



**DESCRIPTION:**

**240W AC-DC DIN RAIL Power Supply**

The rated output power of TPR/NDR-U240-XS series is 2400W, input voltage range: 90-264VAC, output voltage : 24V, 48V, High reliability, precision, efficiency, ultra-small size, stable output voltage, etc., with short circuit & overload protection, Widely used in telecommunications, industrial control, signal control, instrumentation, data acquisition, New Energy, Security, and other electronic systems.

**FEATURES**

|   |  |                                   |
|---|--|-----------------------------------|
| AC input : 90VAC-264VAC, DC input: 127-370VDC | High reliability, efficiency, 100% full load burn-in test            | Operating temperature : -20℃~70℃  |
| Mounting track: TS-35/7.5 or TS-35/15         | Protection: short circuit, over-load, over-voltage, over-temperature | Mini width: 70mm                  |
| RoHS complaint                                | Altitude up to 6000m   | Built-in current limiting circuit |
| High efficiency up to 88%                     | /  | /                                 |

**SELECTION GUIDE**

| Part Number      | Input Voltage |        |         | Output        |                          |                   | Efficiency @25℃, (Typ) % |                |
|------------------|---------------|--------|---------|---------------|--------------------------|-------------------|--------------------------|----------------|
|                  | (VAC)         |        | (VDC)   | Voltage (VDC) | Pre-set voltage @25℃ (V) | Rated current (A) |                          | Rated power(W) |
|                  | Rated         | Range  | Rated   |               |                          |                   |                          |                |
| TPR/NDR-U240-24S | 220           | 85-264 | 127-370 | 24            | 24.00-24.2               | 10                | 240                      | 87             |
| TPR/NDR-U240-48S | 220           | 85-264 | 127-370 | 48            | 48.0-48.2                | 5                 | 240                      | 88             |

All specifications typical at TA=25℃, nominal input voltage and rated output current unless otherwise specified.

**OUTPUT CHARACTERISTICS**

| Conditions                 | Conditions         | Parameter                           |
|----------------------------|--------------------|-------------------------------------|
| Output voltage regulation  | 24V output voltage | 24-28V                              |
|                            | 48V output voltage | 48-56V                              |
| Rated Output current       | 24V output voltage | 10A at 24V                          |
|                            |                    | 9A at 28V                           |
|                            | 48V output voltage | 5A at 48V                           |
|                            |                    | 4.5A at 56V                         |
| Rated Output power         | 24V output voltage | 240W/24V, 252W/28V                  |
|                            | 48V output voltage | 240W/48V, 252W/56V                  |
| Ripple&Noise 0<Ta≤70℃      | 24V output voltage | ≤120mVp-p                           |
|                            | 48V output voltage | ≤240mVp-p                           |
| Ripple&Noise -20<Ta≤0℃     | 24V output voltage | ≤240mVp-p                           |
|                            | 48V output voltage | ≤480mVp-p                           |
| Capacitive load capacity   | 24V output voltage | 3500uF                              |
|                            | 48V output voltage | 1000uF                              |
| Line regulation @-25~70℃   |                    | ±0.5%                               |
| Load regulation @-25~70℃   |                    | ±1.0%                               |
| Temp. coefficient @-25~70℃ |                    | ±0.03%/℃                            |
| Set-up time @25℃           |                    | ≤2S@ 230Vac                         |
| Hold-up time @25℃          |                    | ≥20mS@(110/230Vac input, Full load) |
| Overshoot&Undershoot       |                    | <5.0%                               |

**INPUT CHARACTERISTICS**

| Conditions                | Parameter      |
|---------------------------|----------------|
| Rated Input voltage range | 100VAC~240 VAC |
| Input voltage range       | 90VAC~264 VAC  |
| Input voltage range       | 127VDC-370VDC  |
| Frequency Range           | 47Hz~63Hz      |

**INPUT CHARACTERISTICS**

|                          |   |
|--------------------------|---|
| Set-up voltage @-25~70°C | <90 VAC , <127VDC                                       |
| Input current @25°C 24V  | <2.5A/230VAC ; <1.1A/300VDC                             |
| Input current @25°C 48V  | <3.5A Max(90VAC~264VAC); <2.5A Max/230VAC; <1.1A/300VDC |
| Inrush current @25°C     | <20A@110 Vac input <60A@230Vac Cold start               |
| Power factors@25°C       | 0.98/110VAC, 0.94/230VAC                                |
| Power factors@25°C       | 0.98/110VAC, 0.96/230VAC                                |

**PROTECTION**

| Conditions                      | Parameter   | Notes                    |
|---------------------------------|---|--------------------------|
| Over-Load (24Voutput)           | 10.3A~13A   | Constant current         |
| Over-Load (48Voutput)           | 5.5A~6.5A   |                          |
| Over-voltage (24Voutput)        | 28~35V  | Shut down, auto recovery |
| Over-voltage (48Voutput)        | 58~63V  |                          |
| Over-temperature                | 100±5°C, detect on heat sink of power transistor; shut down O/P, auto recovery after fault condition removed. |                          |
| Output short circuit protection | Long-term model , auto recovery   |                          |

**ENVIRONMENT CHARACTERISTICS**

| Conditions                 | Parameter   |
|----------------------------|---|
| Operating amb. Temp.&Humi. | -20°C~70°C; 20%~90%RH No condensing 230Vac 50°C~70°C 4.8W/°C derating |
| Storage Temp. & Humi.      | -40°C~85°C; 5%~95%RH No condensing                                    |
| Vibration                  | 10 ~ 500Hz, 2G, 10min./1cycle, each along X,Y, Z axes IEC 60068-2-6   |
| Pulse                      | 20G/11mS pulse ,3 times at each X,Y,Z axes IEC 60068-2-27             |
| Altitude                   | 6000m   |

**SAFETY&EMC STANDARDS @25°C**

| Conditions             | Parameter   |
|------------------------|---|
| Safety Standards       | GB4943/EN60950  |
| Withstand Voltage      | I/P-O/P:3.0KVac/10mA; I/P-FG:1.5KVac/10mA; O/P-FG:0.5KVdc/20mA O/P- DC OK :0.5KVdc/1mA<br>Test time:1min. |
| Isolation resistance   | I/P-O/P: 100M ohms; I/P-FG : 100M ohms; O/P-FG : 100M ohms  |
| Grounding test         | 32A / 1min@24V 32A / 2min@48V Grounding resistance: <0.1 ohms   |
| Leakage Current @ 25°C | I/P-Grounding≤3.5mA; I/P-O/P ≤0.25mA (264Vac input, 63Hz)   |
| EMC emission           | Compliance to EN55022, EN55024 CLASS B  |
| EMC immunity           | Compliance to EN61000-4-2,3,4,5,6,11 heavy industry level   |
| Harmaonic current      | EN61000-3-2, CLASS A  |

**OTHERS**

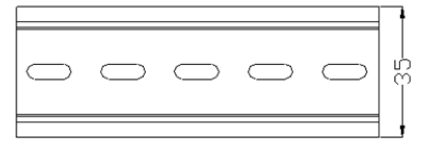
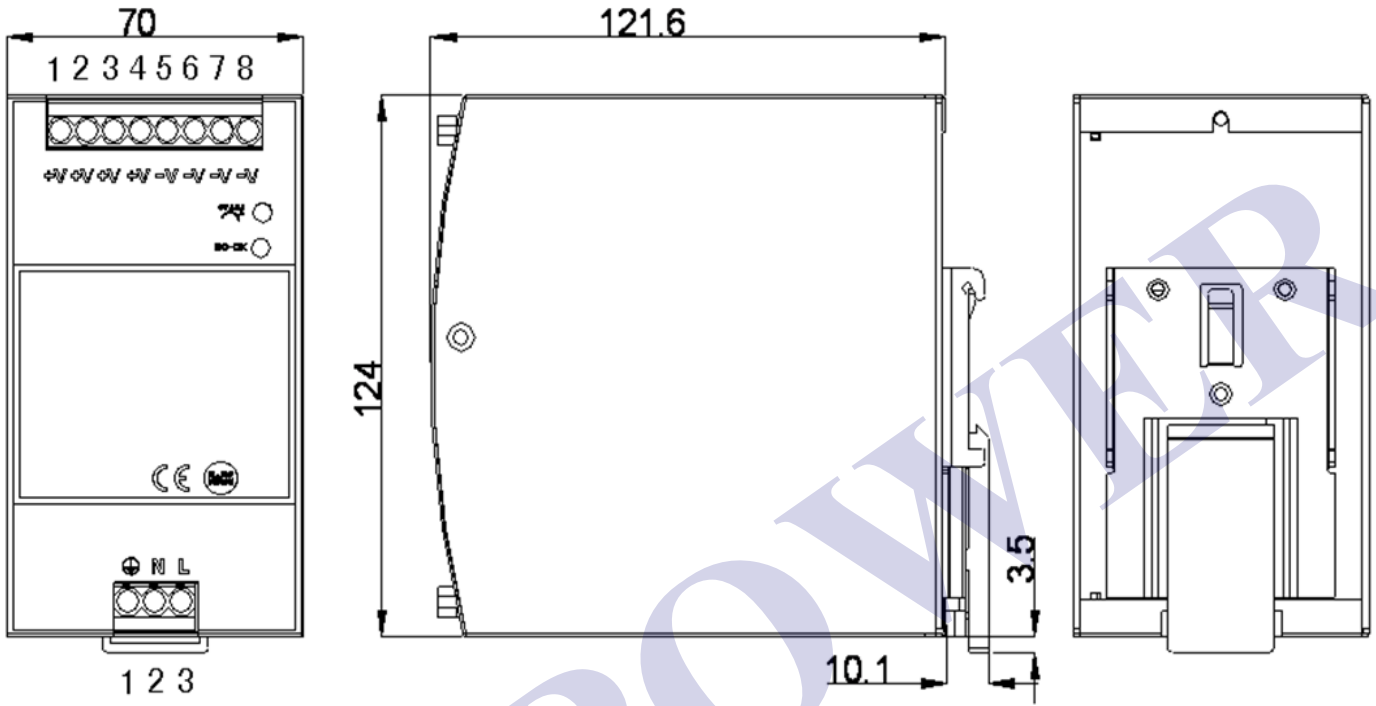
| Conditions                 | Parameter   |
|----------------------------|---|
| Net Weight                 | 0.94kg  |
| Dimension (L*W*H)          | 70*124*127mm  |
| Cooling method             | Cooling by free air flow  |
| Series/Parallel function   | yes   |
| DC OK relay contact rating | Max 30V/1A or 60V/0.3A or 30Vac/0.3A Resistive load   |
| DC OK LED                  | V On: when output voltage is up to 90% of rated output voltage, V Off: when output voltage is down to 80% of rated output voltage |
| Power boost                | 150% of rated current   |

**RELIABILITY CHARACTERISTICS**

|   |  |
|---|--|
| Conditions                              | Parameter  |
| MTBF                                    | 300, 000Hrs AT 25°C, MIL-217 Method 2 Components Stress Method |
| Design electrolytic capacitor life-time | >3years AT 50°C 230VAC input 100% output                       |

**MECHANICAL DIMENSIONS**

Unit: mm



Mounting way: TS35/7.5 or TS35/15

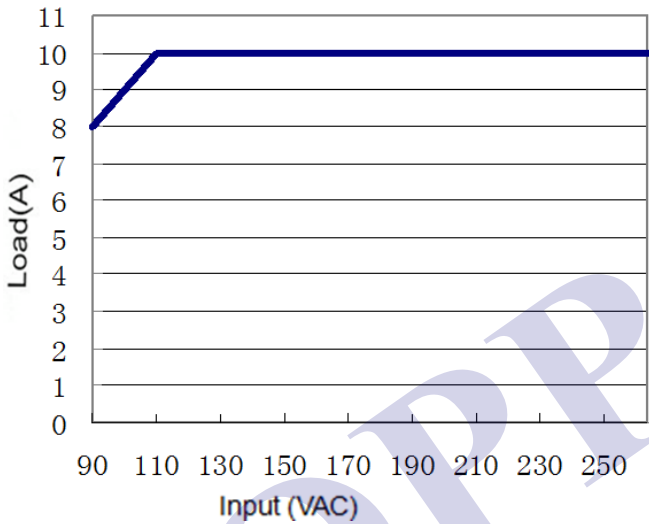
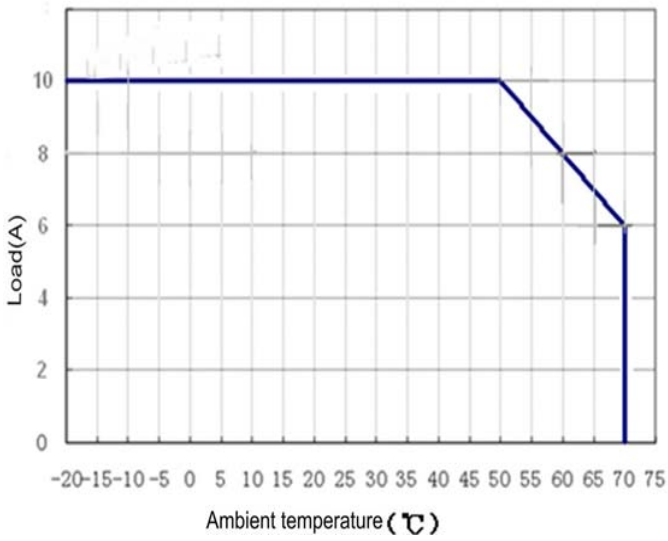
| 1.AC Screw terminal information |          |                              |
|---------------------------------|----------|------------------------------|
| No.                             | Function | Terminal block specs         |
| 1                               | PE       | 6.35mm, 3PIN screw connector |
| 2                               | N        |                              |
| 3                               | L        |                              |

| 2.DC Screw terminal information |          |                              |
|---------------------------------|----------|------------------------------|
| No.                             | Function | Terminal block specs         |
| 1~4                             | V+       | 6.35mm, 6PIN screw connector |
| 5~8                             | V-       |                              |

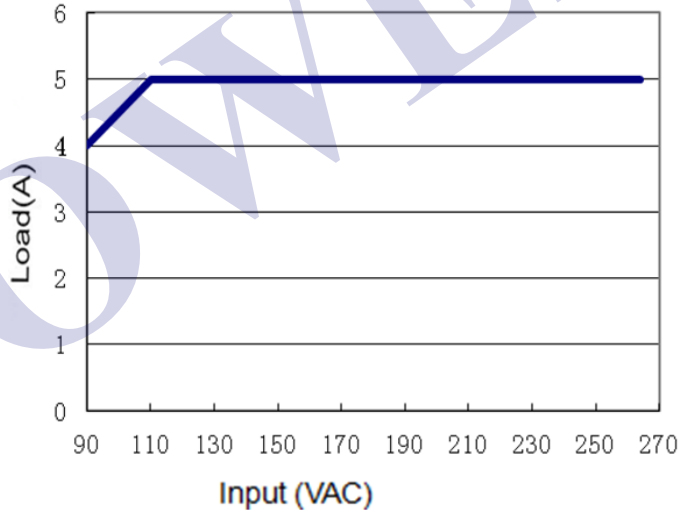
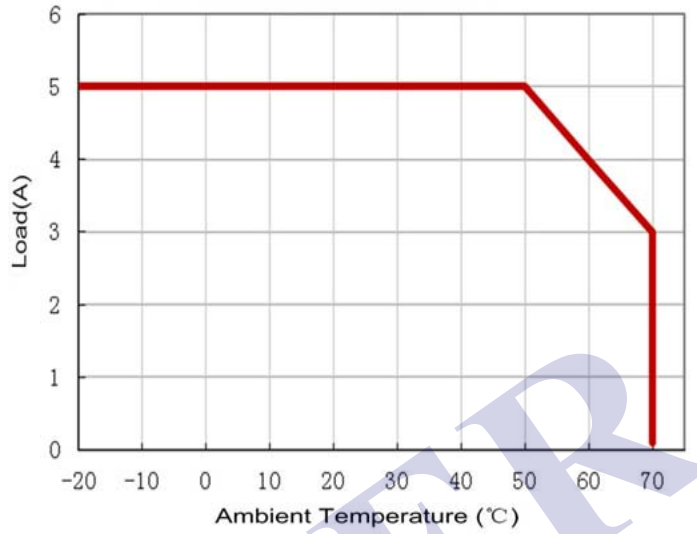
|                              |                                     |
|------------------------------|-------------------------------------|
|                              | AC/DC Terminal blocks               |
| Type                         | Screw terminal blocks               |
| Solid Wire                   | 0.5-6mm <sup>2</sup>                |
| Strand Wire                  | 0.5-4mm <sup>2</sup>                |
| Wire Spec                    | AWG20-10                            |
| Max Wire Diameter            | 2.8mm                               |
| Recommended stripping length | 7mm                                 |
| Screwdriver                  | 3.5mm Straight or Cross Screwdriver |
| Recommended Torque           | 1NM                                 |

**CHARACTERISTICS CURVE**

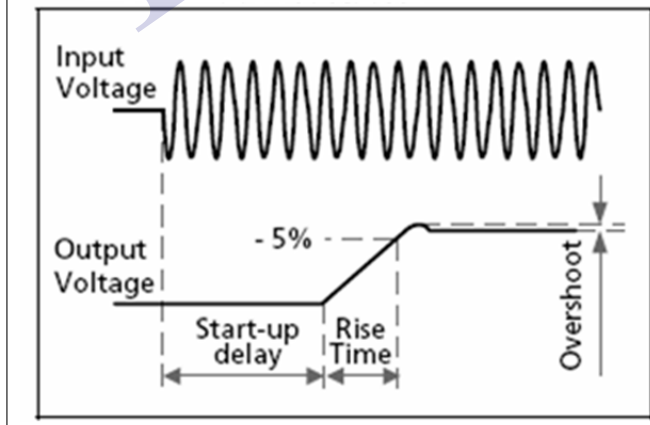
**24V**



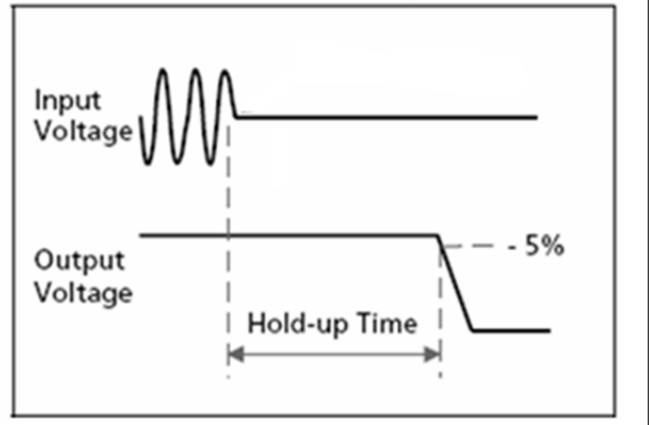
**48V**



**Power-on**



**Power-off**



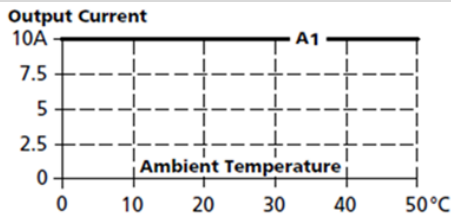
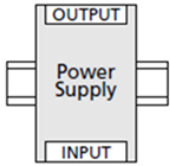
**MOUNTING METHOD INSTRUCTION**

A1 is recommended output current , A2 is the allowed max output current (PSU lifetime is around half of A1)

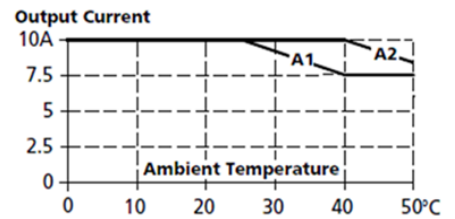
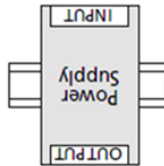
Below curves are tested under 230Vac(179~264Vac), when 110Vac input(85~175Vac), all derating points drops 10°C

**24V output**

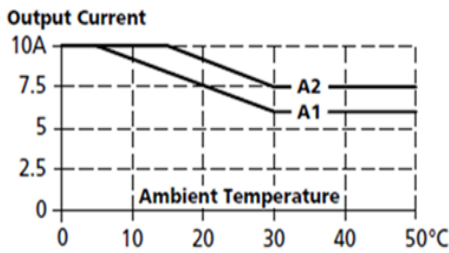
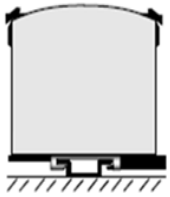
**Mounting 1:**



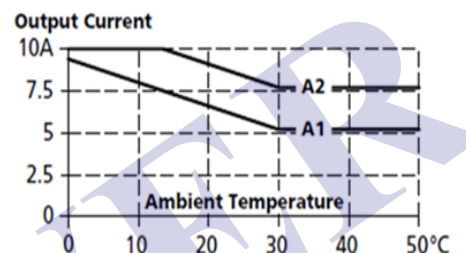
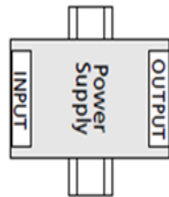
**Mounting 2:**



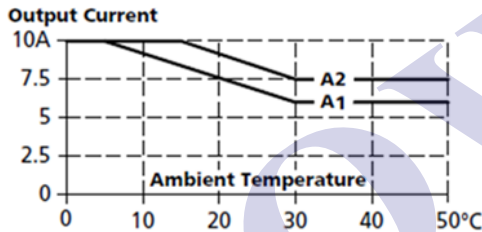
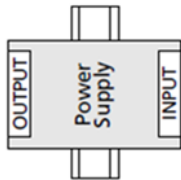
**Mounting 3:**



**Mounting 4:**

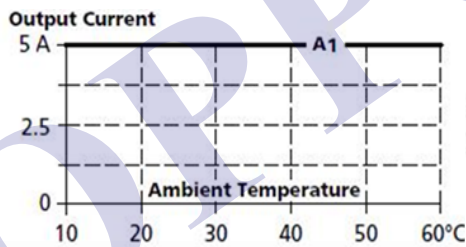
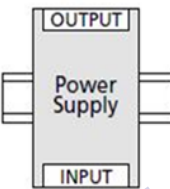


**Mounting 5:**

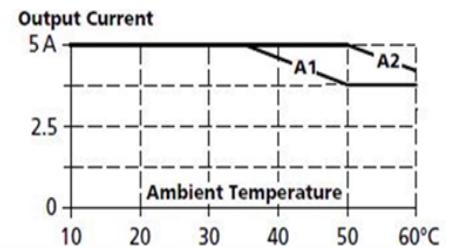
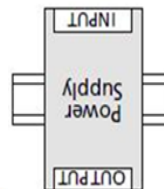


**48V output**

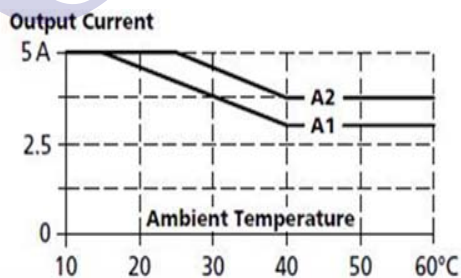
**Mounting 1:**



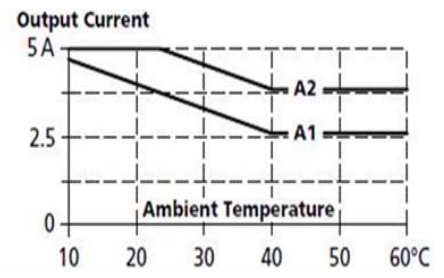
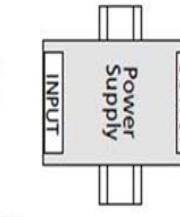
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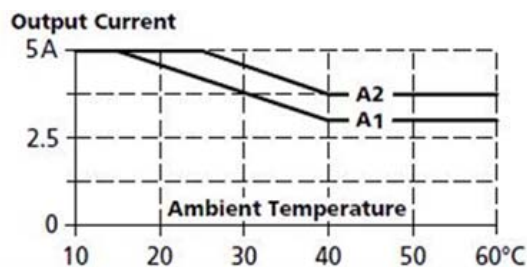
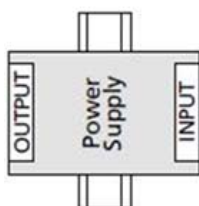
**Mounting 3:**



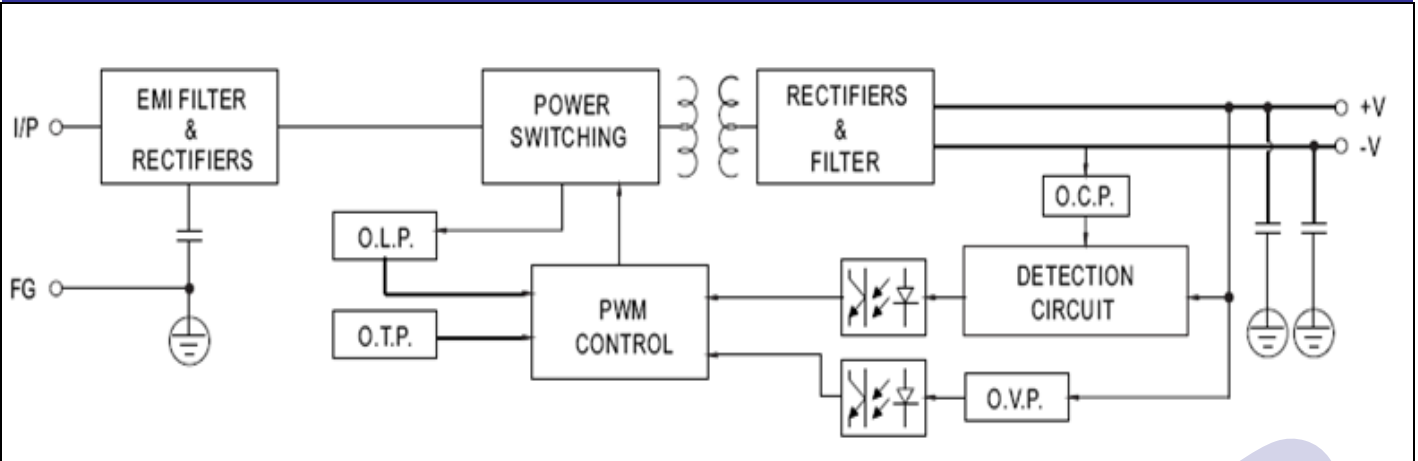
**Mounting 4:**



**Mounting 5:**



**BLOCK DIAGRAM**



**MODEL SELECTION**

**TP R / NDR - U240 - X S**

