



SPECIFICATION FOR APPROVAL

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# KSA-36J-120300VE-1

AC/DC ADAPTOR

Manufacturer Part No.: KS251475

**Customer Name** KTEC

**Customer Part NO.** \_\_\_\_\_

## Project Modify List

[illegible]

## Manufacturer

| SALES | QE  | APPROVED BY | MADE BY |
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**CHECKED BY**

**TESTED BY**

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# AC/DC ADAPTOR

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## 1. INPUT REQUIREMENTS

### 1.1 Highlight & Features

- Simple design philosophy.
- MTBF: The MTBF shall be at least 300,000 hours at 25°C, full load, 230Vac/50Hz input, following SR-332 issue03(2011).
- Electrolytic capacitor life time : The life time of Electrolytic Capacitor should be greater than 3 years under 230Vac/50Hz input @35°C ambient condition with 90% load.
- Continuous operational lifetime >7 years at 25°C ambient with 230Vac full load.
- DC output voltage must be Safe Extra Low Voltage (SELV) & Limited Power as defined by IEC62368-1.
- Cooling: natural convection.
- No Y Cap.

### 1.2 General Description

This specification defines the performance characteristics for a class II adapter, single-phase 36.0 watts. Single output level power supply.

### 1.3 Chemical Substance Control Laws

PAHS, 6P, NP, REACH, ROHS, NOP, HF, SCIP FREE

### 1.4 Input Conditions

The supply shall operate over the voltage ranges as follows:

|                                       |                                                            |
|---------------------------------------|------------------------------------------------------------|
| <b>Rated input voltage</b>            | 200-240Vac                                                 |
| <b>Operating range</b>                | 180-264Vac                                                 |
| <b>Rated input frequency</b>          | 50/60Hz +/- 3Hz                                            |
| <b>Rated input current</b>            | 1.0A maximum                                               |
| <b>Power consumption (no-loading)</b> | 0.075W max.@230Vac                                         |
| <b>Primary current protection</b>     | An adequate internal fuse on the AC input line is provided |
| <b>Configuration</b>                  | 2 Conductor                                                |

### 1.5 Ac inrush current

No damage shall be occurred and the input fuse shall not be blown up nominal input voltage full load 25°C cold start.

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## 2. OUTPUT REQUIREMENTS

|      |                           |                                                                                                                                                                                                                                                             |
|------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.1  | Nominal DC output voltage | +12.0V                                                                                                                                                                                                                                                      |
| 2.2  | Minimum load current      | 0.0A                                                                                                                                                                                                                                                        |
| 2.3  | Rating load current       | 3.0A                                                                                                                                                                                                                                                        |
| 2.4  | Peak load current         | /                                                                                                                                                                                                                                                           |
| 2.5  | Rating output power       | 36.0W                                                                                                                                                                                                                                                       |
| 2.6  | Line regulation           | The line regulation is less than $\pm 5\%$ while measuring at rated load and $\pm 10\%$ of input voltage changing.                                                                                                                                          |
| 2.7  | Load regulation           | The load regulation for +12.0V is less than $\pm 5\%$ , at measured output load from 10% to 100% rated load.                                                                                                                                                |
| 2.8  | Ripple and noise          | 100mVp-p<br>Add 0.1uF/50V ceramic capacitor and 10uF/50V aluminum electrolytic capacitor across the output terminal. Measured with 20MHz Bandwidth Oscilloscope.                                                                                            |
| 2.9  | Average efficiency        | 90.00% minimum (output current from 100%, 75%, 50%, 25%).<br>80.00% minimum 10% load.<br>No load: $\leq 0.075W$<br>Test conditions: 230V/50Hz.<br>Test procedures: EN 50563:2011 & EN 50564:2011<br>Meet ErP VI & COC V5 Tier 2<br>Regulation (EU)2019/1782 |
| 2.10 | Turn on delay time        | 3000ms maximum at nominal input AC voltage and full load.                                                                                                                                                                                                   |
| 2.11 | Rise time                 | The supply shall have a start-up rise time of less than 50ms to rise to within regulation limits for all DC outputs.                                                                                                                                        |
| 2.12 | Hold up time              | 10ms minimum at 200Vac and full load.                                                                                                                                                                                                                       |
| 2.13 | Output over-shoot         | Less than 10% of nominal voltage value.                                                                                                                                                                                                                     |
| 2.14 | LED indication function   | /                                                                                                                                                                                                                                                           |
| 2.15 | Protection function       |                                                                                                                                                                                                                                                             |
|      | Over-voltage protection   | The output voltage shall be clamped by internal protection.                                                                                                                                                                                                 |
|      | Short-circuit protection  | The adapter shall not be damaged by short the DC output to Ground.<br>The adapter shall resume normal operation when a short circuited fault condition is removed.                                                                                          |
|      | Over current protection   | The output shall be protected against the over current conditions.                                                                                                                                                                                          |

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### 3. MECHANICAL

#### 3.1 Enclosure and Layout

|              |             |
|--------------|-------------|
| Plastic case | UL94V-0     |
| Weight       | 167g (Max.) |
| Dimensions   | 89*34*45 mm |
| Color        | Black       |

#### 3.2 Input and Output Configuration

|                  |                                               |
|------------------|-----------------------------------------------|
| Input pin        | EU Pin                                        |
| Output connector | DC plug type: 5.5*2.5*9.5mm (Fork and Groove) |
| Polarity         | Center “+”                                    |
| Cable            | 1.5M VW-1 80°C 300V UL10800 18AWG 3.5Q BLACK  |

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## 4. REGULATORY COMPLIANCE

### 4.1 EMC Specifications

The external power supply must meet all specification in this section. It is required that the external power supply work closely with the customer's equipment in order to get the best EMC solution.

#### 4.1.1 Radiated and Conducted Emission

FCC part 15: Class B for radiated and conducted emissions.

EN55032, Class B for radiated and conducted emissions.

#### 4.1.2 Harmonics

Meet EN61000-3-2

#### 4.1.3 Voltage fluctuations and Flicker

Meet EN61000-3-3

### 4.2 Immunity

#### 4.2.1 Electrostatic Discharge Immunity

EN 55035, EN 61000-4-2

Air Discharge:  $\pm 8\text{kV}$

Contact Discharge:  $\pm 4\text{kV}$

Performance Criteria B

Electrostatic-discharge test by contact or air should be conducted with Static-discharge tester (energy storage capacitance of 150Pf and discharge resistance of 330 $\Omega$ ) 8kV air discharge, 4kV contact discharge.

#### 4.2.2 Radiated Field Immunity

EN 55035, EN 61000-4-3

Frequency Range: 80-1000MHz, still need test singly 1800MHz, 2600MHz, 3500MHz, 5000MHz

Field Strength: 3V/m with 80% amplitude modulation of 1KHz

Performance Criteria A

Radio-frequency electromagnetic field susceptibility test, RS 80-1000MHz, 3V/m, 80%AM(1KHz).

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## 4.2.3 Fast Transient Immunity

EN 55035, EN 61000-4-4

Power line: 1kv

Signal line: 0.5kv

Performance Criteria B

## 4.2.4 Surge Immunity

ITU-T K.21

Differential mode : Line to line:  $\pm 6\text{kv}$

Common mode : Line to earth:  $\pm 6\text{kv}$ (L1-GND;L2-GND;L1/L2-GND)

Surge pulse: 1.2 microseconds / 50 microseconds.

Test number of times: 5 times (cycle: 1 minute)

Lightning surge voltage shall be applied in differential and common mode to AC input lines and cross primary AC input and secondary GND.

## 4.2.5 Conducted Field Immunity

EN 55035, EN 61000-4-6

Frequency Range: 0.15-80MHz(0,15 to 10 MHz,3V; 10 to 30 MHz,3-1V; 30 to 80 MHz,1V)

Field Strength: 3V/m with 80% amplitude modulation of 1KHz

Performance Criteria A

## 4.2.6 Voltage dips/short interruptions

EN 55035, EN 61000-4-11

30% reduction, 0.5 periods, Criteria A,30%

reduction, 25 periods, Criteria B,60%

reduction, 5 periods, Criteria B

50Hz/60Hz

0%U T \* for 0.5per

0%U T \* for 250/300per

70%U T \* for25/30per



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### 4.2.7 Electromagnetic compatibility

EN55035, EN 61000-4-8  
Frequency Range: 50Hz  
Field Strength: 1A/m  
Observation Time: 1 minute  
Inductance Coil: Rectangular type, 1mx1m  
Performance Criteria A

## 4.3 Safety Requirements and Certification

### 4.3.1 Regulatory Standard

The power supply shall comply with the following international regulatory standards:

| For short | Country | Certified Status | Standard         |
|-----------|---------|------------------|------------------|
| CE-EMC    | Europe  | Meet             | EN 55032+EN55035 |
| CE-LVD    | Europe  | Meet             | EN62368-1        |

### 4.3.2 Additional Safety Requirements

- © Dielectric Withstand Voltage, Primary (input AC short)-to-Secondary(output DC short): 3000Vac, 10mA, 1 minute.
- © Insulation Resistance, Input to output: 50MΩ (MIN.) at 500 VDC.
- © Reinforced insulation system, Primary-to-Ground and Primary-to-Secondary.
- © The leakage current shall not exceed 0.25mA.

## 4.4 RoHS directive

This product must comply with: EU Directive 2011/65/EU for Restriction of Hazardous Substance (RoHS)

## 4.5 ESRP regulation

This product must comply with Regulation (EU)2024/1781(ESPR)

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## 5. ENVIRONMENTAL REQUIREMENTS

|             |                    |                          |
|-------------|--------------------|--------------------------|
| Temperature | Operating          | 0°C +45°C                |
|             | Non-Operating      | -20°C +55°C              |
| Humidity    | Operating          | 10%~90% (Non Condensing) |
|             | Non-Operating      | 5%~95% (Non Condensing)  |
| Altitude    | Sea level to 5000m |                          |

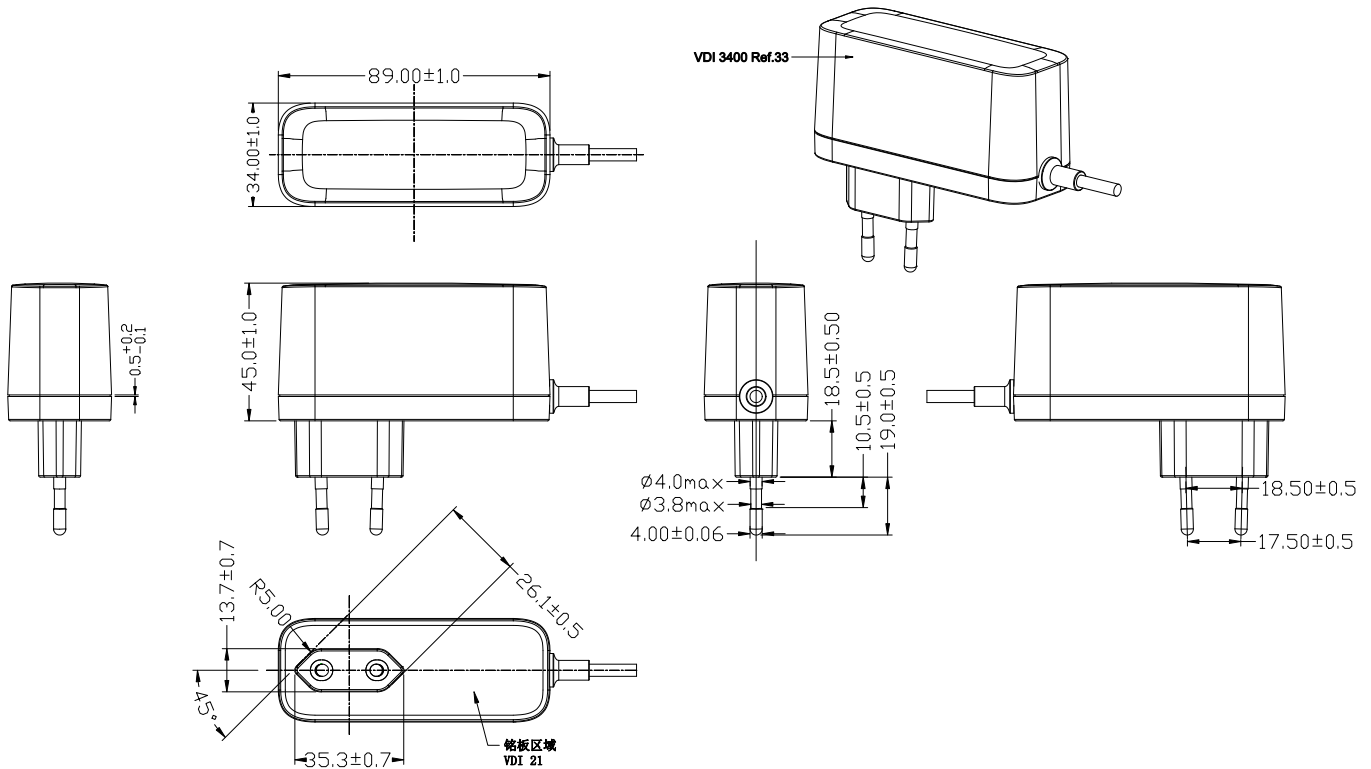
# AC/DC ADAPTOR

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**KTEC**

## 6. APPEARANCE DRAWING: (UNIT: MM)



NOTE: 1. Case cover & chassis material:

PCR 98%      BLACK (NO KTEC)

2. AC PIN MATERIAL: BRASS (NI PLATED)

3. PAHS, 6P, NP, REACH, ROHS, NOP, HF, SCIP FREE

4. Satin finish: nameplate area has VDI 21 very fine texture.

Rest of PSU has texture VDI 3400 Ref.33

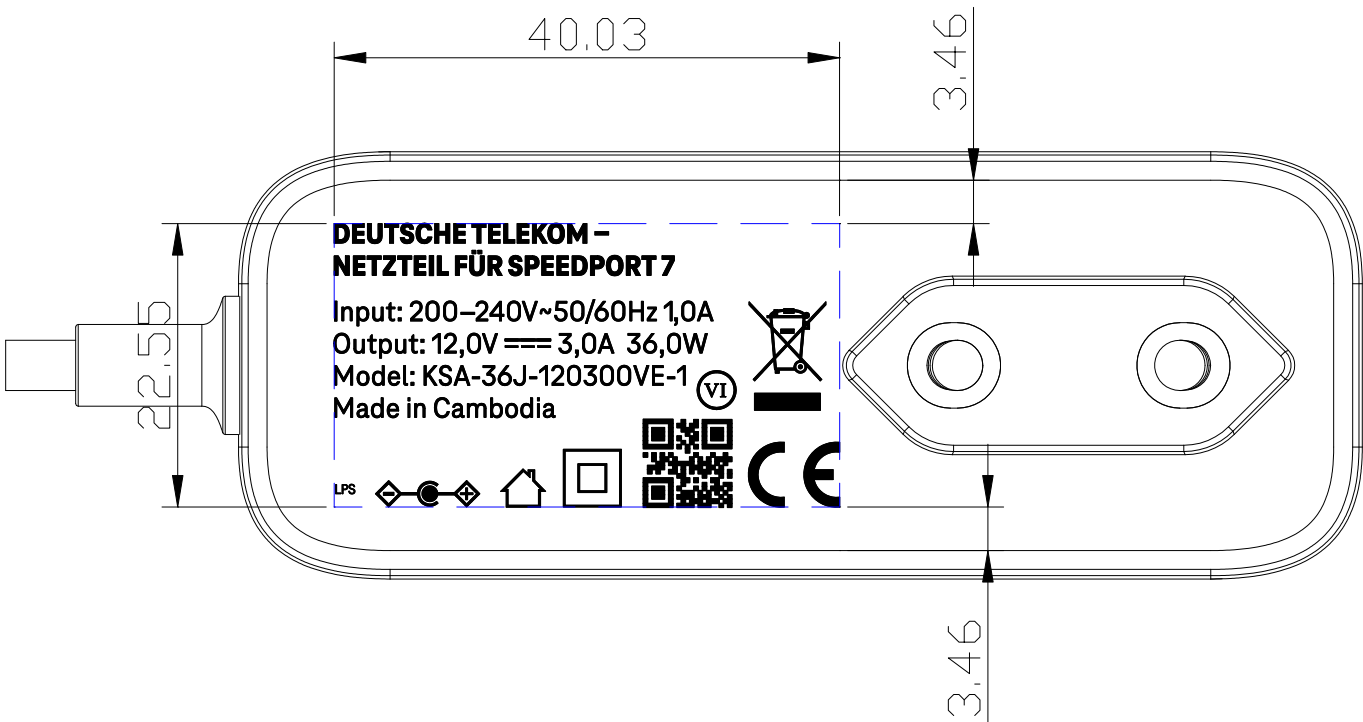
5. Top mold: MSC025002      Bottom mold: MSC025001

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## 7. NAME PLATE



Note: Laser

QR code: 7.0\*7.0mm HXXYY (HXXYY: H=HF XX=WEEK YY=YEAR), According to the actual production date.

Laser Color: Cool Gray 2C

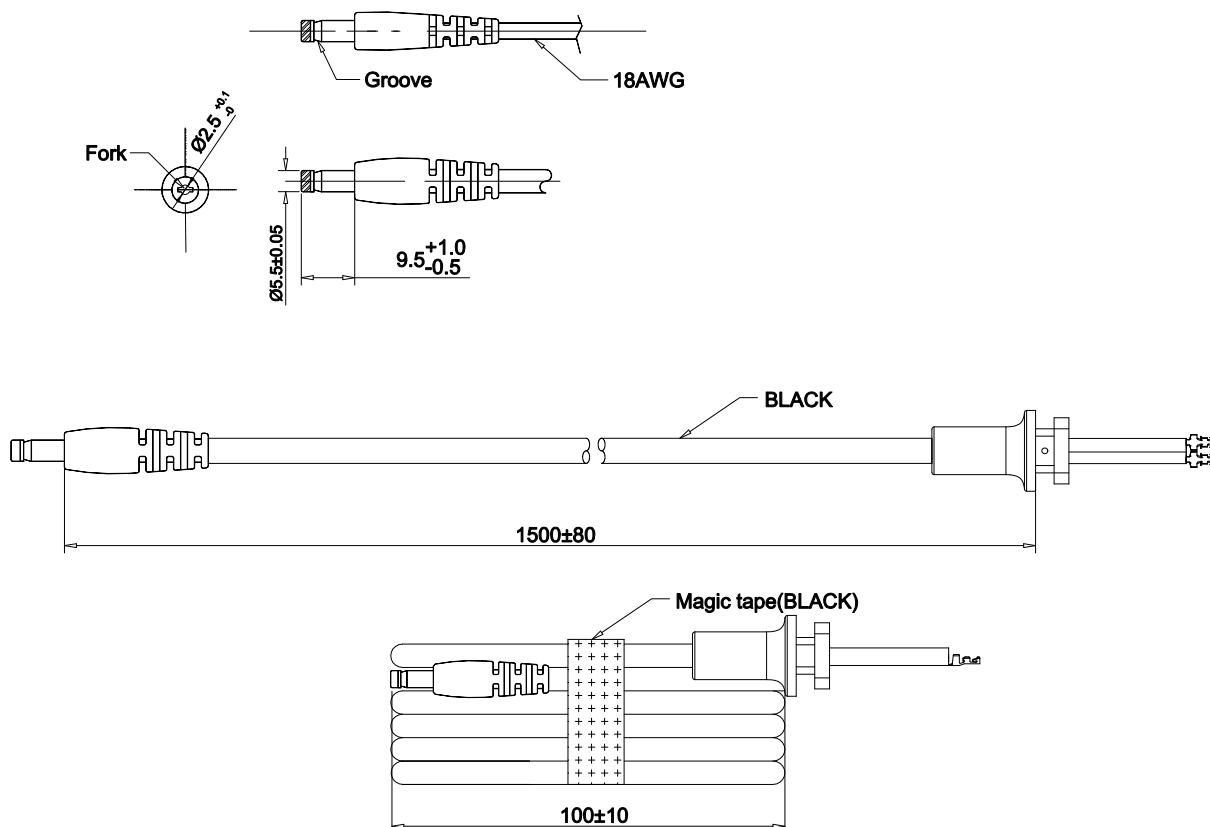
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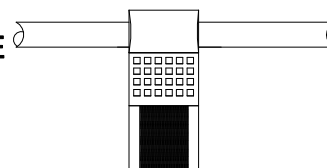
**KTEC**

## 8. DIMENSION OF OUTPUT PLUG & DC CORD (UNIT: MM)

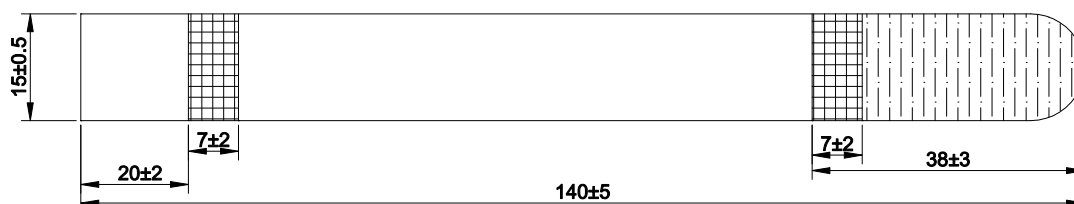


NOTE: (unit:mm)

- 1).WIRE TYPE:VW-1 80°C 300V L=1500mm UL10800 3.5Ø 18AWG BLACK
- 2).THE POLARITY:
- 3).PAHS, 6P, NP, REACH, ROHS, NOP, HF, SCIP FREE
- 4).SR MOLD: ML00516



Magic Tape on the DC cable is moveable



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9. PACKING (UNIT: MM)

