Features | Benefits
--- | ---
• BF ready medical isolation (MOPP) | Eases design into systems (including BF)
• Low speed, low audible noise fan | Enhanced patient / user experience
• Up to 12 outputs | Eliminates need for additional supplies
• PMBus™ communication option | Remote monitoring and control
• 7 year warranty | Low cost of ownership

Input

<table>
<thead>
<tr>
<th></th>
<th>QM5 700W</th>
<th>QM5 800W</th>
<th>QM5H 700W</th>
<th>QM5H 1200W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output power</td>
<td>700W</td>
<td>800W</td>
<td>700W</td>
<td>1200W</td>
</tr>
<tr>
<td>Input voltage</td>
<td>90-264Vac</td>
<td>180-264Vac</td>
<td>90-264Vac</td>
<td>180-264Vac</td>
</tr>
<tr>
<td>Frequency</td>
<td>47 - 63 Hz (440Hz with reduced PFC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input fuses</td>
<td>16A / 250Vac HBC Fast acting (not user accessible) in both Live and Neutral lines (single fusing optional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inrush current</td>
<td>&lt;40A at 25°C and 264Vac (cold start)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leakage current</td>
<td>See ‘How To Create A Product Description’ for details</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch current</td>
<td>&lt;100µA (with 4 or fewer modules). For other configurations, contact sales for details.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td>&gt; 0.95 (at 230Vac, 100% load)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Isolation

<table>
<thead>
<tr>
<th></th>
<th>QM5 700W</th>
<th>QM5H 700W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input to output / signals</td>
<td>Reinforced 2 x MOPPs (3rd edition 60601) 4kVac, 5.7kVdc type tested to 4kVac (equivalent to 5.7kVdc), production tested to 4.3kVdc.</td>
<td>4kVac, 5.7kVdc type tested to 4kVac (equivalent to 5.7kVdc), production tested to 4.3kVdc.</td>
</tr>
<tr>
<td>Input to earth</td>
<td>Basic 1 x MOPP, 1.5kVac</td>
<td>Basic 1 x MOPP, 1.5kVac</td>
</tr>
<tr>
<td>Output / signals to earth</td>
<td>Basic 200Vdc</td>
<td>Basic 200Vdc</td>
</tr>
</tbody>
</table>

How To Create A Product Description

The extensive range of output modules and options make it possible to achieve almost any combination of Volts and Amps. You can create your own QM configuration online at https://config.emea.tdk-lambda.com/. This method checks your configuration and offers the optimum solution. Alternatively, you can do this manually by using the guide below.

1. Calculate total output power to select the appropriate converter, then select required Cooling, Connection, Leakage Current and Controls/Signals from the following table:

<table>
<thead>
<tr>
<th>Converter</th>
<th>QM5 700W low line, 800W high line</th>
<th>QM5H 700W low line, 1200W high line</th>
</tr>
</thead>
<tbody>
<tr>
<td>F cooling</td>
<td>Forward air - standard variable speed</td>
<td>Reverse air (contact sales for details)</td>
</tr>
<tr>
<td>S cooling</td>
<td>Customer air - no fan (contact sales for details)</td>
<td></td>
</tr>
<tr>
<td>I connection</td>
<td>Screw E3C20</td>
<td>Dual AC fuses (contact sales for details)</td>
</tr>
<tr>
<td>D connection</td>
<td></td>
<td>Single AC fuse in Live line (contact sales for details)</td>
</tr>
<tr>
<td>L connection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T5H connection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Select Output Modules using the output voltages tables and the module specifications.
3. Contact TDK-Lambda to validate configuration and issue a part number.
## Possible Outputs - see individual module data for full specifications

<table>
<thead>
<tr>
<th>Module name</th>
<th>Slots used</th>
<th>Output voltage range</th>
<th>Maximum Output Current</th>
<th>Maximum Output Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM (ch2)</td>
<td>1 of 2 outputs in single slot</td>
<td>2.8V - 3.8V</td>
<td>10A</td>
<td>33W</td>
</tr>
<tr>
<td>SB</td>
<td>1 slot</td>
<td>3.3V - 3.63V</td>
<td>37A</td>
<td>122W</td>
</tr>
<tr>
<td>DM (ch2)</td>
<td>1 of 2 outputs in single slot</td>
<td>4.25V - 5.75V</td>
<td>10A</td>
<td>50W</td>
</tr>
<tr>
<td>SA</td>
<td>1</td>
<td>5V - 5V</td>
<td>15A</td>
<td>75W</td>
</tr>
<tr>
<td>SB</td>
<td>1</td>
<td>5V - 5.5V</td>
<td>30A</td>
<td>150W</td>
</tr>
<tr>
<td>SC</td>
<td>2</td>
<td>5V - 5.5V</td>
<td>60A</td>
<td>300W</td>
</tr>
<tr>
<td>ZD</td>
<td>3</td>
<td>5V - 5.3V</td>
<td>80A</td>
<td>400W</td>
</tr>
<tr>
<td>ZF</td>
<td>4</td>
<td>5V - 5.3V</td>
<td>110A</td>
<td>550W</td>
</tr>
<tr>
<td>YC</td>
<td>2</td>
<td>6.6V - 7.26V</td>
<td>37A</td>
<td>244W</td>
</tr>
<tr>
<td>YC</td>
<td>2</td>
<td>10V - 11V</td>
<td>30A</td>
<td>300W</td>
</tr>
<tr>
<td>YF</td>
<td>4</td>
<td>10V - 11V</td>
<td>60A</td>
<td>600W</td>
</tr>
<tr>
<td>DH (ch1 or ch2)</td>
<td>1 of 2 outputs in single slot</td>
<td>10.2V - 13.8V</td>
<td>10A</td>
<td>120W</td>
</tr>
<tr>
<td>DM (ch1)</td>
<td>1 of 2 outputs in single slot</td>
<td>11.9V - 16.1V</td>
<td>8.3A</td>
<td>100W</td>
</tr>
<tr>
<td>DM (ch2)</td>
<td>1 of 2 outputs in single slot</td>
<td>11.9V - 16.1V</td>
<td>10A</td>
<td>120W</td>
</tr>
<tr>
<td>SA</td>
<td>1</td>
<td>12V - 12V</td>
<td>12.5A</td>
<td>150W</td>
</tr>
<tr>
<td>SB</td>
<td>1</td>
<td>12V - 13.2V</td>
<td>25A</td>
<td>300W</td>
</tr>
<tr>
<td>SC</td>
<td>2</td>
<td>12V - 13.2V</td>
<td>50A</td>
<td>600W</td>
</tr>
<tr>
<td>ZD</td>
<td>3</td>
<td>12V - 12.8V</td>
<td>65A</td>
<td>780W</td>
</tr>
<tr>
<td>ZF</td>
<td>4</td>
<td>12V - 12.8V</td>
<td>90A</td>
<td>1080W</td>
</tr>
<tr>
<td>DH (ch1 or ch2)</td>
<td>1 of 2 outputs in single slot</td>
<td>12.75V - 17.25V</td>
<td>8A</td>
<td>120W</td>
</tr>
<tr>
<td>SA</td>
<td>1</td>
<td>15V - 15V</td>
<td>10A</td>
<td>150W</td>
</tr>
<tr>
<td>SB</td>
<td>1</td>
<td>15V - 16.5V</td>
<td>20A</td>
<td>300W</td>
</tr>
<tr>
<td>SC</td>
<td>2</td>
<td>15V - 16V</td>
<td>36A</td>
<td>540W</td>
</tr>
<tr>
<td>ZC</td>
<td>2</td>
<td>18V - 19.2V</td>
<td>30A</td>
<td>300W</td>
</tr>
<tr>
<td>DH (ch1 or ch2)</td>
<td>1 of 2 outputs in single slot</td>
<td>20.4V - 27.6V</td>
<td>5A</td>
<td>120W</td>
</tr>
<tr>
<td>DM (ch1)</td>
<td>1 of 2 outputs in single slot</td>
<td>20.4V - 27.6V</td>
<td>9.8A</td>
<td>200W</td>
</tr>
<tr>
<td>DM (ch2)</td>
<td>1 of 2 outputs in single slot</td>
<td>23.5V - 24.5V</td>
<td>4.16A</td>
<td>100W</td>
</tr>
<tr>
<td>SA</td>
<td>1</td>
<td>24V - 24V</td>
<td>6.25A</td>
<td>150W</td>
</tr>
<tr>
<td>SB</td>
<td>1</td>
<td>24V - 26.4V</td>
<td>12.5A</td>
<td>300W</td>
</tr>
<tr>
<td>SC</td>
<td>2</td>
<td>24V - 26.4V</td>
<td>25A</td>
<td>600W</td>
</tr>
<tr>
<td>ZD</td>
<td>3</td>
<td>24V - 25.6V</td>
<td>30A</td>
<td>720W</td>
</tr>
<tr>
<td>YF</td>
<td>4</td>
<td>24V - 26.4V</td>
<td>50A</td>
<td>1200W</td>
</tr>
<tr>
<td>DH (ch1 or ch2)</td>
<td>1 of 2 outputs in single slot</td>
<td>23.0V - 31V</td>
<td>4.4A</td>
<td>120W</td>
</tr>
<tr>
<td>YB</td>
<td>1</td>
<td>27.6V - 34.5V</td>
<td>7.25A</td>
<td>200W</td>
</tr>
<tr>
<td>SC</td>
<td>2</td>
<td>28V - 30.8V</td>
<td>10.7A</td>
<td>300W</td>
</tr>
<tr>
<td>ZC</td>
<td>2</td>
<td>28V - 30V</td>
<td>19.3A</td>
<td>540W</td>
</tr>
<tr>
<td>YC</td>
<td>2</td>
<td>30V - 33V</td>
<td>20A</td>
<td>600W</td>
</tr>
<tr>
<td>SC</td>
<td>2</td>
<td>36V - 39.6V</td>
<td>16.7A</td>
<td>600W</td>
</tr>
<tr>
<td>ZF</td>
<td>4</td>
<td>36V - 38.4V</td>
<td>29A</td>
<td>1044W</td>
</tr>
<tr>
<td>YB</td>
<td>1</td>
<td>40.8V - 55.2V</td>
<td>4.9A</td>
<td>200W</td>
</tr>
<tr>
<td>SC</td>
<td>2</td>
<td>48V - 52.8V</td>
<td>6.25A</td>
<td>300W</td>
</tr>
<tr>
<td>ZD</td>
<td>3</td>
<td>48V - 51.2V</td>
<td>15A</td>
<td>720W</td>
</tr>
<tr>
<td>YF</td>
<td>4</td>
<td>48V - 52.8V</td>
<td>25A</td>
<td>1200W</td>
</tr>
<tr>
<td>YB</td>
<td>1</td>
<td>55.2V - 62V</td>
<td>3.62A</td>
<td>200W</td>
</tr>
<tr>
<td>YC</td>
<td>2</td>
<td>56V - 61.6V</td>
<td>10.7A</td>
<td>600W</td>
</tr>
<tr>
<td>YF</td>
<td>4</td>
<td>72V - 79.2V</td>
<td>16.7A</td>
<td>1200W</td>
</tr>
<tr>
<td>YC</td>
<td>2</td>
<td>96V - 105.6V</td>
<td>6.25A</td>
<td>600W</td>
</tr>
<tr>
<td>YF</td>
<td>4</td>
<td>96V - 105.6V</td>
<td>12.5A</td>
<td>1200W</td>
</tr>
</tbody>
</table>

Note. ‘Maximum Output Current’ and ‘Maximum Output Power’ above are the maximum available from the module. It is not possible to exceed the ‘Output Power’ of the unit given on the previous page.
## Output Specification

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn on time</td>
<td>2s max at 90Vac (180Vac for 1200W) and 100% rated output power</td>
</tr>
<tr>
<td>Efficiency</td>
<td>up to 91% 240Vac &amp; above 50% rated power, configuration dependent</td>
</tr>
<tr>
<td>Hold up</td>
<td>16ms min at 700W output power. 1 cycle ride-through option available, contact sales for details. 10ms min at 1200W output power</td>
</tr>
<tr>
<td>Over temperature protection</td>
<td>Yes converter protection shuts down all outputs (except standby supplies) and fan, auto restarts. Shutdown temperature varies according to ambient, output power and input voltage.</td>
</tr>
</tbody>
</table>

## Environment

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-20°C to 70°C operational, -40°C to 70°C storage.</td>
</tr>
</tbody>
</table>
| Derating                       | 50°C to 70°C derate total output power and each output current by 2.5% per °C  
Additionally, the 0.25A standby supply provided with the E5H, E12H, T5H and T12H options derates by 2.4% per °C from 25°C to 50°C when the unit is inhibited (fan not running) |
| Low temperature startup       | -40°C                                              |
| Humidity                      | 5 - 95% RH non condensing                          |
| Shock                         | ±3 x 30g shocks in each plane, total 18 shocks (11ms +/-0.5msec), half sine  
Conforms to MIL-STD-810G, Method 516.6, Pro IV |
| Vibration                     | Single axis 10 - 500 Hz at 2g (sweep and endurance at resonance) in all 3 planes  
Conforms to EN60068-2-6, IEC68-2-6  
Conforms to MIL-STD-810G, Method 514.6, Pro I |
| Altitude                      | 5000 metres operational, 5000 metres storage/transportation |
| Pollution                     | Degree 2, Material group IIib                      |
| IP Rating                     | IPX0                                               |

## Emissions EN61000-6-3:2007, EN60601-1-2:2015 - see application notes for best installation practice

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiated electric field</td>
<td>EN55011, EN55032 (as per CISPR.11/32) Class B, FCC47 part 15 subpart B - ‘L’ leakage current variants (Units with ‘R’ type leakage current option achieve Class A)</td>
</tr>
<tr>
<td>Conducted emissions</td>
<td>EN55011, EN55032 (as per CISPR.11/32) Class B, FCC47 part 15 subpart B - ‘L’ leakage current variants (Units with ‘R’ type leakage current option achieve Class A)</td>
</tr>
<tr>
<td>Conducted harmonics</td>
<td>EN61000-3-2 Class A and Class C</td>
</tr>
<tr>
<td>Flicker</td>
<td>EN61000-3-3 Compliant - d&lt;sub&gt;n&lt;/sub&gt; only</td>
</tr>
</tbody>
</table>

## Immunity EN61000-6-2:2005, EN60601-1-2:2015 - see application notes for best installation practice

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrostatic discharge</td>
<td>EN61000-4-2 Level 4 F type cooling only A</td>
</tr>
<tr>
<td>Electromagnetic field</td>
<td>EN61000-4-3 Level 3 Proximity fields, EN60801-1-2, Levels as defined in standard, Criteria A A</td>
</tr>
<tr>
<td>Fast / burst transient</td>
<td>EN61000-4-4 Level 4 Tested at 5kHz and 100kHz A</td>
</tr>
<tr>
<td>Surge immunity</td>
<td>EN61000-4-5 Level 3 A</td>
</tr>
<tr>
<td>Conducted RF immunity</td>
<td>EN61000-4-6 Level 3 A</td>
</tr>
<tr>
<td>Power frequency magnetic field</td>
<td>EN61000-4-8 Level 4 A</td>
</tr>
<tr>
<td>Voltage dips, variations, interruptions</td>
<td>EN61000-4-11 Class 3 Criteria B for 5s and 1 cycle interruptions A</td>
</tr>
<tr>
<td>Voltage sags</td>
<td>Semi F-47 compliant above 180Vac input A</td>
</tr>
<tr>
<td>Ring wave</td>
<td>EN61000-4-12 Level 3 A</td>
</tr>
<tr>
<td>Voltage fluctuations</td>
<td>EN61000-4-14 Class 3 A</td>
</tr>
</tbody>
</table>

## Approvals / Accreditations

<table>
<thead>
<tr>
<th>Approval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC/EN 62368-1, UL62368-1 / CSA 22.2 No 62368-1</td>
<td>File E135494</td>
</tr>
<tr>
<td>IEC/EN 60950-1, UL60950-1 / CSA 22.2 No 60950-1</td>
<td>File E135494</td>
</tr>
<tr>
<td>IEC/EN 60601-1, UL/CSA 60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No 60601-1</td>
<td>File E349607</td>
</tr>
<tr>
<td>IEC/EN 61010-1</td>
<td>Designed to meet</td>
</tr>
<tr>
<td>CE Mark (EN62368-1)</td>
<td>Low Voltage Directive (LVD), electromagnetic compatibility (EMC) and Restriction of Hazardous Substances (RoHS)</td>
</tr>
<tr>
<td>CB certificate and Report</td>
<td>Available on request</td>
</tr>
<tr>
<td>Designed and manufactured under the control of ISO9001 and ISO13485 (including risk management).</td>
<td></td>
</tr>
</tbody>
</table>
**Standby / Signals**

Maximum power per channel: See table below

Available signals (Exx or Txx type): PSU inhibit (Txx type) or enable (Exx type), AC Good

Available signals (Pxx type): PMBus™ control of power supply fan speed and fail warning

Additional Leakage Current (max at 264Vac, 63Hz): xxL = 13.1µA, xxH = 15µA

Must also add the leakage current from modules and selected filter option.

**Available Output Voltages (at PSU signal connector)**

<table>
<thead>
<tr>
<th>Option type</th>
<th>Standby 1</th>
<th>Standby 2</th>
<th>PSU on/off</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>Max Current</td>
<td>Power</td>
</tr>
<tr>
<td>E5L</td>
<td>5V</td>
<td>250mA</td>
<td>1.25W</td>
</tr>
<tr>
<td>E5H</td>
<td>5V</td>
<td>250mA</td>
<td>1.25W</td>
</tr>
<tr>
<td>E12H</td>
<td>5V</td>
<td>250mA</td>
<td>1.25W</td>
</tr>
<tr>
<td>T5L</td>
<td>5V</td>
<td>250mA</td>
<td>1.25W</td>
</tr>
<tr>
<td>T5H</td>
<td>5V</td>
<td>250mA</td>
<td>1.25W</td>
</tr>
<tr>
<td>T12H</td>
<td>5V</td>
<td>250mA</td>
<td>1.25W</td>
</tr>
<tr>
<td>P5H</td>
<td>5V</td>
<td>2A</td>
<td>10W</td>
</tr>
<tr>
<td>P12H</td>
<td>12V</td>
<td>1A</td>
<td>12W</td>
</tr>
</tbody>
</table>

**Output Specification**

<table>
<thead>
<tr>
<th></th>
<th>Standby 1</th>
<th>Standby 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rise time</td>
<td>&lt;30ms</td>
<td>(with resistive load) to 90% of voltage, monotonic rise above 10%</td>
</tr>
<tr>
<td>Ripple and noise</td>
<td>&lt;1%</td>
<td>pk-pk, using 20MHz bandwidth</td>
</tr>
<tr>
<td>Voltage setting accuracy</td>
<td>&lt;3%</td>
<td>of set voltage</td>
</tr>
<tr>
<td>Remote sense</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Minimum load</td>
<td>0W</td>
<td>on any output</td>
</tr>
<tr>
<td>Temperature coefficient</td>
<td>0.02%</td>
<td>of rated voltage per °C</td>
</tr>
<tr>
<td>Load regulation</td>
<td>&lt;1.5%</td>
<td>&lt;1% for 0-100% load change</td>
</tr>
<tr>
<td>Line regulation</td>
<td>&lt;0.1%</td>
<td>for 90-264Vac input change</td>
</tr>
<tr>
<td>Cross regulation</td>
<td>&lt;0.4%</td>
<td>for 100% load change on any output</td>
</tr>
<tr>
<td>Transient deviation</td>
<td>&lt;5%</td>
<td>of set voltage for 25-50% load change</td>
</tr>
<tr>
<td>Recovery</td>
<td>1ms</td>
<td>for recovery to 1% or 100mV of set voltage</td>
</tr>
<tr>
<td>Over voltage protection</td>
<td>Yes</td>
<td>Latching, output shuts down, cycle ac to reset</td>
</tr>
<tr>
<td>Over current protection</td>
<td>Constant Current</td>
<td>Auto recovers</td>
</tr>
<tr>
<td>Short circuit protection</td>
<td>Constant Current</td>
<td>Auto recovers</td>
</tr>
</tbody>
</table>
DH Module - single slot width, 2 output channels

<table>
<thead>
<tr>
<th>Maximum module power</th>
<th>200W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total power from channel 1 + channel 2</td>
<td></td>
</tr>
<tr>
<td>Available signals</td>
<td>Module good, module inhibit</td>
</tr>
<tr>
<td>Additional Leakage Current (max at 264Vac, 63Hz)</td>
<td>20.5µA</td>
</tr>
<tr>
<td>Must also add the leakage current from other modules, any standby supply and selected filter option.</td>
<td></td>
</tr>
</tbody>
</table>

### AVAILABLE OUTPUT VOLTAGES (at PSU output terminals)

<table>
<thead>
<tr>
<th>Channel 1</th>
<th>Channel 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment Range (Volts)</td>
<td>Current</td>
</tr>
<tr>
<td>10.2 - 13.8</td>
<td>10A</td>
</tr>
<tr>
<td>12.75 - 17.25</td>
<td>8A</td>
</tr>
<tr>
<td>20.4 - 27.6</td>
<td>5A</td>
</tr>
<tr>
<td>23.0</td>
<td>4.4A</td>
</tr>
</tbody>
</table>

Channel 1 and channel 2 of DH are both adjusted by single potentiometer. The V2 set = V2max x V1set / V1max
a, b, c, d - for output voltages below 10.8V(a), 13.5V(b), 21.6V(c) or 24.4V(d), a Minimum load of 1W must be applied to channel 1

### Output Specification

- **Rise time**: <50ms (with resistive load) to 90% of voltage, monotonic rise above 10%
- **Turn on overshoot**: zero at full load with resistive load.
- **Ripple and noise**: pk-pk, using 20MHz bandwidth
  - 0°C - 70°C: 1.5%
  - -20°C - 0°C: 2.25%
- **Voltage setting accuracy**: <1% of set voltage (3% for channel 2)
- **Remote sense**: No
- **Minimum load**: 0W (Except for notes a, b, c and d above.)
- **Temperature coefficient**: 0.03% of rated voltage per °C
- **Load regulation**: <6% for 5-100% load change
- **Line regulation**: <0.1% for 90-264Vac input change
- **Cross regulation**: 3% for 5-100% load change on any output
- **Transient deviation**: <4% of set voltage for 50% load change (above 25% load)
- **Recovery**: 3ms for recovery to 1% or 100mV of set voltage
- **Over voltage protection**: Yes, Latching, module shuts down (both outputs), cycle ac to restart.
- **Module current protection**: Hiccup, Protects channel 1 and channel 2, shuts down both outputs, auto-recover when fault clears.
- **Short circuit protection**: Yes, Indefinitely protected, see application notes for details
- **Over temperature protection**: Yes, Module protection shuts down both outputs, cycle ac to restart. Shutdown temperature varies according to ambient, output power and input voltage.

### How To Create A Product Description

Choose your required channel 1 and channel 2 voltages (from the table above)

For example, if you need 12V / 10A and 24V / 3A, you would choose **12/24DHS** as your required module.
DM Module - single slot width, 1 or 2 output channels

- Maximum module power: 200W
- Total power from channel 1 + channel 2

Maximum power per channel: see table below

Available signals: Remote sense (channels 1 & 2), channel 1 good, channel 2 good, Channel 2 inhibit, module inhibit

Additional Leakage Current (max at 264Vac, 63Hz): 22.3µA
Must also add the leakage current from other modules, and standby supply and selected filter option.

**Available Output Voltages (at PSU output terminals)**

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output Power</th>
<th>Max C Load</th>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output Power</th>
<th>Max C Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel 1 unused</td>
<td></td>
<td></td>
<td></td>
<td>Channel 2 unused</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.9 - 16.1</td>
<td>10A</td>
<td>120W</td>
<td>500µF/A</td>
<td>2.8 - 3.8</td>
<td>10A</td>
<td>33W</td>
<td>500µF/A</td>
</tr>
<tr>
<td>20.8 - 28.2</td>
<td>5A</td>
<td>120W</td>
<td>500µF/A</td>
<td>4.25 - 5.75</td>
<td>10A</td>
<td>50W</td>
<td>500µF/A</td>
</tr>
<tr>
<td>Channel 2 unused</td>
<td></td>
<td></td>
<td></td>
<td>Channel 1 unused</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.9 - 16.1</td>
<td>10A</td>
<td>120W</td>
<td>500µF/A</td>
<td>2.8 - 3.8</td>
<td>10A</td>
<td>33W</td>
<td>500µF/A</td>
</tr>
<tr>
<td>20.8 - 28.2</td>
<td>5A</td>
<td>120W</td>
<td>500µF/A</td>
<td>4.25 - 5.75</td>
<td>10A</td>
<td>50W</td>
<td>500µF/A</td>
</tr>
<tr>
<td>11.9 - 16.1</td>
<td>10A</td>
<td>120W</td>
<td>500µF/A</td>
<td>11.9 - 16.1</td>
<td>8.3A</td>
<td>100W</td>
<td>500µF/A</td>
</tr>
<tr>
<td>23.5 - 24.5</td>
<td>10A</td>
<td>100W</td>
<td>500µF/A</td>
<td>23.5 - 24.5</td>
<td>10A</td>
<td>100W</td>
<td>500µF/A</td>
</tr>
</tbody>
</table>

**Output Specification**

- **Ch1**:
  - Rise time: <20ms
  - Turn on overshoot: <5%
  - Ripple and noise: pk-pk, using 20MHz bandwidth
  - Temperature coefficient: 0.02% of rated voltage per °C
  - Load regulation: max of 50mV or <1% of set voltage for 0-100% load change
  - Line regulation: <0.1% for 90-264Vac input change
  - Cross regulation: 1.5% for 100% load change on any output
  - Transient deviation: <4% for recovery to 1% or 100mV of set voltage
  - Over voltage protection: Yes (Latching, module shuts down (both outputs), cycle ac to restart)
  - Over current protection: Hiccup (Constant current Ch1 protection shuts down both outputs)
  - Short circuit protection: Hiccup (Constant current Ch1 protection shuts down both outputs. Refer to application note for details)
  - Over temperature protection: Yes (Ch1 protection shuts down both outputs, cycle ac to restart. Ch2 protection shuts down ch2 only, auto recovers when fault clears. Shutdown temperature varies according to ambient, output power and input voltage)

- **Ch2**:
  - Rise time: <50ms
  - Turn on overshoot: <5%
  - Ripple and noise: pk-pk, using 20MHz bandwidth
  - Voltage setting accuracy: <1% of set voltage
  - Remote sense: Yes (0.5V at the output terminals must be within the specified adjustment range)
  - Minimum load: 0W
  - Temperature coefficient: 0.02% of rated voltage per °C
  - Load regulation: max of 50mV or <1% of set voltage for 0-100% load change
  - Line regulation: <0.1% for 90-264Vac input change
  - Cross regulation: 1.5% for 100% load change on any output
  - Transient deviation: <5% for 250mV for outputs below 5V
  - Recovery: 3ms for recovery to 1% or 100mV of set voltage
  - Over voltage protection: Yes (Latching, module shuts down (both outputs), cycle ac to restart)
  - Over current protection: Hiccup (Constant current Ch1 protection shuts down both outputs)
  - Short circuit protection: Hiccup (Constant current Ch1 protection shuts down both outputs. Refer to application note for details)
  - Over temperature protection: Yes (Ch1 protection shuts down both outputs, cycle ac to restart. Ch2 protection shuts down ch2 only, auto recovers when fault clears. Shutdown temperature varies according to ambient, output power and input voltage)

**How To Create A Product Description**

Choose your required channel 1 and channel 2 voltages (from the table above).
For example, if you need 12V / 10A and 3.3V / 10A, you would choose 12/3.3DMS as your required module.
SA Module - single slot width, 1 output channel

Maximum power per channel: see table below

<table>
<thead>
<tr>
<th>Available signals</th>
<th>Remote sense (5V module only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Leakage Current (max at 264Vac, 63Hz)</td>
<td>14.6µA</td>
</tr>
</tbody>
</table>

Must also add the leakage current from other modules, any standby supply and selected filter option.

### AVAILABLE OUTPUT VOLTAGES (at PSU output terminals)

<table>
<thead>
<tr>
<th>Output voltage</th>
<th>Current</th>
<th>Output power</th>
<th>Maximum capacitive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>5V</td>
<td>15A</td>
<td>75W</td>
<td>1000µF/A</td>
</tr>
<tr>
<td>12V</td>
<td>12.5A</td>
<td>150W</td>
<td>1000µF/A</td>
</tr>
<tr>
<td>15V</td>
<td>10A</td>
<td>150W</td>
<td>1000µF/A</td>
</tr>
<tr>
<td>24V</td>
<td>6.25A</td>
<td>150W</td>
<td>750µF/A</td>
</tr>
</tbody>
</table>

### Output Specification

- **Rise time**: <75ms (with resistive load) to 90% of voltage, monotonic rise above 10%
- **Turn on overshoot**: <5% or 250mV Load type dependent, no overshoot at full load with resistive load. 6% for 12V output
- **Ripple and noise**: pk-pk, using 20MHz bandwidth
- **0°C - 70°C, >5% load**: 1%
- **-20°C - 0°C, >5% load**: 2%
- **≤5% load**: 2%
- **Voltage setting accuracy**: <1% of set voltage
- **Remote sense**: Yes On 5V module only
- **Minimum load**: No on any output
- **Temperature coefficient**: <0.02% of rated voltage per °C
- **Load regulation**: <1% for 0-100% load change
- **Line regulation**: <0.2% for 90-264Vac input change
- **Cross regulation**: <0.2% for 100% load change on any output
- **Transient deviation**: <5% or 250mV of set voltage for 50% load change (above 25% load)
- **Recovery**: 5ms for recovery to 1% or 100mV of set voltage
- **Over voltage protection**: Yes Latching, module shuts down, cycle ac to restart
- **Over current protection**: Hiccup Auto recovers after removal of load
- **Short circuit protection**: Yes Indefinitely protected, see application notes for details
- **Over temperature protection**: Yes Module protection shuts down output, cycle ac to restart. Shutdown temperature varies according to ambient, output power and input voltage.

### How To Create A Product Description

Choose your required output voltage (from the table above)
For example, if you need 15V / 10A, you would choose 15SASL as your required module.
SB Module - single slot width, 1 output channel

Maximum power per channel
Available signals: Remote sense, module good, module inhibit
Additional Leakage Current (max at 264 Vac, 63 Hz): 14.6 µA

Must also add the leakage current from other modules, any standby supply and selected filter option.

**Available Output Voltages** (at PSU output terminals)

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output (W)</th>
<th>Max Capacitive Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>3.63</td>
<td>37A</td>
<td>122W 1000µF/A</td>
</tr>
<tr>
<td>5</td>
<td>5.5</td>
<td>30A</td>
<td>150W 1000µF/A</td>
</tr>
<tr>
<td>12</td>
<td>13.2</td>
<td>25A</td>
<td>300W 1000µF/A</td>
</tr>
<tr>
<td>15</td>
<td>16.5</td>
<td>20A</td>
<td>300W 1000µF/A</td>
</tr>
<tr>
<td>18</td>
<td>19.8</td>
<td>16.7A</td>
<td>300W 1000µF/A</td>
</tr>
<tr>
<td>24</td>
<td>26.4</td>
<td>12.5A</td>
<td>300W 750µF/A</td>
</tr>
<tr>
<td>28</td>
<td>30.8</td>
<td>10.7A</td>
<td>300W 500µF/A</td>
</tr>
<tr>
<td>48</td>
<td>52.8</td>
<td>6.25A</td>
<td>300W 250µF/A</td>
</tr>
</tbody>
</table>

**Output Specification**

- **Rise time**: <75 ms (with resistive load) to 90% of voltage, monotonic rise above 10%
- **Turn on overshoot**: <5% Load type dependent
- **Ripple and noise**: max of pk-pk, using 20 MHz bandwidth
  - 0°C - 70°C, >5% load: 1% or 50 mV
  - -20°C - 0°C, >5% load: 2% or 100 mV
- **5% load**: 4%
- **Voltage setting accuracy**: <1% of set voltage
- **Remote sense**: Yes, 0.5 V (voltage at the output terminals must remain within the adjustment range specified above)
- **Minimum load**: 0 W
- **Temperature coefficient**: 0.016% of rated voltage per °C
- **Load regulation**: <1% for 0-100% load change
- **Line regulation**: <0.1% for 90-264 Vac input change
- **Cross regulation**: 0.1% (5 mV for outputs below 5 V) for 100% load change on any output
- **Transient deviation**: <5% of set voltage for 50% load change (above 25% load)
- **Recovery**: 1 ms for recovery to 1% or 100 mV of set voltage
- **Over voltage protection**: Yes, Latching, module shuts down, cycle ac to restart.
- **Over current protection**: Hiccup, Auto recovers after removal of load
- **Short circuit protection**: Yes, Indefinitely protected, see application notes for details
- **Over temperature protection**: Yes, Module protection shuts down output, cycle ac to restart. Shutdown temperature varies according to ambient, output power and input voltage.

**How To Create A Product Description**

Choose your required output voltage (from the table above)
For example, if you need 12.2 V / 24.5 A, you would choose **12.2SBS** as your required module.
SC Module - two slots width, 1 output channel

Maximum power per channel see table below

Available signals
Remote sense, module good, module inhibit

Additional Leakage Current
13.8µA (max at 264Vac, 63Hz)
Must also add the leakage current from other modules, any standby supply and selected filter option.

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output power</th>
<th>Maximum capacitive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5.5</td>
<td>60A</td>
<td>300W</td>
</tr>
<tr>
<td>12</td>
<td>13.2</td>
<td>50A</td>
<td>600W</td>
</tr>
<tr>
<td>24</td>
<td>26.4</td>
<td>25A</td>
<td>600W</td>
</tr>
<tr>
<td>36</td>
<td>39.6</td>
<td>16.7A</td>
<td>600W</td>
</tr>
<tr>
<td>48</td>
<td>52.8</td>
<td>12.5A</td>
<td>600W</td>
</tr>
</tbody>
</table>

Output Specification

- Rise time: <75ms (with resistive load) to 90% of voltage, monotonic rise above 10%
- Turn on overshoot: <5%
- Load type dependent
- Ripple and noise: $V_{\text{ripple}} < 10V$ and $V_{\text{ripple}} > 10V$ pk-pk, using 20MHz bandwidth
- 0°C - 70°C, >5% load: 1.5% 1%
- -20°C - 0°C, >5% load: 3% 2%
- ≤5% load: 4% 4%
- Voltage setting accuracy: <1% of set voltage
- Remote sense: Yes 0.5V (voltage at the output terminals must remain within the adjustment range specified above)
- Minimum load: 0W
- Temperature coefficient: 0.016% of rated voltage per °C
- Load regulation: <1% for 0-100% load change
- Line regulation: <0.1% for 90-264Vac input change
- Cross regulation: 0.1% for 100% load change on any output
- Transient deviation: <5% of set voltage for 50% load change (above 25% load)
- Recovery: 1ms for recovery to 1% or 100mV of set voltage
- Over voltage protection: Yes Latching, module shuts down, cycle ac to restart.
- Over current protection: Hiccup Auto recovers after removal of load
- Short circuit protection: Yes Indefinitely protected, see application notes for details
- Over temperature protection: Yes Module protection shuts down output, cycle ac to restart. Shutdown temperature varies according to ambient, output power and input voltage.

How To Create A Product Description

Choose your required output voltage (from the table above)
For example, if you need 12.2V / 49A, you would choose 12.2SCS as your required module.
YB Module - single slot width, 1 output channel

Maximum power per channel  see table below

Available signals  Module good, module inhibit

Additional Leakage Current  (max at 264Vac, 63Hz)  20.5µA
Must also add the leakage current from other modules, any standby supply and selected filter option.

---

### AVAILABLE OUTPUT VOLTAGES (at PSU output terminals)

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output power</th>
<th>Maximum capacitive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.4 - 27.6</td>
<td>9.8A</td>
<td>200W</td>
<td>500µF/A</td>
</tr>
<tr>
<td>27.6 - 34.5</td>
<td>7.25A</td>
<td>200W</td>
<td>500µF/A</td>
</tr>
<tr>
<td>40.8 - 55.2</td>
<td>4.9A</td>
<td>200W</td>
<td>375µF/A</td>
</tr>
<tr>
<td>55.2 - 62</td>
<td>3.62A</td>
<td>200W</td>
<td>375µF/A</td>
</tr>
</tbody>
</table>

---

### Output Specification

- **Rise time**: <75ms (with resistive load) to 90% of voltage, monotonic rise above 10%
- **Turn on overshoot**: zero at full load with resistive load. Load type dependent, <7% overshoot with capacitive load
- **Ripple and noise**: pk-pk, using 20MHz bandwidth
  - 0°C - 70°C: 1.5%
  - -20°C - 0°C: 2.25%
- **Voltage setting accuracy**: <2% of set voltage
- **Remote sense**: No
- **Minimum load**: 0W
- **Temperature coefficient**: 0.03% of rated voltage per °C
- **Load regulation**: <6% for 5-100% load change
- **Line regulation**: <0.1% for 90-264Vac input change
- **Cross regulation**: <1% for 100% load change on any output
- **Transient deviation**: <8% of set voltage for 50% load change (above 25% load)
- **Recovery**: 5ms for recovery to 1% or 100mV of set voltage
- **Over voltage protection**: Yes, Latching, module shuts down, cycle ac to restart.
- **Over current protection**: Hiccup, Auto recovers
- **Short circuit protection**: Yes, Indefinitely protected, see application notes for details
- **Over temperature protection**: Yes, Module protection shuts down output, cycle ac to restart. Shutdown temperature varies according to ambient, output power and input voltage.

---

### How To Create A Product Description

Choose your required output voltage (from the table above)
For example, if you need 41V / 4A, you would choose 41YBS as your required module.
YC Module - two slots width, 1 output channel

Maximum power per channel  see table below
Available signals  Module good, module inhibit
Additional Leakage Current  (max at 264Vac, 63Hz)  29.2µA
Must also add the leakage current from other modules, any standby supply and selected filter option.

### Available Output Voltages (at PSU output terminals)

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output Power</th>
<th>Max Capacitive Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.6 - 7.26</td>
<td>37A</td>
<td>244W</td>
<td>1000µF/A</td>
</tr>
<tr>
<td>10 - 11</td>
<td>30A</td>
<td>300W</td>
<td>1000µF/A</td>
</tr>
<tr>
<td>30 - 33</td>
<td>20A</td>
<td>600W</td>
<td>1000µF/A</td>
</tr>
<tr>
<td>56 - 61.6</td>
<td>10.7A</td>
<td>600W</td>
<td>350µF/A</td>
</tr>
<tr>
<td>96 - 105.6V</td>
<td>6.25A</td>
<td>600W</td>
<td>125µF/A</td>
</tr>
</tbody>
</table>

### How To Create A Product Description

Choose your required output voltage (from the table above)
For example, if you need 58V / 10A, you would choose **58YCS** as your required module.
YF Module - four slots width, 1 output channel

Maximum power per channel see table below
Available signals Module good, module inhibit
Additional Leakage Current 27.6µA
(max at 264Vac, 63Hz)
Must also add the leakage current from other modules, any standby supply and selected filter option.

### AVAILABLE OUTPUT VOLTAGES (at PSU output terminals)

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output power</th>
<th>Max Capacitive Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 11</td>
<td>60A</td>
<td>600W</td>
<td>1000µF/A</td>
</tr>
<tr>
<td>24 - 26.4</td>
<td>50A</td>
<td>1200W</td>
<td>650µF/A</td>
</tr>
<tr>
<td>48 - 52.8</td>
<td>25A</td>
<td>1200W</td>
<td>500µF/A</td>
</tr>
<tr>
<td>72 - 79.2</td>
<td>16.7A</td>
<td>1200W</td>
<td>150µF/A</td>
</tr>
<tr>
<td>96 - 105.6V</td>
<td>12.5A</td>
<td>1200W</td>
<td>125µF/A</td>
</tr>
</tbody>
</table>

Output Specification

- Rise time <75ms (with resistive load) to 90% of voltage, monotonic rise above 10%
- Turn on overshoot <5% Load type dependent
- Ripple and noise: 
  - V_{0.02V,>20V} = 1.5% 
  - V_{0.01V,>20V} = 1% 

- Temperature coefficient 0.016% of rated voltage per °C
- Load regulation <1% for 0-100% load change
- Line regulation <0.1% for 90-264Vac input change
- Cross regulation 0.1% for 100% load change on any output
- Transient deviation <5% of set voltage for 50% load change (above 25% load)
- Recovery 1ms for recovery to 1% or 100mV of set voltage
- Over voltage protection Yes Latching, module shuts down, cycle ac to restart.
- Over current protection Hiccup Auto recovers
- Short circuit protection Yes Indefinitely protected, see application notes for details
- Over temperature protection Yes Module protection shuts down output, cycle ac to restart. Shutdown temperature varies according to ambient, output power and input voltage.

How To Create A Product Description

Choose your required output voltage (from the table above)
For example, if you need 48V / 25A, you would choose 48YFS as your required module.
ZC Module - two slots width, 1 output channel

Maximum power per channel: see table below

Available signals: Module good, module inhibit

Additional Leakage Current: 29.2µA (max at 264Vac, 63Hz)
Must also add the leakage current from other modules, any standby supply and selected filter option.

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output Power</th>
<th>Maximum capacitive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>16.0</td>
<td>36A</td>
<td>540W</td>
</tr>
<tr>
<td>18</td>
<td>19.2</td>
<td>30A</td>
<td>540W</td>
</tr>
<tr>
<td>28</td>
<td>30</td>
<td>19.3A</td>
<td>540W</td>
</tr>
</tbody>
</table>

Output Specification

Rise time: <75ms (with resistive load) to 90% of voltage, monotonic rise above 10%
Turn on overshoot: <5% Load type dependent
Ripple and noise: pk-pk, using 20MHz bandwidth

Voltage setting accuracy: <1% of set voltage
Remote sense: Yes 0.5V (voltage at the output terminals must remain within the adjustment range specified above)
Minimum load: 0W
Temperature coefficient: 0.016% of rated voltage per °C
Load regulation: <3.5% for 1-100% load change
Line regulation: <0.1% for 90-264Vac input change
Cross regulation: 0.1% for 100% load change on any output
Transient deviation: <5% of set voltage for 50% load change (above 25% load)
Recovery: 30ms for recovery to 1% or 100mV of set voltage
Over voltage protection: Yes Latching, module shuts down, cycle ac to restart.
Over current protection: Hiccup Auto recovers after removal of load
Short circuit protection: Yes Indefinitely protected, see application notes for details
Over temperature protection: Yes Module protection shuts down output, cycle ac to restart.
Shutdown temperature varies according to ambient, output power and input voltage.

How To Create A Product Description

Choose your required output voltage (from the table above)
For example, if you need 15V / 36A, you would choose 15ZCS as your required module.
ZD Module - three slots width, 1 output channel

Maximum power per channel  see table below

Available signals  Module good, module inhibit

Additional Leakage Current (max at 264Vac, 63Hz)  28.3µA
Must also add the leakage current from other modules, any standby supply and selected filter option.

### AVAILABLE OUTPUT VOLTAGES (at PSU output terminals)

<table>
<thead>
<tr>
<th>Adjustment Range (Volts) at PSU output terminal</th>
<th>Current</th>
<th>Output power</th>
<th>Maximum capacitive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 -</td>
<td>5.3</td>
<td>80A</td>
<td>400W 1000µF/A</td>
</tr>
<tr>
<td>12 -</td>
<td>12.8</td>
<td>65A</td>
<td>780W 1000µF/A</td>
</tr>
<tr>
<td>24 -</td>
<td>25.6</td>
<td>30A</td>
<td>720W 750µF/A</td>
</tr>
<tr>
<td>48 -</td>
<td>51.2</td>
<td>15A</td>
<td>720W 250µF/A</td>
</tr>
</tbody>
</table>

Output Specification

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rise time</td>
<td>&lt;75ms (with resistive load) to 90% of voltage, monotonic rise above 10%</td>
</tr>
<tr>
<td>Turn on overshoot</td>
<td>&lt;5% Load type dependent</td>
</tr>
<tr>
<td>Ripple and noise</td>
<td>$V_{rr}&lt;10V$ for 0°C - 70°C, &gt;5% load, $V_{rr}&gt;10V$ for -20°C - 0°C, &gt;5% load, pk-pk, using 20MHz bandwidth</td>
</tr>
<tr>
<td>Voltage setting accuracy</td>
<td>&lt;1% of set voltage</td>
</tr>
<tr>
<td>Remote sense</td>
<td>Yes 0.5V (voltage at the output terminals must remain within the adjustment range specified above)</td>
</tr>
<tr>
<td>Minimum load</td>
<td>0W</td>
</tr>
<tr>
<td>Temperature coefficient</td>
<td>0.016% of rated voltage per °C</td>
</tr>
<tr>
<td>Load regulation</td>
<td>&lt;3.5% for 1-100% load change (&lt;2.5% for 5-5.3V output)</td>
</tr>
<tr>
<td>Line regulation</td>
<td>&lt;0.1% for 90-264Vac input change</td>
</tr>
<tr>
<td>Cross regulation</td>
<td>0.1% for 100% load change on any output</td>
</tr>
<tr>
<td>Transient deviation</td>
<td>&lt;5% of set voltage for 50% load change (above 25% load)</td>
</tr>
<tr>
<td>Recovery</td>
<td>30ms for recovery to 1% or 100mV of set voltage</td>
</tr>
<tr>
<td>Over voltage protection</td>
<td>Yes Latching, module shuts down, cycle ac to restart.</td>
</tr>
<tr>
<td>Over current protection</td>
<td>Hiccup Auto recovers after removal of load</td>
</tr>
<tr>
<td>Short circuit protection</td>
<td>Yes Indefinitely protected, see application notes for details</td>
</tr>
<tr>
<td>Over temperature protection</td>
<td>Yes Module protection shuts down output, cycle ac to restart. Shutdown temperature varies according to ambient, output power and input voltage.</td>
</tr>
</tbody>
</table>

### How To Create A Product Description

Choose your required output voltage (from the table above)

For example, if you need 48V / 16A, you would choose **48ZDS** as your required module.
ZF Module - four slots width, 1 output channel

Maximum power per channel see table below
Available signals Module good, module inhibit
Additional Leakage Current (max at 264Vac, 63Hz) 27.6µA
Must also add the leakage current from other modules, any standby supply and selected filter option.

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output power</th>
<th>Maximum capacitive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5.3</td>
<td>110A</td>
<td>550W</td>
</tr>
<tr>
<td>12</td>
<td>12.8</td>
<td>90A</td>
<td>1080W</td>
</tr>
<tr>
<td>36</td>
<td>38.4</td>
<td>29A</td>
<td>1044W</td>
</tr>
</tbody>
</table>

**Available Signals**
- Module good
- Module inhibit

**Additional Leakage Current**
- 27.6µA

**How To Create A Product Description**

Choose your required output voltage (from the table above)
For example, if you need 12V / 90A, you would choose 12ZF5 as your required module.

**Output Specification**

- **Rise time**: <75ms (with resistive load) to 90% of voltage, monotonic rise above 10%
- **Turn on overshoot**: <5% Load type dependent
- **Ripple and noise**
  - V<sub>r</sub> < 10V: 1.5%
  - V<sub>r</sub> > 10V: 1%
  - 0°C - 70°C, >5% load
  - -20°C - 0°C, >5% load
  - ≤5% load
- **Voltage setting accuracy**: <1% of set voltage
- **Remote sense**: Yes 0.5V (voltage at the output terminals must remain within the adjustment range specified above)
- **Minimum load**: 0W
- **Temperature coefficient**: 0.016% of rated voltage per °C
- **Load regulation**: <3.5% for 1-100% load change (<2.5% for 5-5.3V output)
- **Line regulation**: <0.1% for 90-264Vac input change
- **Cross regulation**: 0.1% for 100% load change on any output
- **Transient deviation**: <5% of set voltage for 50% load change (above 25% load)
- **Recovery**: 30ms for recovery to 1% or 100mV of set voltage
- **Over voltage protection**: Yes Latching, module shuts down, cycle ac to restart.
- **Over current protection**: Hiccup Auto recovers after removal of load
- **Short circuit protection**: Yes Indefinitely protected, see application notes for details
- **Over temperature protection**: Yes Module protection shuts down output, cycle ac to restart. Shutdown temperature varies according to ambient, output power and input voltage.

**How To Create A Product Description**

Choose your required output voltage (from the table above)
For example, if you need 12V / 90A, you would choose 12ZF5 as your required module.

**Available Output Voltages**

<table>
<thead>
<tr>
<th>Adjustment Range (Volts)</th>
<th>Current</th>
<th>Output power</th>
<th>Maximum capacitive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5.3</td>
<td>110A</td>
<td>550W</td>
</tr>
<tr>
<td>12</td>
<td>12.8</td>
<td>90A</td>
<td>1080W</td>
</tr>
<tr>
<td>36</td>
<td>38.4</td>
<td>29A</td>
<td>1044W</td>
</tr>
</tbody>
</table>
Customer fixings. 8 holes M4. Max thread penetration: 4.5mm