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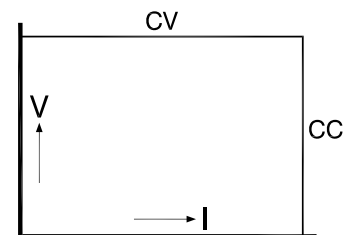


DELTA ELEKTRONIKA B.V.



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

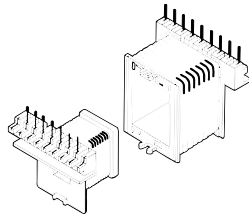
Series operation : Normal and Master / Slave series operation is possible. For fast and easy operation the M/S - SERIES ADAPTER is recommended.

Parallel operation : No limitations. Normal and Master / Slave parallel operation is possible.

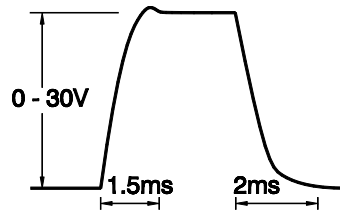
V and I control : 10-turn potmeters, res. 0.03%.

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
with load 3 Ohm Down 30-5 V 2 ms



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



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

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

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 (BW = 20 MHz) : CV 5 mV rms, 15 mV p-p
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 μs 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)

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)

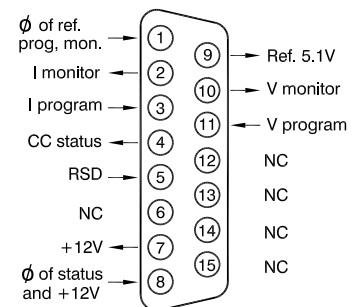
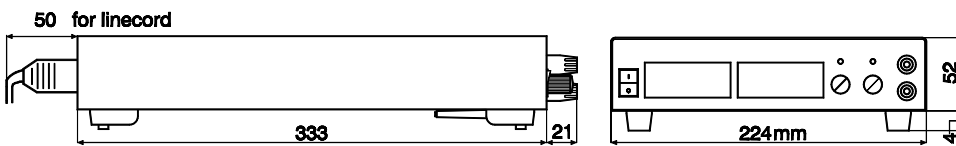
Thermal protection : Shuts down output in case of insufficient cooling.

Digital meters : 0-30.0 V / 0-10.00 A 0.5% + 2 dig.

Dim. and weight : h x w x d = 52 x 224 x 333 mm, 3.1 kg

Enclosure : IP20

Ambient temperature: Storage -40 to +85 °C
Operating -20 to +50 °C.
Above 50 °C derate output current linearly to 20% at 75 °C.



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.

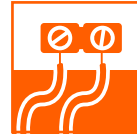
- Order Code - P089



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.

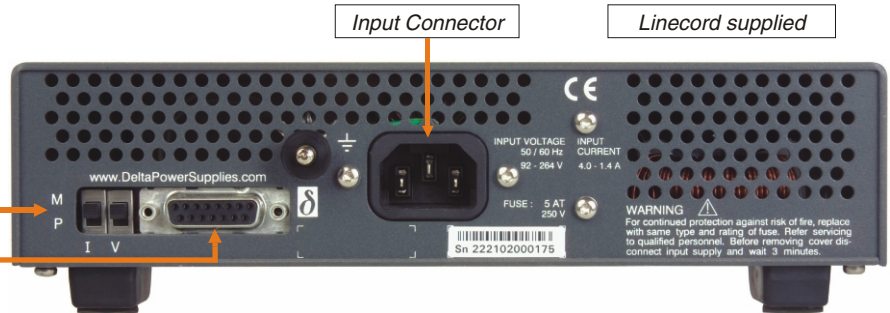
19" rack mounting



Rear Connections

Standard unit:
Analog programming

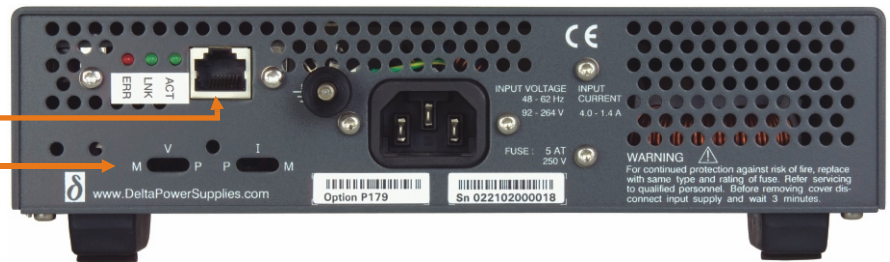
Switches Manual / Programming
Analog programming



Option P179:
Ethernet programming

Ethernet programming
Switches Manual / Programming

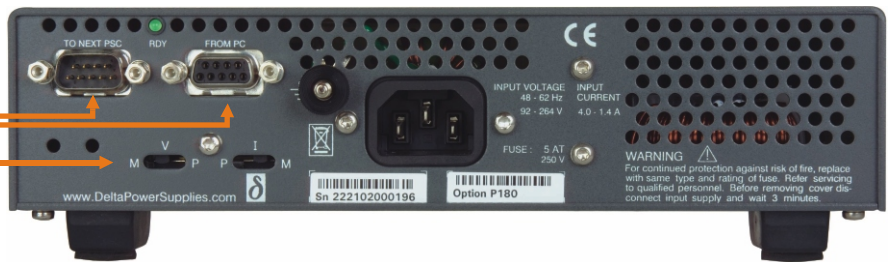
Combination possible with option P185



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

