



PSC AC-series 100-240W 1 to 3 Outputs

Input / Output

- Wide input voltage ranges.
- Single outputs from 5 to 48 V.
- Two to three outputs 5 to 24 V.

Operation

- High efficiency
- Operating temperature range -25 to +70°C.
- Fully encapsulated, meets IP30 as standard.
- Convection cooled.
- Low voltage alarm, open collector.

Features

- Conformally coating, tropic.
- Under voltage logic alarm.
- Accessible on front panel:
 - Output voltage adjustment.
 - Output voltage measurement.
 - Output OK status green LED.

EMC

- EN61000-6-3, Emission.
- EN61000-6-2, Immunity.
- EN/IEC61000-4-4, 4kV.

Input Voltage ranges

Nominal inputs	Input range	Code
100, 110 Va.c.	85 to 135 Va.c.	ACR
220, 230, 240 Va.c.	176 to 264 Va.c.	AC
110, 127, 230 Va.c.	85 to 264 Va.c.	ACW

Single output ratings

Output	Power
5V ⇒ 30A ⇒ 150W	
12V ⇒ 12.5A ⇒ 150W	
13.6V ⇒ 11A ⇒ 200W	
15V ⇒ 16A ⇒ 240W	
24V ⇒ 10A ⇒ 240W	
48V ⇒ 5A ⇒ 240W	
110V 2.2A 240W	

The PSC series supplies a full range of power supplies with compatible units both for AC and DC inputs.

In single outputs from 100 up to 240 W.

As multiple outputs with auxiliary regulated voltage with 1.2 A with total output power of 150 W.

The PSC series have all safety and EMC requirements fulfilled. No additional tests or special safety consideration are needed.

2-3 outputs ratings

Master Output	Auxiliary Output	Total Power
5V 11 - 20A	±12V 1.2A	100 - 150W
5V 15 - 25A	12V 1.2A	100 - 150W
5V 10 - 20A	±15V 1.2A	100 - 150W
5V 14 - 25A	15V 1.2A	100 - 150W
12V 7.3 - 11A	5V 2.5A ²	100 - 150W
12V 7 - 11A	12V 1.2A	100 - 150W
15V 5 - 8A	15V 1.2A	100 - 150W
24V 2.2 - 4.3A	24V 1.2A	100 - 150W

2. Common zero on the output.

240 W Single output

Features

- Single outputs from 5 to 48V
 - 110 or 230Va.c. input and world wide input range ACW
 - Operating temperature range -25 to +70°C without derating.
 - Fully Encapsulated meets IP30.
 - Convection cooled
 - Low voltage alarm, open collector
 - Conformal coating, Tropic
 - Compatible DC input models.
- Please ask for PSC-DC datasheet.



Single Output ratings and type code

Output			Input			Case
Voltage	Current	Power	85 - 135Va.c.	176 - 264V.c.	85 - 264Va.c.	
5V	20.0A ¹	100W	---	PSC100AC5	PSC100ACW5	10TE
5V	30.0A ¹	150W	---	PSC150AC5	PSC150ACW5	12TE
12V	8.3A	100W	---	PSC100AC12	PSC150ACW12	10TE
12V	12.5A	150W	---	PSC150AC12	PSC150ACW12	12TE
13.6V	7.4A	100W	---	PSC100AC13.2	PSC100ACW13.2	10TE
13.6V	11.0A	150W	---	PSC150AC13.2	PSC150ACW13.2	12TE
15V	6.7A	100W	---	PSC100AC15	PSC100ACW15	10TE
15V	10.0A	150W	---	PSC150AC15	PSC150ACW15	12TE
15V	16.0A	240W	PSC240ACR15	PSC240AC15	---	12TE
24V	4.2A	100W	---	PSC100AC24	PSC100ACW24	10TE
24V	6.3A	150W	---	PSC150AC24	PSC150ACW24	12TE
24V	10.0A	240W	PSC240ACR24	PSC240AC24	---	12TE
48V	2.1A	100W	---	PSC100AC48	PSC100ACW48	10TE
48V	3.1A	150W	---	PSC150AC48	PSC150ACW48	12TE
48V	5.0A	240W	PSC240ACR48	PSC240AC48	---	12TE
110V	2.2A	240W	PSC240ACR110	PSC240AC110	---	12TE

1. Operating temperature range -25 to +55°C. For 70°C derate PSC100 to 75 W & PSC150 to 110W. Other input and outputs combination on demand.

Pin-out, Single output

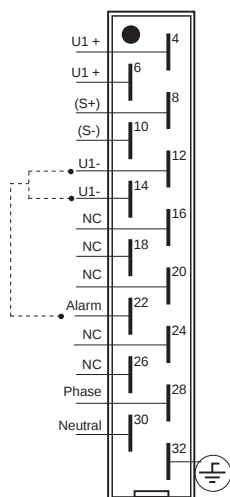


Figure 1. Pin-out single output with Connector DIN41612, H15.

How to read our product code:

Example **PSC240 AC24**

PSC240 = Family code

AC = input voltage code

24 = Output voltage 24V

100 to 150W High Power 2&3 Outputs

Features

- Master Outputs from 5 to 48 V
 - One auxiliary voltage 5 to 30V
 - Second auxiliary voltage 5 to 15V
 - Operating temperature range
-25 to +55°C. +70°C with derating.
 - Fully Encapsulated meets IP30.
 - Convection cooled
 - Low voltage alarm, open collector
 - Conformal coating, Tropic
 - Compatible DC input models.
- Please ask for PSC-DC datasheet.



Two outputs ratings and type code

Master Output	Auxiliary Output	Total Power	Type Code 85 - 135V	Type Code 176 - 264V	Case
5V 17A	12V 1.2A	100W	PSC100ACR5S12	PSC100AC5S12	10TE
5V 25A	12V 1.2A	150W	PSC150ACR5S12	PSC150AC5S12	12TE
5V 17A	15V 1.2A	100W	PSC100ACR5S15	PSC100AC5S15	10TE
5V 25A	15V 1.2A	150W	PSC150ACR5S15	PSC150AC5S15	12TE
12V 7.3A	5V 2.5A ²	100W	PSC100ACR12S5	PSC100AC12S5	10TE
12V 11A	5V 2.5A ²	150W	PSC150ACR12S5	PSC150AC12S5	12TE
12V 7A	12V 1.2A	100W	PSC100ACR12S12	PSC100AC12S12	10TE
12V 11A	12V 1.2A	150W	PSC150ACR12S12	PSC150AC12S12	12TE
15V 5.5A	12V 1.2A	100W	PSC100ACR15S12	PSC100AC15S12	10TE
15V 9A	12V 1.2A	150W	PSC150ACR15S12	PSC150AC15S12	12TE
24V 3A	24V 1.2A	100W	PSC100ACR24S24	PSC100AC24S24	10TE
24V 5A	24V 1.2A	150W	PSC150ACR24S24	PSC150AC24S24	12TE

Operating temperature range -25 to +55°C. For 70°C derate PSC100 to 75 W & PSC150 to 110W.

2. Common zero on the output.

The secondary output voltages are only factory adjustable.

Models with world wide AC input 85 to 264 Va.c. is available on demand with less output power.

Pin-out 2 & 3 outputs

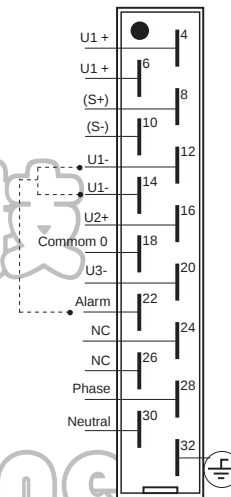


Figure 2. Pin-out 2 to 3 output with Connector DIN41612, H15

Three outputs ratings and type code

Master Output	Auxiliary Output	Total Power	Type Code 85 - 135Va.c.	Type Code 176 - 264Va.c.	Case
5V 14A	±12V 1.2A	100W	PSC100ACR5S12-12	PSC100AC5S12-12	10TE
5V 23A	±12V 1.2A	150W	PSC150ACR5S12-12	PSC150AC5S12-12	12TE
5V 14A	±15V 1.2A	100W	PSC100ACR5S15-15	PSC100AC5S15-15	10TE
5V 23A	±15V 1.2A	150W	PSC150ACR5S15-15	PSC150AC5S15-15	12TE

How to read our product code:

Example **PSC150AC 5S12-12**

PSC150 = Family code & output power

AC = Input voltage code

5 = Master output

S12-12 = Stabilized slave output +/- 12V

Operating temperature range -25 to +55°C. For 70°C derate PSC100 to 75 W & PSC150 to 110W.

The two secondary output use common zero for ±12 or ±15 application or to supply -24V or 30V.

The secondary output voltages are only factory adjustable.

Models with world wide AC input 85 to 264 Va.c. is available on demand with less output power.

Auxiliary outputs

Master - slave

The PSC-series uses a master slave configuration on the auxiliary outputs. The main power circuit is regulated by the master output. The auxiliary circuits use step down regulators. The advantage is high efficiency in all parts and we can supply, continuously 1.A on each of the auxiliary voltages. On special demand we can supply units with higher continuous auxiliary voltage. The disadvantage is that the master output need to take minimum 1/3 of the total load and do not supply any current if the master is unloaded.

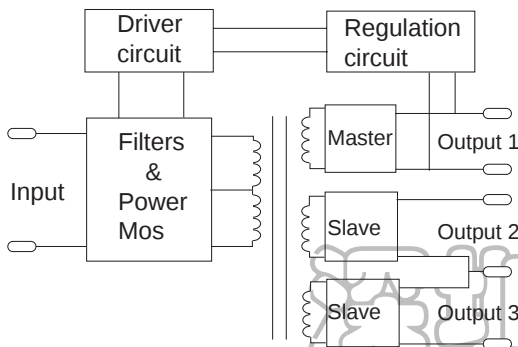


Figure 3. Master slave configuration.

Features

Under voltage logic alarm

On DC-inputs a built in logic alarm changes to alarm state if the converter output voltage drops 10% below nominal output. The DC OK LED is also controlled by the alarm circuit. The alarm has an open collector configuration. A voltage < 1V is normal operating condition. In alarm state the output can drive max 20mA 60V. The logic alarm works if a voltage is applied through a resistor on the collector output max voltage 60V. For relay output, see option B.

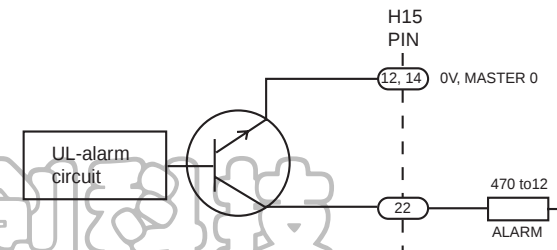


Figure 5. Open collector alarm and inhibit input.

Auxiliary voltage current characteristic

Auxiliary voltage current characteristic

Each auxiliary output is regulated by a step down regulator that have a continuous output current of 1.2A but can supply peak current during 2-3 ms. The voltage regulation is 2% (0-100% load). The current is protected by the faster current limit and a slower thermal limit.

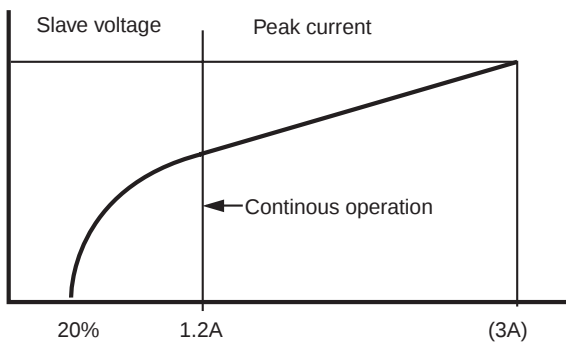


Figure 4. Current characteristic on slave voltage.

Inrush current limit

A NTC resistor is provided on all inputs.

Adjustment & measurement

Output voltage adjustment potentiometer and output voltage measurement points are accessible from the front panel.

Conformal coating

The PSC-series is conformally coated to withstand non-condensing tropical environment Rh 95%.

Optional Features

Overvoltage protection OVP-A

The output voltage is limited to 15% over nominal output voltage. A SCR short-circuits the output. It is reset by switching off the input or by an Inhibit signal. The OVP circuit is a standard feature on 5V outputs, which triggers at 6.2V

Undervoltage alarm with relay -B

The standard under voltage logic alarm circuit output is replaced by a relay fault signalling output. The relay logic is NO (Normally Open) in alarm state. (Alarm state = no input or low output.) The relay rating is 30V 0.5A (a.c. & d.c.) Connect according to figure between Pin 16 and 18 on the H15 connector. Only possible on single output.

Built in series diode -C

A series diode on the output, which is mounted inside the case. Use this option when output is connected in parallel with other power supplies to achieve redundancy.

Remote sense -S

The voltage sensing can be put at the load to compensate for voltage drop. Is a standard feature on 5V output.

2.5 kVa.c. isolation Output/case -E2

The emission level increase to level A.

Euro panel -L, 10TE, 12TE see figure 9

Wall mounting panels -N, see figure 10 & 11
Includes H15 connector holder. The female connector has to be added. To mount on a DIN TS-35 rail, we can supply an optional DIN rail clips

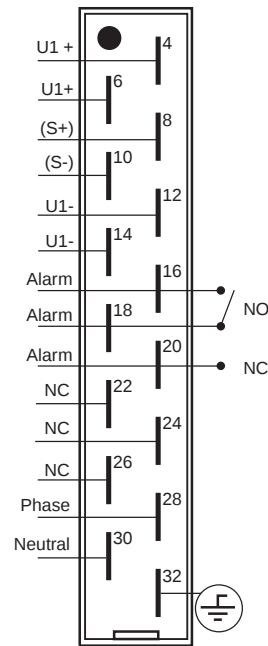
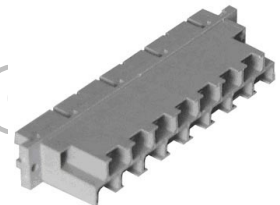


Figure 6. Alarm relay output.

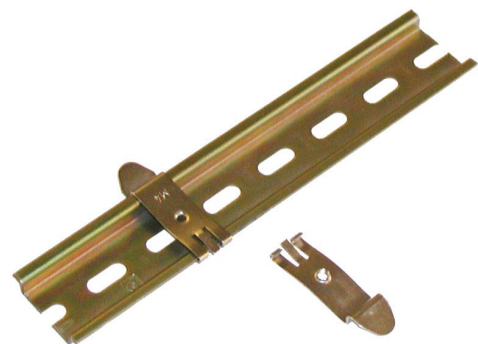
Connector Options



H15 female Screw
Connector H15-S



FastOn 6.3mm
Connector H15-T



DIN-rail Clips

General data DC/DC Converters

Design topology	Half-Bridge
Switching frequency	50 kHz
Emission / immunity	See below
Safety EN/IEC60950	Class I
Power consumption at no load	3 to 5W
Reverse input voltage protection	Parallel diode
Inrush current limit	with NTC
Hold-up time AC (230 Va.c.)	10 ms
ACW (110/230Va.c.)	3/25 ms
ACR 110Va.c.)	3 ms
Efficiency AC	80 - 91%
ACW	78 - 87%
ACR	80 - 91%
Insulation	See below

Output data

Source regulation	0.2%
Load regulation (0-100% load) master	0.2%
Cross regulation 25 to 100% load step on master	0.2%
Secondary regulation 0 to 100%	2%
Transient recovery time for a load step of 10% to 100%	<2ms
voltage deviation	3%
Output ripple (50kHz) Vp-p ²	Typ. 10mV
Input ripple attenuation on output 50 to 400Hz	150:1
Emission / Immunity	See below
Temperature coefficient	0.02 % /°C
Min Output adjustment range on master adjustable with a 15 turn potentiometer	90% to 110%
Current limit, rectangular.	105%
Remote sense, only master	Option S
Soft start	Yes
Isolation output / case	See below
Start-up time	<1s
Operating temperature range at 100% load. Conduction cooling	
Single outputs >10 V	-25 to +70°C
Single outputs <10 V	-25 to +55°C
Dual & Tripple outputs	-25 to +55°C
Storage temperature range	-40 to +85°C

Safety and EMC



PSC-Series meets the requirements defined by CE mark as apparatus.

PSC-Series meets requirements of EMC directive and low voltage directive (LVD).

Thus a PSC-Series can be used as free standing unit or in installations as well as systems designed according to "The modular approach". PSC-Series can be used in installation without further EMC tests, if our installation instructions are followed.

Please note that product standards can demand different levels or other basic standard tests. We test according to levels below. For higher levels or other tests, contact factory.

We use the product standard Low voltage power supplies, DC outputs EN/IEC61204-3 and the generic EMC standards:
EN/IEC61000-6-2 (Immunity)
EN/IEC61000-6-3 (Emission)

- Output ripple might increases when IEC/EN61000-4-3 10V/m test is applied to max 0.5% V_{RMS}
- Lowest efficiency measured within the whole input voltage range at 100% load.

Safety standard IEC60950

Isolation testable levels	Input code
	ACR, AC, ACW
Input / output:	2.5kVa.c. / 4kVd.c.
Input / Case	2.5kVa.c. / 4kVd.c.
Output / Case all outputs	2kVd.c.
Master output / Auxiliary outputs	2kVd.c.
Alarm / Input	2.5kVa.c. / 4kVd.c.
Isolation, not testable level	Safety Isolation
Transformer isolation In/Out:	4 kVa.c./8mm

EMC

EMC-standards	EMC-performance		
Emission standards	Input	Output	Remarks
EN55011/EN55022 (0.15-30MHz)	Level B	Level B	
EN55011/EN55022 (30-1000MHz)	Level B		Enclosure test
Immunity standards	IEC/EN61000-6-2		
EN/IEC61000-4-2	8 kV/15 kV		Contact / air, Enclosure test
EN/IEC61000-4-3	10 V/m AM-Modulated		Output ripple can increase to 0.5% of V _{out} Enclosure test
EN/IEC61000-4-4	4 kV	4 kV	
EN/IEC61000-4-5	1kV / 2 kV	0.5kV / 1 kV	Line-line 2Ω / Line-case 12Ω
EN50155 Figure 4, 1.8kV 1.5/50μs	Yes		Line-line 100 Ω
EN/IEC61000-4-6	10 V _{RMS}	10 V _{RMS}	AM-Modulated
EN/IEC61000-4-8	Not sensitive		Enclosure test
EN/IEC61000-4-10	Not sensitive		Enclosure test

- Higher level 2kV / 4kV with external filters, contact factory.

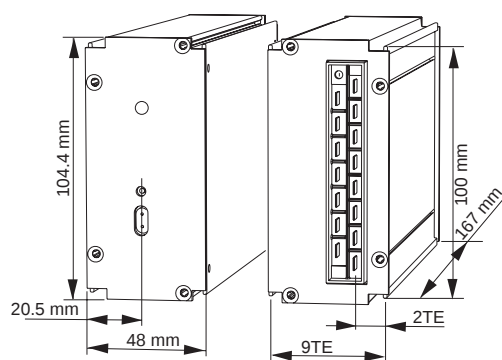


Figure 7. Front and connector side of PSC100

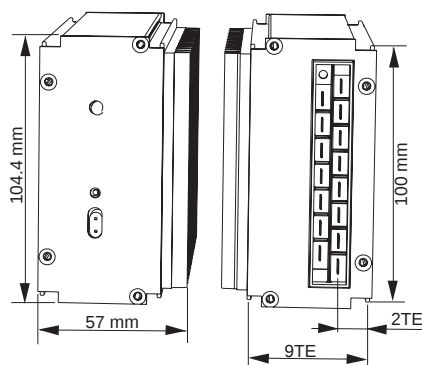


Figure 8. Front and connector side of PSC150 and PSC240

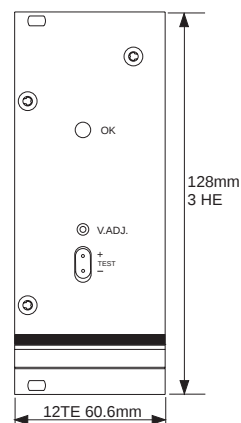


Figure 9. Front panel 3HE option L

The PSC-family are built in a tubular aluminium extrusion, with high thermal conductance which also work as a good EMC shield. The mechanical design permits use in vehicles and heavy industrial environments. The IP class is IP30. On special demand up to IP54 can be supplied using special connectors.

Vibration and shock resistance is high in standard DIN431605: 6g 10ms (5000 times in 3 directions) Higher as 15g 50ms or 30g 10ms can also be provided on demand.

Type	PSC100	PSC150	PSC240
d (mm)	50.4	60.6	60.6
d (TE)	10	12	12
Weight 1 Output	1.0 Kg	1.2 Kg	1.2 Kg
Weight 2&3 outputs	1.1 Kg	1.3 Kg	1.3 Kg
Wall mounting set			
e (mm)	53	63	63
Weight incl. connector	1.2 Kg	1.3 Kg	1.3 Kg

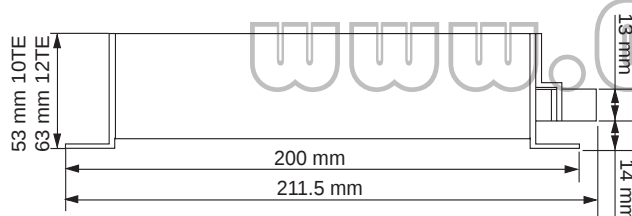


Figure 10. Side view on wall mounting option N

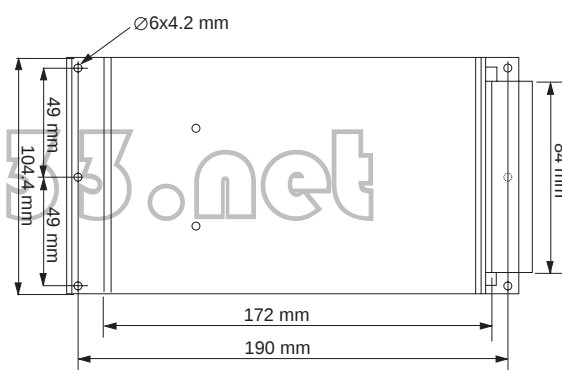
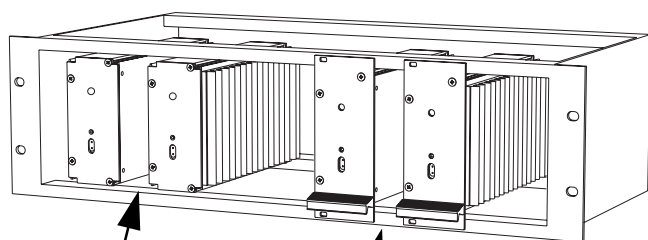
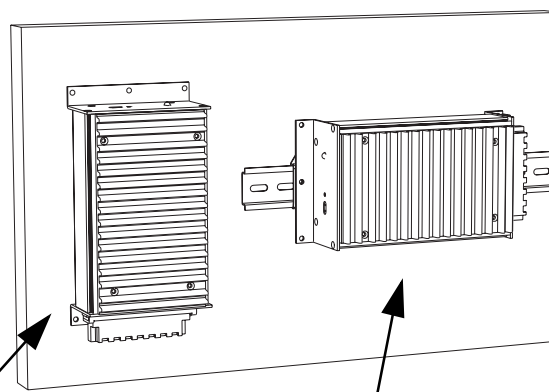


Figure 11. Top view on wall mounting option N



PSC mounted in a 19" Sub-rack. Standard unit.

PSC mounted in a 19" Sub-rack with L panel (Optional)



PSC wall mounted. Using PSC wall mounting kit including connector holder. The female H15 connector is optional. See page 5 for the selection

PSC DIN-rail mounted. Using PSC wall mounting kit with H15 connector, connector holder and DIN-rail clips (Optional).

Note: Wall mounting is standard on the swedish market.