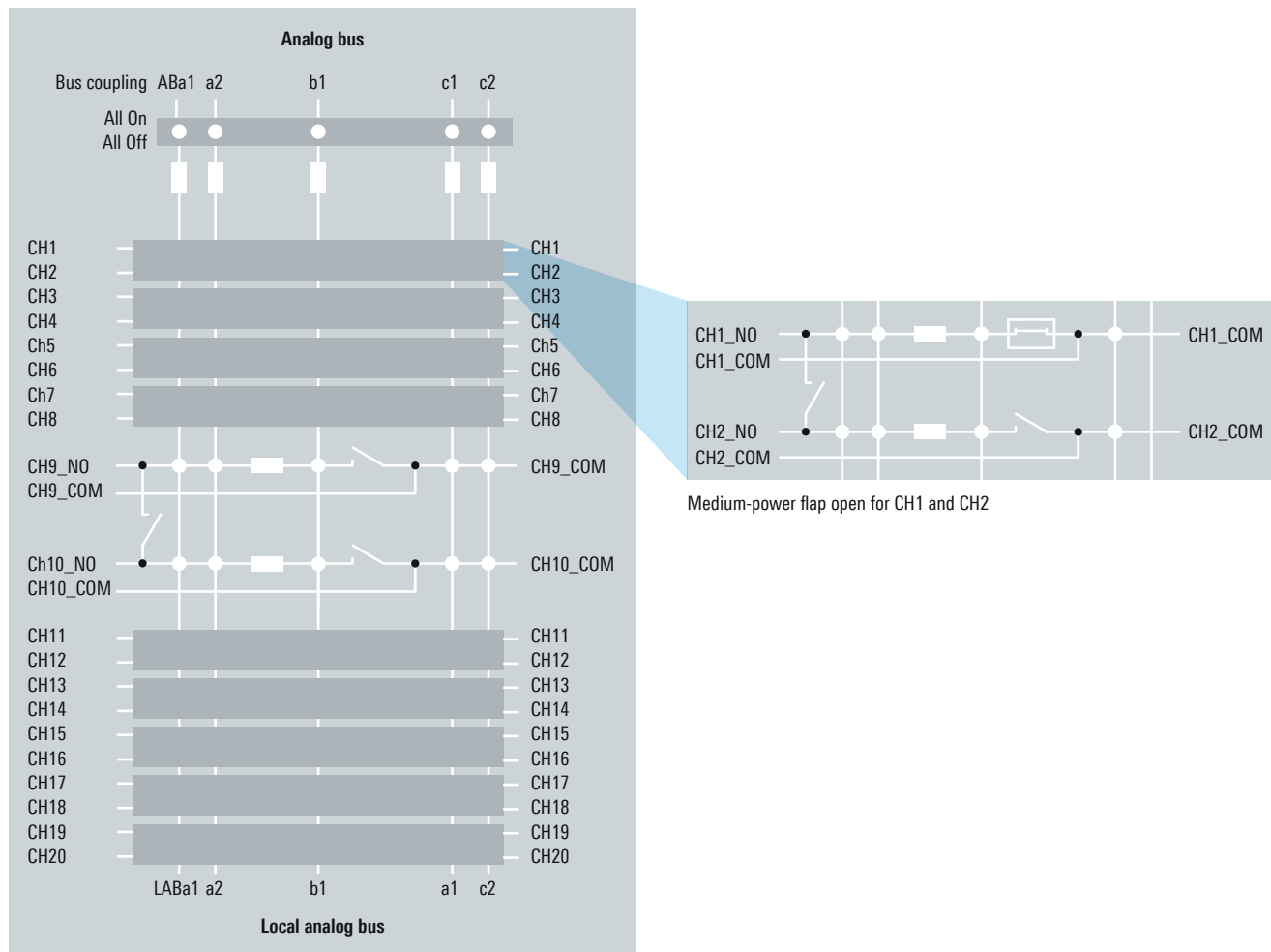
Alternatively, switch path management can be done via the intelligent R&S®TS-LSRL signal routing library as part of the generic test software library (GTSL).

The voltage drop on shunt resistors corresponding to the current flow through each power channel of the R&S®TS-PSM4 can be routed to the R&S®TS-PSAM internal source and measurement module via the analog bus. The precise values of the shunt resistors are determined during calibration.

Selftest and diagnostics for reliable operation

The module's built-in selftest provides fast diagnostics to verify basic functionality. Diagnostic LEDs on the front panel speed up system integration and allow proper operation to be determined at a glance.

Soft front panel of R&S®TS-PSM4 module for interactive operation



Power flap open for CH9 and CH10

Specifications

Specifications		
Application in the R&S®TSVP platform	R&S®CompactTSVP or R&S®PowerTSVP	one slot on front
Interface		
Control bus		CAN 2.0b (1 Mbit/s)
DUT connector (front)	model.02	none
	model.03	Virginia Panel connector: <ul style="list-style-type: none"> ■ micro power ■ module receiver ■ 50 positions contacts: <ul style="list-style-type: none"> ■ micro power, receiver, 12 AWG
Rear I/O connector	CompactPCI	110 pins
	power	12 pins
Channel switching characteristics		
Power channels ¹⁾		
Switch paths		12 channels
Relay type		Zettler AZ987
Switching voltage	DC	30 V (max.)
Switching current		16 A (max.)
Switching power	DC	480 W (max.)
Operate/release time		< 4 ms (typ.)
Medium-power channels		
Switch paths		8 channels
Relay type		AxiCom IM03
Switching voltage	DC	30 V (max.)
	AC (peak)	46 V (max.)
Switching current		2 A (max.)
Switching power	DC	60 W (max.)
	AC	62.5 VA (max.)
Operate/release time		< 6 ms (typ.)
Analog measurement bus access and coupling relays		
Switching voltage	DC	30 V (max.)
	AC (peak)	46 V (max.)
Switching current		1 A (max.)
Switching power	DC	10 W (max.)
	AC	10 VA (max.)
Operate/release time		< 0.5 ms (typ.)

¹⁾ If the contact-applied voltage and contact-applied current are small, contact resistance may become a larger value due to a small amount of film on a contact surface.

Specifications

Conditions

Temperature range		+23°C ±5°C
Additional error specified by the temperature coefficient in the range		+5°C to +18°C and +28°C to +40°C
Warm-up		30 minutes
Shunt resistor (power channels)		
Nominal value		5 mΩ
Accuracy	correction values included, measured by R&S®TS-PSAM	±(1% + 32 mA)
Temperature coefficient	shunt resistor	±50 ppm/K
Shunt resistor (medium power channels)		
Nominal value		22 mΩ
Accuracy	correction values included, measured by R&S®TS-PSAM	±(1% + 4 mA)
Temperature coefficient	shunt resistor	±75 ppm/K

General data

Power consumption	reset state	5 V/0.22 A
	all CHx relays activated, one channel connected to analog bus	5 V/1.4 A
Environmental conditions		
Temperature	operating temperature range	+5°C to +40°C
	storage temperature range	-10°C to +60°C
Damp heat		+40°C, 80% rel. humidity, steady state, in line with EN 60068-2-30
Mechanical resistance		
Vibration	sinusoidal	5 Hz to 55 Hz, 0.15 mm amplitude const., 55 Hz to 150 Hz, 0.5 g const., in line with EN 60068-2-6
	random	10 Hz to 300 Hz, acceleration 1.2 g (RMS), in line with EN 60068-2-64
Shock		40 g shock spectrum, in line with MIL-STD-810E, method 516.4, procedure I
Product conformity		
Electromagnetic compatibility	EU: in line with EMC Directive 2004/108/EC	applied harmonized standards: EN 61326-1 (industrial environment), EN 61326-2-1, EN 55011 (class A), EN 61000-3-2, EN 61000-3-3
Electrical safety	EU: in line with Low Voltage Directive 2006/95/EC	applied harmonized standard: in line with EN 61010-1
Dimensions (W × H × D)	R&S®TS-PSM4B model.02	20 mm × 174 mm × 316 mm (0.79 in × 6.85 in × 12.44 in)
	R&S®TS-PRIO2	20 mm × 130 mm × 180 mm (0.79 in × 5.12 in × 7.09 in)
Weight	R&S®TS-PSM4B model.02	570 g (1.26 lb)
	R&S®TS-PSM4 model.03	860 g (1.90 lb)
	R&S®TS-PRIO2	125 g (0.28 lb)
Calibration interval	recommended for highest accuracy	24 months

Ordering information

Designation	Type	Order No.
Power Switching Module	R&S®TS-PSM4B	1519.2622.02
Power Switching Module, with VPC connector	R&S®TS-PSM4	1519.2622.03
Rear I/O Module for R&S®TS-PSM4, integration to R&S®PowerTSVP only	R&S®TS-PRIO2	1519.3070.02
Cable Set, for power switching modules with VPC connector bracket	R&S®TS-PK04	1157.9104.02
R&S®CompactTSVP Test and Measurement Chassis	R&S®TS-PCA3	1152.2518.02
R&S®PowerTSVP Switching Application Chassis	R&S®TS-PWA3	1157.8043.02

Service options		
Extended Warranty, one year	R&S®WE1TS-PSM4 R&S®WE1TS-PRIO2	Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2TS-PSM4 R&S®WE2TS-PRIO2	
Extended Warranty, three years	R&S®WE3TS-PSM4 R&S®WE3TS-PRIO2	
Extended Warranty, four years	R&S®WE4TS-PSM4 R&S®WE4TS-PRIO2	
Extended Warranty with Calibration Coverage, one year	R&S®CW1TS-PSM4	
Extended Warranty with Calibration Coverage, two years	R&S®CW2TS-PSM4	
Extended Warranty with Calibration Coverage, three years	R&S®CW3TS-PSM4	
Extended Warranty with Calibration Coverage, four years	R&S®CW4TS-PSM4	

Service that adds value

- ▮ Worldwide
- ▮ Local and personalized
- ▮ Customized and flexible
- ▮ Uncompromising quality
- ▮ Long-term dependability

About Rohde & Schwarz

The Rohde & Schwarz electronics group is a leading supplier of solutions in the fields of test and measurement, broadcasting, secure communications, and radiomonitoring and radiolocation. Founded more than 80 years ago, this independent global company has an extensive sales network and is present in more than 70 countries. The company is headquartered in Munich, Germany.

Sustainable product design

- ▮ Environmental compatibility and eco-footprint
- ▮ Energy efficiency and low emissions
- ▮ Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

Rohde & Schwarz GmbH & Co. KG

www.rohde-schwarz.com

Regional contact

- ▮ Europe, Africa, Middle East | +49 89 4129 12345
customersupport@rohde-schwarz.com
- ▮ North America | 1 888 TEST RSA (1 888 837 87 72)
customer.support@rsa.rohde-schwarz.com
- ▮ Latin America | +1 410 910 79 88
customersupport.la@rohde-schwarz.com
- ▮ Asia/Pacific | +65 65 13 04 88
customersupport.asia@rohde-schwarz.com
- ▮ China | +86 800 810 8228/+86 400 650 5896
customersupport.china@rohde-schwarz.com

R&S® is a registered trademark of Rohde & Schwarz GmbH & Co. KG
Trade names are trademarks of the owners
PD 3607.0598.12 | Version 01.00 | July 2014 (fi)
R&S®TS-PSM4 Power Switching Module
Data without tolerance limits is not binding | Subject to change
© 2014 Rohde & Schwarz GmbH & Co. KG | 81671 Munich, Germany



3607059812