REGULATED DC POWER SUPPLIES.

PRODUCT CATALOG

132

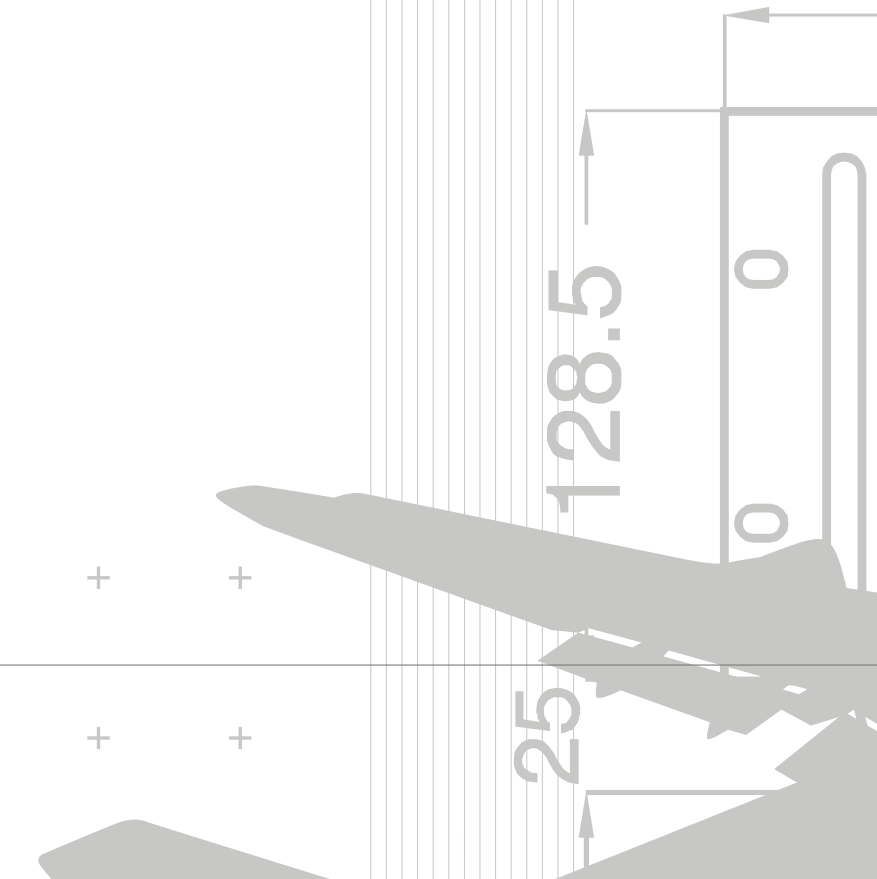
NEW!

Bi-directional
DC power supply

DELTA ELEKTRONIKA
DC POWER SUPPLIES

PRODUCT CATALOG

Table of contents:



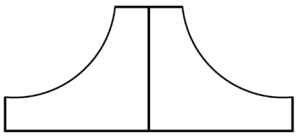
SM15K series

BI-DIRECTIONAL DC POWER SUPPLIES

Units	Voltage range	Current range
SM70 - CP - 450	0 - 70 V	-450 ... 450 A
SM 500 - CP - 90	0 - 500 V	-90 ... 90 A
SM1500 - CP - 30	0 - 1500 V	-30 ... 30 A

NEW!

Bi-directional DC power supply



Features

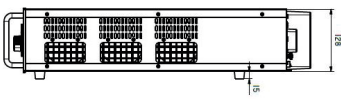
- Bi-directional power supply with standard 15 kW source and sink
- Flexible output with Constant Power characteristics
- Power Regeneration Technology: in sink mode the PSU returns the energy back into the grid
- Very low heat dissipation. Efficiency is more than 95%
- No need for expensive cooling systems
- Excellent dynamic responses to load changes incl. all-digital control to adapt regulation to match load type

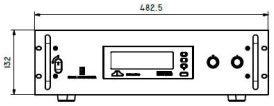
Functionalities

- Operation on wide range of 3 phase AC-input voltages
- Low audible noise: temperature controlled cooling fans
- Large user display, menu driven operation
- Durable digital encoders for voltage and current adjustment and menu operation
- Max. 4 plug and play optional interfaces
- Ethernet interface, built-in sequencer and web interface are included

Dimensions and Weight

Width = 19"
Height = 3 U
Weight = 27 kg





Specifications

- Input voltage (3 phase) : 342-528 V AC (48-62 Hz)
- Active Power Factor Correction (PFC) : up to 0.996 (at 100 % load)
- Efficiency (sink & source mode) : up to 96% (at full load)
- Output ripple and spikes : from 10 mV_{rms} / 55 mV_{pp}
- Regulation : from 4 mV (0-100% load step)
- Recovery time : from 100 µs (50-100% load step)
- Programming speed : from 1.5 ms (10-90%)
- Output voltage and current stability : from 50.10^{-6} / 80.10^{-6}
- MTBF : 500.000 hrs
- Operating ambient temperature : -20 to +50 °C

Standards

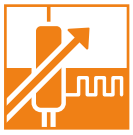
- Power supply standard EN 61204-3
- Generic Emission EN 61000-6-3 (EN 55022B)
- Generic Immunity EN 61000-6-2
- Safety EN 60950 / EN 61010
- Insulation input / output 3750 V_{rms}
- Enclosure IP20

Typical Applications

- Solar inverter testing, PV-Simulation
- Car testing systems
- ATE in industrial production lines
- Plasma chambers
- Automotive battery simulations
- Controlled battery (dis)charging
- Lasers
- Sustainable energy
- Driving PWM-Controlled DC motors
- Accurate current sources
- Aerospace and military equipment

Standard Features

Bi-Directional Two-Quadrant Output
Full power Bi-Directional two quadrant operation maintains the DC output voltage constant whether the output power is positive or negative. Ideal for PWM-speed controlled DC-Motors and ATE systems.



Digital CV-, CC- and CP-Settings
Reliable, longlife digital encoders are implemented at the front panel. Includes total front panel lock and a coarse or fine pitch adjustment depending on the turning speed.

Sequencer

Arbitrary Waveform generator or standalone automation.

More information about this:
Page 18

High Voltage Isolation
A high DC output isolation allows series operation up to 1000 V.

Ethernet Interface
Ethernet interface for programming and monitoring. Integrated function blocks: leadless sensing and internal resistance.

Flex output: Constant Power
Flexible output with Constant Power characteristics.

Available Options

Software Control and Interfaces
Plug&Play interfaces:

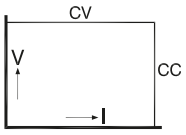
- Isolated analog programming interface
- Digital I/O interface
- Interface with isolated contacts
- Serial interface with multiple protocols: RS232, RS485, RS422 and USB (device)
- Master / Slave interface (up to 300 kW)

More information about this:
Page 16

Master / Slave assembly kit
Connection sets for master / slave set-ups using the M/S PAR or M/S SER assembly kits.

SM6000 series

6000 W DC POWER SUPPLIES



Units	Voltage range	Current range
SM 15 - 400	0 - 15 V	0 - 400 A
SM 30 - 200	0 - 30 V	0 - 200 A
SM 45 - 140	0 - 45 V	0 - 140 A
SM 60 - 100	0 - 60 V	0 - 100 A
SM 70 - 90	0 - 70 V	0 - 90 A
SM 120 - 50	0 - 120 V	0 - 50 A
SM 300 - 20	0 - 300 V	0 - 20 A
SM 600 - 10	0 - 600 V	0 - 10 A

Features

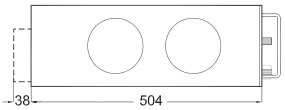
- Designed for long life at full power
- Excellent dynamic response to load changes
- Protected against all overload and short circuit conditions
- EMC surpasses CE requirements: low emission & high immunity
- Low audible noise: fans are temperature controlled

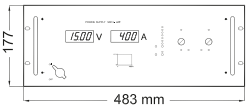
Functionalities

- Master/Slave parallel and series operation with voltage and current sharing
- Stacking is allowed, space between units is not required
- High power system configuration from multiple units
- 19" rack mounting or for laboratory use (feet included)
- Remote sensing
- Interlock

Dimensions and Weight

Width = 19"
Height = 4 U
Weight = 27 kg





Specifications

- Three phase input *(rated voltage input)* : 380 - 480 V AC $V_{nom.}$ line to line (48-62 Hz)
- Active Power Factor Correction (PFC) : 0.98 (at 100% load)
- Efficiency : up to 90% (at full load)
- Output ripple and spikes : from 0.8 mV_{rms} / 8 mV_{pp}
- Regulation : from 2.5 mV (0-100% load step)
- Recovery time : from 100 µs (50-100% load step)
- Programming speed : from 2.7 ms (10-90%), optional from 0.4 ms
- Analog programming accuracy : from 0.2%
- Output voltage and current stability : 5.10^{-5} / 10.10^{-5}
- MTBF : 500.000 hrs
- Operating ambient temperature : -20 to +50 °C

Standards

- Power supply standard EN 61204-3
- Generic Emission EN 61000-6-3 (EN 55022B)
- Generic Immunity EN 61000-6-2
- Safety EN 60950 / EN 61010
- Insulation input / output 3750 V_{rms}
- Enclosure IP20
- cTÜVus

Typical Applications

- Solar Inverter testing, PV-simulation
- Plasma chambers
- Hybrid car test systems
- ATE in industrial production lines
- Automotive battery simulation
- Controlled battery (dis)charging
- Lasers
- Driving PWM-controlled DC-motors
- Accurate current sources
- Aerospace and military equipment

Available Options

Increased Output Power

The conservatively rated unit allows to deliver extra output power with the same reliability.
At some derating, either the maximum output voltage *or* the maximum output current can be increased by about 10%.

High Speed Programming

A 10 to 20 times higher programming speed (down to 0.4 ms rise time at full load) and lower output capacitance. Excellent for laser applications, test systems or as current source with low parallel capacitance as used in plasma chambers.

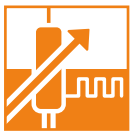
2-Quadrant Output: Power Sink

2 quadrant operation maintains the output voltage constant regardless the output power is positive or negative (for units up to 70 V). Ideal for PWM-speed controlled DC-motors and ATE systems.

Sequencer

Arbitrary Waveform generator or stand-alone automation.
The sequencer is integrated in the Ethernet controller.

More information about this:
Page 18



Digital Voltage and Current Setting

Reliable, longlife digital encoders are implemented at the front panel.
Includes total front panel lock and a coarse or fine pitch adjustment depending on the turning speed Is standard on SM300-20 and SM600-10.

Secured Voltage and Current Setting

For maximum security, the settings for CC and CV can be adjusted with a screwdriver only and are protected with a plastic cap from accidental adjusting. SM300-20, SM600-10 and units with digital voltage and current setting already have secured settings.

Software Control and Interfaces

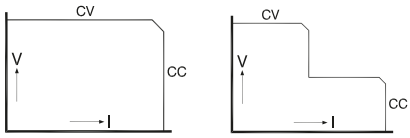
Factory installed programming interfaces:

- Ethernet (incl. sequencer & digital I/O)
- RS232
- IEEE448
- PROFIBUS
- CANBUS
- ISO AMP card - isolated analog (standard on SM300-20 & SM600-10)

Details about interfaces:
Page 18-20

SM3300 series

3300 W DC POWER SUPPLIES



Units	Voltage range	Current range
SM 18 - 220	0 - 18 V	0 - 220 A
SM 66 - AR - 110 Autoranging output	0 - 33 V 0 - 66 V	0 - 110 A 0 - 55 A
SM 100 - AR - 75 Autoranging output	0 - 50 V 0 - 100 V	0 - 75 A 0 - 37.5 A
SM 330 - AR - 22 Autoranging output	0 - 165 V 0 - 330 V	0 - 22 A 0 - 11 A
SM 660 - AR - 11 Autoranging output	0 - 330 V 0 - 660 V	0 - 11 A 0 - 5.5 A

Features

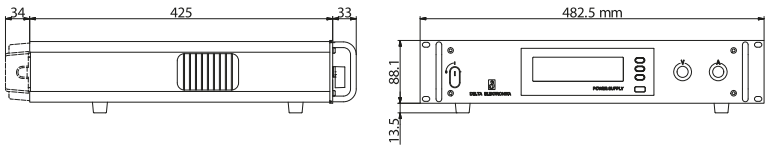
- Designed for long life at full power
- Excellent dynamic response to load changes
- Protected against all overload and short circuit conditions
- EMC surpasses CE requirements: low emission & high immunity
- Low audible noise: fan is temperature controlled

Functionalities

- Operation on single and three phase input voltages
- Standard Ethernet interface, incl. sequencer
- Large user display, menu driven operation
- Durable digital encoders for voltage and current adjustment
- Max. 4 plug and play optional interfaces
- USB input at the front for exchange of settings and wave forms

Dimensions and Weight

Width = 19"
Height = 2 U
Weight = 15 kg



Specifications

- Single and three phase input : 180-528 V AC (single or three phase 48-62 Hz) derating at low input voltage
- Active Power Factor Correction (PFC) : up to 0.99 (at 100 % load)
- Efficiency : up to 92% (at full load)
- Output ripple and spikes : from 3 mV_{rms} / 12 mV_{pp}
- Regulation : from 2.5 mV (0-100% load step)
- Recovery time : from 100 µs (50-100% load step)
- Programming speed : from 1.6 ms (10-90%), optional from 0.2 ms
- Output voltage and current stability : from 6.10^{-5} / 9.10^{-5}
- MTBF : 500.000 hrs
- Operating ambient temperature : -20 to +50 °C

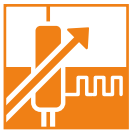
Standards

- Power supply standard EN 61204-3
- Generic Emission EN 61000-6-3 (EN 55022B)
- Generic Immunity EN 61000-6-2
- Safety EN 60950 / EN 61010
- Insulation input / output 3750 V_{rms}
- Enclosure IP20
- cTÜVus

Typical Applications

- Solar Inverter testing, PV-simulation
- Car test systems
- ATE in industrial production lines
- Plasma chambers
- Automotive battery simulation
- Controlled battery (dis)charging
- Lasers
- Driving PWM-controlled DC-motors
- Accurate current sources
- Aerospace and military equipment

Standard Features



Digital Voltage and Current Setting
Reliable, longlife digital encoders are implemented at the front panel. Includes total front panel lock and a coarse or fine pitch adjustment depending on the turning speed.

Ethernet Controller
A 16 bit Ethernet interface for programming and monitoring.

Sequencer
Arbitrary Waveform generator or stand-alone automation.

More information about this:
Page 18

High Voltage Isolation
A higher output isolation allows series operation up to 1320 V.

USB-Input
Front panel USB-input for exchange of settings and waveforms (device).

Available Options

Software Control and Interfaces
Plug&Play interfaces:

- Isolated analog programming interface
- Digital I/O interface
- Interface with isolated contacts
- Master/Slave interface
- Serial interface with multiple protocols: RS232, RS485, RS422, USB (device)
- Interface with simulation software

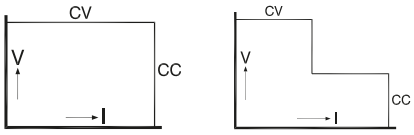
Note: standard no analog interface.
Details about SM3300 interfaces: page 17

High Speed Programming
A 10 to 20 times higher programming speed (down to 0.2 ms rise time at full load) and lower output capacitance. Excellent for laser applications, test systems or as current source with low parallel capacitance as used in plasma chambers.

2-Quadrant Output: Power Sink
2-Quadrant operation maintains the output voltage constant regardless the output power is positive or negative. Ideal for PWM-speed controlled DC-motors and ATE systems.

SM1500 series

1500 W DC POWER SUPPLIES



Units	Voltage range	Current range
SM 15 - 100	0 -15 V	0 - 100 A
SM 35 - 45	0 - 35 V	0 - 45 A
SM 52 - 30	0 - 52 V	0 - 30 A
SM 52 - AR - 60 Autoranging output	0 - 26 V 0 - 52 V	0 - 60 A 0 - 30 A
SM 70 - 22	0 - 70 V	0 - 22 A
SM 120 - 13	0 - 120 V	0 - 13 A
SM 300 - 5	0 - 300 V	0 - 5 A
SM 400 - AR - 8 Autoranging output	0 - 200 V 0 - 400 V	0 - 8 A 0 - 4 A

Features

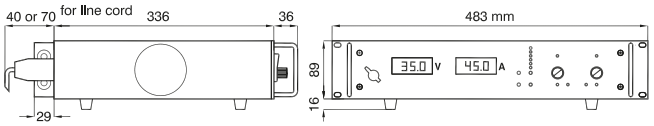
- Designed for long life at full power
- Excellent dynamic response to load changes
- Protected against all overload and short circuit conditions
- EMC surpasses CE requirements: low emission & high immunity
- Low audible noise: fan is temperature controlled

Functionalities

- Master/Slave parallel and series operation with voltage and current sharing
- Stacking is allowed , space between units is not required
- 19" rack mounting or for laboratory use (feet included)
- High power system configuration from multiple units
- Remote sensing
- Interlock

Dimensions and Weight

Width = 19" Weight = 9,9 kg
Height = 2 U



Specifications

- Single phase input : 90-265 V AC (48-62 Hz)
- Active Power Factor Correction (PFC) : 0.99 (at 100 % load)
- Efficiency : up to 91% (at full load)
- Output ripple and spikes : from 1.8 mV_{rms} / 8 mV_{pp}
- Regulation : from 0.5 mV (0-100% load step)
- Recovery time : from 100 µs (50-100% load step)
- Programming speed : from 3.4 ms (10-90%), optional from 0.2 ms
- Analog programming accuracy : from 0.2%
- Output voltage and current stability : 6.10^{-5} / 9.10^{-5}
- MTBF : 500.000 hrs
- Operating ambient temperature : -20 to +50 °C

Standards

- Power supply standard EN 61204-3
- Generic Emission EN 61000-6-3 (EN 55022B)
- Generic Immunity EN 61000-6-2
- Safety EN 60950 / EN 61010
- Insulation input / output 3750 V_{rms}
- Enclosure IP20
- cTÜVus

Typical Applications

- Solar Inverter testing, PV-simulation
- Semiconductor burn-in & processing
- Car test systems
- ATE in industrial production lines
- Lasers
- Controlled battery (dis)charging
- Component device testing
- Driving PWM-controlled DC-motors
- Accurate current sources
- Aerospace and military equipment

Available Options

Increased Output Power

The conservatively rated unit allows to deliver extra output power with the same reliability.
At some derating, either the maximum output voltage *or* the maximum output current can be increased by about 10%.

High Speed Programming

A 10 to 20 times higher programming speed (down to 0.2 ms rise time at full load) and lower output capacitance. Excellent for laser applications, test systems or as current source with low parallel capacitance as used in plasma chambers.

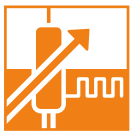
2-Quadrant Output: Power Sink

2-Quadrant operation maintains the output voltage constant regardless the output power is positive or negative (for units up to 70 V). Ideal for PWM-speed controlled DC-motors and ATE systems.

Sequencer

Arbitrary Waveform generator or stand-alone automation.
The sequencer is integrated in the Ethernet controller.

More information about this:
Page 18



Digital Voltage and Current Setting

Reliable, longlife digital encoders are implemented at the front panel.
Includes total front panel lock and a coarse or fine pitch adjustment depending on the turning speed.

Secured Voltage and Current Setting

For maximum security, the settings for CC and CC can be adjusted with a screwdriver only and are protected with a plastic cap from accidental adjusting. Units with digital voltage and current setting already have secured settings.

Software Control and Interfaces

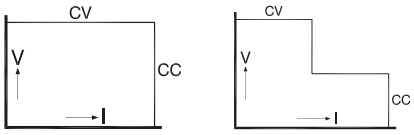
Factory installed programming interfaces:

- Ethernet (incl. sequencer & digital I/O)
- RS232
- IEEE448
- PROFIBUS
- CANBUS
- ISO AMP card - isolated analog

Details about interfaces:
Page 18-20

SM800 series

800 W DC POWER SUPPLIES



Features

- Designed for long life at full power
- Excellent dynamic response to load changes
- Protected against all overload and short circuit conditions
- EMC surpasses CE requirements: low emission & high immunity
- Low audible noise: fan is temperature controlled

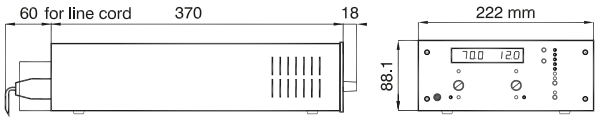
Units	Voltage range	Current range
SM 7.5 - 80	0 - 7.5 V	0 - 80 A
SM 18 - 50	0 - 18 V	0 - 50 A
SM 70 - AR - 24 Autoranging output	0 - 35 V 0 - 70 V	0 - 24 A 0 - 12 A
SM 400 - AR - 4 Autoranging output	0 - 200 V 0 - 400 V	0 - 4 A 0 - 2 A

Functionalities

- Master/Slave parallel and series operation with voltage and current sharing
- Stacking is allowed, space between units is not required
- High power system configuration from multiple units
- Laboratory use (feet included), 19" rack mounting optional
- Remote sensing
- Interlock

Dimensions and Weight

Width = half 19" Weight = 5,4 kg
Height = 2 U



Specifications

- Single phase input : 90-265 V AC (48-62 Hz)
- Active Power Factor Correction (PFC) : 0.99 (at 100% load)
- Efficiency : up to 89% (at full load)
- Output ripple and spikes : from 2 mV_{rms} / 8 mV_{pp}
- Regulation : from 0.2 mV (0-100% load step)
- Recovery time : from 100 µs (50-100% load step)
- Programming speed : from 4 ms (10-90%), optional from 0.2 ms
- Analog programming accuracy : from 0.2%
- Output voltage and current stability : 6.10^{-5} / 9.10^{-5}
- MTBF : 500.000 hrs
- Operating ambient temperature : -20 to +50 °C

Standards

- Power supply standard EN 61204-3
- Generic Emission EN 61000-6-3 (EN 55022B)
- Generic Immunity EN 61000-6-2
- Safety EN 60950 / EN 61010
- Insulation input / output 3750 V_{rms}
- Enclosure IP20

Typical Applications

- Accurate current sources
- Electronic circuit development
- Component device testing
- ATE in industrial production lines
- Automotive battery simulation
- Controlled battery (dis)charging
- Lasers
- Driving PWM-controlled DC-motors
- Medical research equipment
- Aerospace and military equipment

Available Options

Increased Output Power

The conservatively rated unit allows to deliver extra output power with the same reliability.
At some derating, either the maximum output voltage *or* the maximum output current can be increased by about 10%.

High Speed Programming

A 10 to 20 times higher programming speed (down to 0.2 ms rise time at full load) and lower output capacitance. Excellent for laser applications, test systems or as current source with low parallel capacitance as used in plasma chambers.

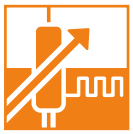
2-Quadrant Output: Power Sink

2-Quadrant operation maintains the output voltage constant regardless the output power is positive or negative. Ideal for PWM-speed controlled DC-motors and ATE systems.

Sequencer

Arbitrary Waveform generator or stand-alone automation.
The sequencer is integrated in the Ethernet controller.

More information about this:
Page 18



Digital Voltage and Current Setting

Reliable, longlife digital encoders are implemented at the front panel.
Includes total front panel lock and a coarse or fine pitch adjustment depending on the turning speed.

Secured Voltage and Current Setting

For maximum security, the settings for CC and CC can be adjusted with a screwdriver only and are protected with a plastic cap from accidental adjusting. Units with digital voltage and current setting already have secured settings.

Software Control and Interfaces

Factory installed programming interfaces:

- Ethernet (incl. sequencer & digital I/O)
- RS232
- IEEE448
- PROFIBUS
- CANBUS
- ISO AMP card - isolated analog

Details about interfaces:
Page 18-20

19" Rack Mounting Adapter

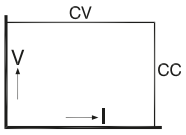
Rack adapter sets for positioning SM800 units in a 19" rack.

Front Power Output

Bind posts at the front panel instead of at the rear panel (n/a for SM7.5-80).

ES300 series

300 W DC POWER SUPPLIES



Features

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

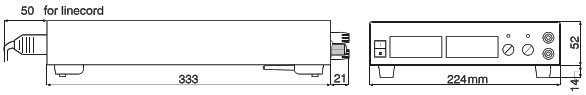
Functionalities

- Master/Slave parallel and series operation with voltage and current sharing
- Voltage and current control with 10 turn potentiometers
- Laboratory use (feet included), 19" rack mounting optional

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

Dimensions and Weight

Width = half 19" Weight = 3,1 kg
Height = 66 mm, incl. feet



Specifications

- Single phase input : 92 -264 V AC (48-62 Hz)
- Active Power Factor Correction (PFC) : 0.99 / 0.96 (at 100% load)
- Efficiency : up to 86% (at full load)
- Output ripple and spikes : 5 mV_{rms} / 15 mV_{pp}
- Regulation : 10 mV (0-100% load step)
- Recovery time : 50 µs (50-100% load step)
- Programming speed : 0.8 ms (10-90%)
- Analog programming accuracy : from 0.2%
- Output voltage and current stability : 30.10^{-5} / 10.10^{-4}
- MTBF : 500.000 hrs
- Operating ambient temperature : -20 to +50 °C

Standards

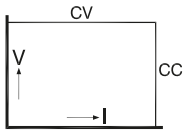
- Power supply standard EN 61204-3
- Generic Emission EN 61000-6-3 (EN 55022B)
- Generic Immunity EN 61000-6-2
- Safety EN 60950 / EN 61010
- Insulation input / output 3750 V_{rms}
- Enclosure IP20

Available Options

More information about options.
Page 14

ES150 series

150 W DC POWER SUPPLIES



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 long life at full power

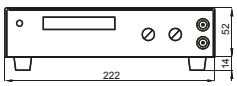
Units	Voltage range	Current range
ES 015 - 10	0 - 15 V	0 - 10 A
ES 030 - 5	0 - 30 V	0 - 5 A
ES 075 - 2	0 - 75 V	0 - 2 A
ES 0300 - 0.45	0 - 300 V	0 - 450 mA

Functionalities

- Master/Slave parallel and series operation with voltage and current sharing
- Voltage and current control with 10 turn potentiometers
- Laboratory use (feet included), 19" rack mounting optional
- Convection cooling

Dimensions and Weight

Width = half 19" Weight = 1,7 kg
Height = 66 mm, incl. feet



Specifications

- Single phase input : 90-265 V AC (48-62 Hz)
- Active Power Factor Correction (PFC) : 0.99 / 0.83 (at 100% load)
- Efficiency : up to 84% (at full load)
- Output ripple and spikes : from 0.5 mV_{rms} / 8 mV_{pp}
- Regulation : from 5 mV (0-100% load step)
- Recovery time : from 100 µs (50-100% load step)
- Programming speed : from 7 ms (10-90%)
- Analog programming accuracy : from 0.2%
- Output voltage and current stability : from 10.10^{-5} / 10.10^{-5}
- MTBF : 500.000 hrs
- Operating ambient temperature : -20 to +50 °C

Standards

- Power supply standard EN 61204-3
- Generic Emission EN 61000-6-3 (EN 55022B)
- Generic Immunity EN 61000-6-2
- Safety EN 60950 / EN 61010
- Insulation input / output 3750 V_{rms}
- Enclosure IP20
- cTÜVus

Available Options

More information about options.
Page 14

Applications & Options

ES150 / 300 series

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 (Not for EST150)

Increased Output Power

The conservatively rated unit allows to deliver extra output power with the same reliability.
At some derating, either the maximum output voltage *or* the maximum output current can be increased by about 10%.

Secured Voltage and Current Setting

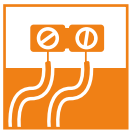
For maximum security, the settings for CC and CC can be adjusted with a screwdriver only and are protected with a plastic cap from accidental adjusting.

Only available for the ES 150 series

Sequencer

Arbitrary Waveform generator or stand-alone automation.
The sequencer is integrated in the Ethernet controller.

More information about this:
Page 18



Rear Power Output and Remote Sensing

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

19" Rack Mounting Adapter

Rack adapter sets for positioning the ES300 or ES150 units in a 19" rack. Several mounting options possible.

Software Control and Interfaces

Factory installed programming interfaces:

- Ethernet (incl. sequencer)
- RS232
- PROFIBUS
- CANBUS

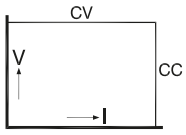
External programming interface modules:

- Ethernet module
- IEEE488 module
- ISO AMP module
- RS232 module

Details about interfaces:
Page 18-20

EST150 series

150 W, TRIPLE OUTPUT DC POWER SUPPLIES



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 long life at full power

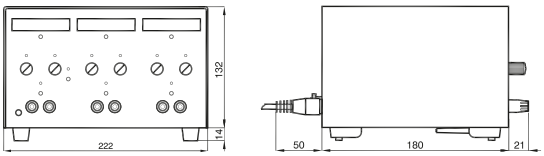
Unit	Voltage range	Current range
EST 150		
Output 1	0 - 20 V	0 - 2.5 A
Output 2	0 - 20 V	0 - 2.5 A
Output 3	0 - 10 V	0 - 5 A

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

Dimensions and Weight

Width = half 19"
Height = 146 mm, incl. feet
Weight = 3,5 kg



Specifications

- Single phase input : 90-265 V AC (48-62 Hz)
- Active Power Factor Correction (PFC) : 0.99 / 0.83 (at 100% load)
- Efficiency : up to 81% (at full load)
- Output ripple and spikes : from 0.5 mV_{rms} / 8 mV_{pp}
- Regulation : from 5 mV (0-100% load step)
- Recovery time : 100 µs (50-100% load step)
- Tracking accuracy : 0.5%
- Output voltage and current stability : 10.10^{-5} / 10.10^{-5}
- MTBF : 500.000 hrs
- Operating ambient temperature : -20 to +50 °C

Standards

- Power supply standard EN 61204-3
- Generic Emission EN 61000-6-3 (EN 55022B)
- Generic Immunity EN 61000-6-2
- Safety EN 60950 / EN 61010 / SELV
- Insulation input / output 3750 V_{rms}
- Enclosure IP20

SM15K interfaces

Interfaces	
INT MOD CON	Isolated Contacts Interface
INT MOD SER	Serial Interface
INT MOD DIG	Digital I/O Interface
INT MOD M/S-2	Master/Slave Interface SM15K
INT MOD ANA	Isolated Analog interface

General Features

- Plug and play for the SM15K series power supplies
- Multiple interfaces possible per power supply
- Isolated from the output voltage
- Working voltage 1000 V
- Floating with respect to earth

Features INT MOD CON
Isolated contacts

- 4 relays with make-and-break contacts
- Additional (floating) Interlock with 24 V enable system
- Programmable via Ethernet

Features INT MOD SER
Serial controller interface

- Multi protocol : RS232, RS485, RS422, USB
- Web based configuration
- Speeds up to 115.2 kbps

Features INT MOD DIG
Digital (user) I/O

- 8 inputs Logic high = 2.5 ... 30 V, Logic low = 0 V
- 8 Open Drain outputs 0 - 30 V, max. 200 mA
- Programmable via Ethernet or sequences

Features INT MOD M/S-2
Master Slave Interface SM15K

- Easy control of series or parallel operation
- Multiple power supplies behave as one power supply
- Large system, up to 300 kW

Features INT MOD ANA
Analog controller interface

- High accuracy, low drift
- 16 bit AD and DA conversion
- Isolated from the output voltage, working voltage 1000 V DC

SM3300 interfaces

Interfaces	
INT MOD ANA	Isolated Analog Interface
INT MOD CON	Isolated Contacts Interface
INT MOD DIG	Digital I/O Interface
INT MOD M/S	Master/Slave Interface
INT MOD SER	Serial Interface
INT MOD SIM	Simulation Interface

General Features

- Isolated from the output voltage
  Working voltage 1000 V
- Floating with respect to earth
- Plug & Play interfaces for the SM3300 series power supplies
- Multiple interfaces possible per power supply

Features INT MOD ANA
Analog interface

- High accuracy, low drift
- 16 bit AD and DA conversion
- Compatible with other Delta Elektronika 15p analog interfaces
- Factory calibrated for optimum accuracy

Features INT MOD DIG
Digital (user) I/O interface

- 8 inputs Logic high = 2.5 ... 30 V, Logic low = 0 V
- 8 Open Drain outputs 0 - 30 V, max. 200 ma
- Programmable via Ethernet or sequences

Features INT MOD SIM
Simulation interface

- High accuracy simulation
- Simulation of photovoltaic, leadless sense compensation, internal resistance and foldback current
- Custom programmable table, for simulation of complex I-V curves
- Configurable trough web and GUI

Features INT MOD CON
Isolated contacts interface

- 4 relays with make-and-break contacts
- Additional (floating) Interlock with 24 V enable system
- Programmable via Ethernet

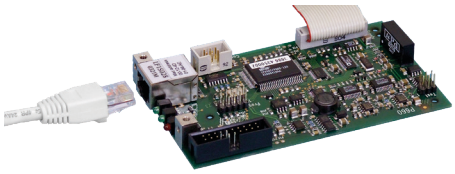
Features INT MOD SER
Serial interface

- Multi protocol RS232, RS485, RS422, USB
- Web based configuration
- Speeds up to 115.2 kbps

Features INT MOD M/S
Master / Slave interface

- Easy control of series or parallel operation
- Multiple power supplies behave as one power supply
- Mixed series and parallel is also possible

PSC series



Interface	
PSC-ETH	Ethernet interface

Features

- Voltage and current programming and monitoring
- Uses existing IP-networks
- Integrated sequencer
- Software calibration
- Isolated digital user in- and outputs
- Factory installed or as an external module

Specifications

- Programming and monitoring resolution: 16 bit
- Linearity error: +/- 2 LSB (prg.)
  +/- 1 LSB (mon.)
  TC = 10 ppm/°C
- Input voltage (external module): 98-264 V AC (48-62 Hz)

Functionalities

Interface:

- Monitoring status outputs: ACF, DCF, CC-mode, Over Temp, PSOL etc.
- Isolated user inputs (8) and outputs (6)
- Software calibration for offset and full scale

Integrated sequencer:

- Converts power supply into an arbitrary waveform generator
- Stand-alone automation like a PLC
- 25 free programmable sequences, 2000 steps each
- Combination of very fast and slow sequences
- Possibility to create loops, sub-routines, ramps etc.

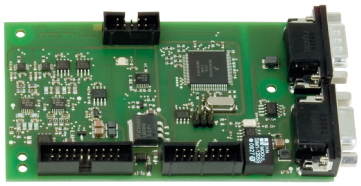
External module PSC-ETH

Standards:

Generic Emission	EN 61000-6-3 (EN 55022B)
Generic Immunity	EN 61000-6-2
Safety	EN 60950 / EN 61010
Insulation in/outputs - case	1000 V_{DC}
Enclosure	IP20

Dimensions and weight:
Dimensions: 89 x 86 x 119 mm
Weight: 0,7 kg
Optional 19" rack mounting

PSC series



Interfaces

PSC-CAN	CANopen interface
PSC-PB	PROFIBUS interface

Functionalities

CANopen Functionalities:

- SYNC Object
- Emergency Object
- Node Guarding
- Heartbeat
- Expedited and Nonexpedited SDO transfer
- Node address range 1 - 127

Features

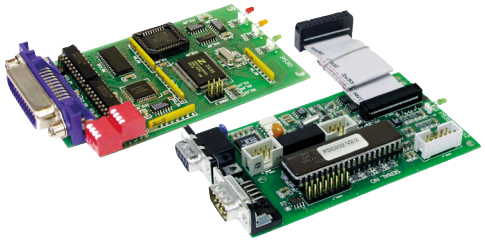
- Voltage and current programming and monitoring
- Node address setting selectable
- Read back of power supply status signals
- 600 V galvanic isolation
- Factory installed

Specifications

- Programming and monitoring resolution: 14 bit
- Communication speed: up to 12Mbit/s for PSC-PB up to 1Mbit/s for PSC-CAN
- Full scale accuracy: < 0.1%

PROFIBUS Functionalities:

- Slave in a PROFIBUS-DP network
- DP-V0 standard acc. IEC 61784 Ed. 1:2002 CPF 3/1
- PROFIBUS protocol acc. IEC 61158
- Slave address range 1 - 127



Interfaces

PSC-232	RS232 interface
PSC-488	IEEE488 interface

Functionalities

- Monitoring status outputs: ACF, DCF, CC-mode, Over Temp, PSOL etc.
- Two isolated user inputs and outputs (external modules only)
- Software calibration for offset and full scale
- PSC-488 Units can also be configured as PSC-232

Features

- Voltage and current programming and monitoring
- Up to 15 PSC's on one BUS
- Software calibration
- Isolated digital user in- and outputs
- Factory installed or as an external module

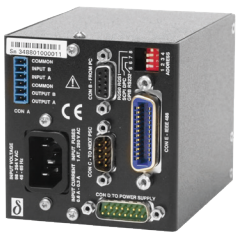
Specifications

- Programming and monitoring resolution: 16 bit
- Linearity error: +/- 2 LSB (prg.)
  +/- 1 LSB (mon.)
  TC = 10 ppm/°C
- Input voltage (external module): 98-264 V AC (48-62 Hz)

External module PSC-232 / 488

Standards:

- Generic Emission: EN 61000-6-3 (EN 55022B)
- Generic Immunity: EN 61000-6-2
- Safety: EN 60950 / EN 61010
- Insulation input / output: 1000 V_{rms}
- Enclosure: IP20



Dimensions and weight:

Dimensions: 89 x 86 x 119 mm
Weight: 0,8 kg
Optional 19" rack mounting

Analog series

Unit

ISO AMP	Isolated Analog Programming

Features

- Selectable 0-5 V and 0-10 V signal levels
- Isolated programming and monitoring of U, I and status signals
- Prevents problems with earth loops and CM-voltages
- Factory installed or **external module**
- Reinforced safety insulation 1000 V DC*

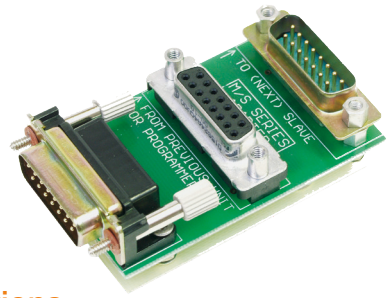
* External module has Basic insulation only

Specifications

- Programming and monitoring offset : +/- 60 µV typical
- Full scale error : 0.1% calibrated
- Non-linearity : 0.01% typical, TC = - 65ppm/°C
- Common mode rejection : 80 dB @ 50 Hz

Unit

M/S - ADAPTER	Master/Slave Series Adapter



Features

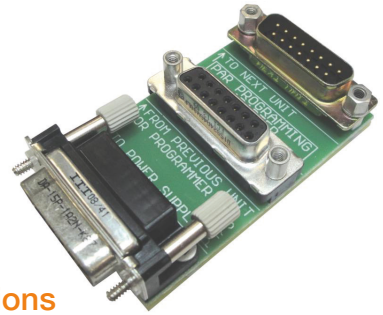
- Connecting ES-series in M/S series mode
- Equal voltage sharing in series operation
- Series operation possible up to 600 V

Specifications

- Programming and monitoring offset : +/- 60 µV typical
- Full scale error : 0.1% calibrated
- Non-linearity : 0.01% typical, TC = - 65ppm/°C
- Common mode rejection : 80 dB @ 50 Hz

Unit

PAR PROG ADAPT	Parallel Programming Adapter

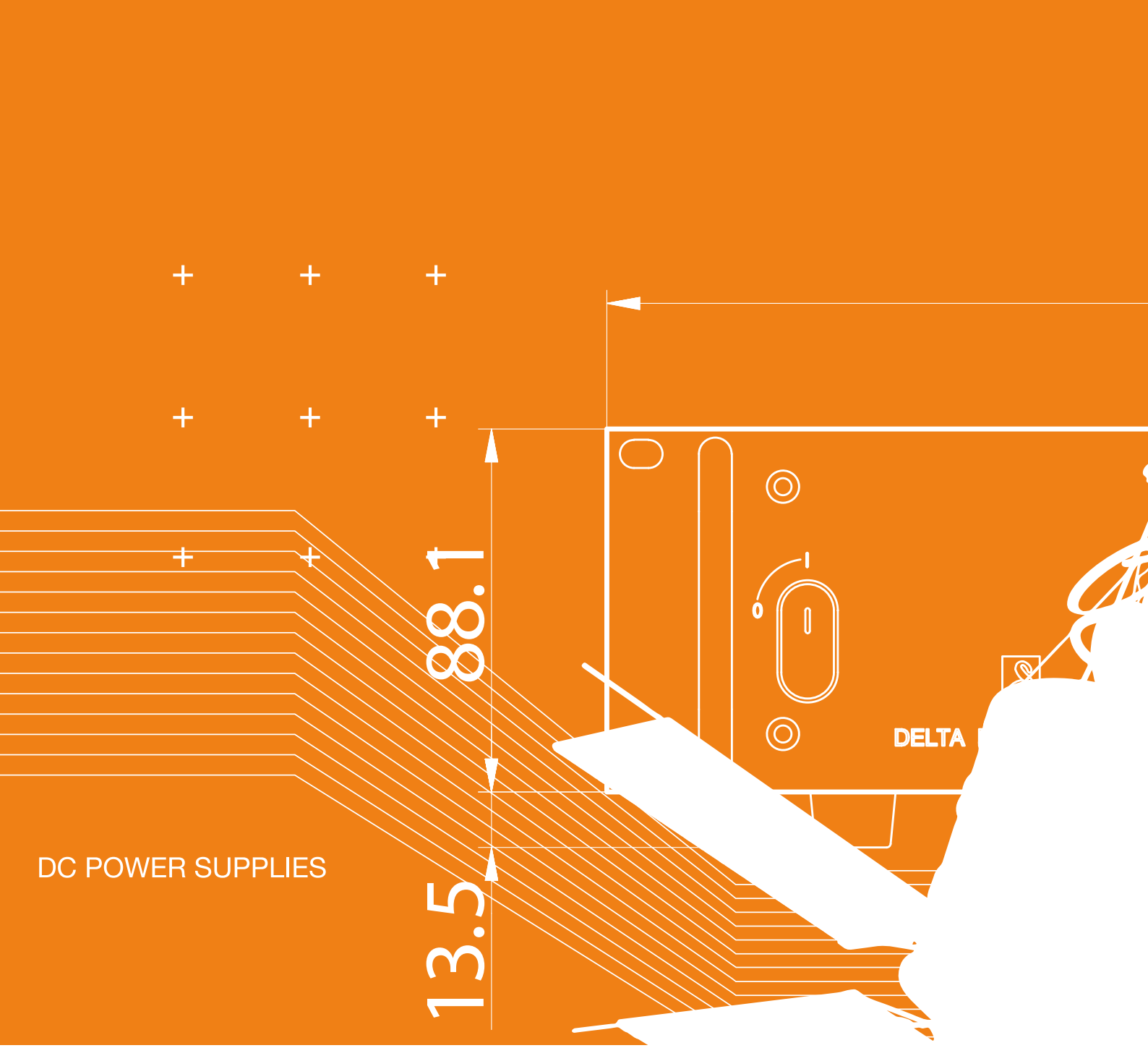


Features

- Each power supply gets the same information
- Easy way of connecting power supplies in parallel
- Fastest way to program multiple power supplies (unlimited quantity)

Specifications

- Programming accuracy : see data sheet of power supply
- Current Monitoring accuracy : add 0.2% to spec of power supply
- Voltage Monitoring accuracy : see data sheet of power supply



DC POWER SUPPLIES

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