

Product:	<b>Tamura Energy-Saving Switching Power Modules</b>	 
Description:	<ul style="list-style-type: none"> <li>• Standby Power - Compliant to Energy Star</li> <li>• Noise Reduction - Reduced up to 1/10</li> <li>• Innovative design – Less discrete components needed</li> <li>• Compact Form - ½ the size of Discrete Design</li> </ul>	 <a href="#">Download Datasheet</a>

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Topic: Rohde & Schwarz Signal Gerator SML-01, (FIXED) (Read 8102 times)

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### High Voltage

Super Contributor



**DANGER**  
**HIGH VOLTAGE**

Posts: 4167

Country: 



### Rohde & Schwarz Signal Gerator SML-01, (FIXED)

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« on: January 17, 2016, 12:54:19 am »

I bought another instrument very cheap because it is broken and does not work. This is a **Rohde & Schwarz Signal Generator SML-01** (9 kHz to 1.1 GHz) Besides a few HAMEG / R&S instruments, this is my first real Rohde & Schwarz gear.


Anyone here having experience in repair of Rohde & Schwarz signal generators?

The specs are:  
 9 kHz to 1.1 GHz/2.2 GHz/3.3 GHz  
 SSB phase noise:  $< -122$  dBc (1 Hz) (at  $f = 1$  GHz,  $\Delta f = 20$  kHz)  
 Setting times  $< 10$  ms  
 High level accuracy (deviation  $< 0.5$  dB at levels  $> -120$  dBm)  
 High reliability through electronic attenuator  
 Digital frequency and level sweep  
 AM/FM/?M  
 Optional pulse modulator with integrated pulse generator  
 3-year calibration cycle

The problem: **No display, does not work at all.**  
 I will start checking the power supply.

Here are some pictures:



 SML1-01.jpg (150.56 kB, 1500x309 - viewed 1096 times.)

SML1-00.jpg (184.75 kB, 1500x332 - viewed 746 times.)



SML1-02.jpg (160.95 kB, 1200x481 - viewed 840 times.)



SML1-03.jpg (171.67 kB, 1200x466 - viewed 799 times.)

« Last Edit: February 07, 2016, 04:37:55 am by HighVoltage »

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There are 3 kinds of people in this world, those who can count and those who can not.

**HighVoltage**

Super Contributor



Posts: 4167

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #1 on: January 17, 2016, 12:58:03 am »

and some more pictures of the inside. It looks all very nice and high quality, as expected from R&S. Enclosed is also the brochure for this instrument as a PDF.

Signalgenerator\_Rhode+Schwarz\_SML.pdf (302.84 kB - downloaded 214 times.)



SML1-04.jpg (369.34 kB, 1200x900 - viewed 1097 times.)



SML1-05.jpg (402.02 kB, 1200x900 - viewed 918 times.)



SML1-06.jpg (337.09 kB, 1200x900 - viewed 934 times.)



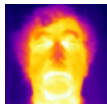
SML1-07.jpg (315.62 kB, 1200x900 - viewed 960 times.)

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There are 3 kinds of people in this world, those who can count and those who can not.

**PA0PBZ**

Super Contributor



Posts: 3939

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #2 on: January 17, 2016, 02:16:03 am »

Interesting to see the translation for attenuator to be eichleitung, in Dutch it is more like attenuator: "verzwakker"

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Keyboard error: Press F1 to continue.

**IconicPCB**

Super Contributor



Posts: 1203

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #3 on: January 18, 2016, 06:12:46 am »

I have one of these. Will check the owners manual to see if there is anything in it which might help.

Report to moderator Logged

**JacobPilsen**

Regular Contributor



Posts: 109

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #4 on: January 21, 2016, 10:28:07 am »

It is equipped with RS-232-C. Does it communicate???  
User manual: [SML\\_SMV\\_e\\_gl.pdf](#).  
Maybe is it Lead-Free.  
Does it contain any BGA ?

« Last Edit: January 21, 2016, 10:30:27 am by JacobPilsen »

Report to moderator Logged

**Theboel**

Regular Contributor



Posts: 210

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #5 on: January 21, 2016, 10:37:18 am »

I think You need to check this area



SML1-04.jpg (164.77 kB, 989x340 - viewed 1336 times.)

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**wilhe\_jo**

Contributor

Posts: 30

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #6 on: January 28, 2016, 05:32:26 am »

Hi there!

Also just got my hands on a unit with quite similar damage...

Anyone has schematics for this? Should be 1090.3700.01.... owners and maintenance manulas are already down the line 😊

73

Report to moderator Logged

**IconicPCB**

Super Contributor



Posts: 1203

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #7 on: January 28, 2016, 05:23:20 pm »

Just checked my manual..it is only a user manual.

I was HORRIFIED to see the instrument has an internal battery which stores parameters... a bit like PC back up battery with a 5 year life expectancy...

I have had the instrument in storage for seven years... 🙄

Will be talking to R&S tomorrow.. but the user manual suggests service centre replaceable battery ...thats a service trip Brissy Sydney Brissy/

Why do they make it so flaming hard to love them.

Report to moderator Logged

**mikerj**

Super Contributor



Posts: 1953

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #8 on: January 28, 2016, 07:21:26 pm »

**Quote from: IconicPCB on January 28, 2016, 05:23:20 pm**

Just checked my manual..it is only a user manual.

I was HORRIFIED to see the instrument has an internal battery which stores parameters... a bit like PC back up battery with a 5 year life expectancy...

I have had the instrument in storage for seven years... 🙄

Will be talking to R&S tomorrow.. but the user manual suggests service centre replaceable battery ...thats a service trip Brissy Sydney Brissy/

Why do they make it so flaming hard to love them.

The backup battery is clearly visible in the OP's pictures, a lithium coin cell mounted on the main PCB. It appears to be fitted into a holder rather than being soldered in so it should be very simple to

change. I think the part code is CR2477 (which is easily available), though there's not quite enough detail to be 100% certain.

Report to moderator  Logged

**Performa01**

Frequent Contributor



Posts: 790

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks

Reply

Quote

« **Reply #9 on:** January 28, 2016, 08:47:07 pm »

**Quote from: PA0PBZ on January 17, 2016, 02:16:03 am**

Interesting to see the translation for attenuator to be eichleitung, in Dutch it is more like attenuator: "verzwakker"

The common German translation of 'attenuator' would be 'Abschwächer'.

'Eichleitung' is a rather ancient term, which I would translate as 'calibrated step attenuator'.

EDIT: The word by word translation of 'Eichleitung' would be something like 'calibration line' 😊

Report to moderator  Logged

**dave\_k**

Frequent Contributor



Posts: 262

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks

Reply

Quote

« **Reply #10 on:** January 28, 2016, 10:04:54 pm »

**Quote from: IconicPCB on January 28, 2016, 05:23:20 pm**

Why do they make it so flaming hard to love them.


In many ways R&S is like Apple - everything is confined to their closed universe (ie: no user servicing allowed!)

Report to moderator  Logged

**wilhe\_jo**

Contributor

Posts: 30

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks

Reply

Quote

« **Reply #11 on:** February 03, 2016, 07:52:21 am »

Any progress???

I spotted the -15V Rail of the LCD to be only -10 if connected.... -13.5 without LCD...

datasheet for the LCD : [https://static.davandisplay.com/document/spec\\_sheet/LMG7380QHFC-SPECS.pdf](https://static.davandisplay.com/document/spec_sheet/LMG7380QHFC-SPECS.pdf)

My unit has traffic on the LCD so, everything else should be Ok....

---update

-10V might be fine...

R/W lines are toggling.. so the unit is running.

The Chip-Enable is a bit suspicious since it never gets low...

73

« *Last Edit: February 03, 2016, 09:37:26 am by wilhe\_jo* »


Report to moderator  Logged

**IconicPCB**

Super Contributor



Posts: 1203

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks

Reply

Quote

« **Reply #12 on:** February 04, 2016, 08:47:58 am »

Had a chat with the service department.

Equipment is now obsolete.. NO SERVICE MANUAL... in any case repair is by replacement of suspect modules and the entire instrument has only a few modules.

That gives You a clue as to how to repair it. Sell it on ebay. 🐱

As for my issues with the battery.. Service centre has a flat "survey" fee of a few hundred dollars.

I may choose to have the battery replaced by the service centre or do it myself.

On the question of what exactly does the back up battery back up.. a few clues .. but the major clue is .. equipment has a self cal capability.


« Last Edit: February 04, 2016, 08:51:07 am by IconicPCB »

Report to moderator  Logged

 **wilhe\_jo**

Contributor

Posts: 30

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #13 on: February 04, 2016, 06:09:29 pm »

you can get the service manual via google... but not the schematics 😞

73

Report to moderator  Logged

 **HighVoltage**

Super Contributor



HIGH VOLTAGE

Posts: 4167

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, Dead - needs repair**

Say Thanks Reply Quote

« Reply #14 on: February 07, 2016, 04:37:28 am »

**Quote from: Theboel on January 21, 2016, 10:37:18 am**

I think You need to check this area

That was right on!

Plus the caps is the PSU.

After fixing the electrolytic caps, in the PSU, the 3.3V rail was dead because of a bad regulator.

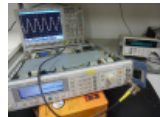
It turned ON right away and seems to be working perfectly.


I still have to check all settings and see if the modulation even works but I am getting a perfect 100 MHZ signal out of.

Measured by the just repaired and calibrated Agilent 53132A counter.


Looks like another great addition to the lab.

Thanks for all your suggestions and links to documentation.



 SML-1\_01.jpg (384.95 kB, 1200x900 - viewed 1181 times.)



 SML-1\_02.jpg (352.83 kB, 1200x900 - viewed 1063 times.)

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There are 3 kinds of people in this world, those who can count and those who can not.

 **Edvic**

Newbie

Posts: 3

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

Say Thanks Reply Quote

« Reply #15 on: February 20, 2018, 10:39:56 am »

Good Day.

Thanks for all your valuable information.

I have 2 units R&S SML 01.

But, 1 unit has a faulty Front Display, meaning LCD Back Light is switched on in Blue Color however, the LCD Information is missing.

I have tried all of the above but the alphanumeric display is missing.

Kindly advise.

Best Regards.

Report to moderator  Logged

 **HighVoltage**

Super Contributor



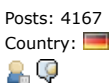
 **Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

Say Thanks Reply Quote

« Reply #16 on: March 13, 2018, 09:29:47 am »



Posts: 4167  
Country:



Quote from: Edvic on February 20, 2018, 10:39:56 am

Good Day.  
Thanks for all your valuable information.  
I have 2 units R&S SML 01.  
But, 1 unit has a faulty Front Display, meaning LCD Back Light is switched on in Blue Color however, the LCD Information is missing.  
I have tried all of the above but the alphanumeric display is missing.  
Kindly advise.  
Best Regards.

Did you find out the problem of your SML 01?

[Report to moderator](#)

There are 3 kinds of people in this world, those who can count and those who can not.

Edvic

Newbie  
Posts: 3  
Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

[Say Thanks](#) [Reply](#) [Quote](#)

« Reply #17 on: March 20, 2018, 10:06:45 am »

Good Day Sir.  
Thanks for all your kind response.  
The SML01 Front Display is simply Blank!  
I have tried all of the above but the alphanumeric display is missing.  
Kindly advise urgently.  
Best Regards.

[Report to moderator](#)

HighVoltage

Super Contributor



Posts: 4167  
Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

[Say Thanks](#) [Reply](#) [Quote](#)

« Reply #18 on: March 20, 2018, 11:06:59 pm »

Always start with the power supply to the display.

[Report to moderator](#)

There are 3 kinds of people in this world, those who can count and those who can not.

The following users thanked this post: Edvic

Edvic

Newbie  
Posts: 3  
Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

[Say Thanks](#) [Reply](#) [Quote](#)

« Reply #19 on: March 21, 2018, 09:16:20 am »

Good Day Sir.  
Can you kindly point specifically which area at the power supply circuit to exactly check.  
Appreciate it.

[Report to moderator](#)

IconicPCB

Super Contributor



Posts: 1203  
Country:



**Re: Rohde & Schwarz Signal Gerator SML-01 BATTERY REPLACED**

[Say Thanks](#) [Reply](#) [Quote](#)

« Reply #20 on: July 03, 2018, 11:52:38 am »

Need to use the sig genny again.  
It's been sitting on the shelf gathering dust and aging the back up battery.  
I got a replacement cell ( RENATA CR2477N ) in preparation for the replacement effort.  
R&S were helpful with their instructions and so the deed is done.

It took four screws at the back of the casing to remove the four retaining feet at the very back of the enclosure.  
The outside skin slides off the back of the box and a very clean almost spartan interior is exposed to the gaze.  
The battery sits in a holder on the main motherboard.  
The usual careful prying with a plastic tool and the battery was out.  
The unit was purchased sometime prior to 2007 and this is the first time I have had to open it.  
First ( original ) battery measured 3.02volts. Probably still OK for some time to come.

A new battery ( @3.27V ) was inserted , box reconstituted and unit switched on.  
After some . to me new and unfamiliar blinking of the screen it woke up and announced itself as having some errors.

It invited me to reinitialise the RAM by pressing a button which was duly done and then it told me it had a bunch of errors.

OK ... I was ready for that; the good people at R&S told me to be ready to recal it.

Recalibration is part of Utilities sub menu and it is clearly explained in the user manual.


Relevant pages from manual attached.

I am waiting for the unit to warm up so that the autocal can commence.

I hope I don't come back gushing tears and gnashing teeth.

Replacement of battery causes loss of time date information all other calibration constants are retained according to R&S advice.

I suspect auto call is there to account for possible module level repairs where the autocal tells the SML01 a bit about the options.

 SIG GEN PAGE 4\_31.pdf (209.22 kB - downloaded 98 times.)

[Report to moderator](#)  Logged

The following users thanked this post: BravoV


**IconicPCB**

Super Contributor



Iconic PCB

Posts: 1203

Country: 




 **Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

[Say Thanks](#) [Reply](#) [Quote](#)

« **Reply #21 on:** July 03, 2018, 11:54:56 am »

Read this page first and follow instructions on SIG GEN PAGE 4\_31 to enable changes made during autocal routine

 SIG GEN PAGE 4\_32.pdf (330.25 kB - downloaded 150 times.)

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**IconicPCB**

Super Contributor



Iconic PCB

Posts: 1203

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

[Say Thanks](#) [Reply](#) [Quote](#)

« **Reply #22 on:** July 03, 2018, 02:12:55 pm »

Auto call completed. Specan and Sig Genny doing well.

EDIT just checked the original purchase date February 11, 2003. Original battery guaranteed for five years...replaced today fifteen years later

« *Last Edit:* July 03, 2018, 02:15:58 pm by IconicPCB »

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**HighVoltage**

Super Contributor



HIGH VOLTAGE

Posts: 4167

Country: 



 **Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

[Say Thanks](#) [Reply](#) [Quote](#)

« **Reply #23 on:** July 05, 2018, 01:11:12 am »

**IconicPCB**

Good to know!  
Thanks for sharing your experience.

This seems to be a very good and stable signal generator, very well built by R&S. Highly recommended for anyone, looking for such an instrument.

[Report to moderator](#)  Logged

There are 3 kinds of people in this world, those who can count and those who can not.

**BravoV**

Super Contributor




 **Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

[Say Thanks](#) [Reply](#) [Quote](#)

« **Reply #24 on:** April 09, 2019, 08:33:30 pm »



Posts: 5859  
 Country: 

---

**Quote from: IconicPCB on July 03, 2018, 02:12:55 pm**

---

Auto call completed. Specan and Sig Genny doing well.

EDIT just checked the original purchase date February 11, 2003. Original battery guaranteed for five years...replaced today fifteen years later

---

Just found this valuable thread, thanks to HighVoltage and IconicPCB on sharing the process of replacing the internal RAM backup battery. 🙏😊

Just scored few days ago an used SML03, and so far from the preliminary status screens looks it should be fine, am I right ? (Photo attached below) Also briefly tested it on my scope, the signal looks pretty good up to near my scope limit (analog 400MHz). 😊

Questions for IconicPCB :

1. Just want to be sure, so by replacing the button cell battery as you did, popping out the old one, then static RAM will be cut off from power and loose of it's content 😬, then install the new one, and do the internal calibration on ALL items as photo below, then I'm done ?

Reason I ask this is, as I'm just an enthusiast, loosing the cal and sending it to calibration service is out of question, as it might be far more expensive than my purchase price. 🙏

Cal screen on "ALL" items :



Also did you get similar error message (highlighted) below right after you replaced the battery ? This quote is from the instruction document for upgrading the firmware to 2.51.15.



2. Did anyone upgrade the firmware to the latest 2.51.15 downloaded from the R&S ? Any notes & precautions maybe ? As mine is still on version 2.50.6, dated back Feb 23 2006. (attached status screen below)

Few shots of the diagnostic results and the unit, came without the rear blue feet and also without the 4 bottom feet as it was installed in a tightly cramped 19" rack full of equipments. Put 6 neoprene pads at the bottom as emergency feet while searching for better alternative, any one got spare R&S SML feet ? 🙏

Diagnostic screens :



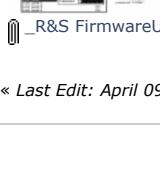
Physical unit :







\_R&S Calibration Screen.png (75.03 kB, 1493x756 - viewed 1106 times.)



\_R&S FirmwareUpgradeScreen.jpg (234.43 kB, 1555x987 - viewed 1168 times.)

« Last Edit: April 09, 2019, 09:01:29 pm by BravoV »

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> [Your favorite bench Lab. PSU](#)

**IconicPCB**

Super Contributor



Iconic PCB

Posts: 1203

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

Say Thanks Reply Quote

« Reply #25 on: April 10, 2019, 08:54:12 am »

I have listed the procedure i had followed.  
Note the belated instruction to "...read this page first..."  
I cant comment on Your sig genny.  
I would imagine being in the same vein as mine the firmware structure ought to be similar.  
In any case do check the the screen for auto cal before changing the battery so that You are at least familiar with the user interface.

On issue of upgrading firmware....  
Is there a compelling reason to upgrade or is it just going from functioning version to one whihc may be marginally different?

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**BravoV**

Super Contributor



Posts: 5859

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

Say Thanks Reply Quote

« Reply #26 on: April 12, 2019, 04:59:17 pm »

**Quote from: IconicPCB on April 10, 2019, 08:54:12 am**

I have listed the procedure i had followed.  
Note the belated instruction to "...read this page first..."  
I cant comment on Your sig genny.  
I would imagine being in the same vein as mine the firmware structure ought to be similar.  
In any case do check the the screen for auto cal before changing the battery so that You are at least familiar with the user interface.

On issue of upgrading firmware....  
Is there a compelling reason to upgrade or is it just going from functioning version to one whihc may be marginally different?

Noted, thanks.

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> [Your favorite bench Lab. PSU](#)

**volvo\_nut\_v70**

Contributor

Posts: 11

Country:



**Re: Rohde & Schwarz Signal Gerator SML-01, (FIXED)**

Reply Quote Modify Remove

« Reply #27 on: July 20, 2019, 11:58:01 am »

Service manual with schematics Marconi/IFR/Aeroflex/R&S 2023 2024 2025 posted to BAMA and KO4bb



Report to moderator 64.180.175.167

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