

# AC/DC POWER SUPPLY- 960W

## THREE PHASE DIN RAIL MOUNTING TYPE



Power Supplies

### 5332x SERIES



### MAIN FEATURES:

- 960W Slim Size – 110mm width
- Built-in Active PFC Function
- Regulated Output Range: 24VDC–48VDC
- Input Range: Three-phase 340VAC – 550VAC wide range input
- Current Sharing Function(3+1)
- DC OK Relay Contact
- High Energetic Efficiency: Meets the requirements of Energy Star and EC Code of Conduct
- Operating Altitude:5000 meters
- Safety : Meets All Requirments of UL61010-1, UL61010-2-201,EN/IEC61558-1,EN/IEC61558-2-16, IEC/EN62368-1,UL62368-1,CSA22.2NO.62368-1-14, CE, UKCA
- EMC Emission : conform to EN55032(CISPR 32), EN61204-3, EN/IEC61000-3-2 Class C, EN61000-3-3
- EMC Immunity: conform to EN61000-4-2, EN/IEC61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11
- Over Voltage Category : OVCIII @ IEC/EN61558-1

### DATA SHEET



| Part No. | Power Rating Watts | Output Voltage (VDC) | Rated Output Current (A) | Output Voltage Range-ADJ(Vdc) | Ambient Temp. (°C) | Efficiency Typical | Input Range                                    |
|----------|--------------------|----------------------|--------------------------|-------------------------------|--------------------|--------------------|------------------------------------------------|
| 53323    | 960                | 24                   | 40                       | 24 ~ 28                       | -30°C ~ +70°C      | 94%                | Three-Phase 340 ~ 550VAC<br>Or<br>(480-780VDC) |
| 53324    | 960                | 36                   | 26.6                     | 36 ~ 42                       | -30°C ~ +70°C      | 94%                |                                                |
| 53325    | 960                | 48                   | 20                       | 48 ~ 55                       | -30°C ~ +70°C      | 94%                |                                                |

NOTE : Other output voltage are available upon request.

Please refer to MYRRA's website and catalogue for MYRRA SMPS application notes.

The information contained in this document is subject to change without notice.

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| Model : 960 Watt          |                                | Specifications                                                                                                                                                            |
|---------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AC Input Characteristics  | Rated Input Voltage            | Three-phase 380~500VAC or 540VDC-710VDC<br>(Dual phase operation possible in connecting L1,L3,FG or L2,L3,FG)                                                             |
|                           | Input Voltage Range            | Three-phase 340~550VAC or 480VDC-780VDC<br>(Dual phase operation possible in connecting L1,L3,FG or L2,L3,FG)                                                             |
|                           | AC Input Frequency Range       | 47Hz~63Hz                                                                                                                                                                 |
|                           | Rated AC Input Frequency       | 50/60Hz                                                                                                                                                                   |
|                           | Input Current                  | 2.5A Max.                                                                                                                                                                 |
|                           | Input Inrush Current           | 60A @ cold start                                                                                                                                                          |
|                           | Power Factor                   | >0.88@400Vac input at full load<br>>0.86@500Vac input at full load                                                                                                        |
|                           | Leakage Current                | < 3.5mA/530VAC                                                                                                                                                            |
| DC Output Characteristics | Output Voltage Accuracy        | ±2% (Output Voltage ADJ Range See table)                                                                                                                                  |
|                           | Output Voltage Line Regulation | ± 0.5%                                                                                                                                                                    |
|                           | Output Voltage Load Regulation | ± 1%                                                                                                                                                                      |
|                           | Ripple & Noise                 | Max. 200mVp-p@ Rated AC input, at nominal line<br>(The measuring will be terminated with a 47µF AL E-Cap and a 0.1µF Ceramic-Cap. An oscilloscope set at 20MHz bandwidth) |
|                           | Dynamic Response               | The output voltage shall not exceed ± 10% rated output voltage @ 50% ~ 90 % Load change, 1A/µS, 1KHz 50% duty cycle                                                       |
|                           | Hold Up Time                   | 10mS typ.@ 400VAC, 12mS typ.@500Vac at full load                                                                                                                          |
|                           | Turn On Delay                  | 2S max. @ 340VAC~550VAC input and DC output with full load                                                                                                                |
|                           | Rise Time                      | 110ms max. @ 400VAC , 100ms max.@500Vac at full load                                                                                                                      |
|                           | Overshoot                      | The output voltage shall not exceed +10% rated output voltage @ Power on and 340VAC~550VAC input, and DC with full load                                                   |
|                           | Undershoot                     | The output voltage shall not exceed -10% rated output voltage @ Power off and 340VAC~550VAC input and DC output with full load                                            |

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|                            |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | Efficiency                      | See table (Meets the requirements of Energy Star and the EC Code of Conduct)                                                                                                                                                                                                                                                                                                                                     |
| Protection Characteristics | Over Current Protection         | The power supply shall automatic protection @ 105% ~160% rated output power.<br>Protection type : Constant current limiting, unit will shut down after 3 sec. ,re-power on to recover.<br>No excessive heat, odour, no safety hazard                                                                                                                                                                             |
|                            | Output Short Circuit Protection | The power supply shall withstand a continuous output short without damage in 24 hours; The short may be applied before power on, or after power on; The power supply shall resume normal operation after the short is removed, no excessive heat, odour ,no safety hazard.                                                                                                                                       |
|                            | Over temperature protection     | The power supply is built thermal protection function and can be shut down(hiccup mode) when NTC thermistor's body temperature reach approx.110°C@ power supply operating ambient temperature apprxo.+65°C ±10°C @ at the DC output with full load.<br>The power supply shall auto-recovery normal operation,it is subject to the shut-down is long enough to allow the thermal detection is down to auto reset. |
|                            | Over voltage protection         | Production type: shut down output voltage and re-power on to recover.                                                                                                                                                                                                                                                                                                                                            |
| Current Sharing Function   | Current sharing                 | When the power modules work in parallel, there is an active current sharing circuit inside to ensure that the current between each module remains balanced<br>In parallel operation 4 units is the maximum                                                                                                                                                                                                       |
| DC OK Function             | DC OK Relay Contact Rantings    | 60Vdc/0.3A; 30Vdc/1A; 30Vac/0.5A resistive load                                                                                                                                                                                                                                                                                                                                                                  |
| Environmental              | Operation Temperature           | -30°C~+70°C (Refer to« DERATING GRAPH »)                                                                                                                                                                                                                                                                                                                                                                         |
|                            | Operation Humidity              | 20~95% RH (No Condensing) @ full load                                                                                                                                                                                                                                                                                                                                                                            |
|                            | Storage Temperature             | -40°C~ +85°C (Recommended +5°C~ +35°C)                                                                                                                                                                                                                                                                                                                                                                           |
|                            | Storage Humidity                | 10%~95% (Recommended <75%RH)                                                                                                                                                                                                                                                                                                                                                                                     |
|                            | Cooling Method                  | Ordinary or thermostat                                                                                                                                                                                                                                                                                                                                                                                           |
|                            | Operation Altitude              | 5000 meters<br>The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft)                                                                                                                                                                                                                                             |
|                            | Dielectric Strength             | Input to Output : 3000VAC 5mA, 3 sec.<br>Input to FG: 2000VAC 10mA, 3 sec.<br>Output to FG: 500VAC 10mA, 3 sec<br>Output to DC OK: 500VAC 10mA, 3 sec                                                                                                                                                                                                                                                            |

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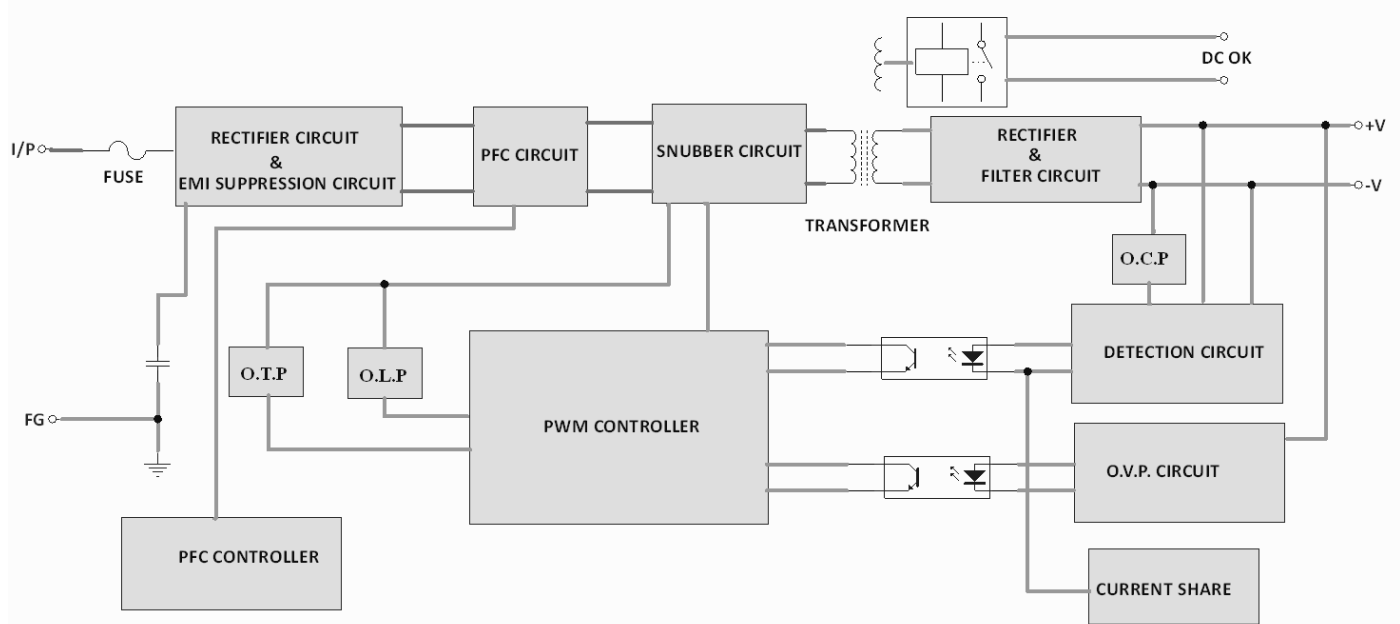
|                           |                                                                         |                                                                                                                                                              |
|---------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety & EMC Requirement  | Insulation Resistance                                                   | 100MΩ max @500Vdc/25°C/70% RH                                                                                                                                |
|                           | Radiation                                                               | Meets EN55032(CISPR32), EN/IEC61204-3, Class B. under 3dB margin                                                                                             |
|                           | Conduction                                                              | Meets EN55032(CISPR32), EN/IEC61204-3, Class B. under 3dB margin                                                                                             |
|                           | Harmonic Current Distance                                               | Meets EN/IEC61000-3-2, Class C                                                                                                                               |
|                           | Voltage Fluctuation and Flicker                                         | Meets EN61000-3-3                                                                                                                                            |
|                           | Electrostatic Discharge                                                 | Meets EN61000-4-2<br>Contact Discharge $\pm 8\text{KV}$ , Air Discharges $\pm 15\text{KV}$                                                                   |
|                           | RF Field Strength Susceptibility                                        | Meets EN/IEC61000-4-3                                                                                                                                        |
|                           | Electrical Fast Transient                                               | Meets EN61000-4-4, $\pm 4\text{KV}$                                                                                                                          |
|                           | Lightning Surge                                                         | Meets EN61000-4-5, $\pm 4\text{KV}$ common mode, $\pm 2\text{KV}$ diff.mode                                                                                  |
|                           | Conducted Susceptibility                                                | Meets EN61000-4-6                                                                                                                                            |
| Safety & EMC Requirements | Power Frequency Magnetic Field Susceptibility Test                      | Meeting EN61000-4-8                                                                                                                                          |
|                           | Voltage Dips and interruptions                                          | Meets EN61000-4-11<br>> 95% dip 0.5 periods, 30% dip 25 periods 95% interruptions 250 periods                                                                |
|                           | Safety Standards                                                        | Meets all requirements of :<br>UL61010-1, UL61010-2-201<br>UL62368-1, CSA22.2No.62368-1-14<br>IEC/EN62368-1<br>IEC/EN61558-1<br>IEC/EN61558-2-16<br>CE, UKCA |
| Reliability Requirement   | MTBF                                                                    | >200K Hours @400VAC input at +25deg.C<br>Calculated in accordance with MIL-HDBK-217-F2                                                                       |
|                           | Burn-in-Test                                                            | The unit shall be burned in 2~5hours<br>and DC with full load at and ambient temperature of 30~45 degrees C                                                  |
| Mechanical                | Physical size                                                           | The units dimension is :<br>(L)150*(W)125.5*(H)110mm ( $\pm 1\text{mm}$ )<br>(see appearance drawing)                                                        |
|                           | Net Weight                                                              | Approximately 2450 grams per product unit                                                                                                                    |
| Guarantee                 | This product is in accordance with the European RoHS & REACH directives |                                                                                                                                                              |

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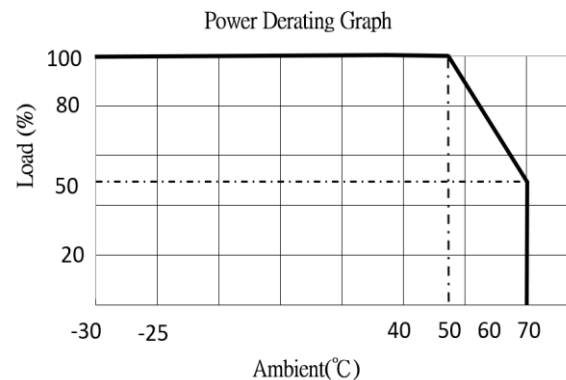
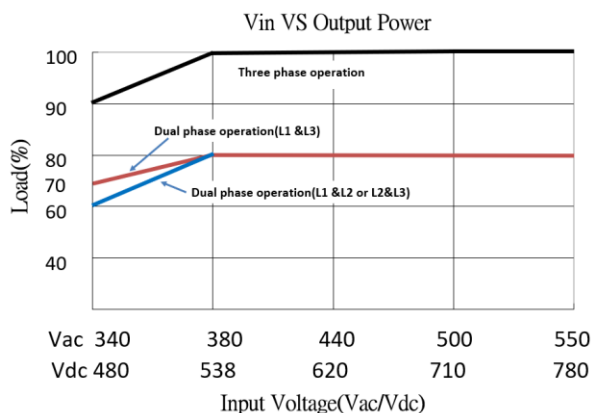


## Power Supplies

## BLOCK DIAGRAM



## DERATING GRAPH



## Current Sharing

The output voltage difference of each single module is less than or equal to 100mV, and a better comprehensive effect of line terminal output voltage and current sharing can be obtained;

The output voltage of each power module will affect the current sharing accuracy. The output voltage of the power module is rated voltage  $\pm 100\text{mV}$ . In practical applications, if the output voltage value needs to be adjusted, the output voltages of all parallel power modules need to be adjusted to the same voltage. The recommended voltage range is: target voltage value  $\pm 100\text{mV}$ .

After the output load of each power module is greater than 50% of the rated load, the current sharing accuracy is required to be  $\pm 5\%$ .

Note:

1. When used in parallel, the number of parallel modules cannot exceed 4.
2. When the power modules work in parallel, there is an active current sharing circuit inside to ensure that the current between each module remains balanced

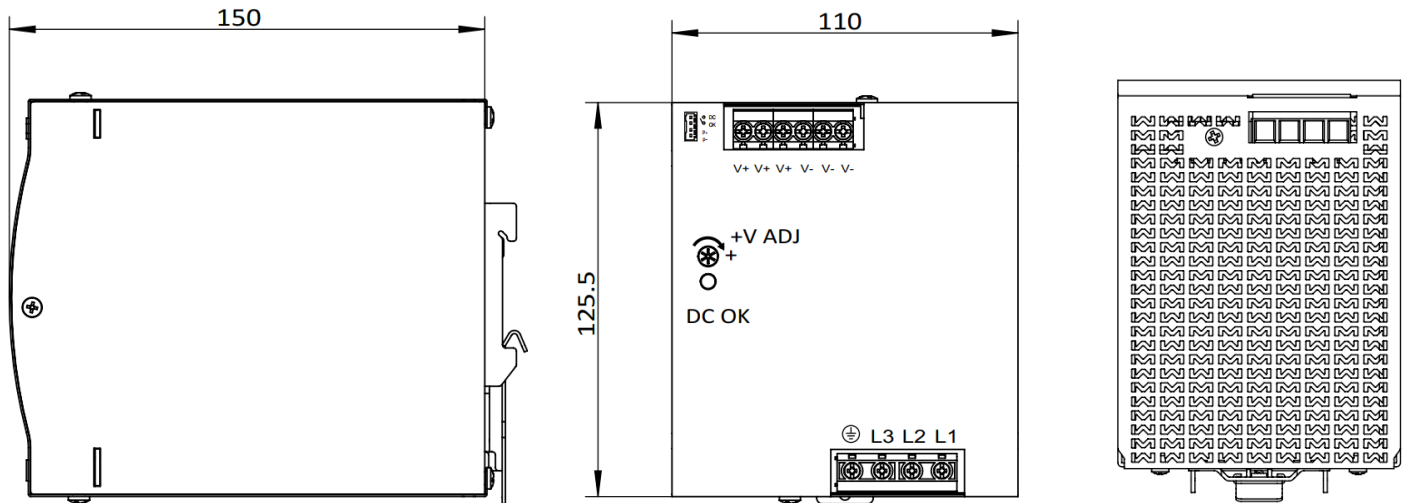
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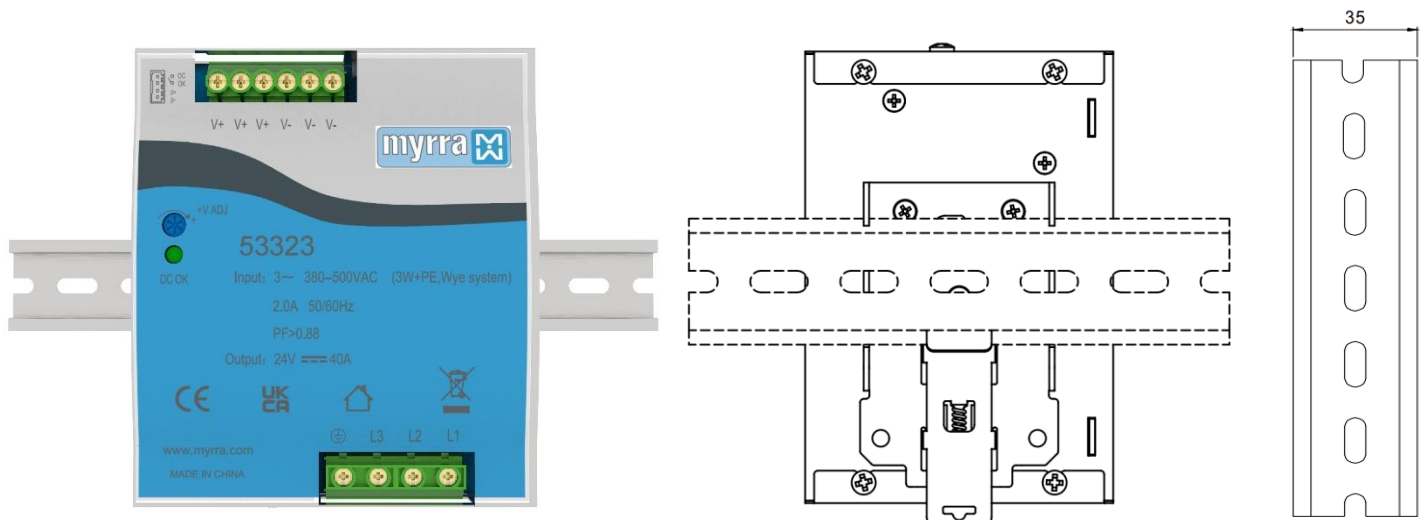


Power Supplies

### DIMENSIONS



### INSTALLATION INSTRUCTION



Admissible Din-Rail: TS35/7.5 or TS35/15, For reference only, not included with unit.