

**Firma / Company :**

**Distribution**

Gerätetyp / Type :

DT150-24 MOPP

Artikelnr. / Part-No. :

1893142

Zeichnungsnr. / Drawing-No. :

15.3481.500-00

Datum / Date :

2012-06-07

Sachbearbeiter Verkauf / Contact Sales :

Bernsmann

Sachbearbeiter Mechanik / Contact Mech. Eng. :

FEHVNL

Sachbearbeiter Elektronik / Contact Elec. Eng. :

FESELU

Freigabe App. / Approved App.

FEPAZH

Freigabe / Approved

FELCCH

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 this 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
Ⓐ	2013/09/02	Kuhn	Bottom inscription changed to 15.3481.501-04, see point 2.1.1. No...
Ⓔ	2013/09/05	Kuhn	Bottom inscription changed to 15.3481.501-05, see point 2.1.1.
Ⓕ	2013/09/05	Kuhn	Type changed, see page 1.
Ⓖ	2016/04/12	Paul	Updated CE declaration, see point 8.
Ⓗ	2016/09/02	Werk	Bottom inscription changed to 15.3481.501-06, see point 2.1.1., updated declaration of conformity, see point 8

**Geschäftssitz / Headquarter**

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 Tel +49 2532/ 81-0  
 Fax +49 2532/ 81-112  
 www.friwo.de  
 WEEE-Reg.-Nr. DE 70846847

**Geschäftsführung / Management Board**

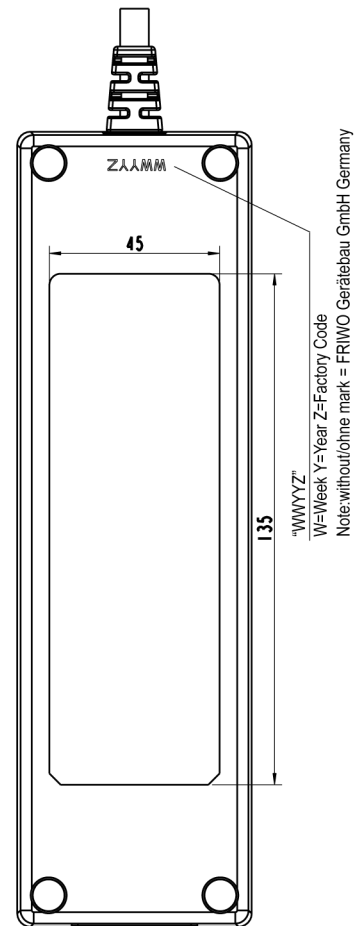
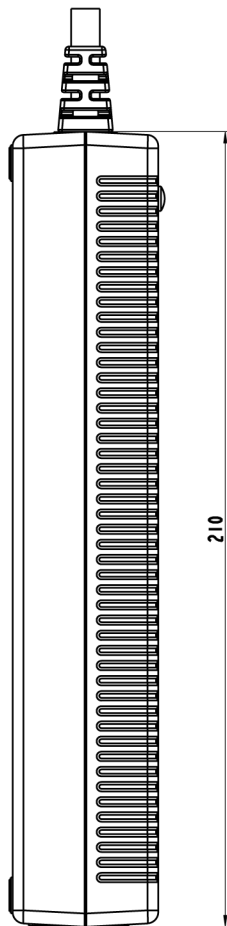
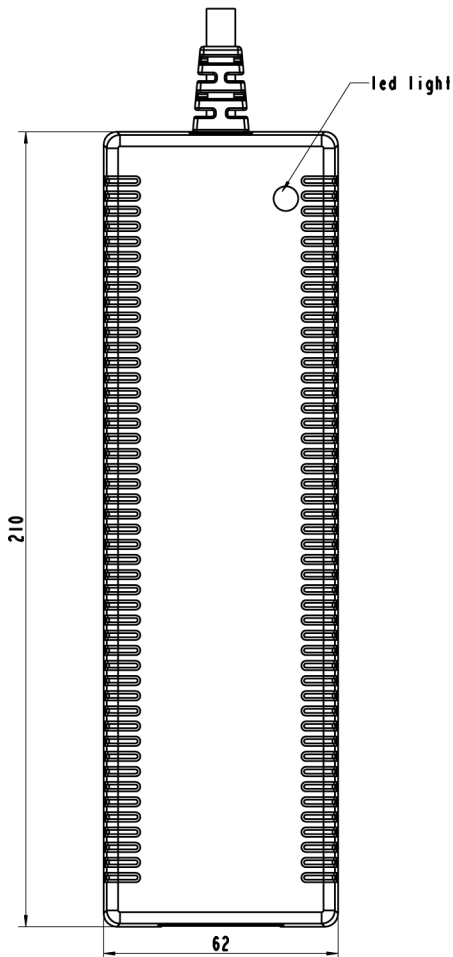
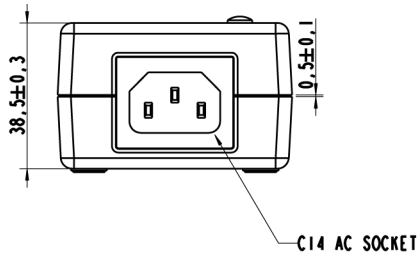
Martin Schimmelpfennig  
 Lothar Schwemm  
 St.-Nr. 346/5840/0923  
 Finanzamt Warendorf  
 USt.-Ident.-Nr. DE811114890  
 Amtsgericht Münster  
 HRB 9325

**Bankverbindung / Bank Details**

*Sparkasse Münsterland-Ost*  
 BLZ 400 501 50 (EUR) Kto. 5 000 526  
 IBAN DE42 4005 0150 0005 0005 26  
 BLZ 400 501 50 (USD) Kto. 86 0000 23  
 SWIFT WELADED1MST  
*Commerzbank AG, Frankfurt a. M.*  
 BLZ 500 400 00 Kto. 5 811 419  
 IBAN DE05 5004 0000 0581 1419 00

**1 Gehäuse / Housing:**

Gehäusetyp / housing-typ: DT150  
Material: PC / ABS V0 125°C  
Farbe Boden/ bottom colour: schwarz / black  
Farbe Deckel/ cover colour: schwarz / black



"WWYYZ"  
W=Week Y=Year Z=Factory Code  
Note: without/ohne mark = FRIWO Gerätebau GmbH Germany

**2 Gehäuseaufschriften / Housing labelling:**

**2.1 Bodenbeschriftung / Bottom labelling**

**2.1.1**



15.3481.501-06DE/ XXXXXX = Germany  
 15.3481.501-06CN/ XXXXXX = China  
 15.3481.501-06VN/ XXXXXX = Vietnam

**3 Leitungen / Leads:**

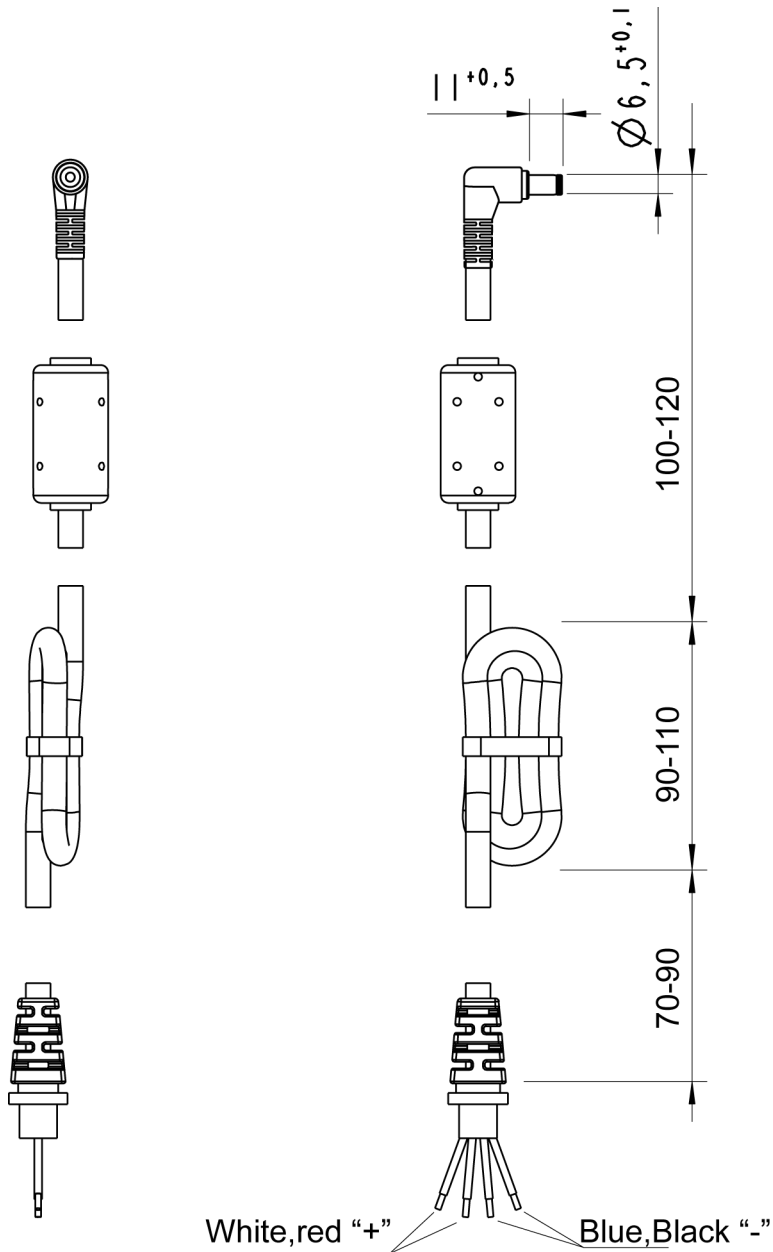
**3.1** Ausgangsleitung / output lead: 15.3481.503-00

Länge / length: 1000 mm

Querschnitt / cross section: 4X18AWG

Farbe / colour: schwarz / black

Polarität / polarity: inner"+",outer"-"



## 4 Verpackung / packaging:

4.1 Einzelverpackung / individual packaging:  
15.3284.556-00

mit Beschriftung \* / with printing \*

\* AC/DC ADAPTER  
SPEC.-NO.:15.3481  
PART-NO.:1893142  
OUTPUT:24VDC/6.25A  
INOUT:100-240VAC

4.1.1 Aussenabmessungen / Outer dimensions: 255mm x 135mm x 55mm

4.2 Sammelverpackung / bulk packaging:  
56 er UMKARTON / Carton 56

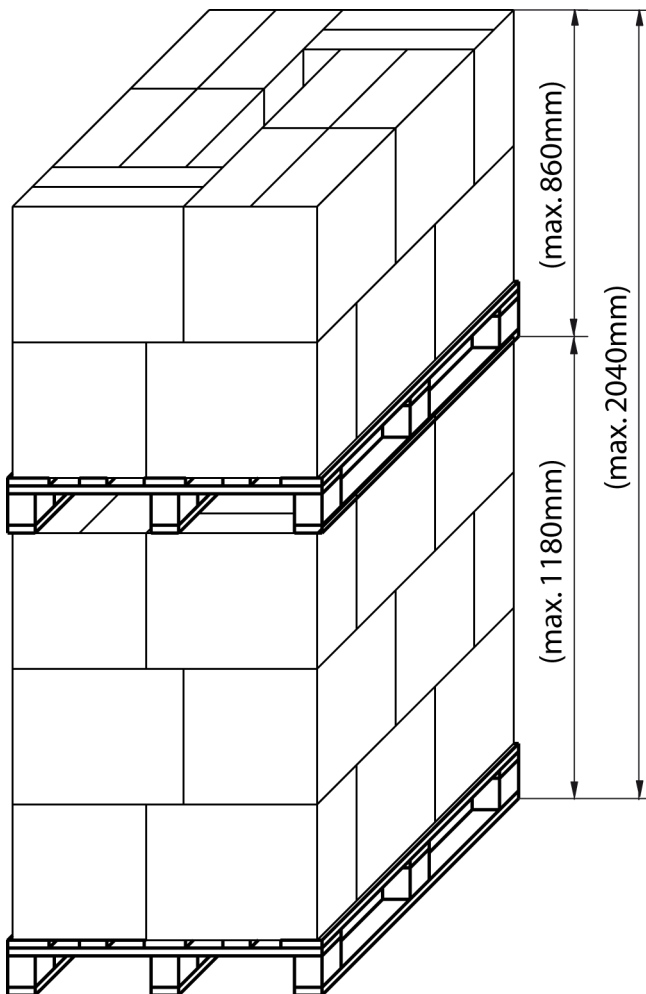
4.2.1 Aussenabmessungen / Outer dimensions: 433mm x 338mm x 344mm

4.3 Anzahl der Geräte pro Umkarton / amount of units per master carton: 19

4.4 Gewicht pro Stück / weight per unit: 622 g

4.5 Lagertemperatur / storage temperature: -20°C - +70°C / 5 to 95 rel. hum.

4.6 Verpackungsvorschriften / packaging specification:



### Master Packing

Notes:

- 1) 19 pcs per carton
- 2) 6 cartons per layer
- 3) 3 layers on 1st pallet + 2 layers on 2nd pallet
- 4) 2 pallets stacked one over another
- 5) total 570 pcs per stack

22 pallets (11 stacks)  
= 6270 pcs  
= 1 20 foot container

48 pallets (24 stacks)  
= 13680 pcs  
= 1 40 foot container

Weight per stack ca. 385kg

## **5 Allgemeine Prüfbedingungen / General test conditions:**

- 5.1** In einem Bereich der Umgebungstemperatur von 0°C bis +40°C bei 90% relativer Luftfeuchte, keine Betauung, muss die einwandfreie Funktion des Gerätes gewährleistet sein.

Within an ambient temperature range from 0°C to +40°C at 90% relative humidity, no condensation, the faultless function of the unit must be guaranteed.

## 6 Elektrische Prüfbedingungen / electrical tests:

6.1 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.

### 6.2 Eingangsdaten / Input data:

- |       |   |  |
|-------|---|--|
| 6.2.1 | Nenneingangsspannung<br>Nominal input voltage                                 | : 100-240V AC ± 10%<br>: 100-240V AC ± 10%                 |
| 6.2.2 | Nenneingangsfrequenz<br>Nominal input frequency                               | : 50-60Hz ±5%<br>: 50-60Hz ±5%                             |
| 6.2.3 | Nenneingangsstrom<br>Nominal input current                                    | : 2 - 0,7Arms @ bei Maxlast<br>: 2 - 0,7Arms @ max load    |
| 6.2.4 | Leerlaufleistungsaufnahme bei $U_E$<br>Stand-by power consumption at $U_{In}$ | : 115V AC, 230V AC : ≤ 0.5W<br>: 115V AC, 230V AC : ≤ 0.5W |
| 6.2.5 | Power Factor<br>Leistungsfaktor   | : >0.97<br>: >0.97   |
| 6.2.6 | Inrush current  | : less than 37A at 230VAC cold start.                      |

### 6.3 Ausgangsdaten / Output data

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

- |       |  |  |  |
|-------|--|--|--|
| 6.3.1 | Ausgangsspannung:<br>Nominal output voltage: | $U_A$ : 24V DC +5% / -5%<br>$U_{out}$ : 24V DC +5% / -5% | $U_{Br}$ : ≤ 240mVss<br>$U_{Br}$ : ≤ 240mVpp |
| 6.3.2 | Nennausgangsstrom<br>Nominal output current  | : $I_A$ : 6250mA<br>: $I_{out}$ : 6250mA                 |  |

### 6.4 Efficiency

Average efficiency 90%@115VAC, 92%@230VAC.

### 6.5 Start-up Delay

The start-up delay time may less than 1.5S.

### 6.6 Hold up time

The hold up time should larger than 20ms at 115/230VAC.

### 6.7 Over Voltage Protect

110%~135% of rated output voltage.

### 6.8 Over load protection

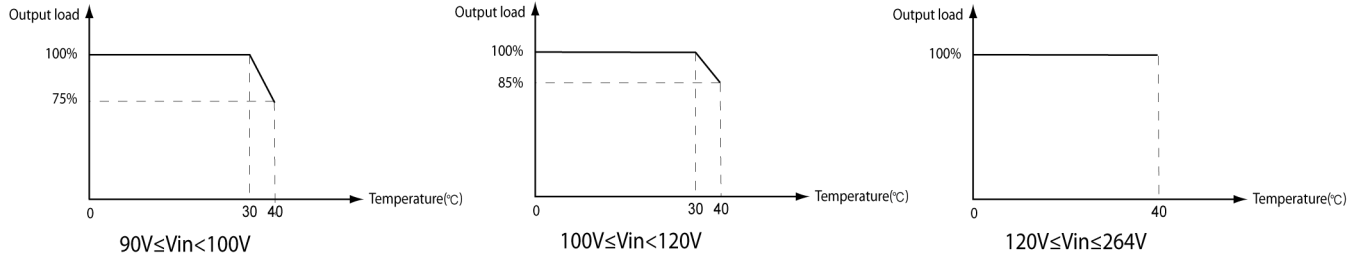
110%~150% of rated load.

### 6.9 Reliability Specification

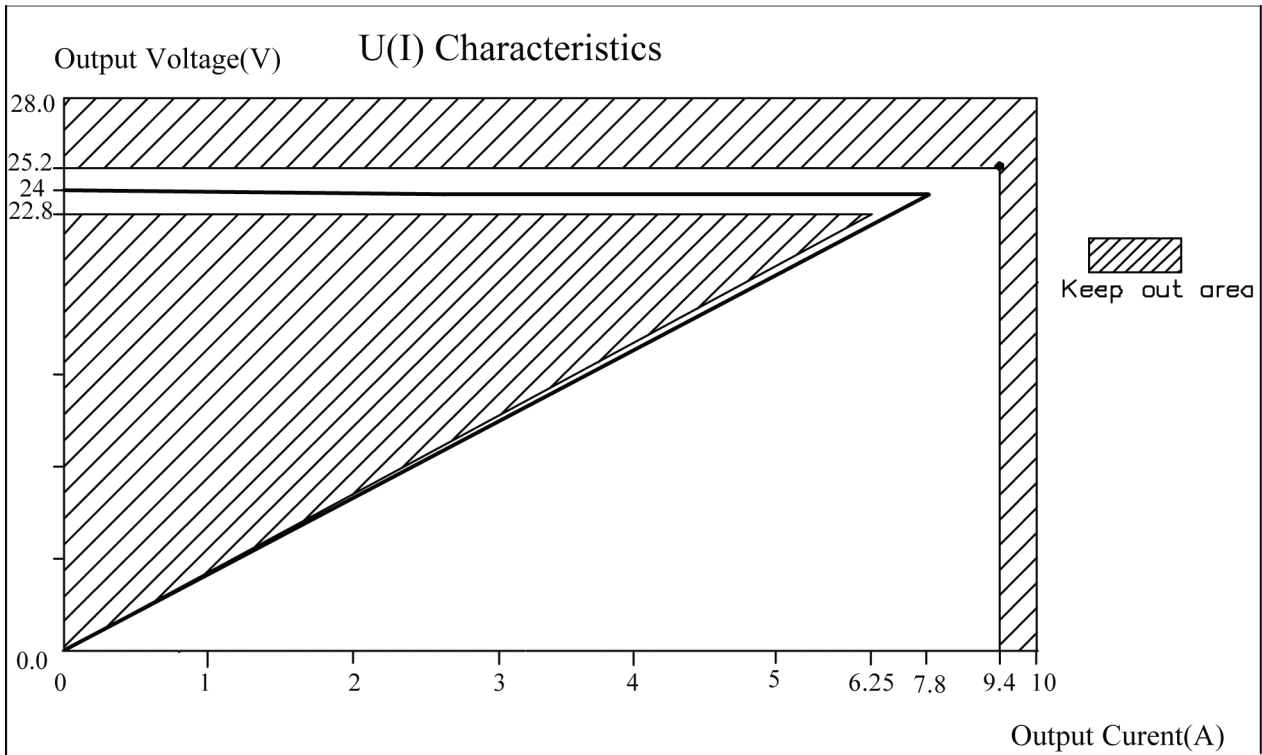
Calculated MTBF shall exceed 200,000 hours at full load and 25°C Ambient in accordance with MIL-STD-HDBK-217.

**6.10 Ouput derating**

**Output derating**



**6.11 Ausgangskennlinie / Output characteristic:**





## 7 Sicherheitsanleitung / Safety details:

Sicherheitsaufbau nach / Safety-standard: IEC60601-1, ES60601-1  
 acc. to

Schutzklasse / Protection class : I

Trennung (prim.-sek.) : Galvanisch durch Wandler

Separation (prim.-sec.) : Galvanic by transformer

Kriech- und Luftstrecken / Creepage distance and clearance :  $\geq$  Kr : 8mm, Lu : 5mm ; Cr : 8mm, Cl : 5mm

Ableitstrom : I Ableit  $\leq$  100 $\mu$ A  
 Gemessen nach EN60601-1 siehe [www.friwo.de](http://www.friwo.de)

Leakage current : I leak  $\leq$  100 $\mu$ A  
 According to EN60601-1 see [www.friwo.de](http://www.friwo.de)

Hochspannungstest / High-voltage test :  $\geq$  4kVac

Anwendungsbereich : Medizinische Anwendungen

Range of application : Medical applications

Umgebungstemperatur / Ambient temperature range : 0°C bis / to +40°C

## 8 CE-Konformitätserklärung / Declaration of Conformity (h)

Wir, der Hersteller, erklären hiermit, dass das Produkt: /  
*We, the manufacturer, hereby confirm, that the product:*

Gerätetyp / Type: DT150-24 MOPP

Artikel-Nr. / Part-No.: 1893142

Zeichnungs-Nr. / Drawing-No.: 15.3481.500-00

weitere Merkmale /  
*additional information:*

mit der beiliegenden Beschreibung die Anforderungen der Niederspannungsrichtlinie 2014/35/EU, der EMV-Richtlinie 2014/30/EU und Öko-Design Richtlinie 2009/125/EG erfüllt.

Hiermit bestätigen wir, dass unsere Produkte, unabhängig von der Produktionsstätte, RoHS- konform produziert werden und die Anforderungen der EU Richtlinie 2011/65/EU erfüllen.

*with the enclosed description fulfils the requirements of the Low Voltage Directive 2014/35/EU, the regulations of the EMC Directive 2014/30/EU and the eco design Directive 2009/125/EC.*

*Hereby, we certify that our products, regardless of the production location, RoHS compliant and fulfill the directive 2011/65/EU.*

Das Gerät entspricht der / *The unit corresponds to:*

a) Niederspannungsrichtlinie /  
*Low Voltage Directive*

EN60601-1 Ed.3 12/2013

b) EMV-Richtlinie /  
*EMC Directive*

EN 60601-1-2 12/2007

c) Öko Design /  
*ECO Design*

Not applicable

Ausstelldatum / *Date of issue:* 02.09.2016



*A. Wegener*

Firmenstempel / Company stamp

Armin Wegener  
 Vice President Research & Development

## 9 Links & Miscellaneous

EMC-specification

9.1 Noise-suppressed: acc. to EN55024 ,55022/B and FCC part 15B.

Suggest that the length of output wire is not in excess of 0.5m.

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

9.3 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

9.4 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

9.5 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

9.6 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

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

Test level	Assessment criteria
3A/m	A

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

Test acc. to IEC61000-4-11

Test performed at  $U_{in} = 120Vac/230VAC$

Voltage dips

Test level % $U_N$	Voltage dips and short interruptions	duration time of voltage dips (in halfsine)	Test result Uin 120Vac	Test result Uin 230Vac
<5	>95	0.5	B	B
		(5s)	B	B
40	60	5	B	B
70	30	25	B	B

9.9 Assessment criteria

a. Agreed operational behaviour within the specified limits.

b. Time limited functional diminishment of malfunction during the tests is permitted.The function is self-reactivated by the unit following completion of the tests.

c. Malfunction is permitted.The function can be reactivated either by reconnection to the mains or by operator intervention.