DELTA ELEKTRONIKA B.V.
DC POWER SUPPLIES

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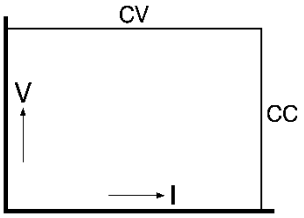
CE

EST 150 - Series 150W Triple Output DC POWER SUPPLIES

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 dynamic response to load changes
- Protected against all overload and short circuit conditions
- Designed for a long life 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 output
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	
rated voltage range		100 - 240 V	
rated frequency		50 / 60 Hz	
Input current @ 230 VAC		1 A	
power factor, 110 / 230 VAC *full load*		0.99 / 0.83	
internal fuses		4 AT	
standby input power (Vo=Io=0)		12 W	
standby input power (Vo=Vmax)		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	0.3 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, Vin = 230 VAC			
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-potmeters, Display-Settings button, Output On/Off, Tracking On/Off

	10 V output	20 V output
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 VAC 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	3750 Vrms (1 min.)
creepage / clearance	8 mm
input / case	2500 Vrms
output / case	600 V DC
Safety	EN 60950 / EN 61010, outputs are SELV
EMC	
Generic Emission	**EN 61326-1,** class B equipment (for use in domestic establishments)
Generic Immunity	**EN 61326-1,** equipment for use in industrial and domestic establishments
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 VAC input)	
Vout = 100% , Iout = 100%	25 ms
Vout = 85% , Iout = 100%	30 ms
Vout = 100% , Iout = 50%	60 ms
Turn on delay (230 VAC input)	
after mains switch on	250 ms
Inrush current	10 A with NTC resistor 30 Ohms cold resistance

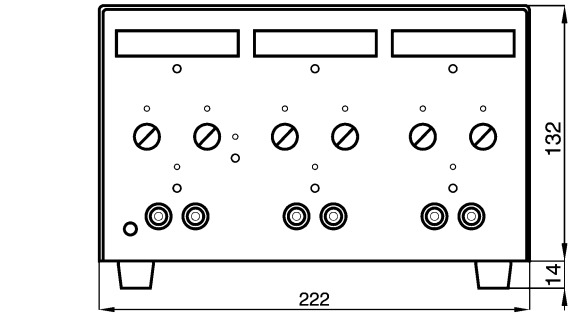
	10 V output	**20 V output**
Series operation		
max. total voltage	600 V	
Parallel operation		
max. total current	no limit	
Over Voltage Limit (fixed)	max. 13 V	max. 25 V
Potentiometers		
front panel control with knobs	standard	
resolution	0.03%	
Meters	3.5 digit	3.5 digit
scale voltage	0 - 10.00 V	0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

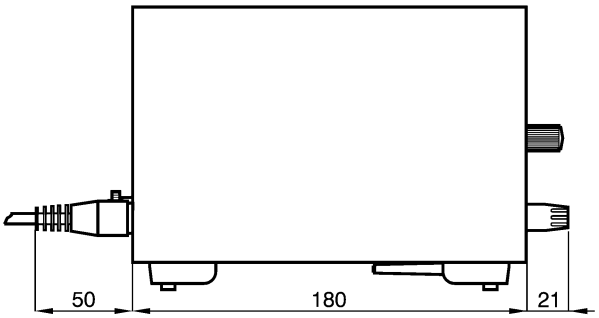
Input Connector	Euro-connector at rear panel 10 Amp / 65 °C IEC320/C14, EN60320/C14
DC Output Terminals	4 mm safety sockets at front-panel
Cooling	Convection cooling
Enclosure degree of protection	IP20
Dimensions (h x w x d)	132 x 222 x 180 mm
Weight	3.5 kg

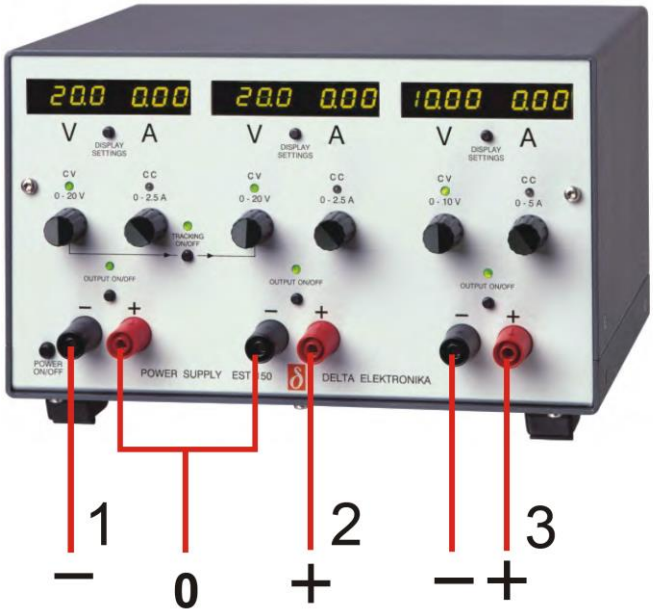
CV = Constant Voltage
CC = Constant Current

Specifications measured at t_{amb} = 25 ± 5 °C and Vin = 230 VAC, 50 Hz unless otherwise noted.

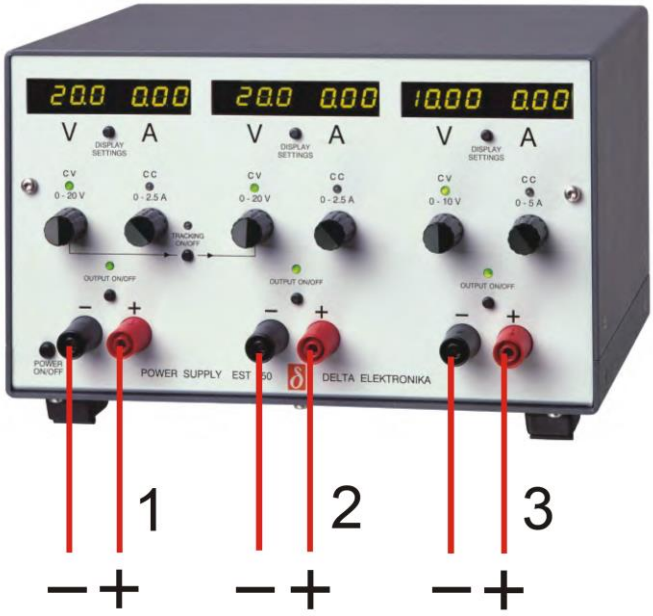
Linecord supplied | *Input connector*







*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. Three independent voltage / current sources. Outputs are floating.

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