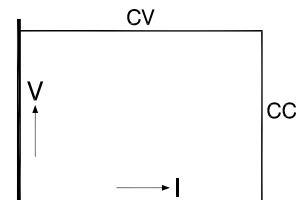




## EST 150 - Series 150 W Triple output DC POWER SUPPLY

Models	Voltage range	Current range
1 )	0 - 20 V	0 - 2.5 A
2 )	0 - 20 V	0 - 2.5 A
3 )	0 - 10 V	0 - 5 A



- \* 3 independent and floating outputs
- \* 20 V outputs tracking or independent (switch selectable)

### Features

- Very low output ripple and spikes
- EMC surpasses CE requirements: low emission & high immunity
- Excellent dynamics response to load changes
- Protected against all overload and short circuit conditions
- Designed for long time at full power

### Functionalities

- 3 independent, floating outputs
- Dual voltage tracking or series tracking mode
- 3 output On / Off buttons
- Convection cooling
- Voltage and current control with 10 turn potentiometers

		10 V output	20 V outputs
<b>Output</b> voltage current		0 - 10 V 0 - 5 A	0 - 20 V 0 - 2.5 A
<b>Input</b> <b>AC</b> single phase, 48 - 62 Hz  Input current @ 230 V AC  power factor, 110 / 230 V AC <i>full load</i>  internal fuses  standby input power ( $V_o=I_o=0$ ) standby input power ( $V_o=V_{max}$ )		90 - 265 V  1 A  0.99 / 0.83  4 AT  12 W 15 W	
<b>Efficiency</b> AC 230 V input, full load AC 110 V input, full load		81 % 78 %	
<b>Regulation</b>			
Load 0 - 100% Line 90 - 265 V AC	<b>CV</b> <b>CV</b>	6 mV 0.2 mV	5 mV 0.5 mV
Load 0 - 100% Line 90 - 265 V AC	<b>CC</b> <b>CC</b>	1 mA 0.2 mA	0.5 mA 0.1 mA
<b>Ripple + noise</b> (@ full load) rms (BW=300 kHz) p-p (BW=20 MHz)	<b>CV</b> <b>CV</b>	0.5 mV 8 mV	0.5 mV 8 mV
rms (BW=300 kHz) p-p (BW=20 MHz)	<b>CC</b> <b>CC</b>	0.5 mA 4 mA	0.25 mA 1 mA
<b>Temp. coeff., per °C</b>	<b>CV</b> <b>CC</b>		$5 \cdot 10^{-5}$ $10 \cdot 10^{-5}$
<b>Stability</b> after 1 hr warm-up during 8 hrs	<b>CV</b> <b>CC</b>		$10 \cdot 10^{-5}$ $10 \cdot 10^{-5}$
$t_{amb} = 25 \pm 1 \text{ °C}$ , $V_{in} = 230 \text{ V AC}$			
<b>Tracking accuracy</b>			0.5 %

<b>Indicators</b> (front panel)	CV-mode, CC-mode, output On/Off, Tracking On/Off
<b>Controls</b> (front panel)	Mains on/off, CV- and CC-potmeter, Display-Settings button, Output On/Off, Tracking On/Off

	10 V output	20 V outputs
<b>Recovery time</b> recovery within di/dt of load step output voltage time, @ 50 - 100% load step max. deviation @ 230 V AC input voltage	100 mV 125 mA/μs 9 V 100 μs 200 mV	50 mV 75 mA/μs 18 V 100 μs 200 mV
<b>Output impedance</b> CV, 0-100 kHz	< 250 mOhm	< 250 mOhm
<b>Pulsating load</b> max. tolerable AC component of load current f > 1 kHz f < 1 kHz	2 A rms 5 A peak	2 A rms 2.5 A peak

<b>Insulation</b> input / output creepage / clearance	3750 Vrms (1 min.) 8 mm
input / case output / case	2500 Vrms 600 V DC
<b>Safety</b>	EN 60950 / EN 61010-1 outputs are SELV
<b>EMC Power Supply Standard</b>	<b>EN 61204-3</b> , Emission: residential, <b>light</b> industrial environment (CISPR22-Class <b>B</b> ) Immunity: industrial environment
<b>Generic Emission Generic Immunity</b>	<b>EN 61000-6-3</b> , residential, <b>light</b> industrial environment (EN 55022 <b>B</b> ) <b>EN 61000-6-2</b> , industrial environment
<b>Operating Temperature at full load</b>	- 20 to + 50 °C derate output to 75% at 60 °C
<b>Humidity</b>	max. 95% RH, non condensing, up to 40 °C max. 75% RH, non condensing, up to 50 °C
<b>Storage temperature</b>	- 40 to + 85 °C
<b>Thermal protection</b>	Output shuts down in case of insufficient cooling
<b>MTBF</b>	500 000 hrs

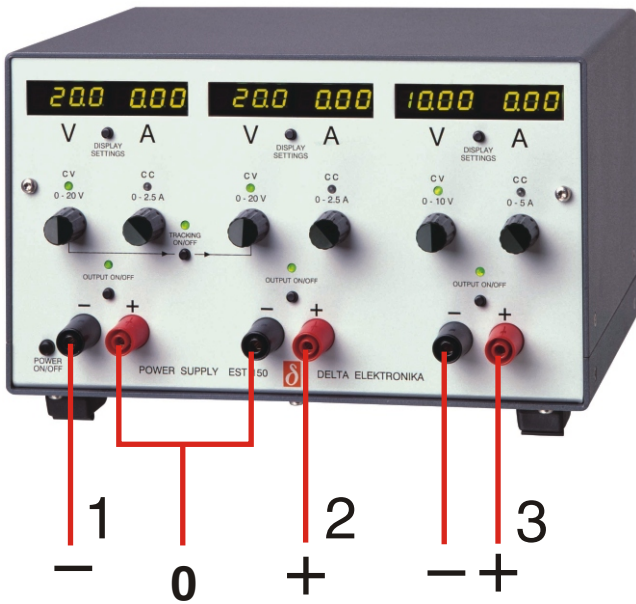
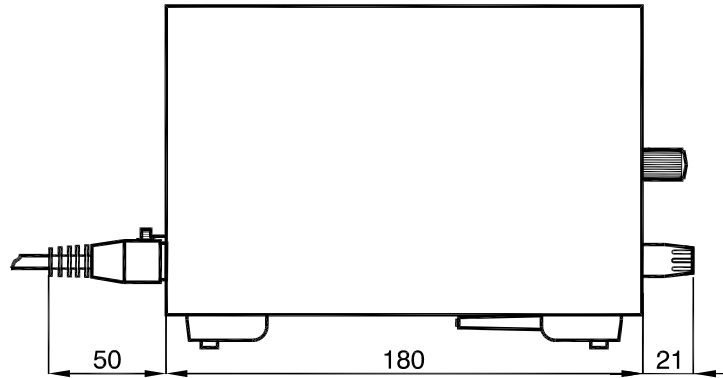
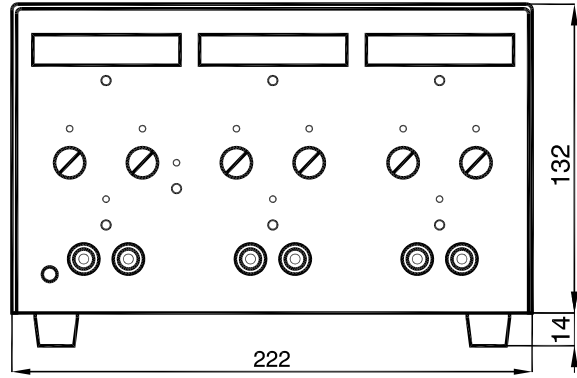
<b>Hold-Up time</b> (230 V AC input) $V_{out} = 100\%$ , $I_{out} = 100\%$ $V_{out} = 85\%$ , $I_{out} = 100\%$ $V_{out} = 100\%$ , $I_{out} = 50\%$	25 ms 30 ms 60 ms
<b>Turn on delay</b>	250 ms
<b>Inrush current</b>	10 A (limited by an internal NTC resistor, 30 Ohms cold resistance)

	10 V output	20 V outputs
<b>Series operation</b> max. total voltage	600 V	
<b>Parallel operation</b> max. total current	no limit	
<b>Over Voltage Limit</b> (fixed)	max. 13 V	max. 25 V
<b>Potentiometers</b> front panel control with knobs resolution	standard 0.03%	
<b>Meters</b> scale voltage scale current accuracy V-meter accuracy A-meter	3.5 digit 0 - 10.00 V 0 - 5.00 A 0.5% + 2 digits 1% + 2 digits	3.5 digit 0 - 20.0 V 0 - 2.50 A 0.5% + 2 digits 1% + 2 digits

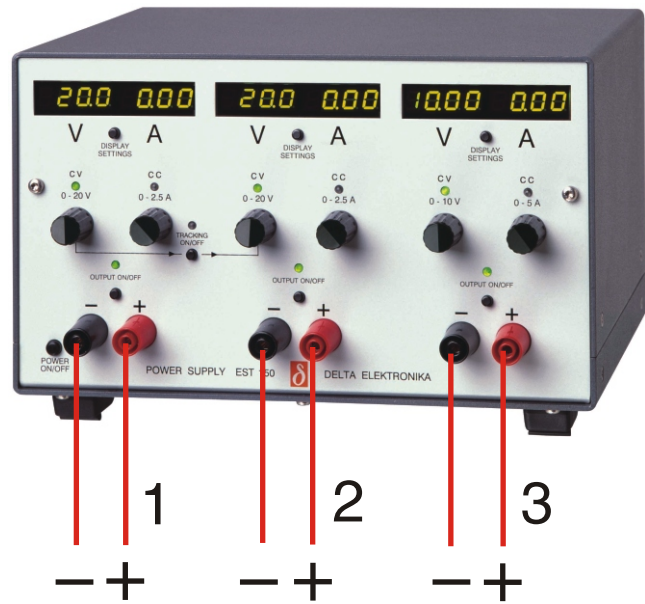
<b>Input Connector</b>	Euro-connector at rear panel 10 Amp / 65 °C IEC320/C14, EN 60320/C14
<b>Output Terminals</b>	4 mm safety sockets at front-panel
<b>Cooling</b>	Convection cooling
<b>Enclosure</b> degree of protection	IP20
<b>Dimensions</b> (h x w x d)	132 x 222 x 180 mm
<b>Weight</b>	3.5 kg

CV = Constant Voltage  
CC = Constant Current

Specifications measured at  $t_{amb} = 25 \pm 5^\circ\text{C}$  and  
 $V_{in} = 230\text{ V AC}$ , 50 Hz unless otherwise noted.



*20 V Outputs in **Tracking - Mode**,  
to create a dual voltage source  
Voltage of Output (2) follows the setting  
for Output (1), current settings still independent*



***Tracking - Mode off**  
3 independent voltage / current sources  
outputs are floating*