Elektro-Automatik

产品说明书
Instruction Manual

EA-PS 800 R
1000W / 1500W

该图与实际产品相似 / Fig. similar to actual product

PS 880-40R	21 540 107
PS 880-60R	21 540 108
PS 8360-10R	21 540 109
PS 8360-15R	21 540 110

关于

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危险电压

警告：本产品输出电压可能上升至危险级别(> 60 VDC)！

产品上所有带电元件必须有外遮盖。输出端的所有操作必须在产品与主电源（电源开关关闭）断开时才能执行，且可只有受训过电流危险知识的专业人员执行此类操作。负载与本产品间的任何连接必须有防碰擦装置。连到功率输出端的应用设备必须配置好，并且有保险丝熔断保护，这样可防止使用过程中由于过载或误操作损坏产品或更严重事情发生。

安全说明

- 负载线的直径必须符合产品的额定输出电流。
- 请避免产品出现任何损坏，不要将金属元件插入通风槽，不要阻挡通风槽！
- 必须由专业受训人员执行市电连接。
- 只能用合适直径的连线，按照一般安全措施将产品接到市电。
- 避免直接接触太阳光和湿气。
- 必须遮盖直流输出端，以免被危险电压伤到！

页码

1. 一般信息

1.1 简介

PS 800 R这一系列的产品，由微处理器控制，专门设计成墙挂式结构，用温控风扇冷却。

功能主要集中于工业用途。意思是，本产品在断电后仍可按最后设定继续工作。

输出电压分三个可选范围，每个被定义成约为额定电压的1/3。

电源输出端有短路保护和过载保护。为了保护负载，产品还有过压保护（OVP）功能。出现过温（OT）时，电源输出关闭，直至温度冷却，又自动打开。

输出功率为1500W的型号在输入电压<150V_{AC}时，将输出功率限制到1000W。

1.2 目检

收到本产品后，请检查是否有外观受损痕迹。如有，请不要操作本产品，应立即联系您的供应商。

1.3 供应清单

1 x 电源供应器
1 x 印刷版使用说明书
1 x 电源连接器

2. 安装

2.1 安装

本产品设计成墙挂式结构。安装时需按空气顺着通风槽流出的方式安装。注意产品的上方和下方应保留一定空间（至少15cm），以保证足够的冷却效果。随产品附有安装套件-挂条，可垂直或横向装于产品上。挂条上有几个适合大到5mm的螺丝孔。

也可参考第7页和第8页产品机械图。

2.2 与市电的连接

本系列所有型号都具有正向PFC (功率因素校正）和宽范围输入电压。可在90V至264VAC输入电压，以及45Hz至65Hz频率下工作。

连接图请看章节2.4。

连接市电时，将电源线连到前板“Power Input”3位端子上。仅受训技术人员方可执行。必须使用适当直径的电源线，因本产品无电源开关。电源输入端由一标准的5x20mm T16A保险丝保护，它装于产品前板保险座上。

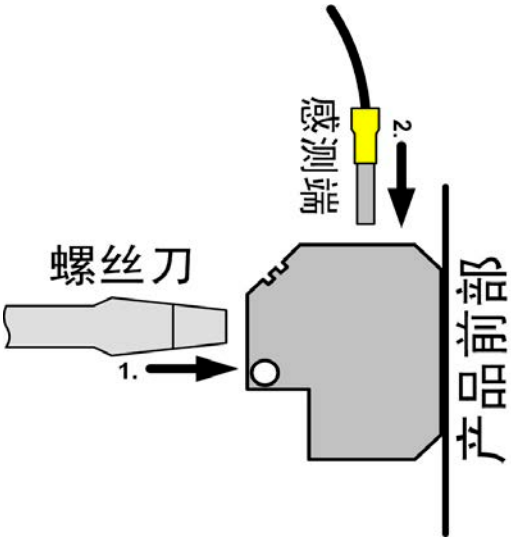
2.3 直流输出端的连接

用合适直径的连线将负载连到产品前板DC输出端。本产品可能会产生危险电压。故操作产品时应遮盖DC输出端。可使用随附的收缩管或类似元件。

2.4 直流输出端和感测端的连接

直流输出和远程感测输入端位于产品前面，且相邻，为同类型端子（卡紧型），适合安装直径为0.08mm² (28 AWG)至4mm² (12 AWG)的连接线。如果可以，线尾请套上线套。

连线夹紧步骤：

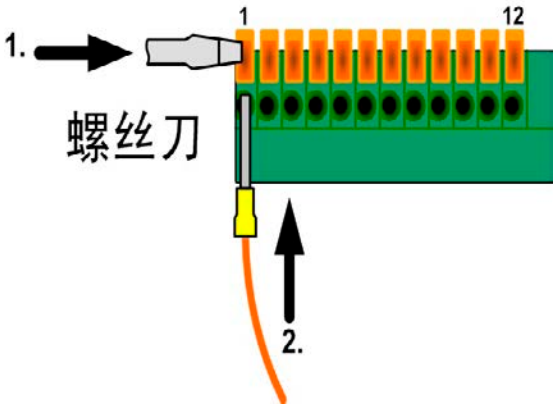


2.5 模拟接口的连接

*注意！千万不要将模拟接口的地接到外部控制应用（例如**PLC**）的负极输出端，若连接，控制应用会与电源输出端的负极连通（形成接地回路）。于是负载电流会经过控制引线，然后损坏产品！为了避免此情况发生，需在此“弱”地线上安装一保险丝。*

产品顶部的12针模拟接口也采用按压夹紧型端子。适合安装0.1mm² (26 AWG)至0.5mm² (20 AWG)直径的连接线。如果可以，线尾请套上线套。

连线夹紧步骤：



3. 功能描述

3.1 远程感测

为补偿负载线上的压降，产品前板还具有一远程感测输入端。按正确极性连线到此，可感测负载的电压。远程感测端可补偿一定的电压，具体电压值可参考„4. 技术规格“章节下的“远程感测补偿”小节。

不用该感测输入端时，就让它空闲着，不用连跳线到输出端。

感测线的直径非关键条件。

3.2 共享总线

PS 800 R系列的共享总线端子无任何功能。

3.3 过压保护 (OVP)

本系列所有型号都有过压保护电路，过压保护值为当前调整的设定电压的偏移值。该偏移值为：

80V型号:3V

360V型号:14V

举例：如果一台360V的产品被设为，那么OVP在约214V时动作。如果出现过压，不论是内部不良元件引起还是外部因素，功率输出将被关闭，该错误通过“OVP”灯以及模拟接口的引脚9指示出来。OV状态清除后，输出再次打开。

3.4 过温 (OT)

本系列所有型号都有内温监控功能。如遇过热，电源输出暂时关闭，直至冷却后，又自动打开。

该错误以“OT”LED灯和模拟接口的9脚指示出来。

3.5 模拟接口

本系列产品所有型号的前板都有一12脚模拟接口，可用来监控产品状态，以及远程启动/停止充电程序。也可参考章节“5.5 远程控制”。

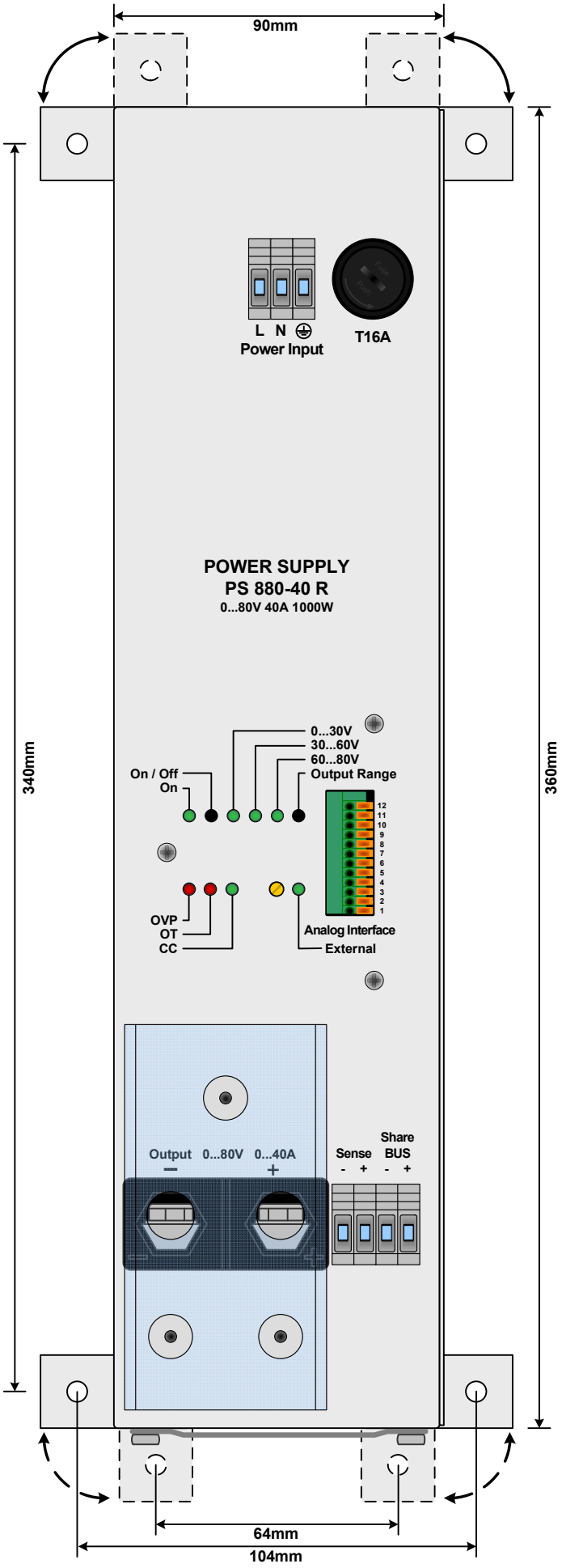
3.6 功率的减小

额定功率为1500W的产品如果当输入电压为或更低时，其功率将减小至1000W。长期在115V额定电压的电网下操作，比如在美国，将导致此类产品只能输出最大1000W功率。

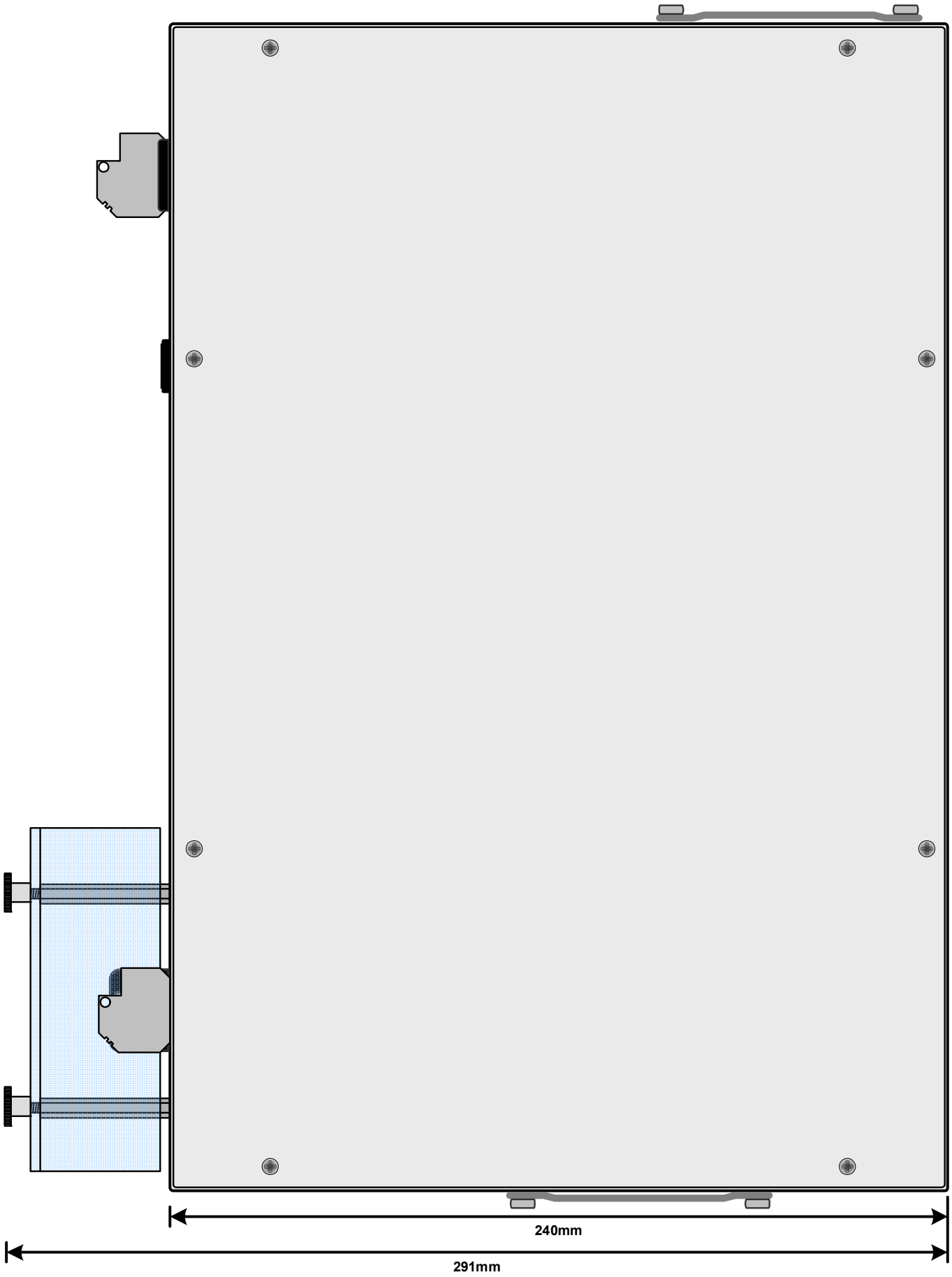
4. 技术规格

	PS 880-40R	PS 880-60R	PS 8360-10R	PS 8360-15R
电源输入				
输入电压	90…264V	90…264V	90…264V	90…264V
输入频率	45…65Hz	45…65Hz	45…65Hz	45…65Hz
功率因数值	>0.99	>0.99	>0.99	>0.99
230V时输入电流	约4.8A	约7.5A	约4.8A	约7.5A
100V和满载时的输入电流	约11.4A	约11.4A	约11.4A	约11.4A
输入保险丝	16A	16A	16A	16A
输出 - 电压				
额定电压 U_{Nom}	80V	80V	360V	360V
电压范围 1	0V...30V	0V...30V	0V...120V	0V...120V
电压范围 2	30V...60V	30V...60V	120V...240V	120V...240V
电压范围 3	60V...80V	60V...80V	240V...360V	240V...360V
带载10…90%时的稳定度	<0.05%	<0.05%	<0.05%	<0.05%
市电波动范围在±10% ΔU_{IN}时的稳定度	<0.02%	<0.02%	<0.02%	<0.02%
纹波	$<70mV_{PP}$	$<70mV_{PP}$	$<100mV_{PP}$	$<100mV_{PP}$
带载10-100%的调整	<2ms	<2ms	<2ms	<2ms
远程感测补偿	max. 2.5V	max. 2.5V	max. 8V	max. 8V
输出 - 电流				
额定电流	40A	60A	10A	15A
带载0…100% ΔU_{OUT}时的稳定度	<0.15%	<0.15%	<0.15%	<0.15%
市电波动范围在±10% ΔU_{IN}时的稳定度	<0.05%	<0.05%	<0.05%	<0.05%
纹波	$<7A_{RMS}$	$<0.45mA_{RMS}$	$<7A_{RMS}$	$<0.45mA_{RMS}$
输出 - 功率				
额定功率	1000W	1500W	1000W	1500W
U_{In} <150V时的额定功率	1000W	1000W	1000W	1000W
其它				
工作温度	0…50° C	0…50° C	0…50° C	0…50° C
储存温度	-20…70° C	-20…70° C	-20…70° C	-20…70° C
相对湿度	<80%	<80%	<80%	<80%
尺寸 (WxHxD)	90x360x240mm	90x360x240mm	90x360x240mm	90x360x240mm
重量	6.3kg	6.5kg	6.3kg	6.5kg
产品编号	21540107	21540108	21540109	21540110
安全标准	EN 60950			
EMC标准	EN 61204, EN 55022 等级 B			
过压等级	等级 II			
保护等级	等级 I			

4.1 前视图


90mm
L N
Power Input
T16A
POWER SUPPLY
PS 880-40 R
0...80V 40A 1000W
340mm
360mm
On / Off
On
0...30V
30...60V
60...80V
Output Range
OVP
OT
CC
Analog Interface
External
Output 0...80V 0...40A
Sense
Share BUS
64mm
104mm

4.2 侧视图



5. 操作

5.1 给产品供电

产品与市电连接后，不会形成电源开关的功能，而立即准备工作。

关闭产品后将存储最后状态（选定模式，输出条件），以便下次启动时自动恢复。因此在遇断电等这样的中断并恢复后，可继续工作。

5.2 调节输出电压

额定输出电压分三个可选范围，每个范围约为额定电压的1/3。详见“技术规格”。

内置电位器为10圈电位器，从最左至最右旋转10圈对应选定电压范围。

5.3 打开或关闭输出

如未出现错误（OVP或OT）或产品未受控于远程模式，用“On/Off”按钮可打开或关闭电源输出。通过电位器可立刻设定输出电压。

也可通过模拟接口的“Rem-SB”引脚8，随时关闭输出和再次打开。

注意！Rem-SB引脚优先于“On/Off”按钮。

打开输出时，“CC”灯会指示恒流操作（灯亮）或恒压操作（灯灭）。

5.4 选择一电压范围

„Output Range“按钮可用来选择由额定电压分成的三组电压范围中的一组。

5.5 远程控制

可经VSEL和CSEL引脚，利用0...10V外部模拟电压输入设定值。

电源输出值可当0...10V范围内的VMON和CMON监控信号送出。

若要远程控制设定值，需先激活“Remote”控制脚，即下拉“Remote”引脚7。如有需求，将其中一设定值设为VREF参考电压，故其范围为100%电压。

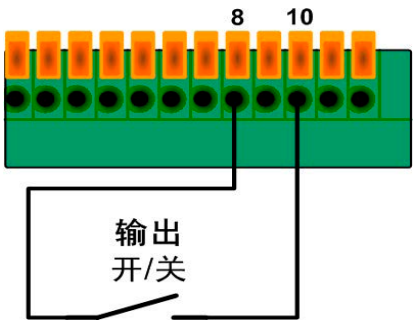
远程控制模式以“External”灯指示。

模拟接口的引脚分布见下页。

5.5.1模拟接口举例

远程开/关输出

输入：REM-SB

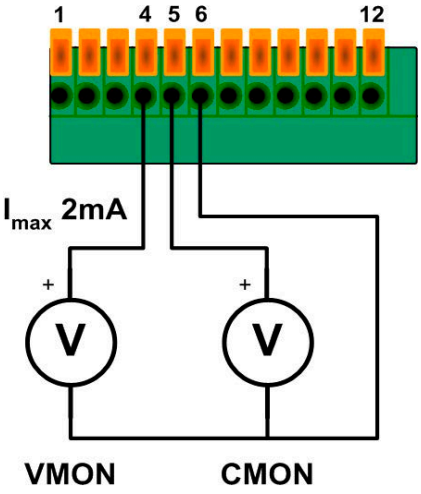


该输入脚可随时关闭产品输出。关闭后，只有断开该触点或开关才能再次打开。

- 引脚8的触点/开关优先于“Output On/Off”按钮。
- 转至远程控制不需用到引脚7。
- 远程控制时，引脚也可用于确认，以及通过将该引脚拉至LOW(=off) 可重设OVP错误。

监控电压和电流

输出：VMON和CMON

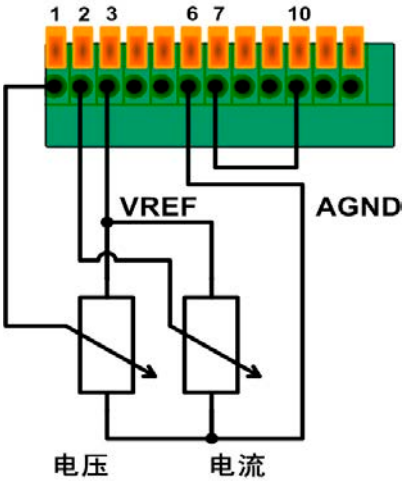


模拟监控输出脚输出0...10V电压，对应额定电压的0...100%。

参考脚为模拟地（AGND）。

调节设定值1

输入：VSEL 和 CSEL



这个例子显示如何用参考电压（10V，VREF）和设定值输入脚上的电位器来调节设定值。

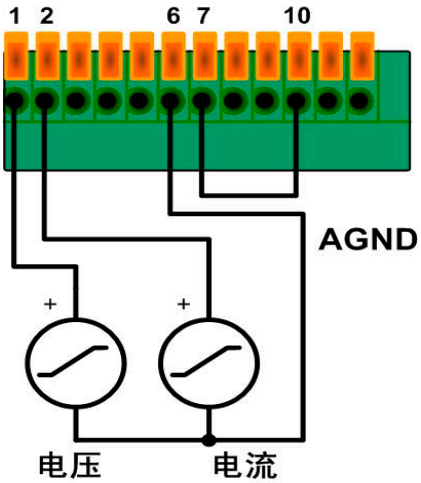
引脚7与10之间的跳线可将产品转至要求的远程控制模式。该跳线可用以低阻开关代替。

如果仅需调节两设定值中的一个，应将另一个接到VREF脚。

电位器阻值应分别为10kΩ或更高。

调节设定值2

输入：VSEL 和 CSEL



这个例子显示如何通过外部电压源控制电压和电流。

注意！严禁连接>12V的电压至这些输入脚！

>10V的设定值会被限定为100%额定值。

5.5.2模拟接口的引脚分布和技术规格：

引脚	名称	类型[1]	描述	电平	电器参数
1	VSEL	AI	设定值：电压	0….10V对应0….100%的U_{nom}	精确度 <0.5%，U_{max} = 12V，输入阻抗 >100k
2	CSEL	AI	设定值：电流	0….10V对应0….100%的I_{nom}	
3	VREF	AO	参考电压	10V	I_{max} = 5mA时，精确度<0.5%
4	VMON	AO	实际值：电流	0….10V对应0….100%的U_{nom}	I_{max} = +2mA时精确度为0.2%，对AGND有短路保护
5	CMON	AO	实际值：电压	0….10V对应0….100%的I_{nom}	
6	AGND		模拟信号地		CMON，VMON用
7	Remote	DI	激活外部控制	外部 = Low (U_{Low}<1V)， 内部 = High (U_{High}>4V)	U_{max} = 30V I_{out} = <1mA，5V时 I_{out} = 2mA typ. 0V时
8	Rem-SB	DI	电源输出关闭	关 / 启动 = Low (U_{Low}<1V)， 开 / 停止 = High (U_{High}>4V)	
9	OT / OVP	DO	过温OT / 过压OVP	Low = 无错误 (U_{Low}<1V)，High = 出错 (U_{High}>4V)	U_{max} = 30V，I_{max} = 20mA；准集电极上拉至+15V
10	DGND		数字信号地		用来控制和监控信号
11	Reserved	X	不能连		
12	Reserved	X	不能连		

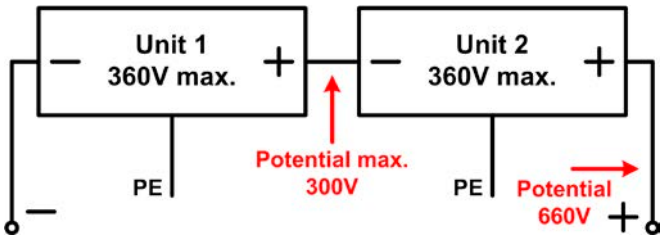
[1] AO = 模拟输出，DI = 数字输入(非TTL/CMOS脚)，DO = 数字输出(非TTL/CMOS脚)

6. 其它应用

6.1 串联

如果遵循下列规则，可将多台同型号设备串联在一起：

- 不作主-从操作
- 模拟接口地**不允许**相互连接。模拟接口的其它信号也适用。如需远程控制，可利用隔离放大器，并联控制所有设备。
- 任何负载电流连线的直径必须与产品的最大额定输出电流对应。
- 任何一台产品直流输出负极对地(PE)电压不可>300V



6.2 并联

可将多台同型号产品并联连接并操作，但非全部支持。因为过压保护限制了可调输出电压，故不可使用模拟接口建立主从类型的系统。

About

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Dangerous voltage

Caution: The output voltage can rise to dangerous levels (> 60 VDC)!

All live parts have to be covered. All actions at the output terminals have to be done while the unit is disconnected from the mains and may only be executed by personnel which is instructed about the hazards of electrical current. Any connection between the load and the unit (at the output terminals) have to be scoop-proof. Applications connected to the power output must be configured and fused in a way that prevents the use of these to cause a damage to the unit by overload or malfunction.

Safety instructions

- The cross section of the load leads has to match the nominal current of the device.
- Avoid any damage to the device, do not insert metal parts through the slots, do not obstruct the slots!
- Mains connection must only be done by trained technical personnel.
- Mains connection only with appropriate leads and under adherence of common safety measures.
- Avoid direct sunlight and humidity.
- The DC output must be covered in order to prevent injury by dangerous voltages!

1. General

1.1 Introduction

The microprocessor controlled power supplies of the PS 800 R series are designed for wall mount and are cooled by a temperature-controlled fan.

The functionality focuses industrial power supply. It means, the device will continue its work with the last settings after a blackout.

The output voltage is seperated into three selectable ranges, where each one is defined as approximately 1/3 of the nominal voltage.

The power output is short-circuit-proof and overload-proof. For protection of the loads, the devices also feature an overvoltage protection (OVP). At an overtemperature (OT) event, the power output will be switched off until the unit has cooled down and automatically switch on again.

Models with 1500W output power will switch to a 1000W output power limitation at mains input voltages of <150V_{AC}.

1.2 Visual check

After receipt, the unit has to be checked for signs of physical damage. If any damage is found, the unit may not be operated. Also contact your dealer immediately.

1.3 Scope of delivery

1 x Power supply unit

1 x Printed user manual

1 x Mounting kit

2. Installation

2.1 Mounting

The device is designed for wall mount. It is required to mount it in a way that allows unimpeded air flow through the ventilation slots. Take care for plenty of space (at least 15cm) below and above the device in order to ensure proper cooling. The included mounting kit contains strips that can be attached to the device in vertical or horizontal position. These strips have drill holes for screws with up to 5mm thread.

Also see drawings on page 18 and 19.

2.2 Mains connection

All models are equipped with an active PFC (power factor correction) and a wide range input. It can be operated at AC input voltages from 90V to 264V and mains frequencies of 45Hz up to 65Hz.

The connection is done at the 3pole terminal „Power Input“ on the front plate. It must only be carried out by trained technical personnel. Main focus lies on an appropriate cross section of the mains lead, as well as the fact that the device does not feature a power switch.

For connection scheme see figure in section 2.4.

The mains input is fused by a standard 5x20mm fuse, type T16A, which is located in the fuse holder on the front plate.

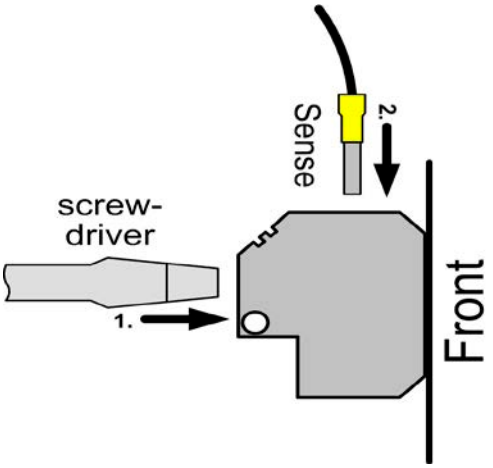
2.3 DC output connection

The load is connected to the DC output terminals on the front using leads with appropriate cross section. The device can produce dangerous voltages. Thus the output must be covered when working with the device. The included shrinking hose can be used, or something similiar.

2.4 Remote sense connection

The remote sense inputs are located on the front of the device are of type press & clamp. Cable cross section goes from 0.08mm² (28 AWG) to 4mm² (12 AWG). If possible, use cable end sleeves.

Clamping procedure:

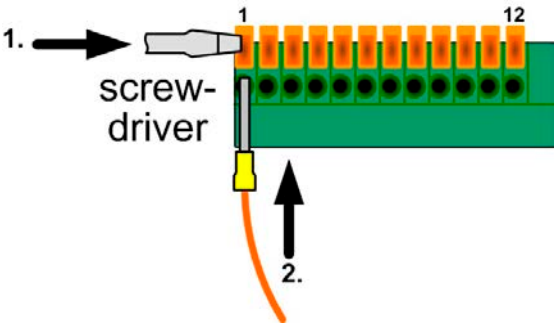


2.5 Analog interface connection

The 12 pole analog interface on the right side is of type press & clamp. It is eligible for cable cross sections of 0.1mm² (26 AWG) to 0.5mm² (20 AWG). If possible, use cable end sleeves.

Attention! Never connect grounds of the analog interface to minus (negative) output of an external control application (PLC etc.), if that control application is already connected to the negative power supply output (ground loop). Load current may flow over the control leads and damage the device! In order to avoid this a fuse can be integrated in the „weak" ground line.

Clamping procedure:



3. Functional description

3.1 Remote sense

In order to compensate voltage drops along the load leads, the device features remote sense inputs on the front. Here the sensed voltage from the load is connected with correct polarity. Remote sense can compensate up to a certain level, see „4. Technical specifications", item „Remote sense compensation" for details.

When not using the sense inputs, they just remain open. It is not required to bridge them to the output.

The cross section of the sense leads is non-critical.

3.2 Share Bus

The Share-Bus connector at models of series PS 800 R is without function.

3.3 Overvoltage protection (OVP)

All models feature an overvoltage protection circuit which follows the currently adjusted voltage set value with an offset. This offset is:

80V models: 3V, 360V model: 14V

If, for example, a 360V model is set to 200V, then the OVP would act at around 214V.

In case of an overvoltage condition, whether caused by an internal defect or by external reasons, the power output is switched off and the error is indicated by the LED „OVP" and also by pin 9 of the analog interface. After the OV condition is gone, the output can be switched on again.

3.4 Overtemperature (OT)

All models also feature an internal temperature supervision. In case of overheating, the power output will be temporarily switched off until the device has cooled down, and then automatically switch on again.

The condition is indicated by the LED „OT" and by pin 9 (OT/OVP) of the analog interface.

3.5 Analog interface

All models feature a 12 pin analog interface on the front of the device. It can be used to monitor the device condition, as well as remotely switch the output on or off. Also see section "5.5 Remote control".

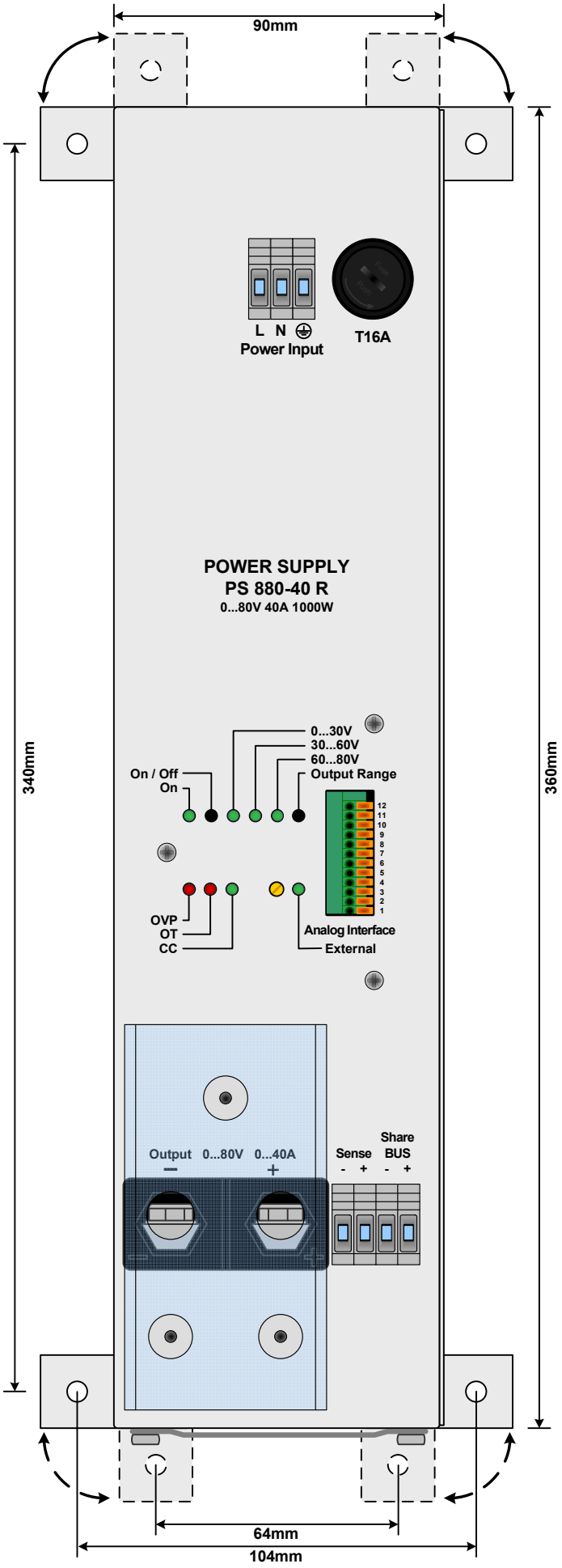
3.6 Power reduction

Models with 1500W nominal power will switch to a power reduction of 1000W at mains input voltage of 150V and under. Permanent operation at grids of 115V nominal voltage, like for example in the USA, will always result in max. 1000W output power.

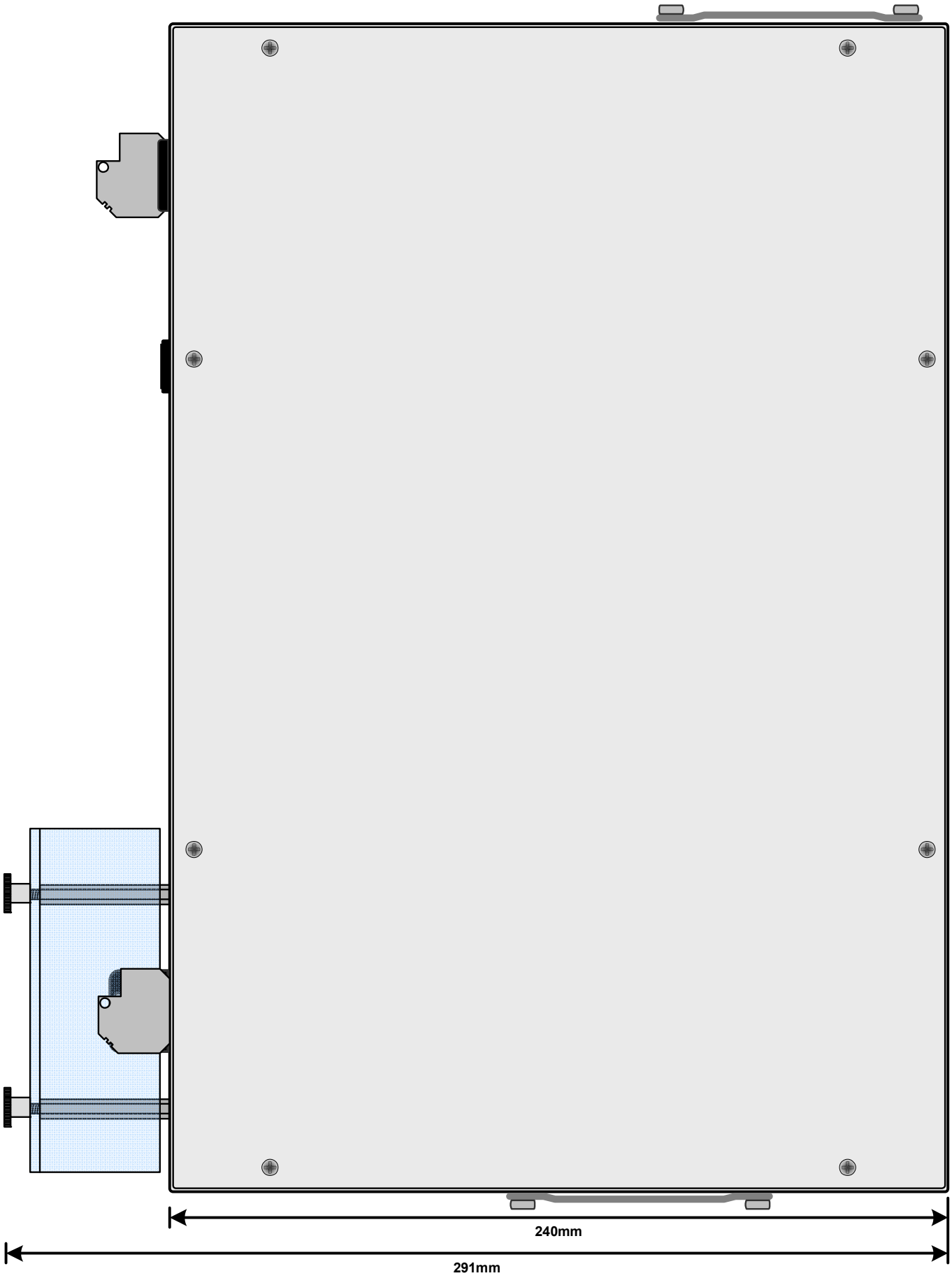
4. Technical specifications

	PS 880-40R	PS 880-60R	PS 8360-10R	PS 8360-15R
Mains input				
Input voltage	90…264V	90…264V	90…264V	90…264V
Frequency	45…65Hz	45…65Hz	45…65Hz	45…65Hz
Power factor correction	>0.99	>0.99	>0.99	>0.99
Input current at 230V and full load	approx. 4.8A	approx. 7.5A	approx. 4.8A	approx. 7.5A
Input current at 100V and full load	approx. 11.4A	approx. 11.4A	approx. 11.4A	approx. 11.4A
Fuse	16A	16A	16A	16A
Output - Voltage				
Nominal voltage U_{Nom}	80V	80V	360V	360V
Voltage range 1	0V...30V	0V...30V	0V...120V	0V...120V
Voltage range 2	30V...60V	30V...60V	120V...240V	120V...240V
Voltage range 3	60V...80V	60V...80V	240V...360V	240V...360V
Stability at 10-90% load	<0.05%	<0.05%	<0.05%	<0.05%
Stability at ±10% ΔU_{In}	<0.02%	<0.02%	<0.02%	<0.02%
Ripple	<70mV_{PP}	<70mV_{PP}	<100mV_{PP}	<100mV_{PP}
Regulation 10-100% load	<2ms	<2ms	<2ms	<2ms
Remote sense compensation	max. 2.5V	max. 2.5V	max. 8V	max. 8V
Output - Current				
Nominal current	40A	60A	10A	15A
Stability at 0-100% ΔU_{Out}	<0.15%	<0.15%	<0.15%	<0.15%
Stability at ±10% ΔU_{In}	<0.05%	<0.05%	<0.05%	<0.05%
Ripple	<7A_{RMS}	<0.45mA_{RMS}	<7A_{RMS}	<0.45mA_{RMS}
Output - Power				
Nominal power	1000W	1500W	1000W	1500W
Nominal power at U_{In} <150V	1000W	1000W	1000W	1000W
Miscellaneous				
Operation temperature	0…50°C	0…50°C	0…50°C	0…50°C
Storage temperature	-20…70°C	-20…70°C	-20…70°C	-20…70°C
Humidity	<80%	<80%	<80%	<80%
Dimensions (WxHxD)	90x360x240mm	90x360x240mm	90x360x240mm	90x360x240mm
Weight	6.3kg	6.5kg	6.3kg	6.5kg
Article No.	21540107	21540108	21540109	21540110
Safety	EN 60950			
EMC standards	EN 61204, EN 55022 Class B			
Overvoltage category	Class II			
Protection class	Class I			

4.1 Front view



4.2 Side view



5. Handling

5.1 Powering the device

The device does not feature a power switch. When connecting it to mains, it is immediately ready to work. After switching mains off the device stores the last state (selected mode, output condition) in order to restore it automatically at the next start. Thus it can continue to work after an interruption like a blackout etc.

5.2 Adjusting the output voltage

The nominal output voltage is seperated into three selectable voltage ranges, each approximately 1/3 of the nominal voltage. For details see the „Technical specifications“.

The built-in trimmer is a 10-turn type and the approximate 10 rotations from left stop to right stop correspond to the selected range.

5.3 Switching output on or off

The pushbutton „On/Off“ is used to switch the power output on or off, if not inhibited by any error (OVP or OT) or the device being in remote control. The voltage set by the trimmer will then be put out immediately.

The output can also be switched off at any time via pin 8 „Rem-SB“ of the analog interface and then on again.

Attention! *The pin REM-SB overrides the pushbutton „On/Off“.*

When the output is switched on, the LED „CC“ will indicate constant current operation (LED is on) or constant voltage operation (LED is off).

5.4 Selecting a voltage range

The button „Output Range“ is used to select one of the three available voltage ranges, the nominal voltage is seperated into

5.5 Remote control

Set values can be put in externally via the pins VSEL and CSEL and with analog voltages of 0...10V.

The power output values are put out as monitor signals VMON and CMON in a range of 0...10V.

In order to control the set values remotely, the „remote“ control has to be activated first. This is done by pulling pin 7 „Remote“ to low. If required, one of the set values can be bridged to the reference voltage VREF and will thus be 100%.

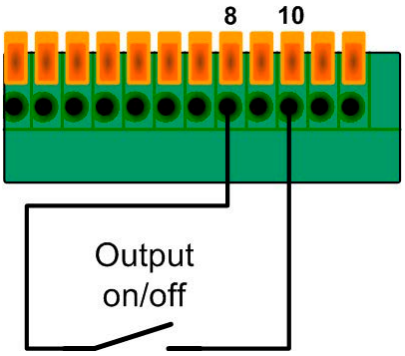
Remote control is indicated by the LED „External“.

For pin assigment of the analog interface see next page.

5.5.1 Examples for the analog interface

Remotely switching output on / off

Input: REM-SB

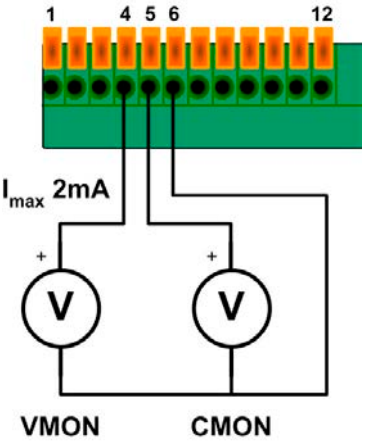


The input can be used to switch off the device output at any time. After this, switching it on again is only possible by releasing the contact or switch.

- The contact/switch on pin 8 overrides the pushbutton „On/Off“.
- Switching to remote control by pin 7 is not required.
- During remote control, this input REM-SB is also used to acknowledge and delete the OVP error by pulling the pin to LOW (=off).

Monitoring voltage and current

Outputs: VMON and CMON

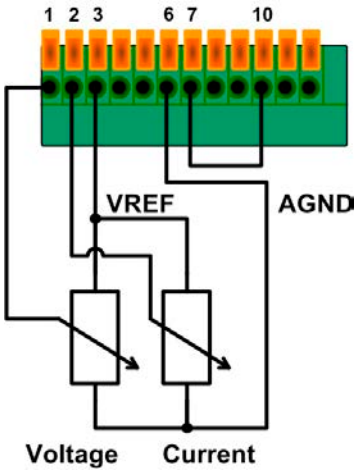


The analog monitoring outputs put out 0...10V, which corresponds to 0...100% of the nominal values.

Reference is analog ground (AGND).

Adjust set values 1

Inputs: VSEL and CSEL



This example shows how the set values can be adjusted using the reference voltage (10V, VREF) and potentiometers on the set value inputs.

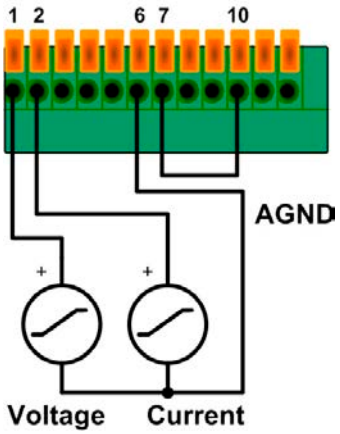
The bridge between pin 10 and Pin 7 switches the device to the required remote control mode. This bridge can be substituted by a low resistive switch.

In case only one of both set values shall be adjusted, the other one should be tied to pin VREF.

The potentiometer should be 10kOhm each or higher.

Adjust set values 2

Input: VSEL and CSEL



The example shows how to control voltage and current by means of external voltage sources. Also see example 1.

Attention! Never connect voltages >12V to these inputs!

Set values >10V are internally clipped to 100% nominal value.

5.5.2 Pin assignment and technical specifications of the analog interface:

Pin	Name	Type[1]	Description	Level	Electrical specifications
1	VSEL	AI	Set value: Voltage	0….10V correspond to 0….100% of U_{nom}	Accuracy <0.5%, U_{max} = 12V Input impedance >100k
2	CSEL	AI	Set value: Current	0….10V correspond to 0….100% of I_{nom}	
3	VREF	AO	Reference voltage	10V	Accuracy <0.5% at I_{max} = 5mA
4	VMON	AO	Actual value: current	0….10V correspond to 0….100% of U_{nom}	Accuracy 0.2% at I_{max} = +2mA Short-circuit-proof against AGND
5	CMON	AO	Actual value: voltage	0….10V correspond to 0….100% of I_{nom}	
6	AGND		Reference for analogue signals		For CMON, VMON
7	Remote	DI	Activate external control	External = Low (U_{low}<1V), Internal = High (U_{high}>4V)	U_{max} = 30V I_{out} = <1mA at 5V I_{out} = 2mA typ. at 0V
8	Rem-SB	DI	Power output off	Off = Low (U_{low}<1V), On = High (U_{high}>4V)	
9	OT / OVP	DO	Overtemperature OT / Overvoltage OVP	Low = No error (U_{low}<1V) High = Error (U_{high}>4V)	U_{max} = 30V, I_{max} = 20mA Quasi Open Collector with pull-up to +15V
10	DGND		Reference for digital signals		For control and monitoring signals
11	Reserved	X	must not be connected		
12	Reserved	X	must not be connected		

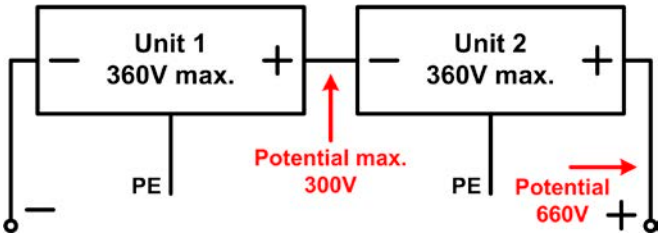
[1] AO = Analogue output, DI = digital input (no TTL/CMOS), DO = digital output (no TTL/CMOS)

6. Other applications

6.1 Series connection

It is possible to connect multiple units of the same type to a series connection if these rules are followed:

- No master-slave operation
- The grounds of the analog interfaces MUST NOT be connected to each other. This also applies for any other signal on the analog interfaces. If remote control is required, it can be done using galvanic isolation amplifiers and by controlling all units in parallel.
- Any load current leading conductor must be dimensioned for the maximum output current of the unit with the highest nominal output current.
- No negative DC output pole of any device may have a potential >300V against earth (PE).



6.2 Parallel connection

The parallel connection and operation of multiple identical units is basically possible, but not explicitely supported. Due to the overvoltage protection level that follows the adjusted output voltage, it is not possible to use the analog interface to create a master-slave-like system or to use the Share Bus for load current distribution.

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