



## TUMW6080 Series Modular high voltage power supply

**8kV-20kV, 60W/125W, voltage/current regulation through automatic cross control**



- ◆ Voltage range from 8kV to 20kV
- ◆ The output power available at 60W or 125W
- ◆ Voltage/current regulation through automatic crossover control
- ◆ Voltage and current monitoring signal
- ◆ Arc and short circuit protection
- ◆ UL certification
- ◆ CE registered and RoHS compliant

### **Integrate shape, mounting and functional ease of use:**

TUMW6080's high voltage module provides users with a combination of shape, mounting and function, which can replace the power supply currently used in the market, and has more functions and competitive price. Using proprietary power conversion technology and near 20 years of Teslaman's high voltage experience, this SMT-based high voltage module offers better performance, easier system integration and lower cost compared to competing products.

### **Advanced power conversion topology technology;**

The TUMW6080 converter uses a proprietary resonant power conversion topology for superior efficiency and low noise and ripple output. Compared with the traditional switching topology technology, the radiation is greatly reduced, which effectively reduces the need for shielding adjacent circuits, even without shielding. High voltage output uses a step-up transformer with ferrite core to supply high voltage output circuit. The power supply uses a properly arranged low capacitance Cockcroft-Walton voltage multiplier to obtain the specified high

voltage output.

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 generated by a current sensing resistor placed at the low end of the high voltage output circuit. These two precise ground reference feedback signals are used to accurately adjust and control the power output. These accurate and calibrated signals are used for external monitoring purposes.

TUMW6080's unique conversion topology technology 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 user interface:**

The TUMW6080 provides a standard customer interface that provides current

programming capability and 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.

#### **Mechanical and environmental considerations:**

The TUMW 6080 is a modular metal plate enclosed transducer measuring 114mm wide, 27mm high and 203mm deep. All power supplies are packaged using silicon-based potting materials, which are lighter than epoxy resin packaging technology. Installation of the power supply is accomplished by blind insertion using bottom mounting studs or threads, depending on the model ordered.

#### **Specifications:**

**Input voltage: 24VDC.**

**Standard voltage range:** 23VDC to 30VDC.

**Non-standard voltage range:** 11VDC to 30VDC.

#### **Input Current: (Typical)**

Disabled: < 40mA.

No load: < 600mA.

Full load:

60W power supply: 3A.

125W power supply: 6.2 A.

#### **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)**

100ppm/° C.

**Overshoot:** < 0.1% Vp.

#### **Environmental:**

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.

**Dimensions:** 114mm wide, 27mm high and 203mm deep.

**Weight:** 0.79 kg.

#### **Compliance certification:**

Comply with EEC EMC instructions and EEC low voltage instructions.

UL/CUL certification, document E227588. RoHS compliant.



# TUMW6080 Series Modular high voltage power supply

8kV-20kV, 60W/125W, voltage/current regulation through automatic cross control

TUMW6080 Series High Voltage Power Supply Model Selection Table (Customizable):

Output rating		Type of power supply	
KV	MA	Positive polarity	Negative polarity
8	15.625	TUMW6080P8-125	TUMW6080N8-125
10	12.5	TUMW6080P10-125	TUMW6080N10-125
20	6.25	TUMW6080P20-125	TUMW6080N20-125

Standard interface:

Stitch	Signal	Description
1	Ground return of power supply	Ground return of + 24VDC power supply
2	+ Power input	+ 24VDC Power Input
3	Current sensor	See the current sensor text and table for details
4	Enable input	Low (< 0.7 V, Isink, 1mA) = high voltage off, high (open or > 2V) = high voltage on
5	Signal ground	Signal ground
6	Remote voltage regulation	0 to +4.64 VDC = 0 to 100%, $Z_{in} > 1 \text{ M } \Omega$ .
7	+ 5V reference output	+ 5VDC $\pm 2\%$ , $Z_{out} = 475 \Omega$
8	Ground return of power supply	Ground return of + 24VDC power supply
9	+ Power input	+ 24VDC Power Input
10	Characteristic resistance	Unique identification resistor connected to ground
11	Remote current regulation	0 to +4.64 VDC = 0 to 100%, $Z_{in} > 1 \text{ M } \Omega$ . Keep open circuit to achieve preset current limit, 103% of rated output current
12	Current monitoring	0 to + 5VDC = 0 to 107.5%, $Z_{out} < 10\text{k } \Omega$
13	Voltage monitoring	0 to + 5VDC = 0 to 107.5%, $Z_{out} < 10\text{k } \Omega$
14	E Output Monitoring	1.00 V, $1\text{G } \Omega / 1.1 \text{ M } \Omega$ voltage divider, using $10 \text{ M } \Omega$ meter.

**Legacy interface (L option):**

Stitch	Signal	Description
1	Ground return of power supply	Ground return of + 24VDC power supply
2	+ Power input	+ 24VDC Power Input
3	Current sensor	See the current sensor text and table for details
4	Enable input	Low (< 0.7 V, Isink, 1mA) = high voltage off, high (open or > 2V) = high voltage on
5	Signal ground	Signal ground
6	Remote adjustment	Positive power supply: 0 to +4.64 VDC = 0 to 100% rated voltage, $Z_{in} > 1 \text{ M } \Omega$ . Negative power supply: + 5VDC to 0.36 VDC = 0 to 100% rated voltage, $Z_{in} > 1 \text{ M } \Omega$ .
7	+ 5V reference output	+ 5VDC $\pm$ 2%, $Z_{out} = 475 \text{ } \Omega$ .
8	Ground return of power supply	Ground return of + 24VDC power supply
9	+ Power input	+ 24VDC Power Input
10	Characteristic resistance	Unique identification resistor connected to ground
11	N/C	
12	N/C	
13	N/C	
14	E Output Monitoring	1.00 V/kV, $1 \text{ G } \Omega / 1.1 \text{ M } \Omega$ voltage divider, using $10 \text{ M } \Omega$ meter.

# Overall dimensions: mm

15kV

20kV

