

## T1DP0x

# High Voltage Desk Top Power Supply

## Operators Manual

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### WARNING!

-It is not allowed to use the unit if the covers have been removed.

- It is not allowed to connect or disconnect the HV cable if HV is ON !

-We decline all responsibility for damages and injuries caused by an improper use of the module. It is highly recommended to read the operators manual before any kind of operation.

### Note

The information in this manual is subject to change without notice. We take no responsibility for any error in the document. We reserve the right to make changes in the product design without reservation and without notification to the users.

Filename T1DP0x\_eng.\_\_\_\_; Version 2.0 as of 06-11-24

## 1. General information

The model T1DP 0vv is a high voltage desk top supply which offer a very stable output voltage up to 6 kV for use in industry and research. The output is generated by means of a high voltage modules of the DPS-series, which are supplied by means of an AC/DC converter.

### Main Characteristics:

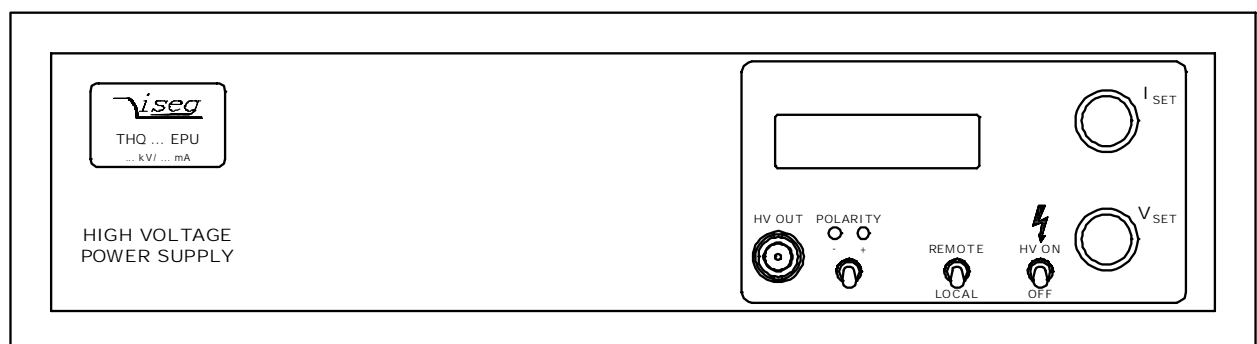
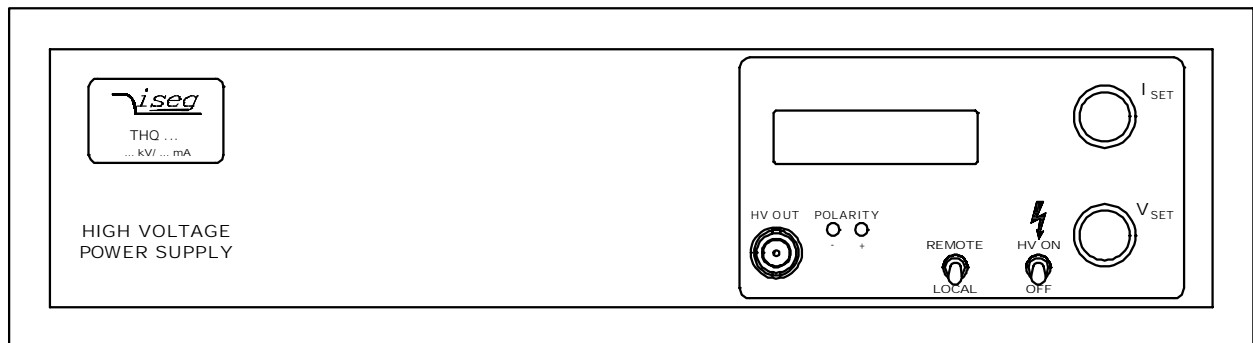
- High voltage desk top power supplies with either front-panel or remote control via analogue I/O
- Output voltages with very low ripple and noise
- Compact and ruggedized enclosure
- Polarity reversible
- Output short circuit and overload protected

## 2. Technical Data

One channel HV-PS T1	T1DP005	T1DP0 1	T1DP0 2	T1DP0 3	T1DP0 4	T1DP0 5	T1DP0 6
Output voltage $V_{Onom}$	500 V	1 kV	2 kV	3 kV	4 kV	5 kV	6 kV
Output current $I_{Onom}$	10 mA	10 mA	6 mA	4 mA	3 mA	2 mA	1,5 mA
Output polarity	Positive or negative, switchable mechanically or electronically (with <b>option EPU, only up to 3kV</b> )						
Ripple and noise	typical $< 2 \text{ mV}_{P-P}$ , max. $7 \text{ mV}_{P-P}$						
Stability: $\frac{\Delta V_O}{\Delta V_{INPUT}}$	$< 1 * 10^{-5}$						
$\Delta V_O$ (no load/ load)	$< 5 * 10^{-5}$						
Temperature coefficient	$< 1 * 10^{-5}/K$						
Voltage resolution:	1 V / 4-digit LCD display						
measurement accuracy:	$\pm ( 1\% * V_{Onom} )$ (for one year)						
Voltage manual settings:	Control switch in lower position via 10-turn potentiometer						
REMOTE:	Control switch in upper position via analog I/O with $V_{SET/MON} = 0 \text{ to } 5 \text{ V}$						
Current resolution:	1 $\mu\text{A}$ / 4-digit LCD display						
measurement accuracy:	$\pm ( 1\% * I_{Onom} )$ (for one year)						
Current manual settings:	Control switch in lower position via 10-turn potentiometer						
REMOTE:	Control switch in upper position via analog I/O with $V_{SET/MON} = 0 \text{ to } 5 \text{ V}$						
Rate of change of output voltage	fixed: $V_{Onom} / 4\text{s}$ (at HV-ON/OFF)						
Protection	Output short circuit and overload protected.  <b>Attention !</b> There is only one short circuit or arc per second allowed! The integral output current must limited to the max. output current of the module external otherwise.						
REMOTE control	via analog I/O						
Line voltage AC ( $V_{INPUT}$ )	100 to 240 V-AC; 50/60 Hz; fused with 2 A-slow						

1 channel HV-PS T1DP		<b>T1DP 0vv</b>	
Connectors	HV output: analogue I/O:	SHV-Connector 9-pin male D-Sub connector	
Desk case	Size (W/H/D) : (310/90/280, 310 with SHV) mm		
Operating temperature	0 ... +50 °C		
Storage temperature	-20 ... +60 °C		
9-pin male D-Sub connector "analog I/O" on the rear side			
PIN	Name	Description	
1	n.c.		
2	V_I <sub>MON</sub>	Monitor voltage corresponding I <sub>O</sub> : I <sub>O</sub> = 0 to I <sub>Onom</sub> (R <sub>i</sub> = 10 kΩ) ⇒ V <sub>2-6</sub> = 0 to 5 V	
3	INH	INHIBIT (TTL level, LOW ⇒ V <sub>O</sub> = 0, [LOW to] HIGH or open ⇒ V <sub>O</sub> = V <sub>SET</sub> with ramp)	
4	V_I <sub>SET</sub>	Setting current (R <sub>IN</sub> = 10 kΩ): V <sub>4-6</sub> = 0 to 5 V ⇒ I <sub>O</sub> = 0 to I <sub>Onom</sub> n.c. ⇒ I <sub>Onom</sub> is possible	
5	n.c.		
6	GND	GND = V <sub>SET_0V</sub>	Signal 0 V (connected to the metal module box)
7	V_V <sub>MON</sub>	Monitor voltage corresponding V <sub>O</sub> : V <sub>O</sub> = 0 to V <sub>Onom</sub> (R <sub>OUT</sub> = 10 kΩ) ⇒ V <sub>7-6</sub> = 0 to 5 V	
8	V_V <sub>SET</sub>	Setting voltage: V <sub>8-6</sub> = 0 to 5 V ⇒ V <sub>O</sub> = 0 to V <sub>Onom</sub> (R <sub>IN</sub> ≈ 300kΩ)	
9	V <sub>REF</sub>	V <sub>9-6</sub> = 5 V ( 1 mA) Reference voltage for a external potentiometer (Sliding contact on V_V <sub>SET</sub> and/or V_I <sub>SET</sub> )	

### 3. Front panel



## 4. Operation

The state-of-readiness of the unit is detected by monitoring the AC line voltage on the rear. Switch "Power On" at the rear of the unit. The displays light up at the front and the chosen polarity is displayed on the according polarity LED.

High voltage output of the channel is switched on with HV-ON switch at the front panel.

**WARNING!** It is not allowed to connect or disconnect the HV cable on the HV-output if HV-ON switch is ON !

**WARNING!** If the CONTROL switch is in lower position (manual control), high voltage is generated at HV-output with a ramp speed from  $V_{Onom} / 4s$  (hardware ramp) to the set voltage chosen via the 10-turn potentiometer  $V_{SET}$  subject to the set current chosen via the 10-turn potentiometer  $I_{SET}$ .

If the CONTROL switch is in upper position (REMOTE), high voltage will be activated only after connecting the set-voltages via the analogue I/O.

If working with manual control, output voltage and current can be set via 10-turn potentiometer in a range from 0 to the nominal values.

The display will be indicate the actually output voltage and the actually output current.

Switching HV-ON to "OFF" and an active INHIBIT-signal only switches off the high voltage generator, however, the output is not put to ground. The internal and external capacitors discharge via an internal 50 M $\Omega$ -measurement resistor and via the external load. Therefore, extended discharge times may occur. Be careful!

## 5. Polarity and Limit setting

The output polarity is selected with help of the rotary switch on the built-in module. The chosen polarity is displayed on the polarity LED's on the front panel. You can open the desk and switch up the polarity (see point 6).

**WARNING!** Please open the desk after disconnecting load and main voltage only !!

An undefined switch setting (not at one of the end positions) will cause no output voltage.

### Option \_EPU

The output polarity is selected with help of the POLARITY switch on the front panel at  $V_{OUT} = 0$  normally! The chosen polarity is displayed on the polarity LED's on the front panel.

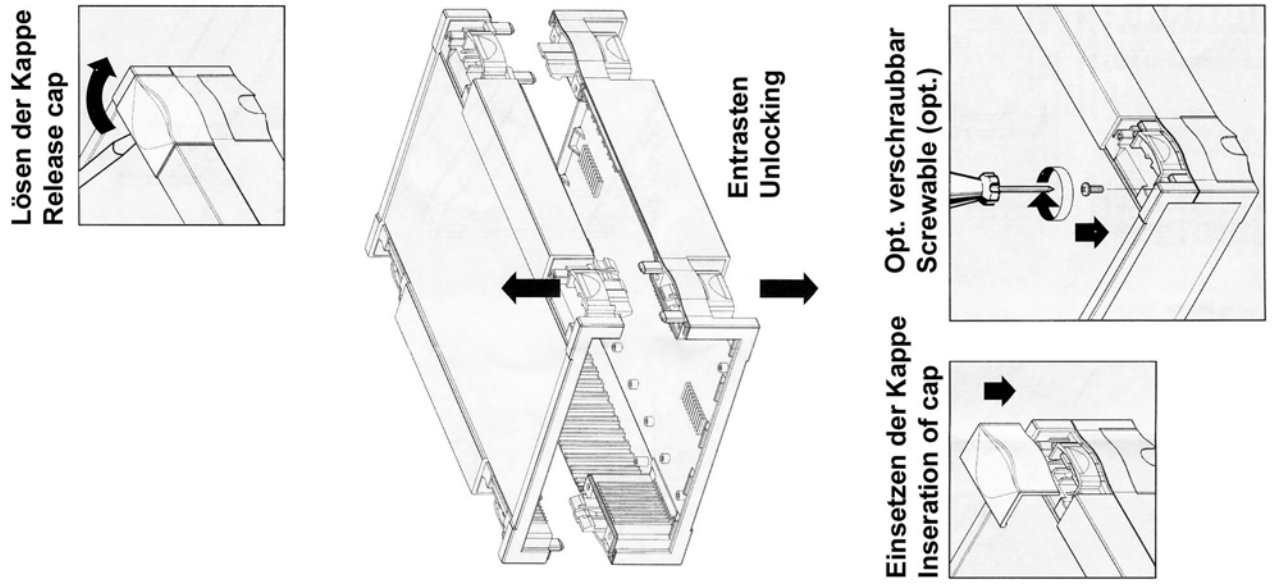
If the POLARITY switch will be operated, the generation of output voltage stopped for ca. one second before the polarity will changed internally. The unit will be ready to deliver the output voltage with the changed polarity after an internal switch time from ca. one second.

**Don't use the POLARITY switch if any output voltage > 800 V is displayed!**

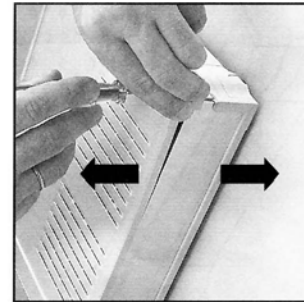
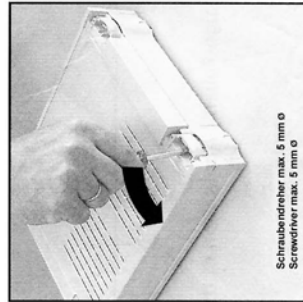
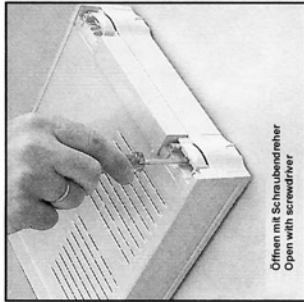
Maximum output voltage and current can be selected by hardware with help of the potentiometer Limit V and Limit I on the built-in DPS module. The output voltage and current will be limited to this setting values under operation.

The hardware limit will make smaller with setting the potentiometer clock wisely.

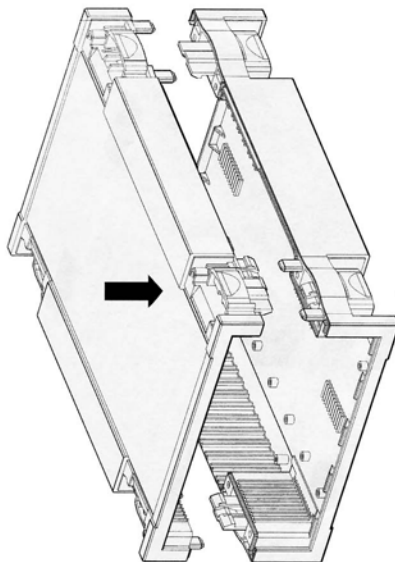
## 6. Desk information



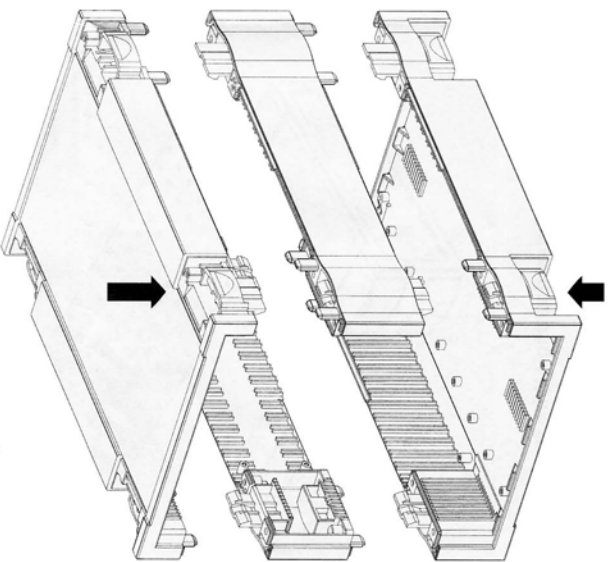
**Halbschalen-Demontage**  
**Half-shell disassembly**



**Halbschalen-Montage**  
**Half-shell assembly**



**Montage der Aufbausätze**  
**Assembly of extension sets**



## 7. Certificate

# ***Copy of CE-Certificate***

This is to certify the original equipment manufacturer

***iseg Spezialelektronik GmbH***

*Bautzner Landstr. 23*

*D - 01454 Rossendorf*

*Germany*

guaranteed the compliance of the following standards

*EN 50081-2*

*EN 55011*

and of the technical specifications according the manual

*for the High Voltage Desk Top Power Supplies THQ series.*

*Rossendorf, September 9<sup>th</sup>, 2002*

Dr. Frank Gleisberg  
Managing director