

Firma / Company

FRIWO Gerätebau GmbH

Gerätetyp / Type: OF150-12
Artikelnr. / Part-No.: 1893143
Zeichnungsnr. / Drawing-No.: 15.3339.500-00
Datum / Date: 06.07.2011

Sachbearbeiter Verkauf / Contact Sales: Frederick Balzer
Sachbearbeiter Mechanik / Contact Mech. Eng.: Angela Chen
Sachbearbeiter Elektronik / Contact Elec. Eng.: KSTDW
Freigabe App. / Approved App. PRFFR
Freigabe / Approved KSTMM

Wir bitten Sie, ein Exemplar mit Freigabevermerk an uns zurückzusenden. Sollten Sie dieser Spezifikation nicht unverzüglich widersprechen, gilt die Zustimmung und Fertigungsfreigabe auf Grundlage dieser Spezifikation als erteilt.

We may ask you to return one signed copy of the specification for our records as having your approval. Unless you do not enter your objection to the latest specification issue without delay, your acceptance and release for production on the basis of this specification is deemed to be given.

Kundenfreigabe / Customer Release:

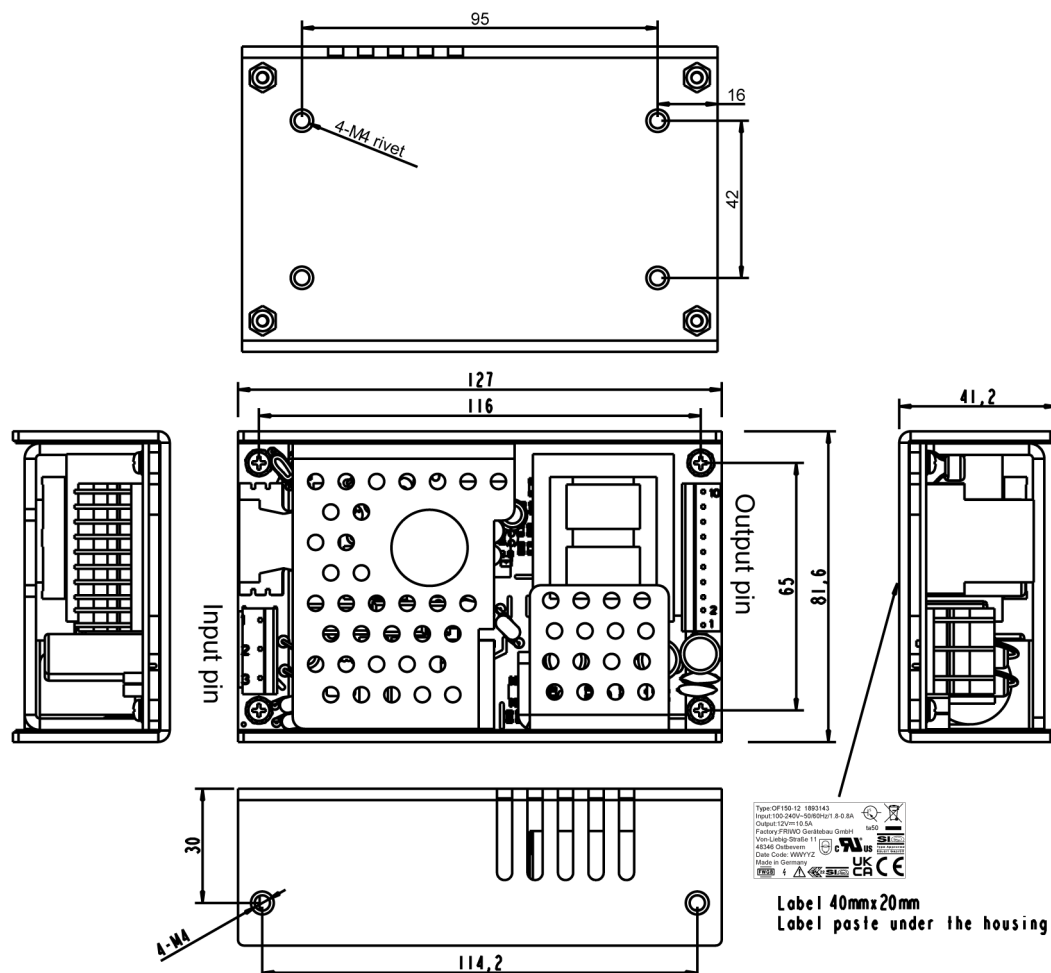
Datum / Date:

Unterschrift / Signature:

Index / Rev.	Datum / Date	Name	Einzelheit / Detail
①	2018/10/25	Brokhage	Label for housing updated, see point 1. Point 3 added. Operating a ...
⑨	2021/10/27	Brian	PCR P003800897, MR2021-4-11841: Update with new UKCA sign, see point 1.0. Hide Declaration of conformity

1 Gehäuse / Housing:

Gehäusetyp / housing type: OPEN FRAME



Item	Molex connector type or equivalent	Mating connector Molex type or equivalent
Input	0010634037	0009503051
Output	0026604100	0009503101

Output pin	1	2	3	4	5	6	7	8	9	10	Input pin	1	2	3
	-	-	-	-	-	-	-	-	-	-		N	L	PE



Printing: Black letter on white base
 Material: copperplate paper with bright/shining surface (UL, CSA approval)
 Coating: Acrylic adhesive backing
 To be manufactured by UL/CSA qualified vendor
 Storage temperature: -20 degC ~ +70 degC
 The thickness of label is 0.12 +/- 0.02mm
 Datumscode/date-code "WWYYZ"
 W=Woche/week Y=Jahr/year Z=Fertigungsstätte/Factory code
 (Note: without mark = FRIWO Gerätebau GmbH)

Falls das Netzteilmodul ohne das U-Profil betrieben werden soll, bitte beachten: Vor Inbetriebnahme des Netzteils müssen die vier mit dem Erdungssymbol gekennzeichneten Montagelöcher mit einer ausreichend niederohmigen ($\leq 0,1 \text{ Ohm}$) Verbindung versehen werden.

In case, the power supply shall be used without the U-bracket, please note: Before first use, the four mounting holes with "PE" symbol must be connected by a sufficiently low impedance ($\leq 0.1 \text{ Ohm}$) connection.

Label 40mmx20mm
 Label paste under the housing

2 Verpackung / Packaging

2.1 Einzelverpackung / Individual packaging:

Fächersteg/ Divider: 11.3083.056-20
Zwischenlagen/ Underliner: 13.0002.056-03
ESD Beutel/ ESD bag: 1815232 (152mmx254mm)
Paste label (40x20mm) on ESD bag to close the ESD bag

OF150-12/1893143
12V $\Rightarrow$ /10,5A

2.2 Sammelverpackung / bulk packaging: 28 er UMKARTON / Carton 28

Paste label (85x50mm) on master carton next to the standard label

OF150-12/1893143
12V $\Rightarrow$ /10,5A

2.2.1 Aussenabmessungen / Outer dimensions: 433mm x 338mm x 196mm

2.3 Anzahl der Geräte pro Umkarton /
amount of units per master carton: :18

2.4 Gewicht pro Stück / weight per unit: 340 g

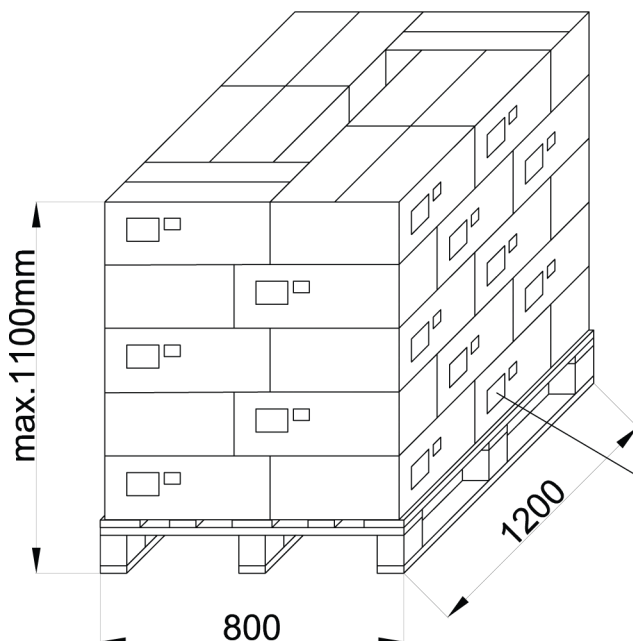
2.5 Lagertemperatur / storage temperature: -20°C - +70°C / 10 to 95 rel. hum.

2.6 Verpackungsvorschriften / packaging specification:

Master Packing

Notes:

- 1) 18 pcs per carton
- 2) 6 cartons per layer
- 3) 5 layers on pallet
- 4) total 540 pcs per stack



Pro Karton 1 Standard Aufkleber und 1 Aufkleber
1830988 auf der Längsseite des Kartons kleben/
Paste per Carton 1 standard Label and 1 label
1830988 on the long side of the carton.

3 Allgemeine Prüfbedingungen / General test conditions

- 3.1** In einem Bereich der Umgebungstemperatur von 0°C bis +70°C bei 10% bis 95% relativer Luftfeuchte, keine Betauung und einen Luftdruck von 70kPa bis 106kPa muss die einwandfreie Funktion des Gerätes gewährleistet sein.

Within an ambient temperature range from 0°C to +70°C at 10% to 95% relative humidity, no condensation and an atmospheric pressure of 70kPa to 106kPa the faultless function of the unit must be guaranteed.

4 Elektrische Prüfbedingungen / electrical tests

4.1 Alle nachstehend aufgeführten Werte werden bei +20°C Raumtemperatur und nach 15 Minuten Einschaltdauer gemessen.

All values listed below are measured at an ambient temperature of +20°C and after 15 minutes of operation.

4.2 Eingangsdaten / Input data:

4.2.1 Input fuse: 3.15AH/250V

4.2.2 Nenneingangsspannung / Nominal input voltage :	100-240V AC $\pm 10\%$ 100-240V AC $\pm 10\%$
---	--

4.2.3 Nenneingangsfrequenz / Nominal input frequency:	47-63Hz 47-63Hz
--	--------------------

4.2.4 Leistungsfaktor/ Power Factor:	≥ 0.9
---	------------

4.2.5 Leerlaufleistungsaufnahme bei UE / Stand-by power consumption at UIn:	115V AC, 230V AC : $\leq 0.5W$ 115V AC, 230V AC : $\leq 0.5W$
--	--

4.3 Ausgangsdaten / Output data:

Messaufbau siehe / <http://www.friwo.de>
Measuring setup see:

4.3.1 Ausgangsspannung / Nominal output voltage:	UA: 12V DC +5% / -5% Uout: 12V DC +5% / -5%	UBr : $\leq 120mV_{ss}$ UBr : $\leq 120mV_{pp}$
---	--	--

Ripple voltage test: 100nF ceramic capacitor and 47uF aluminum electrolytic capacitor should be parallel at output terminal, and the oscilloscope with 20MHz bandwidth is required.

IA : 10500mA
Iout : 10500mA

≥87%(Energy Star level 'V')

4.3.4 Überstromschutz/Over current protection

Steigt der Ausgangsstrom auf 12A bis 15A an, spricht der Überstromschutz an. Das Netzteil bleibt in diesem

Betriebszustand bis die Überlastung beendet ist. Danach arbeitet das Netzteil normal weiter.

If the PSU output current rise to 12A~15A, the PSU will occur over-current protection and bouncing, until the over-current removed, PSU will work normally again.

4.3.5 Ausgangs-Kurzschluss-Schutz/Output short protection

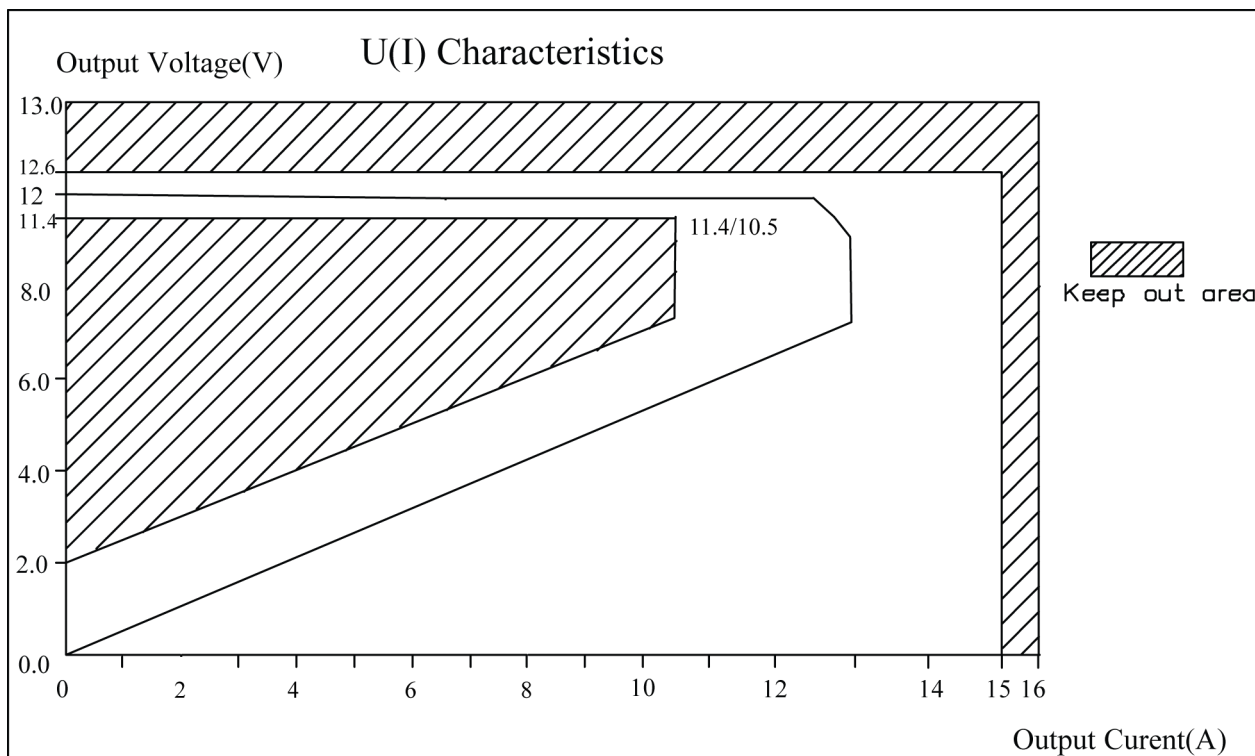
Bei kurzgeschlossenem Ausgang spricht der Kurzschlusschutz an. Nach Entfernen des Kurzschlusses arbeitet das Netzteil normal weiter.

If the PSU output shorted, unit will enter bouncing, until the short circuit removed, PSU will work normally again.

4.3.6 Betriebstemperatur/Operating temperature

0 – 70°C (Volllast bis 50°C, danach lineare Abnahme der Leistung bis auf 70% bei 70°C)
0 - 70°C (Full load to 50°C, derate linearly to 70% load at 70°C).

4.3.7 Ausgangskennlinie / Output characteristic:



5 Sicherheitsanleitung / Safety details:

Sicherheitsaufbau nach / Safety-standard acc. to :	EN60601, EN60950, EN61558
Schutzklasse / Protection class :	I
Trennung (prim.-sek.) / Separation (prim.-sec.) :	Galvanisch durch Wandler Galvanic by transformer
Kriech- und Luftstrecken / Creepage distance and clearance :	$\geq$ Kr : 8mm, Lu : 5mm ; Cr : 8mm, Cl : 5mm
Erdableitstrom / Earth leakage current:	$\leq$ 500 μ A
Patientenableitstrom / Patient leakage current :	$\leq$ 100 μ A
Betriebshöhe / Operating altitude :	$\leq$ 3000m
Gemessen nach / According to : siehe / see www.friwo.de	
Hochspannungstest / High-voltage test :	
Primär zu sekundär / primary to secondary:	$\geq$ 4 KV AC
Primär zur Erde / primary to earth :	$\geq$ 1.5 KV AC
Sekundär zu Erde / secondary to earth :	$\geq$ 500V AC
Anwendungsbereich / Range of application :	Einrichtungen für Informationstechnik , einschließlich elekt- rische Büromaschinen "und Medizintechnik" Information technology Equipment including technical of- fice "and professional healthcare"

6 Links & Miscellaneous

EMC-specification

6.1 Noise-suppressed:acc. to EN55024 ,55022/B and FCC part15 B.

6.2 Harmonic current emissions ass.to IEC61000-3-2

6.3 Immunity to electrostatic discharge (ESD): acc. to IEC61000-4-2

Discharge characteristic	Test level	Assessment criteria Uin 120Vac	Assessment criteria Uin 230Vac
Air discharge	±8kV	B	B
Contact discharge	±6kV	B	B

6.4 Immunity to radiated electromagnetic field: acc. to IEC61000-4-3
 Test characteristic: 80 - 2.5GHz; 80% AM (1 kHz)

Test level	Assessment criteria
10V/m	A

6.5 Immunity to fast electric transients (burst): acc. to IEC61000-4-4

Coupling	Test level	Assessment criteria Uin 120Vac	Assessment criteria Uin 230Vac
AC - input	±2kV	B	B

6.6 Surge capability: acc. to IEC61000-4-5

Surge voltage	Assessment criteria Uin 120Vac	Assessment criteria Uin 230Vac
±1KV(Line to line)	B	B
±2KV(Line to earth)	B	B

6.7 Power frequency(50/60Hz) magnetic field.acc.to IEC61000-4-8

Test level	Assessment criteria
3A/m	A

6.8 Immunity to voltage dips, short interruptions and voltage variations.

Test acc. to IEC61000-4-11

Test performed at $U_{in} = 120V_{ac}/230V_{ac}$

Test level %Un	Voltage dips and short interruptions %Un	Duration time of voltage Dips (in half sine)	Test result $U_{in} 120V_{ac}$	Test result $U_{in} 230V_{ac}$
0	100	0.5	B	B
		(5s)	B	B
40	60	5	B	B
70	30	25	B	B

6.9 Assessment criteria

- Agreed operational behaviour within the specified limits.
- Time limited functional diminishment of malfunction during the tests is permitted. The function is self-reactivated by the unit following completion of the tests.
- Malfunction is permitted. The function can be reactivated either by reconnection to the mains or by operator intervention.

7 Installation instructions

7.1 Rating

Type : OF150-12

Rated voltage : AC 100-240V

Nominal Current : Max 1.8A

Rated frequency : 50/60 Hz

Class : I

Protection against electric shock : By means of appropriate installation

Output voltages and currents DC12V/10.5A (SELV)

Max. ambient temperature for rated output power : 50°C

Max. operating relative humidity : 95%,no condensation.

Storage : -20 to +70°C

Units should be allowed to warm-up under non-condensing conditions before application of power.

Remark : the end-use product shall provide an adequate enclosure to prevent access to the power supply and

have an adequate enclosure for protection against the spread of fire.

7.2 Classification

Protection against electric shock = Class I,mains grounded input (protective earth must be connected to mains supply network).

Protection against moisture:

Have not been evaluated for use in the presence of a flammable anaesthetic mixture with air,oxygen,or nitrous oxide.This evaluation is to be made on the end equipment by the OEM.

Do not connect as direct power source to patient circuits.

Not to be used as single power source within critical life support systems,without prior request to FRIWO Geratebau GmbH and receipt of confirmation in writing from FRIWO Geratebau GmbH.

Ask for Application Engineering Support from FRIWO Geratebau GmbH.

7.3 Temperatures

The maximum operating temperatures of certain safety components, as defined in the applicable safety standards, must not be exceeded after installation to preserve the intended safety.The output power,ambient air temperature and the availability,amount,direction and/or restriction of airflow influence the temperatures of these components.

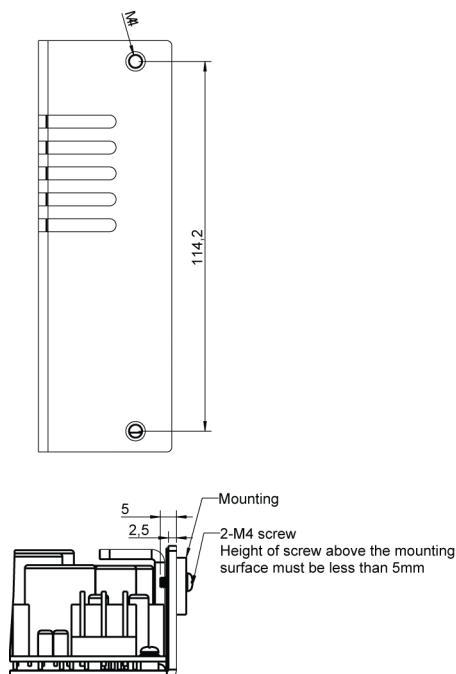
8 Explanation of symbols

EXPLANATION OF SYMBOLS	
	Alternating Current
	Direct Current
	Attention, Consult Accompanying Documents
	Attention, Dangerous Voltages
	Earth (Ground)

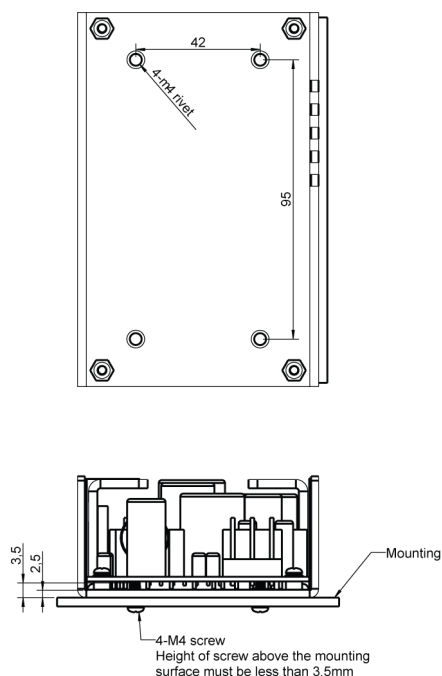
- 8.1** Fusing
Fuses for both Line and Neutral are provided in the power supply. Replace only with same type and rating of use.
- 8.2** Caution
Read instruction manual before connecting to mains.
- 8.3** Warning! Risk of fire!
A blown internal fuse is an indication of catastrophic failure of circuit component(s). Refer to fuse marking on the supply for rating.
- 8.4** Warning! Shock Hazard!
Dangerous voltages are present on some components, printed wiring traces and heatsinks.

9 Installation method

9.1 Assembly on side



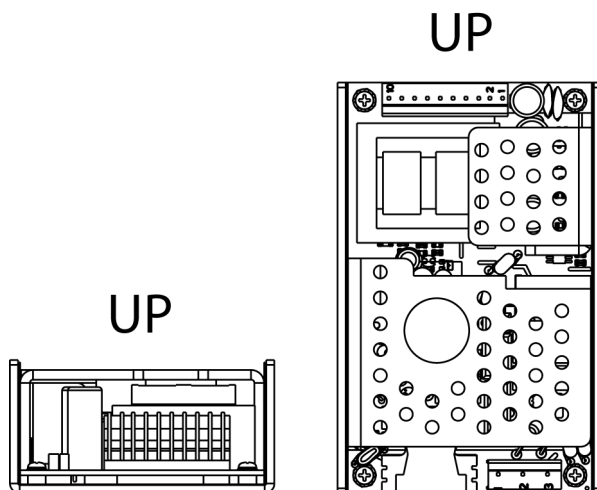
9.2 Assembly on front



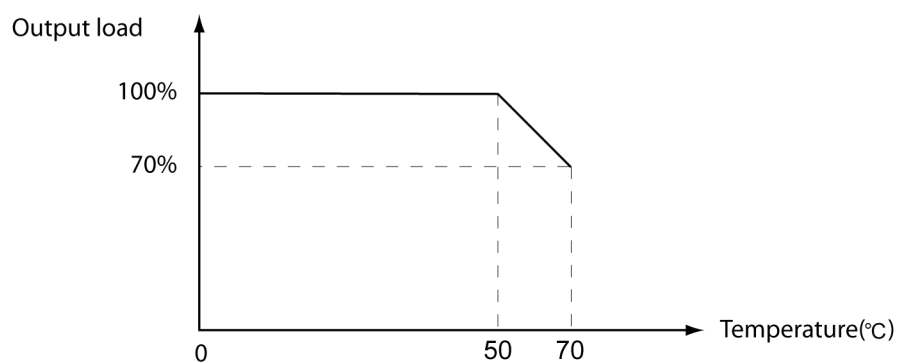
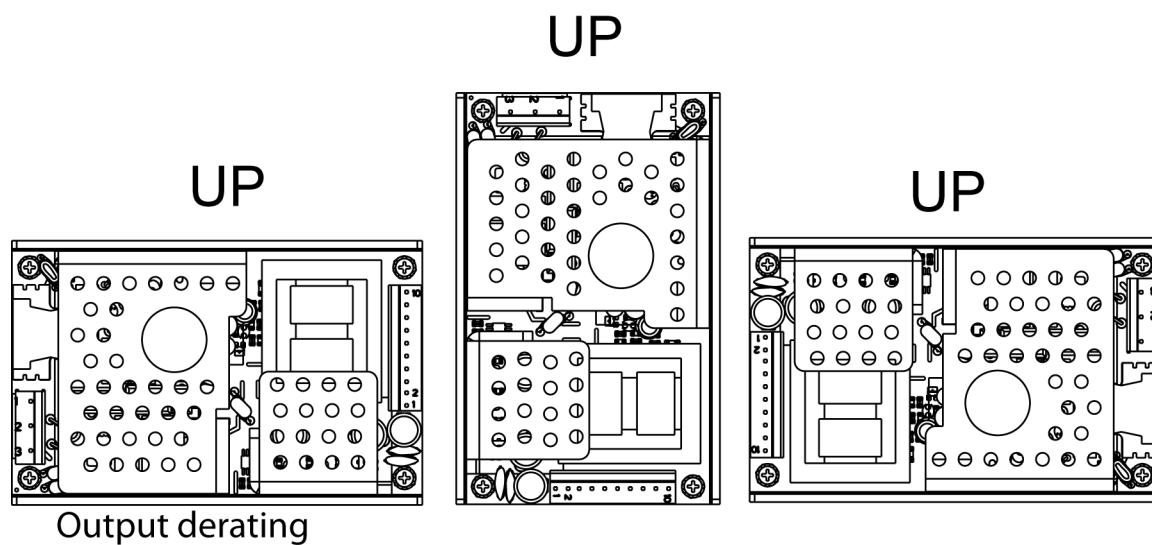
10 Installation positions versus output derating

Need to check all safety components' temperatures do not exceed the limits.

10.1 Ideal installation positions:



10.2 Acceptable installation positions(See output derating below):



10.3 Unacceptable installation position:**UP**