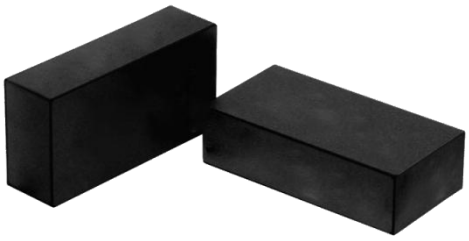
TUM6060 Series
Modular high voltage power supply

62.5 V to 6kV, 4W/20W/30W, voltage/current regulation by automatic crossover control



- **Voltage range from 62.5 V to 6kV**
- **The output power at 4W, 20W or 30W**
- **Voltage/current regulation through automatic crossover control**
- **Voltage and current monitoring signal**
- **Arc and short circuit protection**
- **Accurate + 5V reference output**
- **Universal standard interface**
- **CE is registered, UL certified and RoHS compliant**

Design that integrates shape, mounting and function:

Teslaman TUM6060 series printed circuit boards can be mounted with high-voltage modules, which integrate shape, mounting and function, and can replace the power supply currently used in the market, at the same time, they have more functions and have more competitive advantages in price.

Using proprietary power conversion technology and near 20 years of Teslaman's high voltage experience, these SMT-based high voltage modules offer better performance, higher reliability, easier system integration and lower prices compared to competing products.

Advanced power conversion topology technology;

The TUM6060 converter uses a proprietary zero-voltage switching power conversion topology for superior efficiency and low noise and ripple. Compared with the traditional conversion topology, the radiation is greatly reduced. The need for shielding adjacent circuits is effectively reduced, even without shielding.

High voltage output uses a high voltage step-up transformer with ferrite core to supply the output circuit. Power supplies at 1kV or higher use a set of half-wave Coccroft-Walton voltage multipliers to achieve a specified high voltage output, while lower voltage supplies use a robust rectifier and filter circuit.

Because of its fixed high frequency conversion rate, its output capacitance is very small, so its storage energy is the lowest. All power supplies are fully arc and short-circuit protected by the use of wide rated surge current limiting resistors and a fast current loop.

Control and regulation:

The actual output voltage passes through a high impedance voltage divider to output a voltage feedback signal. The current feedback signal is returned to the output at the low end of the high voltage output circuit through a current sensing resistor. These two accurate ground reference feedback signals are used to accurately regulate and control the power supply in addition to external monitoring purposes.

TUM6060's unique conversion topology enables the power supply to work at full current in low impedance loads or even in a short circuit circuit. The standard power supply is limited to 103% of the maximum rated output current.

Standard interface:

The TUM6060 Series interfaces provide current programming capability, positive polarity, with buffering, low output impedance, voltage and current monitoring signals (0 to +4.64 VDC equals zero to rated full scale). Voltage programming inputs are also provided, with 0 to +4.64 VDC equal to 0 to 100% of the rated voltage.

Current programming allows the user to set the current limit of this power supply from 0 to 100% of the maximum rated current. This function is useful when the demand is less than full output current, such as in the case of protecting a sensitive load. Buffered low impedance voltage and current monitoring signals can directly drive external circuits while minimizing load and sensing effects. These functions save the cost of users and the implementation of external interface buffer circuit, and improve the integrity of the whole signal.
The standard interface consists of a row of 13 pins with a pin spacing of 0.1. A traditional interface (7 pins, 0.2 pin spacing) is matched with the currently available commercial products, and the power supply can be provided by ordering the "L" option.

Mechanical and environmental considerations:
The TUM 6060 series is solid-state packaged, mountable printed circuit board, plastic case converter measurements only 2.97 x1.5x0.83 (75.4 mmx38.1 mmx21.1 mm).
All power supplies are packaged using silicon-based potting materials, which are lighter than epoxy resin packaging technology. The module is securely mounted to the printed circuit board using two independent, non-grounded 2-56 mechanical screws, relieving some of the stress on the interface pins. Mounting plate, bracket and flange installation options are available.

Compliance certification: EECEMCUL/CUL compliance instructions and E227588EEC low pressure instructions. RoHS certification, documents. Meet.

Specifications:

Input voltage: 4W input voltage is 12VDC, 20W and 30W input voltage is 24VDC.

Nominal voltage range: 4W voltage range 11VDC to 30VDC, 20W and 30W voltage range 23VDC to 30VDC.

Input Current: (Typical)
Disabled: 30mA.
No load: 90mA.
Full load:
4W power supply: 0.5 A.
20W power supply: 1.0 A.
30W power supply: 1.5 A.

Efficiency: Typical 80-85%.

Voltage regulation:
Input: < 0.01%.
Load: < 0.01%.

Current regulation:
Input: < 0.01%.
Load: < 0.01%.

Stability:
After preheating for 30 minutes, 0.01% every 8 hours and 0.02% every day.

Accuracy:
Except for the current sensor at 10%, all programming and monitoring at 2%.

Temperature coefficient: (typical)
Standard: 100ppm/℃.
Optional: 25ppm/℃ (T option).

Environment:
Temperature range:
Operating temperature: 0 ° C to 65 ° C, enclosure temperature.
Storage temperature:-55 ° C to 85 ° C, non-operating.
Humidity: 10% to 90%, no condensation.

Cooling: Convective cooling, typical. When the 30W power supply works at full power, external cooling may be needed to keep the housing temperature below 65 ℃. Methods include: forced air cooling, using radiator or metal shell, etc. The user is responsible for keeping the shell temperature below 65 ℃. Power damage due to insufficient cooling is considered improper use and is not covered by the warranty.
Size: 37.9 mm wide, 20.6 mm high and 75.2 mm deep.

Weight: 113g.

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TUM6060 Series High Voltage Power Supply Model Selection Table (Customizable):

Output rating		Type of power supply	
KV	MA	Positive polarity	Negative polarity
1	30	TUM6060P1-30	TUM6060N1-30
2	15	TUM6060P2-30	TUM6060N2-30
3	10	TUM6060P3-30	TUM6060N3-30
6	5	TUM6060P6-30	TUM6060N6-30

Standard interface:

Stitch	Signal	Description
1	Ground return of power supply	+ 12VDC or + 24VDC Power Return/High Voltage Return
1A	Characteristic resistance	Unique identification resistor connected to ground
2	+ Power input	+ 12VDC or + 24VDC power input
2A	N/C	
3	Current sensor	See Current Sensor Description and Table
3A	Current monitoring	0 to 4.64 VDC = 0 to 100% rated output. Zout < 10k Ω
4	Startup input	Low (< 0.7 V, Isink, 1mA) = high voltage off, high (open or > 2V) = high voltage on
4A	Voltage monitoring	0 to 4.64 VDC = 0 to 100% rated output. Zout < 10k Ω
5	Signal ground	Signal ground
5A	Current programming	0 to 4.64 VDC=0 to 100% rated output. Zin > 47 k Ω remains open for preset current limit, 103% of rated output current
6	Remote adjustment	Positive power supply: 0 to +4.64 VDC = 0 to 100% rated voltage, Zin > 1M Ω + 5VDC to 0.36 V=0 to 100% rated voltage, negative power supply: Zin > 100 k Ω If programmed using pin 6A (voltage programming), this pin remains open
6A	Voltage programming	0 to 4.64 VDC = 0 to 100% voltage rating. Zin > 100 k Ω If programmed using Pin 6 (remote adjustment), this pin remains open
7	+ 5V reference output	+ 5VDC ± 0.5%, 50ppm/°C. Zout = 475 Ω
8	Return at high pressure	Return at high pressure
9	E Output Monitoring	Models with a ratio of 10: 1 below 1kV and models with a ratio of 100: 1 above 1kV. The polarity of the voltage monitoring signal is consistent with that of the power supply. The accuracy is 2%, 100ppm/℃. Calibration of voltmeters using 10 M Ω input impedance
10	High voltage output	High voltage output
11	High voltage output	High voltage output

Legacy interface (L option):

Stitch	Signal	Description
1	Ground return of power supply	+ 12VDC or + 24VDC Power Return/High Voltage Return
2	+ Power input	+ 12VDC or + 24VDC power input
3	Current sensor	Please refer to the current sensor description and table for details
4	Enable input	Low (< 0.7 V, Isink, 1mA) = high-voltage turn-off, high (open > 2V) = high-voltage turn-on
5	Signal ground	Signal ground
6	Remote adjustment	Positive power supply: 0 to +4.64 VDC = 0 to 100% rated voltage, Zin > 1 M Ω Negative power supply: + 5VDC to 0.36 V= 0 to 100% rated voltage, Zin > 100 k Ω
7	+ 5V reference output	+ 5VDC ± 0.5%, 50ppm/℃. Zout = 475 Ω
8	Return at high pressure	Return at high pressure
9	E Output Monitoring	Models with a ratio of 10: 1 below 1kV and models with a ratio of 100: 1 above 1kV. The polarity of the voltage monitoring signal is consistent with that of the power supply. The accuracy is 2%, 100ppm/℃. Calibration of voltmeters using 10 M Ω input impedance
10	High voltage output	High voltage output
11	High voltage output	High voltage output

Overall dimensions: mm