

DECKBLATT ZUM ORIGINAL-DOKUMENT DES HERSTELLERS

# 15KW | DATENBLATT GERÄTE

**HERSTELLER** Delta Elektronik BV  
**PRODUKTSERIE** SM15k-Serie

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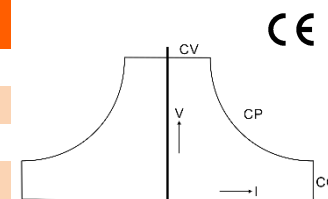
**ING. ERHARD FISCHER GMBH**  
**Immer die passende Lösung für Industrie-  
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## SM15K - Series 15kW DC POWER SUPPLIES

### Bi-Directional - Constant Power

| Models       | Voltage range | Current range |
|--------------|---------------|---------------|
| SM70-CP-450  | 0 – 70 V      | -450 – 450 A  |
| SM210-CP-150 | 0 – 210 V     | -150 – 150 A  |
| SM500-CP-90  | 0 – 500 V     | -90 – 90 A    |
| SM1000-CP-45 | 0 – 1000 V    | -45 – 45 A    |
| SM1500-CP-30 | 0 – 1500 V    | -30 – 30 A    |



### Features

- Bi-directional power supply, standard 15kW Source & Sink
- Flexible output with constant power characteristic
- Power regeneration technology: sink power is not dissipated but fed back into the grid
- Designed for long life at continuous full power
- Excellent dynamic response to load changes, digital controlled with the possibility to adapt to the type of load
- Very low heat dissipation, efficiency 95% or more
- Protected against all overload and short circuit conditions

### Functionalities

- Operation on a wide range of three phase AC input voltages
- Standard ethernet & web interface
- EMC surpasses CE requirements: low emission & high immunity
- Low audible noise: temperature-controlled cooling fans
- Durable digital encoders for voltage & current adjustment and menu operation
- Large user display, menu driven operations

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SM70-CP-450                                                                                                                                                                                | SM210-CP-150                                                                                                                                                                   | SM500-CP-90                                                                                                                                                                                      | SM1000-CP-45                                                                                                                                                                                                      | SM1500-CP-30                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Output rating</b><br>Voltage range<br>Current range                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0 - 70 V<br>- 450 - 450 A                                                                                                                                                                  | 0 - 210 V<br>- 150 - 150 A                                                                                                                                                     | 0 - 500 V<br>- 90 - 90 A                                                                                                                                                                         | 0 - 1000 V<br>- 45 - 45 A                                                                                                                                                                                         | 0 - 1500 V<br>- 30 - 30 A                                                                                                                                                                                                 |
| <b>Regenerative mode</b><br>Minimum sink voltage<br><i>Note: Unit switches automatically between source ↔ sink.</i><br>Absolute maximum sink voltage<br>Minimum sink current                                                                                                                                                                                                                                                                                                                         | 1.2 V @ - 450 A<br>0.8 V @ - 215 A<br>0.8 V @ - 45 A<br>74 V<br>0.4%                                                                                                                       | 3.0 V @ - 150 A<br>1.5 V @ - 75 A<br>1.5 V @ - 15 A<br>220 V<br>0.4%                                                                                                           | 7.0 V @ - 90 A<br>5.0 V @ - 30 A<br>2.0 V @ - 10 A<br>525 V<br>0.4%                                                                                                                              | 12.0 V @ - 45 A<br>8.5 V @ - 15 A<br>2.5 V @ - 5 A<br>1050 V<br>0.4%                                                                                                                                              | 19.5 V @ - 30 A<br>14 V @ - 10 A<br>4.5 V @ - 3 A<br>1575 V<br>0.4%                                                                                                                                                       |
| <b>AC Input</b><br>Rated voltage range<br>Rated frequency<br>Rated current<br><br>Current, 15kW<br>Power factor, 15kW / 7.5kW<br><br>Internal fuses<br>Standby input power ( $V_o=I_o=0$ ) <sup>1</sup><br>Standby input power ( $V_o=V_{max}$ ) <sup>1</sup>                                                                                                                                                                                                                                        | 380 - 480 V<br>50 / 60 Hz<br>Maximum 27 A<br><br>23 A<br>0.996 / 0.988<br><br>30 AT<br>100 W<br>180 W                                                                                      |                                                                                                                                                                                |                                                                                                                                                                                                  |                                                                                                                                                                                                                   |                                                                                                                                                                                                                           |
| <b>Efficiency (Sink &amp; Source mode):</b><br>15 kW, $I_{out}=100\%$<br>15 kW, $U_{out}=100\%$                                                                                                                                                                                                                                                                                                                                                                                                      | 95 %<br>96 %                                                                                                                                                                               |                                                                                                                                                                                |                                                                                                                                                                                                  |                                                                                                                                                                                                                   |                                                                                                                                                                                                                           |
| <b>Regulation</b><br>Load 0 - 100% CV<br>Line 342 - 528 V <sub>AC</sub> <sup>2</sup> CV<br>Load 0 - 100% CC<br>Line 342 - 528 V <sub>AC</sub> <sup>1,3</sup> CC                                                                                                                                                                                                                                                                                                                                      | 6 mV<br>< 1 mV<br>35 mA<br>4 mA                                                                                                                                                            | 5 mV<br>< 1 mV<br>12 mA<br>3 mA                                                                                                                                                | 4 mV<br>< 1 mV<br>8 mA<br>1 mA                                                                                                                                                                   | 10mV<br><1mV<br>2mA<br>1mA                                                                                                                                                                                        | 10 mV<br>< 1 mV<br>2 mA<br>1 mA                                                                                                                                                                                           |
| <b>Ripple + noise</b> <sup>5</sup><br>Source mode:<br>rms (BW=300 kHz) CV<br>p-p (BW=20 MHz) CV<br><br>rms (BW=300 kHz) CC<br>p-p (BW=20 MHz) CC<br><br>70 V / 215 A<br>rms (BW=300 kHz) CV<br>p-p (BW=20 MHz) CV<br><br>rms (BW=300 kHz) CC<br>p-p (BW=20 MHz) CC<br><br>Sink mode:<br>rms (BW=300 kHz) CV<br>p-p (BW=20 MHz) CV<br><br>rms (BW=300 kHz) CC<br>p-p (BW=20 MHz) CC<br><br>70 V / 215 A<br>rms (BW=300 kHz) CV<br>p-p (BW=20 MHz) CV<br><br>rms (BW=300 kHz) CC<br>p-p (BW=20 MHz) CC | 33 V / 450 A<br>10 mV<br>60 mV<br><br>100 mA<br>-<br><br>10 mV<br>60 mV<br><br>100 mA<br>-<br><br>33 V / 450 A<br>8 mV<br>50 mV<br><br>100 mA<br>-<br><br>8 mV<br>50 mV<br><br>100 mA<br>- | 100 V / 150 A<br>30 mV<br>150 mV<br><br>-<br>-<br><br>20 mV<br>125 mV<br><br>-<br>-<br><br>100 V / 150 A<br>30 mV<br>150 mV<br><br>-<br>-<br><br>20 mV<br>125 mV<br><br>-<br>- | 167 V / 90 A<br>10 mV<br>55 mV<br><br>45 mA<br>200 mA<br><br>25mV<br>115mV<br><br>7 mV<br>35 mV<br><br>45 mA<br>200 mA<br><br>167 V / 90 A<br>7 mV<br>35 mV<br><br>45 mA<br>200 mA<br><br>320 mA | 333V / 45A<br>25mV<br>150mV<br><br>45mA<br>200mA<br><br>1000V / 15A<br>35mV<br>250mV<br><br>45mA<br>200mA<br><br>333V / 45A<br>15mV<br>75mV<br><br>60mA<br>-<br><br>1000V / 15A<br>25mV<br>125mV<br><br>60mA<br>- | 500 V / 30 A<br>25 mV<br>150 mV<br><br>12 mA<br>70 mA<br><br>35mV<br>250mV<br><br>5 mA<br>25 mA<br><br>500 V / 30 A<br>15 mV<br>130 mV<br><br>10 mA<br>60 mA<br><br>1500 V / 10 A<br>25 mV<br>200 mV<br><br>3 mA<br>12 mA |
| <b>Programming &amp; monitoring accuracy</b> <sup>4</sup><br>Voltage<br>Current                                                                                                                                                                                                                                                                                                                                                                                                                      | ± 0.08%<br>± 0.15%                                                                                                                                                                         |                                                                                                                                                                                |                                                                                                                                                                                                  |                                                                                                                                                                                                                   |                                                                                                                                                                                                                           |
| <b>Temperature coefficient, per °C</b> <sup>1,5</sup><br>CV<br>CC                                                                                                                                                                                                                                                                                                                                                                                                                                    | 20 ppm<br>50 ppm                                                                                                                                                                           |                                                                                                                                                                                |                                                                                                                                                                                                  |                                                                                                                                                                                                                   |                                                                                                                                                                                                                           |
| <b>Stability over 8 hours</b> <sup>1,5</sup><br>25 ± 1 °C<br>CV<br>CC <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                   | 50 ppm<br>80 ppm                                                                                                                                                                           |                                                                                                                                                                                |                                                                                                                                                                                                  |                                                                                                                                                                                                                   |                                                                                                                                                                                                                           |

<sup>1</sup> After 1 hour warm up<sup>2</sup> Remote voltage sense<sup>3</sup> Local voltage sense<sup>4</sup> Excluding INT MOD ANA<sup>5</sup> Measured at full load

|                                                                                                                                                                                                                                                                                                                                                | SM70-CP-450                                                                                                                                                                          | SM210-CP-150                                                                                                                               | SM500-CP-90                                                                                                                                | SM1000-CP-45                                                                                                                                 | SM1500-CP-30                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Programming speed</b> <sup>6, 7</sup><br><b>Rise time (10 - 90%)</b><br>Output voltage step<br>Load = 15 kW<br>Load = 1500 W<br><br>Output voltage step<br>Load = 15 kW<br>Load = 1500 W<br><b>Fall time (90 - 10%)</b><br>Output voltage step<br>Load = 15 kW<br>Load = 1500 W<br><br>Output voltage step<br>Load = 15 kW<br>Load = 1500 W | 0 → 33 V<br>2.2 ms<br>1.5 ms<br><br>0 → 70 V<br>5.5 ms<br>3.5 ms<br><br>33 → 0 V<br>1.5 ms<br>1.5 ms<br><br>70 → 0 V<br>2.6 ms<br>3.5 ms                                             | 0 → 100 V<br>1.6 ms<br>1.3 ms<br><br>0 → 210 V<br>3 ms<br>2.7 ms<br><br>100 → 0 V<br>1.3 ms<br>1.3 ms<br><br>210 → 0 V<br>2.5 ms<br>2.5 ms | 0 → 167 V<br>1.5 ms<br>1 ms<br><br>0 → 500 V<br>4.5 ms<br>3.5 ms<br><br>167 → 0 V<br>0.8 ms<br>0.9 ms<br><br>500 → 0 V<br>2.5 ms<br>3.5 ms | 0 → 333 V<br>1.5 ms<br>1 ms<br><br>0 → 1000 V<br>4.5 ms<br>3.5 ms<br><br>333 → 0 V<br>0.9 ms<br>1.0 ms<br><br>1000 → 0 V<br>2.8 ms<br>3.5 ms | 0 → 500 V<br>1.5 ms<br>1 ms<br><br>0 → 1500 V<br>4.5 ms<br>3.5 ms<br><br>500 → 0 V<br>0.8 ms<br>0.9 ms<br><br>1500 → 0 V<br>2.8 ms<br>3.5 ms |
| <b>Recovery time</b> <sup>8, 9</sup><br>Condition<br>Recovery within<br>di/dt of load step<br>Time<br>Maximum deviation<br><br>Condition<br>Recovery within<br>di/dt of load step<br>Time<br>Maximum deviation                                                                                                                                 | 33V, 225 → 450A<br>100 mV<br>5 A/μs<br>100 μs<br>0.8 V<br><br>70V, 112 → 215A<br>100 mV<br>2 A/μs<br>100 μs<br>0.3 V                                                                 | 100V, 75 → 150A<br>500 mV<br>2.4 A/μs<br>100 μs<br>1.4 V<br><br>210V, 36 → 72A<br>250 mV<br>1.15 A/μs<br>100 μs<br>0.75 V                  | 167V, 45 → 90A<br>750 mV<br>0.8 A/μs<br>100 μs<br>2.8 V<br><br>500V, 15 → 30A<br>500 mV<br>0.25 A/μs<br>150 μs<br>1.2 V                    | 333V, 22.5 → 45A<br>2.5 V<br>0.4 A/μs<br>100 μs<br>9.0 V<br><br>1000V, 7.5 → 15A<br>1 V<br>0.15 A/μs<br>150 μs<br>3.0 V                      | 500V, 15 → 30A<br>2.8 V<br>0.25 A/μs<br>100 μs<br>9.0 V<br><br>1500V, 5 → 10A<br>1.2 V<br>0.085 A/μs<br>150 μs<br>3.5 V                      |
| <b>DC output capacitance</b><br>X-capacitors (typical)<br>Y-capacitors (typical)                                                                                                                                                                                                                                                               | 22000 μF<br>950 nF                                                                                                                                                                   | 1170 μF<br>950 nF                                                                                                                          | 560 μF<br>145 nF                                                                                                                           | 141 μF<br>145 nF                                                                                                                             | 58 μF<br>145 nF                                                                                                                              |
| <b>Output impedance</b> <sup>10</sup><br>0-1 kHz<br>1-100 kHz<br><b>CV</b><br><b>CV</b>                                                                                                                                                                                                                                                        | < 0.75 mΩ<br>< 40 mΩ                                                                                                                                                                 | < 5 mΩ<br>< 40 mΩ                                                                                                                          | < 16 mΩ<br>< 160 mΩ                                                                                                                        | < 150 mΩ<br>< 800 mΩ                                                                                                                         | < 250 mΩ<br>< 2 Ω                                                                                                                            |
| <b>Pulsating load</b><br>Max. tolerable AC component<br>of load current<br>f > 1 kHz<br>f < 1 kHz                                                                                                                                                                                                                                              | 60 A <sub>RMS</sub><br>450 A <sub>pk</sub>                                                                                                                                           | 15 A <sub>RMS</sub><br>150 A <sub>pk</sub>                                                                                                 | 15 A <sub>RMS</sub><br>90 A <sub>pk</sub>                                                                                                  | 3 A <sub>RMS</sub><br>45 A <sub>pk</sub>                                                                                                     | 2.5 A <sub>RMS</sub><br>30 A <sub>pk</sub>                                                                                                   |
| <b>Hold-up time</b><br>V <sub>out</sub> = 100%, P <sub>out</sub> = 15 kW<br>I <sub>out</sub> = 100%, P <sub>out</sub> = 15 kW<br>V <sub>out</sub> = 100%, P <sub>out</sub> = 7.5 kW                                                                                                                                                            | 10 ms<br>10 ms<br>25 ms                                                                                                                                                              | 10 ms<br>10 ms<br>20 ms                                                                                                                    | 15 ms<br>15 ms<br>35 ms                                                                                                                    | 15 ms<br>15 ms<br>35 ms                                                                                                                      | 15 ms<br>15 ms<br>35 ms                                                                                                                      |
| <b>Turn on delay</b> <sup>11</sup>                                                                                                                                                                                                                                                                                                             | 2.5 s after mains switch is turned on, the rated output voltage is reached                                                                                                           |                                                                                                                                            |                                                                                                                                            |                                                                                                                                              |                                                                                                                                              |
| <b>Inrush current</b> <sup>10</sup>                                                                                                                                                                                                                                                                                                            | 23 A                                                                                                                                                                                 |                                                                                                                                            |                                                                                                                                            |                                                                                                                                              |                                                                                                                                              |
| <b>Safety standards</b>                                                                                                                                                                                                                                                                                                                        | EN 60950 / EN 61010                                                                                                                                                                  |                                                                                                                                            |                                                                                                                                            |                                                                                                                                              |                                                                                                                                              |
| <b>Insulation</b><br>AC / DC terminals<br>Creepage / clearance<br>AC power terminals / case<br>DC power terminals / case                                                                                                                                                                                                                       | 3750V <sub>RMS</sub> (1 min.)<br>8 mm<br>2500 V <sub>RMS</sub><br>1000 V <sub>DC</sub> <sup>12</sup>                                                                                 |                                                                                                                                            |                                                                                                                                            |                                                                                                                                              | 3750 V <sub>RMS</sub> (1 min.)<br>8 mm<br>2500 V <sub>RMS</sub><br>1500 V <sub>DC</sub> <sup>12</sup>                                        |
| <b>EMC</b><br>Emission<br>Immunity                                                                                                                                                                                                                                                                                                             | <b>EN 61326-1</b> , class B equipment(for use in domestic establishments)<br><b>EN 61326-1</b> , equipment for use in industrial and domestic establishments                         |                                                                                                                                            |                                                                                                                                            |                                                                                                                                              |                                                                                                                                              |
| <b>Environmental conditions</b><br>Storage temperature<br>Operating temperature<br>Output automatically disabled at<br>overttemperature<br>Humidity<br><br>IP Rating<br>Pollution degree                                                                                                                                                       | - 40 to + 70 °C<br>- 20 to + 50 °C, Derate output to 75% at 60 °C<br><br>Maximum 95% RH, non-condensing, up to 40 °C<br>Maximum 75% RH, non-condensing, up to 50 °C<br><br>IP20<br>2 |                                                                                                                                            |                                                                                                                                            |                                                                                                                                              |                                                                                                                                              |
| <b>MTBF</b>                                                                                                                                                                                                                                                                                                                                    | 500 000 hrs                                                                                                                                                                          |                                                                                                                                            |                                                                                                                                            |                                                                                                                                              |                                                                                                                                              |

<sup>6</sup> Measured on resistive load with power supply in CV mode, different conditions may influence the specified speed

<sup>7</sup> Signal latency depends on the interface used & data traffic

<sup>8</sup> Local voltage sense

<sup>9</sup> Remote sensing and long wiring may influence the values

<sup>10</sup> Typical

<sup>11</sup> Unit should be configured to switch on the output at startup

<sup>12</sup> See "Safety Instructions"

|                                                                                                                                    | SM70-CP-450                                                                                                                                                                                                                                                                                                               | SM210-CP-150                                                                     | SM500-CP-90                                                                    | SM1000-CP-45                                                                  | SM1500-CP-30                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <b>Series operation</b><br>Maximum total voltage<br>Master / slave operation                                                       | Series operation not allowed                                                                                                                                                                                                                                                                                              |                                                                                  | 750V <sup>13</sup><br>1000V <sup>14</sup><br>Maximum 6 units <sup>15</sup>     | Series operation not allowed                                                  |                                                                                |
|                                                                                                                                    |                                                                                                                                                                                                                                                                                                                           |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Parallel operation</b><br>Master / slave operation                                                                              | Maximum 60 units                                                                                                                                                                                                                                                                                                          |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Remote sensing</b><br>Maximum voltage drop per load lead                                                                        | Default 1 V, can be set to 10 V                                                                                                                                                                                                                                                                                           |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Limits</b><br>Adjustable<br>Voltage<br>Current<br>Power<br><br>Fixed<br>Voltage OverLoad level<br>Voltage Self-Protection level | 0 - 101 %<br>0 - 101 %<br>0 - 101 %<br><br>102.5 % - unit will continue to operate (OL-indication in display)<br>105 % - output is automatically disabled (PROT-indication in display)                                                                                                                                    |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Potentiometers</b><br>Front panel control knob resolution                                                                       | 15 bits                                                                                                                                                                                                                                                                                                                   |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Meter scale</b><br>Voltage<br>Current<br>Power<br>Accuracy read output                                                          | 4 digits<br>0.00 - 70.00V<br>-450.0 - 450.0A<br>-15000 - 15000W<br>0.2% + 2 digit                                                                                                                                                                                                                                         | 4 digits<br>0.0 - 210.0V<br>-150.0 - 150.0A<br>-15000 - 15000W<br>0.2% + 2 digit | 4 digits<br>0.0 - 500.0V<br>-90.0 - 90.0A<br>-15000 - 15000W<br>0.2% + 2 digit | 4 digits<br>0 - 1000V<br>-45.00 - 45.00A<br>-15000 - 15000W<br>0.2% + 2 digit | 4 digits<br>0 - 1500V<br>- 30.00 - 30.00A<br>-15000 - 15000W<br>0.2% + 2 digit |
| <b>Mounting</b>                                                                                                                    | Stacking of units allowed                                                                                                                                                                                                                                                                                                 |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>AC terminals</b> (CON A)                                                                                                        | Screw terminals for wire 4 mm <sup>2</sup> , 3 phase + earth (no neutral)                                                                                                                                                                                                                                                 |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>DC terminals</b> (CON B1 & B2)                                                                                                  | M12 bolts                                                                                                                                                                                                                                                                                                                 | M8 bolts                                                                         |                                                                                |                                                                               |                                                                                |
| <b>Programming connectors</b> (LAN)                                                                                                | Standard with RJ45-connector for Ethernet at rear panel, 100 Mb/s, full-duplex                                                                                                                                                                                                                                            |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Interlock</b> (CON F)                                                                                                           | Input for contact at rear panel                                                                                                                                                                                                                                                                                           |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Cooling</b><br>Audio noise level<br><br>Airflow direction<br>Thermal protection                                                 | Low noise, fan speed adapts to temperature of internal system<br>ca. 50 dBA at full load, 25 °C ambient temperature, 1 m distance<br>ca. 65 dBA at full load, 50 °C ambient temperature, 1 m distance<br>From left to right<br>Output shuts down in case of insufficient cooling (over temperature indication in display) |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Dimensions</b><br>Front panel: h x w<br>behind front panel: h x w x d                                                           | 132 x 483 mm (19", 3 U)<br>128 x 448 x 591 mm (excluding feet)<br><i>No additional depth is required with optional interfaces assembled</i>                                                                                                                                                                               |                                                                                  |                                                                                |                                                                               |                                                                                |
| <b>Weight</b>                                                                                                                      | 27 kg                                                                                                                                                                                                                                                                                                                     |                                                                                  |                                                                                |                                                                               |                                                                                |

CV = Constant Voltage

CC = Constant Current

CP = Constant Power

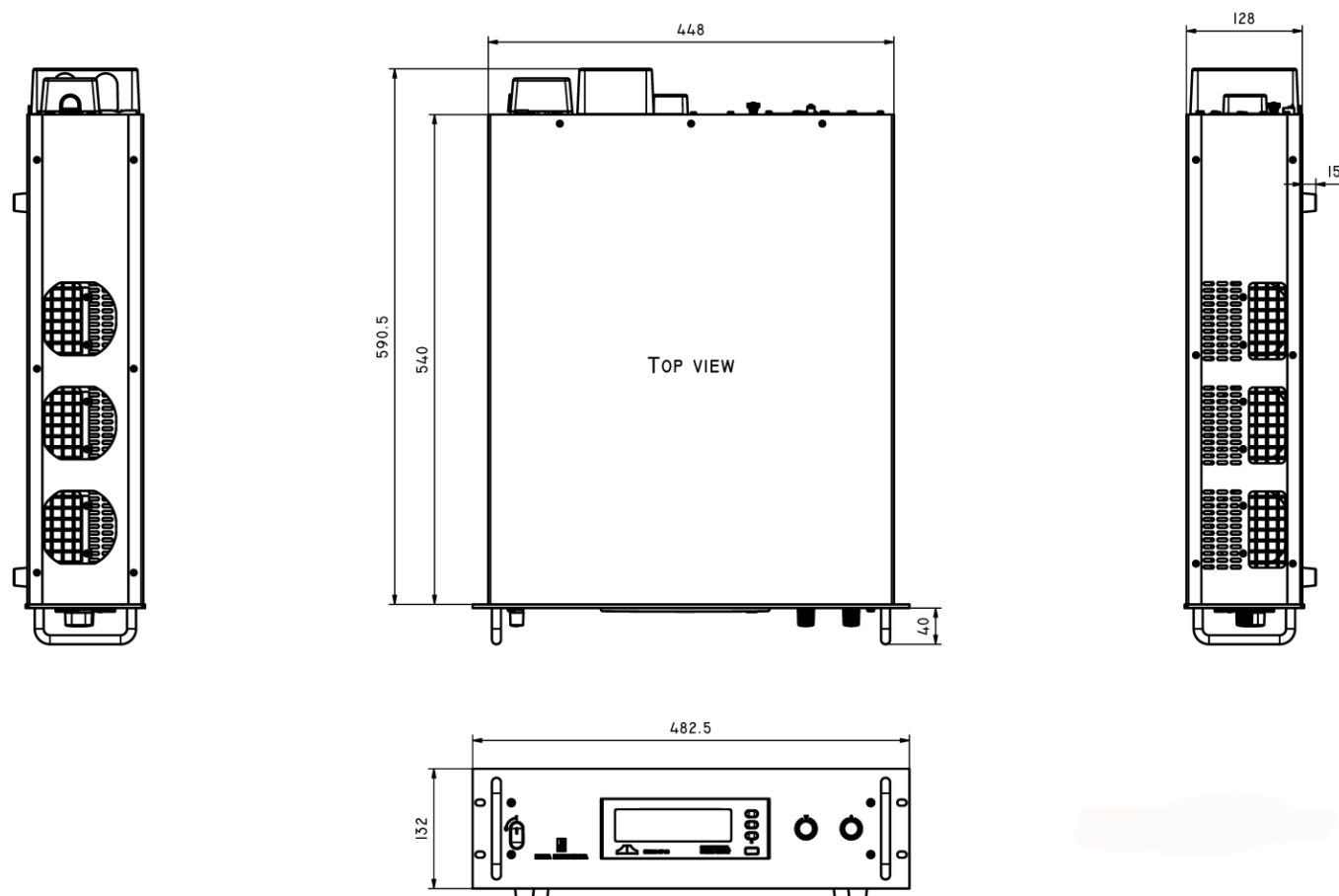
Specifications measured at  $T_{amb} = 25 \pm 5 \text{ }^{\circ}\text{C}$  and  $V_{in} = 400 \text{ V}_{AC}$ , 3 phase, 50 Hz unless otherwise noted. The information in this document is subject to change without notice.

<sup>13</sup> Units delivered before Q4 / 2018. Contact factory for upgrading to enable 1000V series operation for older units.

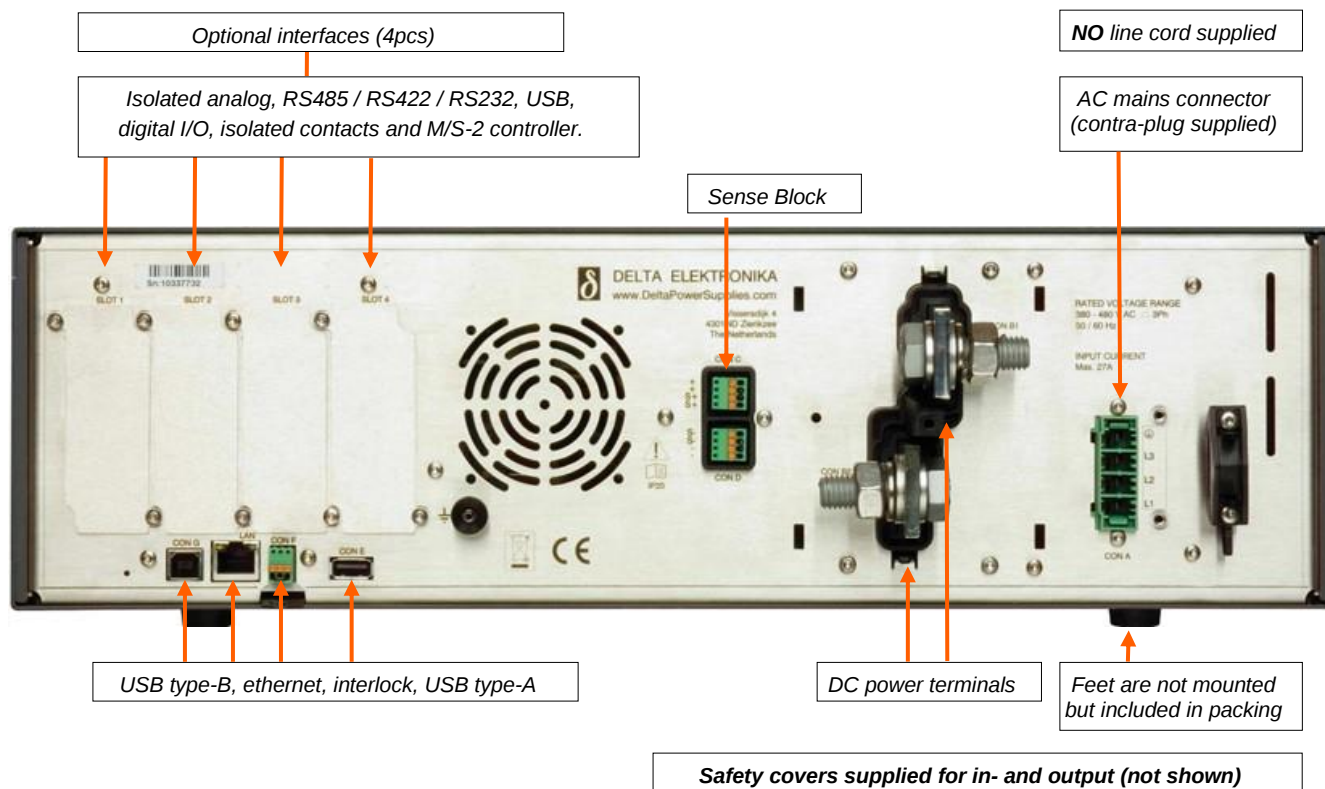
<sup>14</sup> Units delivered in Q4 / 2018 or later.

<sup>15</sup> See "Safety Instructions"

## Dimensions



## Rear view



## Typical Applications

- PV-Simulation and inverter testing
- Automotive battery simulations
- PWM-controlled DC motor testing
- Car testing systems
- Controlled battery (dis)charging
- Accurate current sources
- ATE in industrial production lines
- Lasers
- Aerospace
- Plasma chambers
- Sustainable energy
- Military

## 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- and CC-Settings

Reliable, long-life digital encoders are implemented at the front panel. Includes total front panel lock (also for CV- / CC-knobs) and a coarse or fine pitch adjustment depending on the turning speed.



### High Voltage Isolation

A high DC output isolation allows floating operation up to 1000 V for SM70-CP-450, SM210-CP-150, SM500-CP-90 and SM1000-CP-45 and up to 1500 V for SM1500-CP-30.



### Sequencer

Arbitrary Waveform generator or standalone automation.



### Ethernet Interface

Ethernet interface for programming and monitoring



### USB-Input

*Feature not yet available.*  
Front and rear panel USB inputs (Host / Type-A) are planned for the exchange of settings and waveforms. A web interface is available for uploading sequences.

## Interfaces



### Plug-and-play extension modules

Interfacing and functional capabilities of the power supply can be extended at any time by inserting modules. Four slots are available at the rear of the power supply unit. Consult the [interfaces data sheet](#) for more information.

Modules:

- **Analog programming**  
(INT MOD ANA)  
High speed and accuracy
- **Anybus interface**  
(INT MOD ANY)  
Carrier for Anybus CompactCom 40 fieldbus modules:  
CANopen, EtherCAT, Ethernet/IP, Modbus-TCP, POWERLINK, PROFIBUS, PROFINET
- **Digital I/O**  
(INT MOD DIG)  
Interacts with sequencer
- **Isolated contacts**  
(INT MOD CON)  
Relay and interlock contacts
- **Serial communication**  
(INT MOD SER)  
RS232, RS485, RS422, USB
- **Master/Slave**  
(INT MOD M/S-2)  
Series/parallel output configuration

## Where to buy?

Visit our [website to request a quote](#), free of charge.

Alternatively, contact us directly or get in touch with one of our [authorized distributors](#).

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