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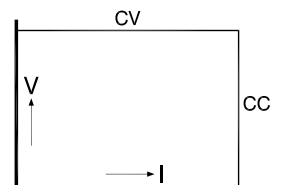


**DELTA ELEKTRONIKA B.V.**



## ES 300 Series 300 watts DC POWER SUPPLIES

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



### Features

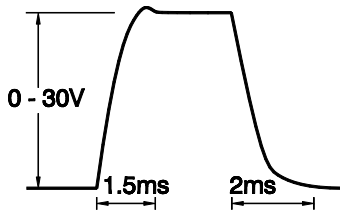
- Very low output ripple and spikes
- EMC surpasses CE requirements: low emissions & high immunity
- High programming speed
- Excellent dynamic response to load changes
- Protected against all overload and short circuit conditions
- Designed for a long life at full power

### Functionalities

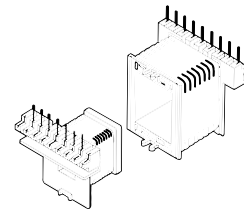
- Master/Slave parallel and series operation with voltage and current sharing
- Voltage and current control with 10 turn potentiometers
- 19" rack mounting or for laboratory use (feet included)
- Remote sensing

- Input voltage : AC 92-264 V 48-62 Hz  
Fuse 5 A T
- Input current : 1.55 A at 230 V AC  
3.20 A at 115 V AC
- Power factor : Better than 0.97
- Efficiency : 86% at 230 V AC, 82% at 115 V AC
- Inrush current : Limited with NTC resistor of 16 Ohms cold resistance
- Insulation :  
Input / output : 4 kV rms (1 min.), 8 mm cr./cl.  
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

- Series operation : Normal and Master / Slave series operation is possible. For fast and easy operation the M/S - SERIES ADAPTER is recommended.
- Parallel operation : No limitations. Normal and Master / Slave parallel operation is possible.
- V and I control : 10-turn potmeters, res. 0.03%.
- Programming inputs :  
Voltage : 0-5 V, offset -3 to +10 mV  
full scale error +/- 0.2%  
Current : 0-5 V, offset 0 to +20 mV  
full scale error +/- 0.5%  
Input impedance 1 MOhm
- Progr. response time : Up 0-30 V 1 ms Down 30-5 V 2 ms with load 3 Ohm



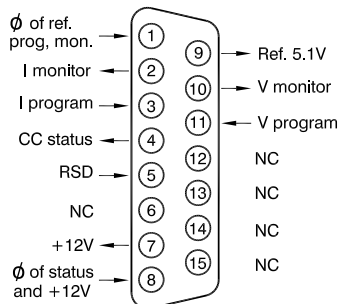
High programming speed of output voltage, 0 - 30 V in 1 ms (no electrolytic capacitors on output)



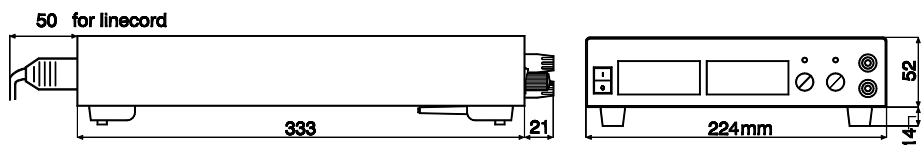
HF transformer has two isolated bobbins providing very safe 4 kV rms dielectric strength between input and output circuits.

- Voltage regulation: Load 0-100% 10 mV  
Line 100-260 V AC 1 mV
- Current regulation : Load 0-100% 4 mA  
Line 100-260 V AC 1 mA
- Ripple + noise : CV 5 mV rms, 15 mV p-p  
(BW = 20 MHz)  
CC 6 mA rms, 15 mA p-p
- Stability : After 1 hr warm up, during 8 hrs  
CV:  $3 \cdot 10^{-4}$  CC:  $1 \cdot 10^{-3}$  ( $T_a = 25^\circ\text{C}$ )
- Temp. coefficient/ °C :  $5 \cdot 10^{-5}$  (CV),  $1 \cdot 10^{-4}$  (CC)
- Output impedance : Less than 0.3 Ohm up to 100 kHz  
( $I_{out} > 0.5\text{ A}$ )
- Recovery time : 50  $\mu\text{s}$  to within 0.1 V after 50-100% load step. Max. deviation 0.3 V.
- Hold up time : 18 ms at full load, 50 ms at half load  
( $V_{in}$  100-230 V AC)
- Ambient temperature : Storage -40 to +85 °C  
Operating -20 to +50 °C.  
Above 50 °C derate output current linearly to 20% at 75 °C.

- Monitor outputs :  
Voltage : 0-5 V, offset 0 to +7 mV  
full scale error +/- 0.2%  
Current : 0-5 V, offset -5 to 0 mV  
full scale error +/- 0.5%  
Output imp. 1 Ohm, max 4 mA
- Reference voltage : 5.165 V +/- 31 mV, TC 12 ppm typ.  
30 ppm max.
- CC status output : +5 V (or 5 mA) when in CC mode.
- Remote shut down : +5 V (3.5 - 12 V) or relay contact,  
response time 3 ms
- Remote sensing : Is not provided
- Over voltage limit : Fixed at 34 V (Int.adjust. 6-34 V)
- 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
- Laboratory analysis
- Medical research equipment
- 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



### High Voltage Isolation

A higher output isolation allows series operation up to 1000V.

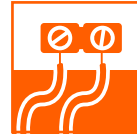
- Order Code - P089



### 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



### 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



### 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.

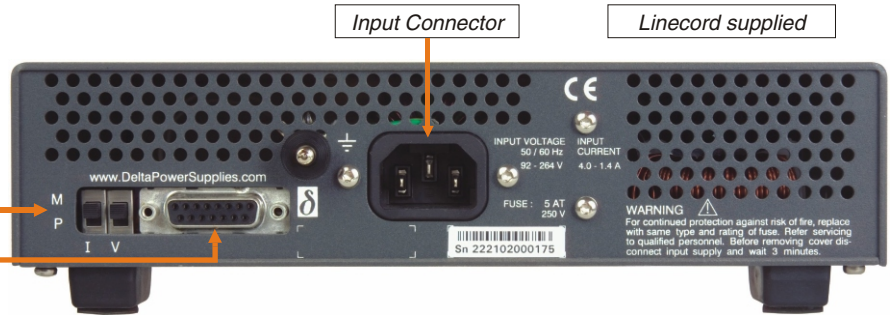
**19" rack mounting**



**Rear Connections**

**Standard unit:**  
*Analog programming*

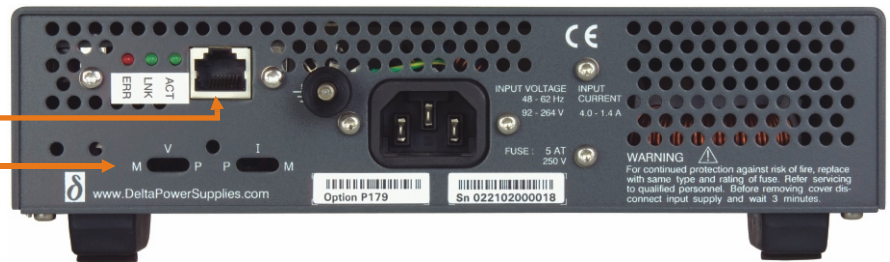
Switches Manual / Programming  
Analog programming



**Option P179:**  
*Ethernet programming*

Ethernet programming  
Switches Manual / Programming

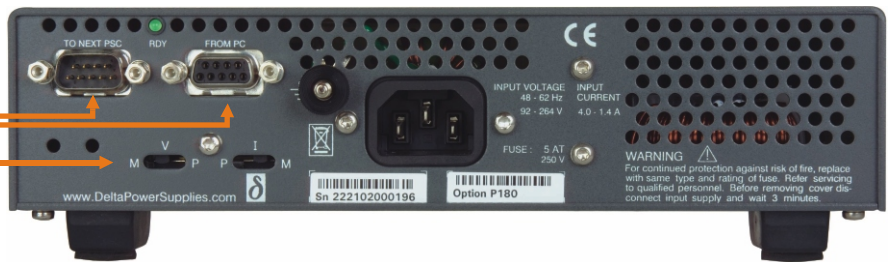
Combination possible with option P185



**Option P180:**  
*RS232 programming*

RS232 programming  
Switches Manual / Programming

Combination possible with option P185



**Option P185:**  
*Rear power outlet*

Rear power outlet  
Switches Manual / Programming  
Analog programming

