

FRIWO®

FWGB

FWFE

Specifications

for **FRIWO GMBH**

230Vac/50Hz 12Vdc/1000mA

Page 1 of 3

Typ: EI 48

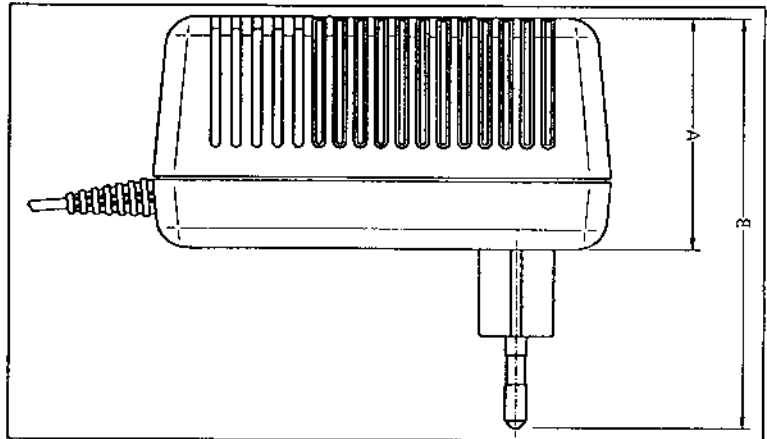
EDV No.: 1883469

REF. No. :

848-00228-300

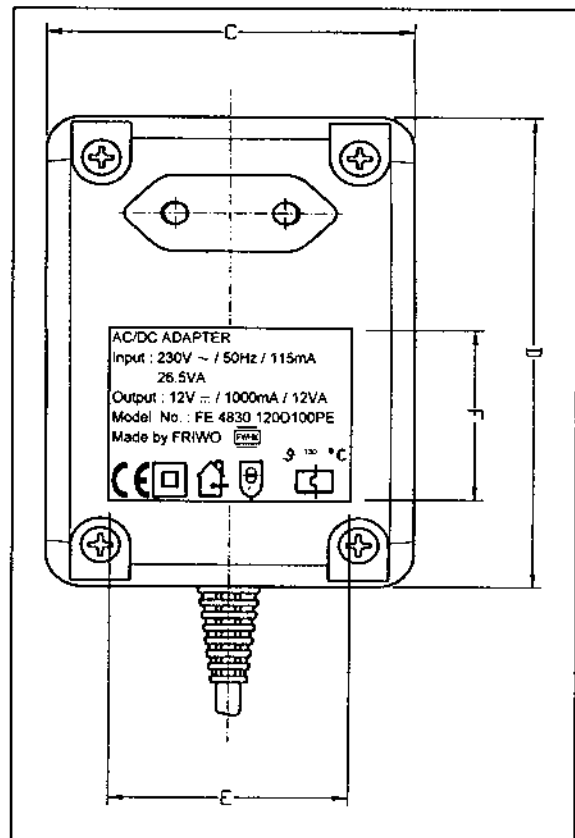
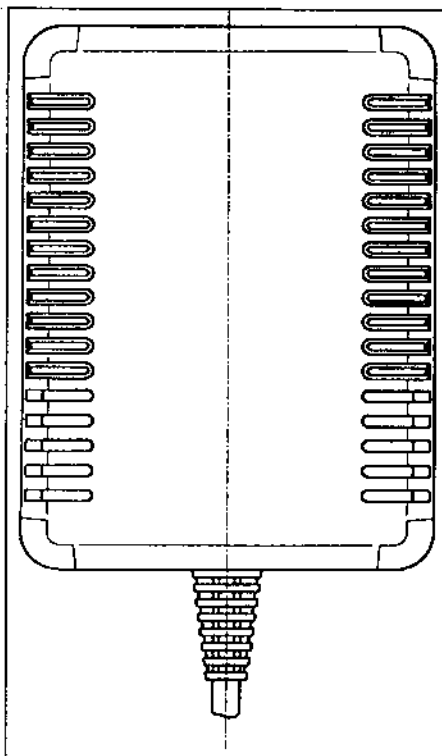
P/N: 2J.0333.III-00

Material : *ABS/PC*
 Colour : black
 Housing : 48/630 **EURO.**
 Output Lead : 10.5567.003-XX



All Dimensions in mm

| A | B | C | D | E | F |
|----|------|------|----|----|----|
| 48 | 85.5 | 61.5 | 88 | 40 | 32 |



Bottom Inscription : 820-01394-999

| | | |
|------------|--------------|-----------|
| Author : | <i>David</i> | 22-3-2002 |
| Checked : | <i>John</i> | 29/4/02 |
| Approved : | <i>J.W.</i> | 29/4/02 |
| | Name | Date |

| index | Modi. | Name | Date |
|-------|-------|------|------|
| | | | |

1.0 General test conditions

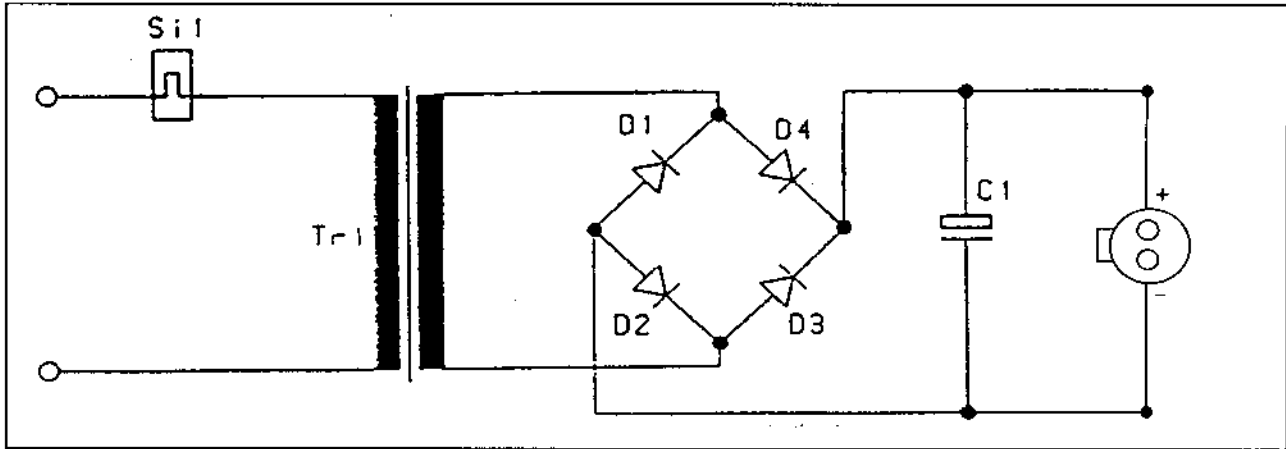
- 1.1 Operating temperature : 0 deg. C to +40 deg. C
- 1.2 Storage temperature : -40 deg. C to +70 deg. C
- 1.3 Input data : 230Vac, 50Hz, 115mA, 26.5VA
- 1.4 High voltage test : Input to Output 4.5KVac / 50Hz / 1s
- 1.5 Thermal protection : Thermal fuse operate at primary winding temperature of 130 deg. C
- 1.6 Transformer type : EI 48
- 1.7 Power supply : Output values at ambient temperature of 25°C with non reactive load after 2 minutes of operation
- 1.8 Comply with EN61558

| Input : UE (V~) | Output 1: | | | Output 2: | | | Output 3: | | |
|-----------------------|------------------|--------------|----------------|------------------|--------------|----------------|------------------|--------------|----------------|
| | Charact. curve : | | | Charact. curve : | | | Charact. curve : | | |
| | IA (mA) | UA (V...) | VBr (mVeff) | IA (mA) | UA (V...) | VBr (mVeff) | IA (mA) | UA (V...) | VBr (mVeff) |
| 230 | 0 | ≤ 18 | | | | | | | |
| 230 | 1000 | 12±10% | ≤ 700 | | | | | | |
| | | | | | | | | | |

| | | |
|------------|--------------------|-----------|
| Author : | <i>David</i> | 22-3-2002 |
| Checked : | <i>[Signature]</i> | 29/4/02 |
| Approved : | <i>[Signature]</i> | 27.4.2002 |
| | Name | Date |

| | | | |
|-------|-------|------|------|
| index | Modi. | Name | Date |
| | | | |
| | | | |

Circuit Diagram



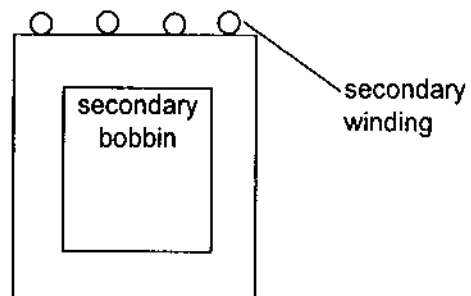
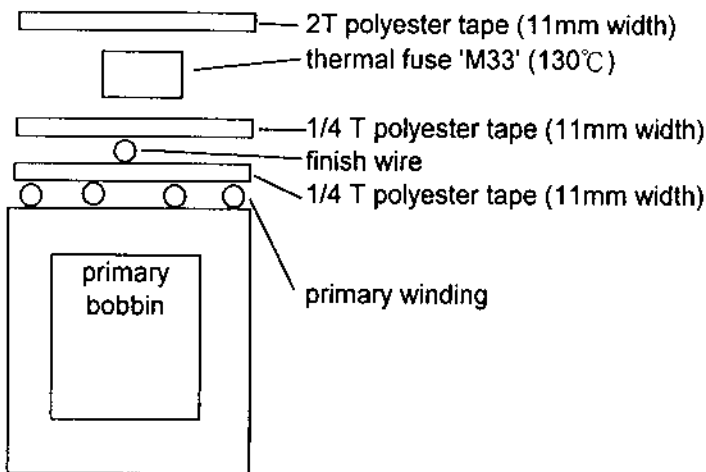
| | | | | | | |
|-------|-------|------|------|------------|-----------------|-----------|
| | | | | Author : | <i>David</i> | 22-3-2002 |
| | | | | Checked : | <i>F. H. C.</i> | 29/4/02 |
| | | | | Approved : | <i>S. L. K.</i> | 29.4.2002 |
| index | Modi. | Name | Date | | Name | Date |

Transformer Specification

- 2.1 Primary Winding : 1462T wire gauge 0.16mm diameter
- 2.2 Secondary Winding : pin 6 to pin 3 : 80T wire gauge 0.67mm diameter
- 2.3 Core Material : H14 ANNEALED

Primary

Secondary



| | | |
|------------|--------|-----------|
| Author : | David | 22-3-2002 |
| Checked : | Yellac | 29/4/02 |
| Approved : | J. C. | 28/4/2002 |
| | Name | Date |

| | | | |
|-------|-------|------|------|
| index | Modi. | Name | Date |
| | | | |
| | | | |
| | | | |

Customer: **FRIWO GMBH**
 EDV: **1833467**
 Ref.No.: **848-00228-3cc**

Input **230 Vac / 50 Hz**
 Output **12 Vdc / 1000 mA**

Sample Submission Form

| INPUT | SPEC. | LIMIT | Sample 1 to Sample 8 | | | | | | | | Hot Test Sample |
|----------------------------------|------------------------|--------------------------|---|-------|-------|-------|-------|-------|-------|-------|--------------------|
| | | | O/P | O/P | O/P | O/P | O/P | O/P | O/P | O/P | |
| 20 Vac | O/P Voltage(Full Load) | Vdc/1000 mA | 10.20 | 10.24 | 10.33 | 10.24 | 10.18 | 10.24 | 10.21 | 10.23 | 10.23 |
| | Ripple Voltage | mVac(or mV-p-p) max. | 5.69 | 5.62 | 5.60 | 5.66 | 5.63 | 5.66 | 5.69 | 5.67 | 5.63 |
| | O/P Voltage(No Load) | Vdc max./0mA | 14.95 | 14.82 | 14.81 | 14.72 | 14.81 | 14.81 | 14.81 | 14.78 | 15.08 |
| | I/P Current(No Load) | mA max. | 19.05 | 15.05 | 20.75 | 16.61 | 20.75 | 18.99 | 20.75 | 28.95 | 15.50 |
| 50 Hz | I/P Current(Full Load) | mA max. | 92.23 | 91.93 | 92.56 | 92.06 | 92.01 | 92.01 | 92.01 | 92.01 | 92.23 |
| | I/P Power(No Load) | W max. | 1.0 | 0.9 | 1.0 | 0.9 | 1.0 | 0.9 | 1.0 | 1.1 | 1.2 |
| | I/P Power(Full Load) | W max. | 16.2 | 16.2 | 16.2 | 16.3 | 16.3 | 16.3 | 16.3 | 16.3 | 16.2 |
| | O/P Voltage(Full Load) | 12 ± 10 %Vdc/1000 mA | 11.88 | 11.86 | 11.94 | 11.95 | 11.89 | 11.89 | 11.89 | 11.93 | 11.62 |
| 230 Vac | Ripple Voltage | 700 mVac(or mV-p-p) max. | 5.55 | 5.89 | 5.66 | 5.66 | 5.70 | 5.66 | 5.66 | 5.69 | 5.14 |
| | O/P Voltage(No Load) | 18 Vdc max./0mA | 16.66 | 16.55 | 16.63 | 16.73 | 16.57 | 16.56 | 16.57 | 16.78 | 16.80 |
| | I/P Current(No Load) | mA max. | 31.29 | 25.07 | 36.04 | 26.78 | 33.40 | 26.02 | 33.40 | 46.88 | 26.57 |
| | I/P Current(Full Load) | mA max. | 94.63 | 97.23 | 94.64 | 94.56 | 94.57 | 94.51 | 94.57 | 94.80 | 93.23 |
| 50 Hz | I/P Power(No Load) | W max. | 1.4 | 1.3 | 1.4 | 1.2 | 1.4 | 1.4 | 1.5 | 1.6 | 1.6 |
| | I/P Power(Full Load) | W max. | 18.3 | 18.6 | 18.3 | 18.1 | 18.2 | 18.2 | 18.3 | 18.3 | 18.2 |
| | O/P Voltage(Full Load) | Vdc/1000 mA | 13.53 | 13.40 | 13.61 | 13.61 | 13.47 | 13.51 | 13.51 | 13.59 | 13.15 |
| | Ripple Voltage | mVac(or mV-p-p) max. | 5.68 | 5.85 | 5.77 | 5.83 | 5.81 | 5.87 | 5.81 | 5.78 | 5.23 |
| 144 Vac | O/P Voltage(No Load) | Vdc max./0mA | 18.37 | 18.44 | 18.34 | 18.34 | 18.34 | 18.34 | 18.34 | 18.42 | 18.56 |
| | I/P Current(No Load) | mA max. | 74.67 | 73.55 | 79.84 | 71.96 | 76.69 | 76.69 | 76.69 | 81.67 | 65.34 |
| | I/P Current(Full Load) | mA max. | 106.8 | 107.0 | 103.1 | 103.1 | 107.5 | 107.5 | 107.5 | 103.8 | 100.9 |
| | I/P Power(No Load) | W max. | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.7 | 2.7 |
| Hi-pot Test | I/P Power(Full Load) | W max. | 20.6 | 20.5 | 20.6 | 20.5 | 20.7 | 20.9 | 20.9 | 21.0 | 20.6 |
| | Input to output | 4.5 kV/ 50 Hz/ 1 s | OK | OK | OK | OK | OK | OK | OK | OK | |
| | O/P to O/P | kV/ Hz/ s | OK | OK | OK | OK | OK | OK | OK | OK | |
| | T _{AMBIENT} | °C | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Temp. Rise | WORKING TIME | 3 Hours | OK | OK | OK | OK | OK | OK | OK | OK | |
| | ΔT PRIMARY WINDING | ΔT PRIMARY WINDING | OK | OK | OK | OK | OK | OK | OK | OK | |
| ΔT (234.5+T _{AMBIENT}) | | | R ₂ -R ₁ / R ₁ | | | | | | | | ΔT PRIMARY WINDING |

Approval by customer: _____ Date: _____

Signature: _____ Date: _____

Checked By: **FRIWO FAR EAST LTD.** Date: **2002-04-23**

Approved: *[Signature]* Date: **2002-04-23**

Form No.: **STD.-F-027** Rev.: **B**

Unit tested at input voltage 207Vac,230Vac & 253Vac and the output load from 0mA to short circuit

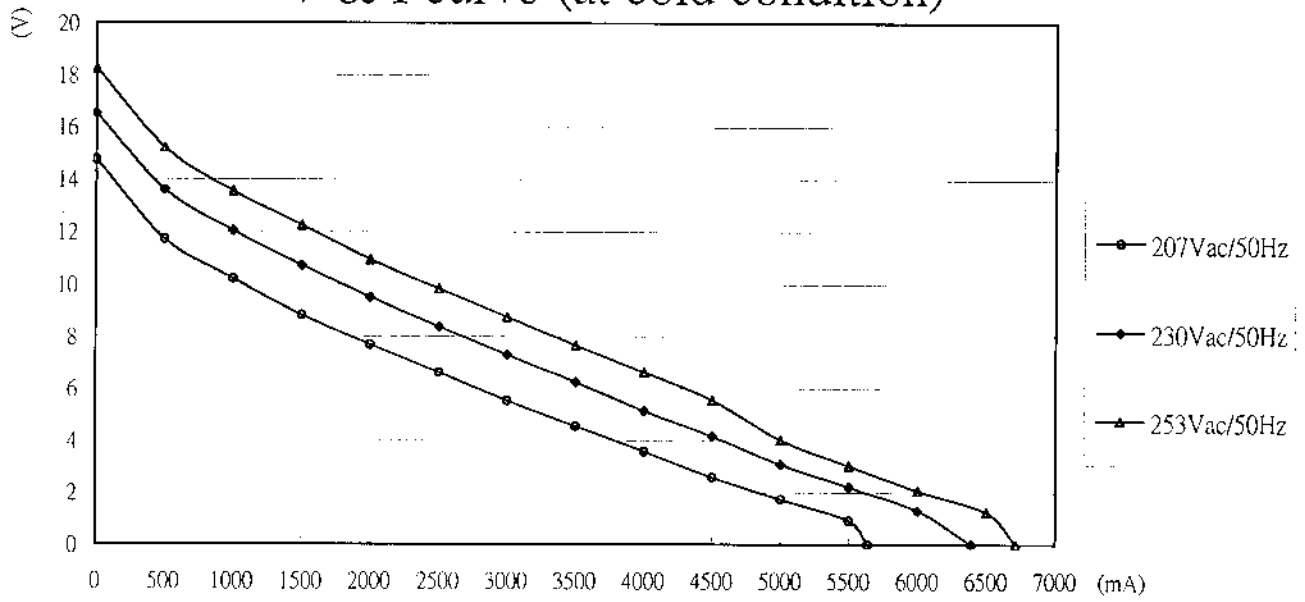
1, Unit at cold condition

| 207Vac/50Hz O/P current (mA) | 207Vac/50Hz O/P voltage (Vdc) | 230Vac/50Hz O/P current (mA) | 230Vac/50Hz O/P voltage (Vdc) | 253Vac/50Hz O/P current (mA) | 253Vac/50Hz O/P voltage (Vdc) |
|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|
| 0 | 14.75 | 0 | 16.51 | 0 | 18.26 |
| 500 | 11.72 | 500 | 13.59 | 500 | 15.21 |
| 1000 | 10.22 | 1000 | 12.05 | 1000 | 13.54 |
| 1500 | 8.84 | 1500 | 10.73 | 1500 | 12.25 |
| 2000 | 7.70 | 2000 | 9.52 | 2000 | 10.94 |
| 2500 | 6.63 | 2500 | 8.38 | 2500 | 9.84 |
| 3000 | 5.54 | 3000 | 7.31 | 3000 | 8.76 |
| 3500 | 4.55 | 3500 | 6.26 | 3500 | 7.67 |
| 4000 | 3.59 | 4000 | 5.15 | 4000 | 6.64 |
| 4500 | 2.59 | 4500 | 4.17 | 4500 | 5.57 |
| 5000 | 1.74 | 5000 | 3.09 | 5000 | 4.03 |
| 5500 | 0.92 | 5500 | 2.22 | 5500 | 3.04 |
| 5635 | 0 | 6000 | 1.31 | 6000 | 2.08 |
| | | 6390 | 0 | 6500 | 1.25 |
| | | | | 6713 | 0 |

2, unit at warm condition

| 207Vac/50Hz O/P current (mA) | 207Vac/50Hz O/P voltage (Vdc) | 230Vac/50Hz O/P current (mA) | 230Vac/50Hz O/P voltage (Vdc) | 253Vac/50Hz O/P current (mA) | 253Vac/50Hz O/P voltage (Vdc) |
|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|
| 0 | 15.13 | 0 | 16.93 | 0 | 18.56 |
| 500 | 11.63 | 500 | 13.21 | 500 | 14.95 |
| 1000 | 9.93 | 1000 | 11.29 | 1000 | 13.10 |
| 1500 | 8.42 | 1500 | 9.73 | 1500 | 11.59 |
| 2000 | 7.08 | 2000 | 8.38 | 2000 | 10.12 |
| 2500 | 5.94 | 2500 | 7.21 | 2500 | 8.82 |
| 3000 | 4.63 | 3000 | 6.04 | 3000 | 7.57 |
| 3500 | 3.58 | 3500 | 4.93 | 3500 | 6.37 |
| 4000 | 2.48 | 4000 | 3.69 | 4000 | 5.00 |
| 4500 | 1.44 | 4500 | 2.82 | 4500 | 3.65 |
| 4955 | 0 | 5000 | 1.66 | 5000 | 2.40 |
| | | 5492 | 0 | 5500 | 1.25 |
| | | | | 5746 | 0 |

V & I curve (at cold condition)



V & I curve (at warm condition)

