

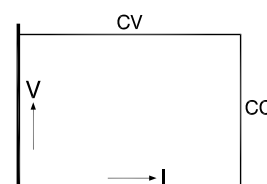


DELTA ELEKTRONIKA B.V.



ES 300 Series 300 watts DC POWER SUPPLIES

Models	Voltage range	Current range
ES 030-10	0 - 30 V	0 - 10 A



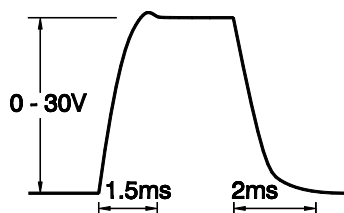
Features

- Very low output ripple and spikes
- EMC surpasses CE requirements: low emissions & high immunity
- High programming speed
- Excellent dynamic response to load changes
- Protected against all overload and short circuit conditions

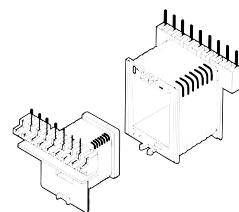
Functionalities

- Designed for a long life at full power
- Master/Slave parallel and series operation with voltage and current sharing
- Voltage and current control with 10 turn potentiometers
- 19" rack mounting or for laboratory use (feet included)
- Optional Remote Sensing

• Input voltage	: AC 92-264 V 48-62 Hz Fuse 5 A T	• Series operation	: Normal and Master / Slave series operation is possible. For fast and easy operation the M/S - SERIES ADAPTER is recommended.
• Input current	: 1.55 A at 230 V AC 3.20 A at 115 V AC	• Parallel operation	: No limitations. Normal and Master / Slave parallel operation is possible.
• Power factor	: Better than 0.97	• V and I control	: 10-turn potmeters, res. 0.03%.
• Efficiency	: 86% at 230 V AC, 82% at 115 V AC	• Programming inputs	
• Inrush current	: Limited with NTC resistor of 16 Ohms cold resistance	Voltage	: 0-5 V, offset -3 to +10 mV full scale error +/- 0.2%
• Insulation		Current	: 0-5 V, offset 0 to +20 mV full scale error +/- 0.5% Input impedance 1 MOhm
Input / output	: 4 kV rms (1 min.), 8 mm cr./cl.	• Progr. response time	: Up 0-30 V 1 ms Down 30-5 V 2 ms
Input / case	: 2.5 kV rms (1 min.), 5 mm cr./cl.		
Output / case	: 600 V DC		
• Safety	: EN 60950/ EN 61010		
• EMC:	EN 61204-3 Power Supply Standard EN 61000-6-3 (EN55022B) Generic Emission EN 61000-6-2 Generic Immunity		

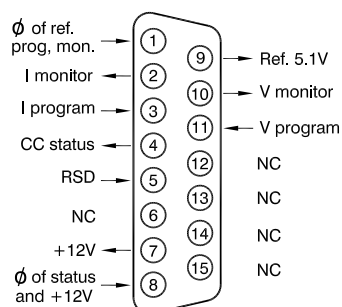


High programming speed of output voltage, 0 - 30 V in 1 ms (no electrolytic capacitors on output)

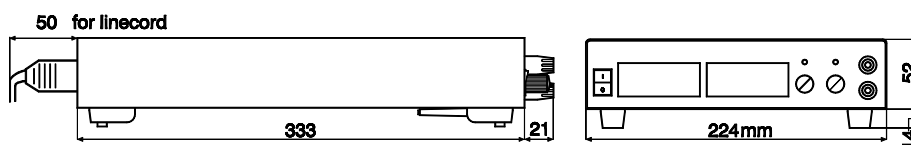


HF transformer has two isolated bobbins providing very safe 4 kV rms dielectric strength between input and output circuits.

• Voltage regulation:	Load 0-100% 10 mV Line 100-260 V AC 1 mV	• Monitor outputs	
• Current regulation	: Load 0-100% 4 mA Line 100-260 V AC 1 mA	Voltage	: 0-5 V, offset 0 to +7 mV full scale error +/- 0.2%
• Ripple + noise (BW = 20 MHz)	: CV 5 mV rms, 15 mV p-p CC 6 mA rms, 15 mA p-p	Current	: 0-5 V, offset -5 to 0 mV full scale error +/- 0.5% Output imp. 1 Ohm, max 4 mA
• Stability	: After 1 hr warm up, during 8 hrs CV: $3 \cdot 10^{-4}$ CC: $1 \cdot 10^{-3}$ ($T_a = 25^\circ\text{C}$)	• Reference voltage	: 5.165 V +/- 31 mV, TC 12 ppm typ. 30 ppm max.
• Temp. coefficient/ $^\circ\text{C}$	: $5 \cdot 10^{-5}$ (CV), $1 \cdot 10^{-4}$ (CC)	• CC status output	: +5 V (or 5 mA) when in CC mode.
• Output impedance	: Less than 0.3 Ohm up to 100 kHz ($I_{out} > 0.5$ A)	• Remote shut down	: +5 V (3.5 - 12 V) or relay contact, response time 3 ms
• Recovery time	: 50 μs to within 0.1 V after 50-100% load step. Max. deviation 0.3 V.	• Remote sensing	: Is not provided
• Hold up time	: 18 ms at full load, 50 ms at half load (V_{in} 100-230 V AC)	• Over voltage limit	: Fixed at 34 V (Int.adjust. 6-34 V)
• Ambient temperature	: Storage -40 to +85 $^\circ\text{C}$ Operating -20 to +50 $^\circ\text{C}$. Above 50 $^\circ\text{C}$ derate output current linearly to 20% at 75 $^\circ\text{C}$.	• Thermal protection	: Shuts down output in case of insufficient cooling.
		• Digital meters	: 0-30.0 V / 0-10.00 A 0.5% + 2 dig.
		• MTBF	: 500 000hrs
		• Dimensions and weight	: Height 52 mm Depth 333 mm Width 214 mm Weight 3.1 kg
		• Enclosure	: IP20



Connections 15-p D-connector



Dimensions

Typical Applications

- Test and measurement
- Controlled battery charging
- Electronic Circuit Development
- Component device testing
- ATE in industrial production lines
- Medical research equipment
- Laboratory analysis
- Accurate current sources

Available Options

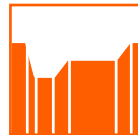


Increased Output Power

The conservatively rated unit allows to deliver extra output with the same reliability.

At some derating, either the maximum output voltage or the maximum output current can be increased by about 10%.

- Order Code - P069



Sequencer

Arbitrary Waveform generator or standalone automation. The sequencer is integrated in the Ethernet controller.

- Order Code - P179



Rear Power Output and Remote Sensing

Output terminals at the rear panel instead of bind posts at the front panel, includes remote sensing.

- Order Code - P185



19" Rack Mounting Adapter

Using the 19" mounting adapters, its possible to position the ES units in a 19" rack. Several configurations possible with multiple ES and / or PSC or ISO AMP modules.



Software control and Interfaces

Factory installed programming interfaces:

- Ethernet controller (incl.sequencer) - P179
- RS232 controller - P180
- PROFIBUS controller - P281
- CANBUS controller - P282

External programming interface modules :

- IEEE488 controller module
- ISO AMP module

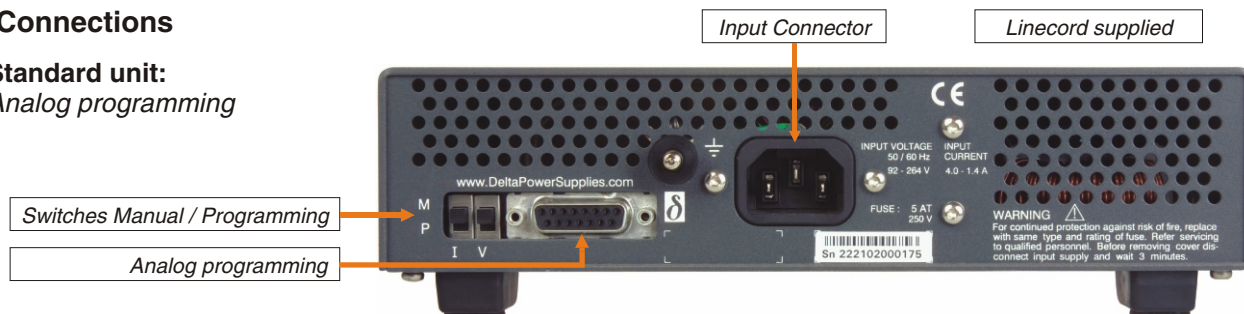
Notes: 1. Download the special datasheet about Battery Charging from www.DeltaPowerSupplies.com.
2. There is only room for one of the interfaces in a unit, see next page for configurations.

19" rack mounting

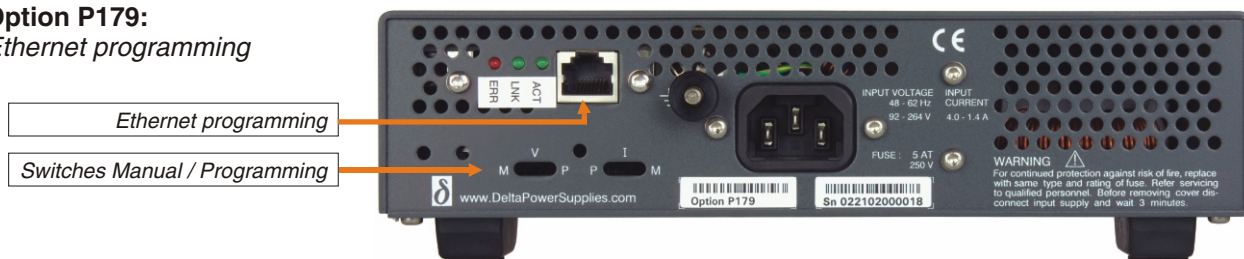


Rear Connections

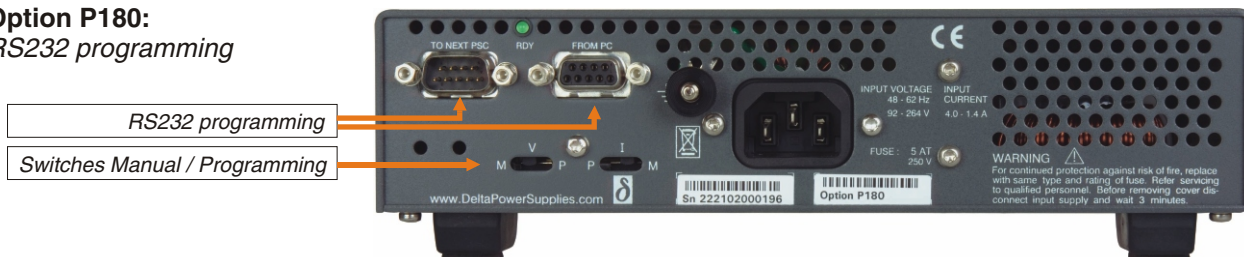
Standard unit:
Analog programming



Option P179:
Ethernet programming



Option P180:
RS232 programming



Option P185:
Rear power outlet + Rem.Sense

