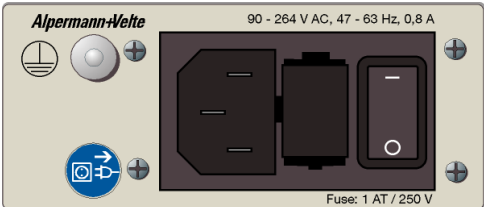


Module PS

60W Power Supply of the RUBIDIUM SERIES 1 System

Supplement to the "Installation & Systems Manual RUBIDIUM SERIES"



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A1 Revision History

No.	Date	Subject
2.0	September 07, 2005	40 W power supply changed to 60 W power supply.
2.1	December 14, 2006	Photo added to first page.
2.2	October 24, 2007	Revised. Chapter "Power Supplies in a Parallel Configuration" added. Chapter "Status Monitor" added.
2.3	August 13, 2008	Specifications revised. Picture at title-page updated.

A2 Copyright

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For further information please contact your local dealer or:

Alpermann+Velte

Electronic Engineering GmbH

Otto-Hahn-Str. 42

D-42369 Wuppertal

Phone: ++49 - (0)202 - 244 111 0

Fax: ++49 - (0)202 - 244 111 5

E-Mail: info@alpermann-velte.com

Internet: <http://www.alpermann-velte.com>

A3 General Remarks

This manual is a supplement to the "Installation & Systems Manual RUBIDIUM SERIES". Please read the below listed chapters of the "Installation & Systems Manual RUBIDIUM SERIES", as these chapters are necessary for the safe and proper use of the RUBIDIUM module "PS".

- A3 Warranty,
- A4 Unpacking/Shipping/Repackaging Information,
- A5 Safety Instructions,
- A6 Certifications & Compliances,
- Plug-In a Module,
- Remove a Module.

1 Module PS: 60 W Power Supply

1.1 Description

This module provides the power for all the modules in the frame. It can be installed at any slot (location) of the frame just as any other module would. Power is distributed in parallel to all slots and to the 24V pin at the DSUB female connector RLC at the rear of the frame.

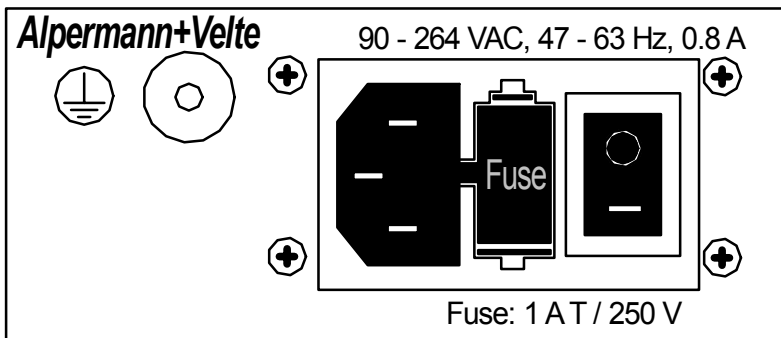


Figure 1: Rear panel of the PS module

There is no initial set-up or configuration of this module possible, it is not addressable via the PC connector. The front panel label **PS** visibly identifies where this module is located.

Survey of the basic features:

- 2-pole ON/OFF switch.
- 2-pole fuse-holder.
- Universal IEC locking inlet.
- Extra safe fuse-drawer: to remove the drawer it is necessary to pull out the power supply cord first. Manual opening is virtually impossible, the aid of a tool (e.g. a small screw-driver) is necessary.
- Additional ground terminal at the rear.
- Red LED (OPER) at the front indicates that power is ok.
- Continuous short circuit protection.
- Temperature and voltage sensing. Measured values can be viewed by using a status monitor option of a configurable RUBIDIUM module, which must be located in the same frame.
- Isolation diode is provided, so parallel operation with a second module of the same type is possible. Parallel operation may be used for fail-safe reason, not to increase the total output power.
- "Hot Swapping", i.e. it is possible to insert or remove the power supply module in parallel operation without interrupting the operation of other modules in this frame.
- Failure relay, connected to the FAIL_A and FAIL_B pins of the **RLC** connector at the rear of the frame. Relay closes in case that voltage drops below the specified threshold or temperature rises above the specified value.

1.2 Specifications

Input:

Inlet socket	According to IEC/EN 60320-1/C14, protection class 1
Line voltage range	90 - 264 VAC, auto-ranging
Power line frequency	47 - 63 Hz
Input current	800 mA maximum at 90 VAC
Inrush current	50 A max. @ 264 VAC
Efficiency	86% typical at 75% load, 25 °C, nominal line, after 5 mins warm-up
Line regulation	± 0.5%

Output:

Output voltage	23.7 VDC ± 5%
Output current	0.05 A minimum, 2.5 A maximum
Turn-on delay	4 secs maximum
Ripple & Noise	1%
Load regulation	± 1%
Temperature coefficient	± 0.05% / °C
Hold-up time at 100% load	8 ms typical

Failure relay:

FAIL signal threshold voltage	If the output voltage (nominal 23.7 V) of the power supply falls below 20 V approximately.
FAIL signal temperature value	$T_{amb} > 70\text{ °C}$.
Max. switching power	10 W
Max. switching voltage	48 V
Max. switching current	0.5 A
Max. transportable current	1.0 A

Others:

Weight	0.5 kg
Mechanical	Circuit board (W x D): 100 x 160 mm / 3.94 x 6.30 inch Rear panel: RUB H1: 103 x 44 mm / 4.06 x 1.73 inch
Environmental characteristics, operating	Ambient temperature if plugged to RUBIDIUM SERIES 1 frame: +5 °C to +40 °C Relative humidity: 20 - 80%, non-condensing
Environmental characteristics, non-operating	Temperature: -30 °C to +70 °C Relative humidity: 5 - 95%, non-condensing
Altitude	Operating at 3000 m / 10.000 ft maximum

1.3 Fuse Replacement Procedure

The power entry module incorporates a 2-pole fuse-holder, which is located between the inlet and the ON/OFF switch.

To access the fuses please proceed as follows:

1. Turn power switch to off (position **O**).
2. Disconnect the mains plug.
3. With the aid of a tool (e.g. a small screwdriver) the fuse-drawer can be removed.

Type of fuse	250V, 1A T, 5x20 mm
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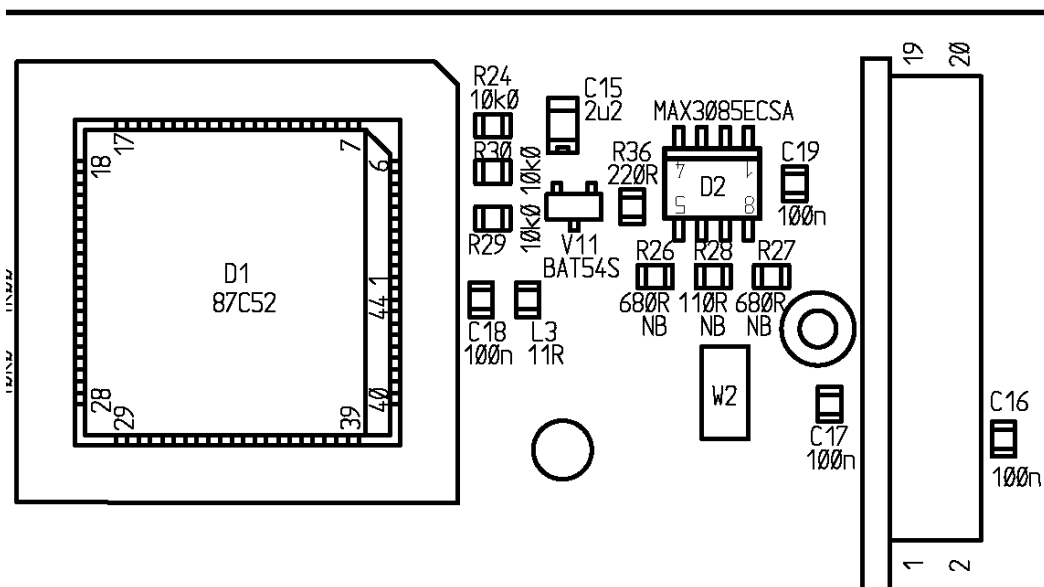


Warning: to avoid fire hazard, the fuse must always be replaced with the same type of fuse and specified rating.

1.4 Power Supplies in a Parallel Configuration

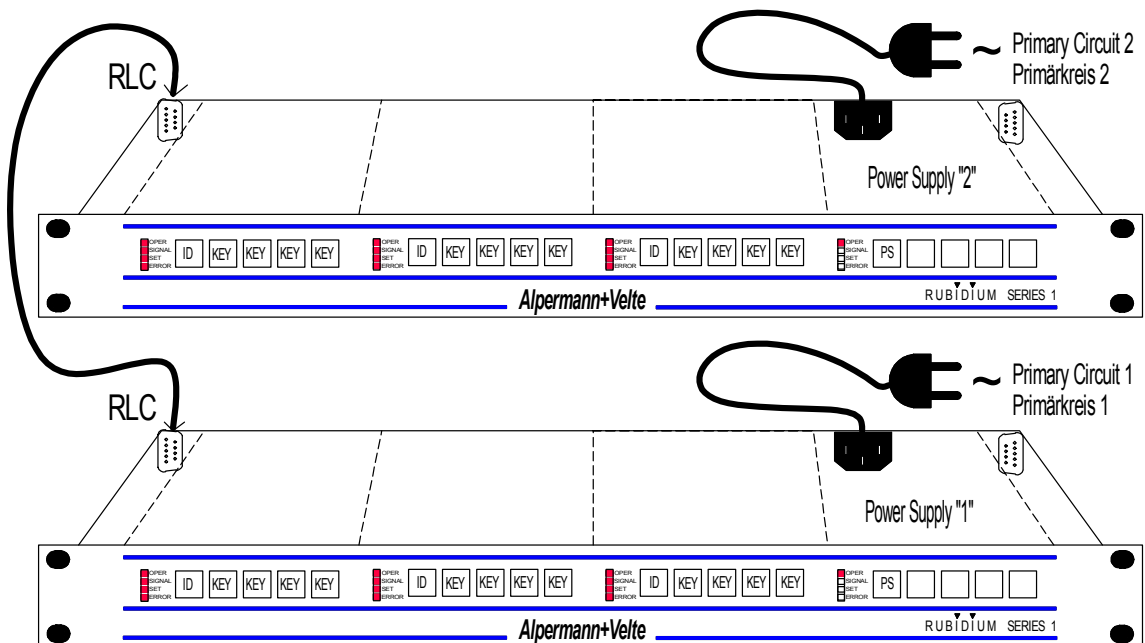
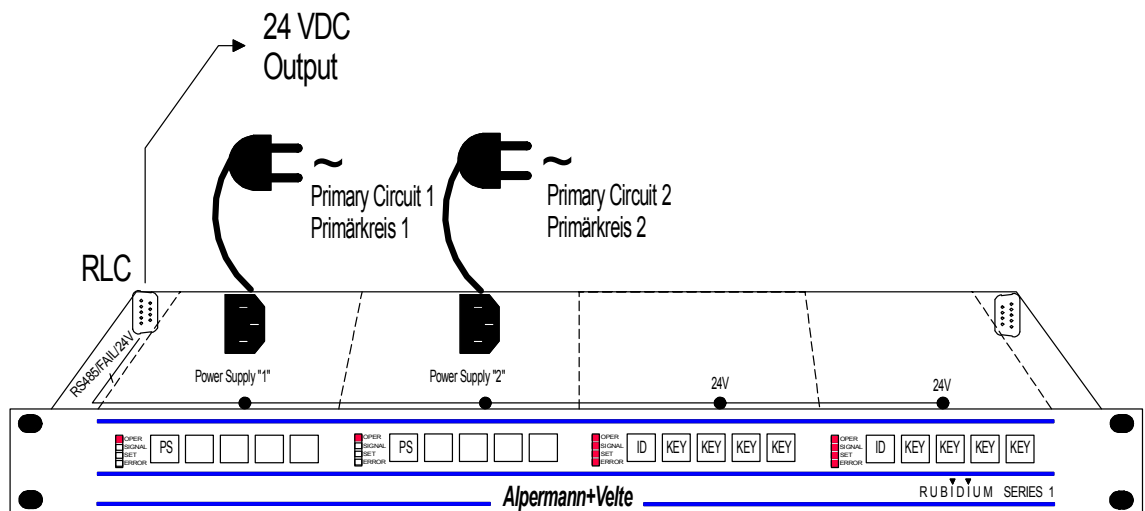
Parallel operation may be used for fail-safe reason but not to increase the total power output.

- The total DC output power should not exceed the power rating of the **individual** module.
- Each PS module is fitted with a decoupling diode.
- In case that there are two power supply modules (PS, PQ) located in the same frame, at one module the jumper **W2** has to be removed (see diagram below). This enables the status monitor (of a configurable RUBIDIUM module which must be located in the same frame) to show and supervise the measured values of temperature and voltage of both modules. A module with this jumper removed will be identified as "#2".



1.5 Examples for Parallel Operation

These are examples for fail-safe operation using two power supply modules in parallel.



- The fail-safe operation can be achieved with respect to the primary power supply circuit as well, if each power supply module receives the mains input from a different primary circuit.
- The total output power should not exceed the power rating of the individual module.
- Each module PS has the redundancy diode integrated.

2 Status Monitor

Configurable modules of the RUBIDIUM SERIES offer a 'Status Monitor', which indicates at its "Fan Monitor" page the operating state of Power Supplies within this frame. Please refer to the "Functional Descriptions and Specifications" manual of this configurable module for a detailed description of how to open the 'Status Monitor'.

Example:



An alarm will be generated if the temperature rises above 65 °C.