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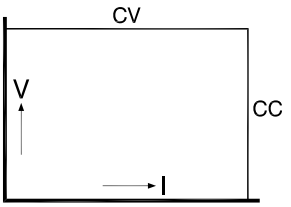
DELTA ELEKTRONIKA B.V.

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
Output		
voltage	0 - 10 V	0 - 20 V
current	0 - 5 A	0 - 2.5 A
Input		
AC single phase, 48 - 62 Hz	90 - 265 V	
Input current @ 230 V AC	1 A	
power factor, 110 / 230 V AC *full load*	0.99 / 0.83	
internal fuses	4 AT	
standby input power (V_o=I_o=0)	12 W	
standby input power (V_o=V_{max})	15 W	
Efficiency		
AC 230 V input, full load	81 %	
AC 110 V input, full load	78 %	
Regulation		
Load 0 - 100% **CV**	6 mV	5 mV
Line 90 - 265 V AC **CV**	0.2 mV	0.5 mV
Load 0 - 100% **CC**	1 mA	0.5 mA
Line 90 - 265 V AC **CC**	0.2 mA	0.1 mA
Ripple + noise (@ full load)		
rms (BW=300 kHz) **CV**	0.5 mV	0.5 mV
p-p (BW=20 MHz) **CV**	8 mV	8 mV
rms (BW=300 kHz) **CC**	0.5 mA	0.25 mA
p-p (BW=20 MHz) **CC**	4 mA	1 mA
Temp. coeff., per °C **CV**	5.10^{-5}	
CC	10.10^{-5}	
Stability after 1 hr warm-up		
during 8 hrs **CV**	10.10^{-5}	
CC	10.10^{-5}	
t_{amb} = 25 ± 1 °C, V_{in} = 230 V AC		
Tracking accuracy	0.5 %	

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

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

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

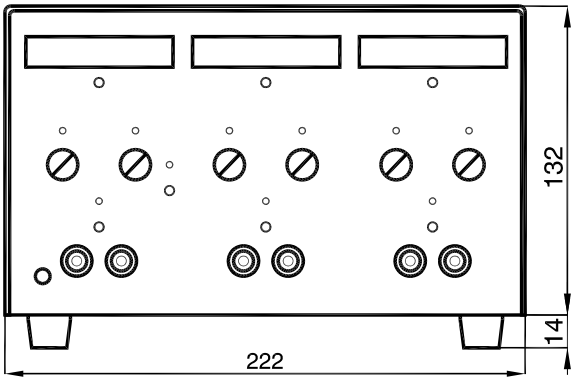
Hold-Up time (230 V AC input) V_{out} = 100% , I_{out} = 100% V_{out} = 85% , I_{out} = 100% V_{out} = 100% , I_{out} = 50%	 25 ms 30 ms 60 ms
Turn on delay	250 ms
Inrush current	10 A (limited by an internal NTC resistor, 30 Ohms cold resistance)

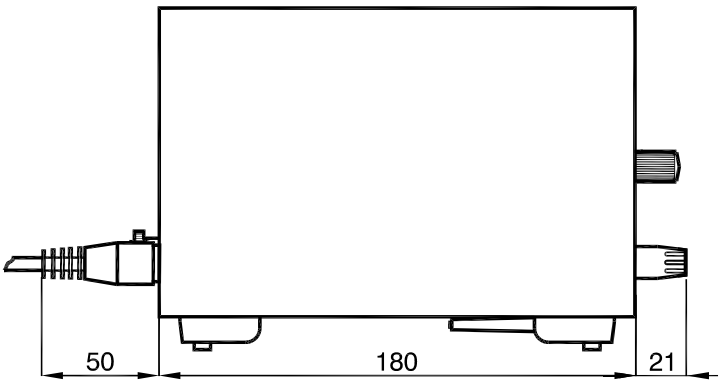
	10 V output	**20 V outputs**
Series operation max. total voltage	600 V	
Parallel operation max. total current	no limit	
Over Voltage Limit (fixed)	max. 13 V	max. 25 V
Potentiometers front panel control with knobs resolution	standard 0.03%	
Meters scale voltage scale current accuracy V-meter accuracy 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

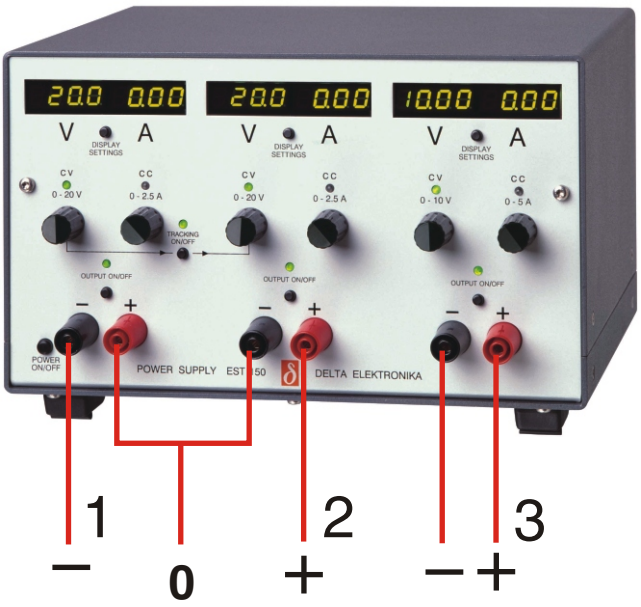
Input Connector	Euro-connector at rear panel 10 Amp / 65 °C IEC320/C14, EN 60320/C14
Output Terminals	4 mm safety sockets at front-panel
Cooling	Convection cooling
Enclosure degree of protection	IP20
Dimensions (h x w x d)	132 x 222 x 180 mm
Weight	3.5 kg

CV = Constant Voltage
CC = Constant Current

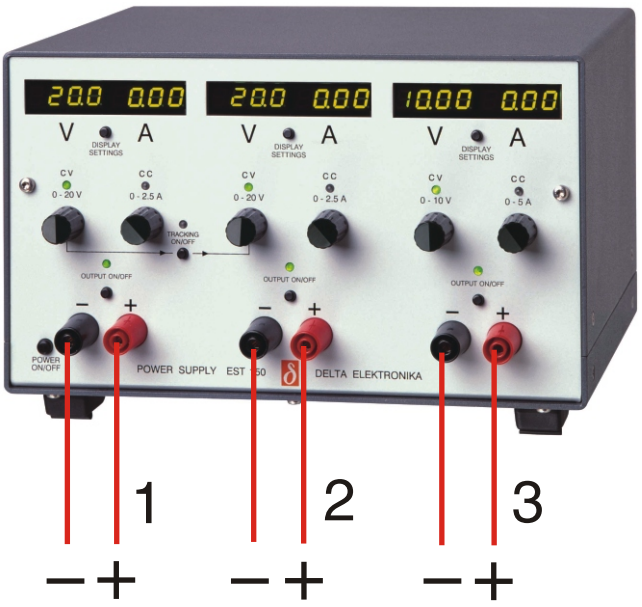
Specifications measured at t_{amb} = 25 ± 5 °C and V_{in} = 230 V AC, 50 Hz unless otherwise noted.







*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