Adelsystem Power Supplies

Series FLEX Power Supplies................................................................. P2
Technical Information & Dimensions (Online) ........................................ P5
Flexible Switching Power Supplies

High Quality AC to DC power with power boost up to 150% of rated Output to 60°C

Sprecher + Schuh is proud to bring you a Flexible Power Supply from the best in AC to DC power supplies, Adel System.

Solutions for Power Supply Continuity

The FLEXline DC Power Supplies offer more power and flexibility for all your power needs. FLEX units are power rated from 100 to 150%, have a voltage input from 115V to 500V, and three modes of output circuit protection. The extremely compact housings offer a variety of features.

Unparalleled Benefits

ADEL system Power Supplies offer unparalleled benefits in the industry:

- High quality AC to DC power boost with up to 150% of rated output to 60°C
- 1- and 2-phase input from 230V to 500V AC eliminates the need for control transformers
- Hiccup, Manual Reset and Continuous Output protection modes
- Operating temperature range of -25/+70°C
- Metal Case IP 20 provides excellent heat dissipation
- Built-in overload protection
- LED status indicator for all models
- Internally fused for short-circuit protection
- Easy Installation, DIN Rail Mountable
- Three year warranty

One Solution, Many Applications

ADEL system Power Supplies can apply to numerous applications and industries:

- PLC and Smart Relay power
- Proximity Switches
- Light Curtains
- Textile & Robotic Machinery
- Material Handling Equipment
- Metal & Wood Working
- Freezers & Refrigerators
- Building Automation
- Air Cleaning Systems
- Packing Equipment

RoHS ✔

3-Year Warranty

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Three Modes of Protection

With the exception of FLEX6024A, all Flex Models are field selectable via a factory supplied jumper for the three protection modes as described below.

Hiccup Mode
Automatic Restart
This is the default factory setting of all FLEX units. In case of short-circuit or overloading, the output current is interrupted. The device tries again to re-establish output voltage and normal condition about every 2 seconds until the problem is cleared.

Manual Reset
In case of short-circuit or overload, the output current is interrupted. In order to restart the output it is necessary to switch-off the input circuit for about 1 minute. This protection mode is particularly suggested in applications where safety procedures require that reset be carried out only by an authorized person.

Continuous Output mode
In case of short-circuit or overload, the output current is kept at high values with near zero voltage. In case of short circuit the current can reach up to 3 times the rated current at 60°C. This protection mode is used to meet the requirements of demanding loads such as motors, solenoid valves, lamps, PLC with highly capacitive input circuits and other loads with marked transient overload behavior. FLEX6024A is factory set to continuous output (C.O.) mode only.
Flexible Switching Mode Power Supplies

<table>
<thead>
<tr>
<th>Input Voltage AC</th>
<th>Input Voltage Selection</th>
<th>Watts</th>
<th>Output VDC</th>
<th>Output Amps @40ºC</th>
<th>Output Amps @60ºC</th>
<th>Power Good Contact</th>
<th>Catalog Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Phase</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>115…230</td>
<td>Automatic</td>
<td>36…72</td>
<td></td>
<td>2</td>
<td>1.5</td>
<td>~</td>
<td>FLEX6024A</td>
<td>172.06</td>
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<tr>
<td>115/230</td>
<td>Selectable</td>
<td>96/120</td>
<td></td>
<td>5</td>
<td>4</td>
<td>Yes</td>
<td>FLEX9024A</td>
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<tr>
<td>115/230</td>
<td>Selectable</td>
<td>120/180</td>
<td></td>
<td>7.5</td>
<td>5</td>
<td>Yes</td>
<td>FLEX17024A</td>
<td>382.78</td>
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<tr>
<td>115/230</td>
<td>Selectable</td>
<td>240/336</td>
<td></td>
<td>14</td>
<td>10</td>
<td>Yes</td>
<td>FLEX28024A</td>
<td>373.14</td>
</tr>
<tr>
<td>115/230</td>
<td>Bridge only</td>
<td>480/600</td>
<td></td>
<td>25</td>
<td>20</td>
<td>Yes</td>
<td>FLEX50024A</td>
<td>857.19</td>
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<td>Two Phase</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>230/400…500</td>
<td>Selectable</td>
<td>96/120</td>
<td></td>
<td>5</td>
<td>4</td>
<td>Yes</td>
<td>FLEX9024B</td>
<td>242.55</td>
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<tr>
<td>230/400…500</td>
<td>Selectable</td>
<td>120/180</td>
<td></td>
<td>7.5</td>
<td>5</td>
<td>Yes</td>
<td>FLEX17024B</td>
<td>400.09</td>
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<tr>
<td>230/400…500</td>
<td>Selectable</td>
<td>240/336</td>
<td></td>
<td>14</td>
<td>10</td>
<td>Yes</td>
<td>FLEX28024B</td>
<td>431.19</td>
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<tr>
<td>Three Phase</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400…500</td>
<td>Automatic</td>
<td>480…600</td>
<td></td>
<td>25</td>
<td>20</td>
<td>Yes</td>
<td>FLEX50024B</td>
<td>604.29</td>
</tr>
</tbody>
</table>

Norms and certifications

The CE mark in According to EMC 2004/108/EC and the Low voltage directive 2006/95/EC.

EMC Immunity

EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-6-2

Electrical Safety

According to UL508, UL file E308682, IEC/EN 60950 (VDE 0805) e EN 50178 (VDE 0160) for assembling device. The unit must be installed according to IEC/EN 60950. Input / Output separation: SELV EN60950-1 and PELV EN 60204-1. Double or reinforced insulation.

EMC Emission:

EN 61000-6-4, EN61000-3-2

Standards Conformity

EN 60204-1 Safety of Electrical Equip-ment Machines

1. 115V Amp Rating shown; 3A @ 230V (72 W)
2. 115V Amp Rating shown; 2.5@ 230V @ 50ºC (60 W)
3. Input voltage selectable via slide switch located below input terminals inside metal casing.
4. With the exception of Flex6024A, all models are capable of being set to hiccup mode, manual reset or Continuous mode via factory supplied jumper.
5. The NO Power Good signal contact Closes when the output power is OK and Opens when the output voltage falls below 20V DC.
6. For 115V input voltage jumper is required between "bridge only" terminals.
FLEX6024A

Input: single-phase 115 ... 230 V AC
Output: One output 24 V DC 50ºC
Efficiency up to 85%
Strong overload without switch-off up
Flexible power continuity: 36 to 72 W
DIN Rail Mountable
Extremely small size

### Input Data
- Nominal Input Voltage (2 x Vac): 115 ... 230 Vac
- Input Voltage range (Vac): 90 ... 264
- Inrush Current (Vin and In Load) I'f: ≤ 19 A ≤ 5 msec.
- Frequency: 47 – 63 Hz ±6%
- Input Current (115 – 230 Vac): 1 – 0.7 A
- Internal Fuse: T 4 A
- External Fuse (recommended): 6 A (MCB curve B)

### Output Data
- Output Voltage (Vn) Factory Setting 3%: 24 Vdc
- Adjustment range (Vadj): 22 – 27 Vdc
- Start up with Strong Load (capacitive load): ≤ 50,000 µF
- Turn-On delay after applying mains voltage: 1.5 sec. (max)
- Continuous Current at 24 V < 40ºC (In): 2 A (115) 3 A (230)
- Continuous Current at 24 V < 50ºC (In): 1.5 A (115) 2.5 A (230)
- Power Boost Current at 24 Vdc 50ºC (In): 3.5A ≥ 3 min.
- Current max. Overload 4Vdc (permanent): Imax = In 50ºC x (1.8 - 2.2)
- Max current Short Circuit (Icc): 7 A
- Hold-up Time (min. Vac) 24Vdc 5A: Typ. 20 msec
- Residual Ripple: ≤ 80 mVpp
- Efficiency: ≥ 85 %
- Over temperature Protection: Yes. Shut-down output and automatic restart.
- Short-circuit protection: Yes, Continuous Mode
- Dissipation power load max (W): 13
- Over Load protection: Yes, Continuous Mode
- Over Voltage Output protection: Yes (typ. 35 Vdc)
- Parallel connection: Yes

### Climatic Data
- Ambient Temperature operation: -25 up to +70 ºC
- Ambient Temperature Storage: -40 up to + 85 ºC
- Humidity at 25 ºC, no condensation: 95 % to 25 ºC

### General Data
- Isolation Voltage (In / Out): 3000 Vac
- Isolation Voltage (In / PE): 1605 Vac
- Isolation Voltage (Out / PE): 500 Vac
- Protection Class (EN/IEC 60609): IP 20
- Reliability: MTBF IEC 61709: > 500,000 h
- Pollution Degree Environment: 2
- Protection class: I with PE connected
- Dimension (w-h-d): 50x120x50 mm
- Weight: 0.3 kg approx.

### Terminal Connections

<table>
<thead>
<tr>
<th>Solid (mm²)</th>
<th>Stranded (mm²)</th>
<th>AWG</th>
<th>Torque (NM)</th>
<th>Stripped Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input: 0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
<td>7 mm</td>
</tr>
<tr>
<td>Output: 0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
<td>7 mm</td>
</tr>
</tbody>
</table>

*VDC ok* LED indicator

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**FLEX Power Supplies**

**FLEX9024A**

- **Input:** single-phase 115 / 230 V AC
- **Output:** One output 24 V DC 60°C
- **Efficiency up to 89%**
- **Strong overload without switch-off, up to 50%**
- **Flexible power continuity: 96 to 120 W**

**“Power Good” Contact**

**Selectable Protection Mode:**

- **Hiccup, Continuous Mode & Restart after Main**

**DIN Rail Mountable**

**Extremely small size**

### Technical Information

#### FLEX Power Supplies

#### FLEX9024A

**Input Data**

- **Nominal Input Voltage (2 x Vac):** 115 / 230 Vac
- **Manual select Input from 115 to 230**
- **Input Voltage range (Vac):** 115 / 230 Vac
- **Inrush Current (Vin and In Load):** ≤ 36 A ≤ 5 msec.
- **Frequency:** 47 – 63 Hz ±6%
- **Input Current (115 – 230 Vac):** 1.91 – 0.96 A
- **Internal Fuse:** T 1.4 A
- **External Fuse (recommended):** 10 A (MCB curve B)

**Output Data**

- **Output Voltage (Vn) Factory Setting:** ±3% 24 Vdc
- **Adjustment range (Vadj):** 22 – 27 Vdc
- **Start up with Strong Load (capacitive load):** ≤ 50,000 µF
- **Turn-On delay after applying mains voltage:** 1 sec. (max)
- **Continuous Current at 24 V < 40°C:** 5 A (permanent)
- **Continuous Current at 24 V < 50°C:** 4.5 A (permanent)
- **Continuous Current at 24 V < 60°C:** 4 A (permanent)
- **Power Boost Current at 24 Vdc 60°C:** In (60°C) x 1.5 ≤ 3 min.
- **Current max. Overload:** 4Vdc (permanent) 3 min.
- **Current Short Circuit Icc:** Max 2 sec.: Hiccup mode 12 A
- **Hold-up Time (min Vdc)** 24Vdc 5A
- **Residual Ripple:** ≤ 80 mVpp
- **Efficiency:** ≥ 89%
- **Over temperature Protection:** Yes, Shut-down output and automatic restart.
- **Short-circuit protection modes:** Hiccup Mode Continuous Mode Restart After Main
- **Dissipation power load max (W):** 15
- **Over Load protection:** Yes
- **Over Voltage Output protection:** Yes (typ. 35 Vdc)
- **Parallel connection:** Yes
- **Power Good contact rating (EN60947.4.1):**
  - Max. DC1: 30VDC 1S; AC1: 60 VAC 1A
  - Resitive load
  - Min. 1mA at 5 VDC
- **Climatic Data**
  - Ambient Temperature operation: -25 up to +70°C (>60°C derating 2.5% /°C)
  - Ambient Temperature Storage: -40 up to +85°C
  - Humidity at 25°C: no condensation 95 % to 25°C
- **General Data**
  - Isolation Voltage (In / Out): 3000 Vac
  - Isolation Voltage (In / PE): 1605 Vac
  - Isolation Voltage (Out / PE): 500 Vac
  - Protection Class (EN/IEC 60529): IP 20
  - Reliability: MTBF EC 61709 > 500,000 h
  - Pollution Degree Environment: 2
  - Protection class: I with PE connected
  - Dimension (w-h-d): 55x110x105 mm
  - Weight: 0.50 kg approx.

#### Terminal Connections

<table>
<thead>
<tr>
<th>Type</th>
<th>Solid</th>
<th>Stranded</th>
<th>AWG</th>
<th>Torque (NM)</th>
<th>Stripped Length (mm)</th>
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</thead>
<tbody>
<tr>
<td>Input</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.8</td>
<td>7 mm</td>
</tr>
<tr>
<td>Output</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.8</td>
<td>7 mm</td>
</tr>
</tbody>
</table>

**Discount Schedule B9**

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SSNA2018
FLEX17024A
Input: single-phase 115 / 230 V AC
Output: 24 V DC 60°C
Efficiency up to 89%
Strong overload without switch-off, up to 50%
Flexible power continuity: 120 to 180 W
*Power Good* Contact
Selectable Protection Mode:
**Hippoc, Continuous Mode & Restart after Main**
DIN Rail Mountable
Extremely small size

### Input Data
- **Nominal Input Voltage (2 x Vac):** 115 / 230 Vac
- **Manual select Input from 115 to 230**
- **Input Voltage range (Vac):**
  - 90 – 135 (115)
  - 170 – 264 (230)
- **Inrush Current (Vn and In Load) Pt:** ≤ 36 A ≤ 5 msec
- **Frequency:** 47 – 63 Hz ±6%
- **Input Current (115 – 230 Vac):**
  - 2.8 – 1.3 A
- **Internal Fuse:** T 4 A
- **External Fuse (recommended):** 10 A (MCB curve B)

### Output Data
- **Output Voltage (Vn) Factory Setting ±3%:** 24 Vdc
- **Adjustment range (Vad):** 22 – 27 Vdc
- **Start up with Strong Load (capacitive load):** ≤ 50.000 µF
- **Turn-On delay after applying mains voltage:** 1 sec. (max)
- **Rated Current at 24 V < 40°C (In):** 7.5 A (permanent)
- **Rated Current at 24 V < 50°C (In):** 6 A (permanent)
- **Rated Current at 24 V < 60°C (In):** 5 A (permanent)
- **Power Boost Current at 24 V 60°C (In):** In (60°C) x 1.5 ≥ 3 min.
- **Current max. Overload HVAC:** 4Vdc (permanent) Imax = In 60°C x (1.8 - 2.2)
- **Current Short Circuit Icc:**
  - Max 2 sec.: Hiccup mode
  - Permanent: Continuous Mode mode
- **Hold-up Time ( min. Vac):** 24Vdc 5A Typ. 20 msec
- **Residual Ripple:** ≤ 0.50 mA
- **Efficiency:** ≥ 89 %
- **Over temperature Protection:** Yes. Shut-down output and automatic restart.
- **Short-circuit protection modes:**
  - Hiccup Mode
  - Continuous Mode
  - Restart After Main
- **Dissipation power load max (W):** 22
- **Over Load protection:** Yes
- **Over Voltage Output protection:** Yes (typ. 35 Vdc)
- **Parallel connection:** Yes
- **Power Good contact rating (EN60947.4.1):**
  - DC1: 30VDC 1S; AC1: 60 VAC 1A
  - Min. 1mA at 5 VDC
- **Climatic Data**
  - **Ambient Temperature operation:** -25 up to +70 °C
  (≥ 80% derating 2.5% °C)
  - **Ambient Temperature Storage:** -40 up to +65 °C
  - **Humidity at 25 °C, no condensation:** 95 % to 25 °C
- **General Data**
  - **Isolation Voltage (In / Out):** 3000 Vac
  - **Isolation Voltage (In / PE):** 1605 Vac
  - **Isolation Voltage (Out / PE):** 500 Vac
  - **Protection Class (EN/IEC 60529):** IP 20
  - **Reliability: MTBF IEC 61709:** > 500.000 h
  - **Pollution Degree Environment:** 2
  - **Protection class:** I with PE connected
  - **Dimension (w-h-d):** 55x110x105 mm
  - **Weight:** 0.60 kg approx.

### Terminal Connections
- **Solid (mm²):** 0.2-2.5
- **Stranded (mm²):** 0.2-2.5
- ** AWG:** 24-14
- **Torque:** 0.5-0.6 (NM)
- **Stripped Length:** 7 mm

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**Power Supplies**

**Technical Information**

**Output derating Curve**

**Continuous Load**

**Output Voltage vs. Output Current, typ.**

**Discount Schedule B9**

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SSNA2018

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Technical Information

FLEX28024A
Input: single-phase 115 / 230 V AC
Output: 24 V DC 60°C
Efficiency up to 89%
Strong overload without switch-off, up to 50%
Flexible power continuity: 240 to 336 W
"Power Good" Contact
Selectable Protection Mode:

Hiccup, Continuous Mode & Restart after Main
DIN Rail Mountable
Extremely small size

<table>
<thead>
<tr>
<th>Input Data</th>
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<tbody>
<tr>
<td>Nominal Input Voltage (2 x Vac)</td>
<td>115 / 230 Vac</td>
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<tr>
<td>Manual select Input from 115 to 230</td>
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</tr>
<tr>
<td>Input Voltage range (Vac)</td>
<td>90 – 135 (115)</td>
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<tr>
<td></td>
<td>170 – 264 (230)</td>
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<tr>
<td>Inrush Current (Vn and In Load) t²</td>
<td>≤ 42 A ≤ 5 msec.</td>
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<tr>
<td>Frequency</td>
<td>47 – 63 Hz ±6%</td>
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<tr>
<td>Input Current (115 – 230 Vac)</td>
<td>3.3 – 2.2 A</td>
</tr>
<tr>
<td>Internal Fuse</td>
<td>1.63 A</td>
</tr>
<tr>
<td>External Fuse (recommended)</td>
<td>16 A (MCB curve B)</td>
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</table>

<table>
<thead>
<tr>
<th>Output Data</th>
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</thead>
<tbody>
<tr>
<td>Output Voltage (Vn) Factory Setting ±3%</td>
<td>24 Vdc</td>
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<tr>
<td>Adjustment range (Vadj)</td>
<td>22 – 27 Vdc</td>
</tr>
<tr>
<td>Start up with Strong Load (capacitive load)</td>
<td>≤ 50,000μF</td>
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<tr>
<td>Turn-On delay after applying mains voltage</td>
<td>1 sec. (max)</td>
</tr>
<tr>
<td>Rated Current at 24 V &lt; 40°C (In)</td>
<td>14 A (permanent)</td>
</tr>
<tr>
<td>Rated Current at 24 V &lt; 50°C (In)</td>
<td>12 A (permanent)</td>
</tr>
<tr>
<td>Rated Current at 24 V &lt; 60°C (In)</td>
<td>10 A (permanent)</td>
</tr>
<tr>
<td>Power Boost Current at 24 V 60°C(In)</td>
<td>In (60°C) x 1.5 ± 3 min.</td>
</tr>
<tr>
<td>Current max. Overload 4Vdc (permanent)</td>
<td>I_max = In (60°C) x (1.8 - 2.2)</td>
</tr>
<tr>
<td>Current Short Circuit Icc</td>
<td>30A</td>
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<tr>
<td>Max 2 sec.: Hiccup mode</td>
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<tr>
<td>Permanent: Continuous Mode</td>
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<tr>
<td>Hold-up Time (min. Vac) 24Vdc 5A</td>
<td>Typ. 20 msec</td>
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<tr>
<td>Residual Ripple</td>
<td>≤ 80 mVpp</td>
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<tr>
<td>Efficiency</td>
<td>≥ 89 %</td>
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<tr>
<td>Over temperature Protection</td>
<td>Yes, Shut-down output and automatic restart.</td>
</tr>
<tr>
<td>Short-circuit protection modes</td>
<td>Hiccup Mode</td>
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<tr>
<td></td>
<td>Continuous Mode</td>
</tr>
<tr>
<td></td>
<td>Restart After Main</td>
</tr>
</tbody>
</table>

Dissipation power load max (W) 42
Over Load protection Yes
Over Voltage Output protection Yes (typ. 35 Vdc)
Parallel connection Yes, "Easy Parallel"
Power Good contact rating (EN60947-4.1):
Max. DC1: 30VDC 1S; AC1: 60 VAC 1A
Min. 1mA at 5 VDC
Resistive load
Min. permisive load

Climatic Data
Ambient Temperature operation -25 up to +70 °C
(>60°derating 2.5% °C)
Ambient Temperature Storage -40 up to +85 °C
Humidity at 25 °C, no condensation
95 % to 25 °C

General Data
Isolation Voltage (In / Out) 3000 Vac
Isolation Voltage (In / PE) 1605 Vac
Isolation Voltage (Out / PE) 500 Vac
Protection Class (EN/IEC 60529) IP 20
Reliability: MTBF IEC 61709 ≥ 500,000 h
Pollution Degree Environment 2
Protection class 1 with PE connected
Dimension (w-h-d) 72x115x135 mm
Weight 0.65 kg approx.

<table>
<thead>
<tr>
<th>Terminal Connections</th>
<th>Solid (mm²)</th>
<th>Stranded (mm²)</th>
<th>AWG</th>
<th>Torque (NM)</th>
<th>Stripped Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input:</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
<td>7 mm</td>
</tr>
<tr>
<td>Output:</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
<td>7 mm</td>
</tr>
<tr>
<td>Signal:</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
<td>7 mm</td>
</tr>
</tbody>
</table>

Output derating Curve
Continuous Load
Output Voltage vs. Output Current, typ.
FLEX50024A

Input: single-phase 115 / 230 V AC
Output: 24 V DC 60°C
Efficiency up to 90%
Strong overload without switch-off, up to 50%
Flexible power continuity: 480 to 600 W
"Power Good" Contact
Selectable Protection Mode:
Hiccup, Continuous Mode & Restart after Main

DIN Rail Mountable
Extremely small size

### Input Data
- Nominal Input Voltage (2 x Vac) 115 / 230 Vac
- Bridge for 115V
- Input Voltage range (Vac) 90 – 135 (115) / 170 – 264 (230)
- Inrush Current (Vn and In Load) ≤ 80 A / ≤ 80 A / 5 msec.
- Frequency 47 – 63 Hz ±10%
- Input Current (115 – 230 Vac) 8 – 4.2 A
- Internal Fuse T 10 A
- External Fuse (recommended) 16 A (MCB curve B)

### Output Data
- Output Voltage (Vref. Factory Setting) ±3% 24 Vdc
- Adjustment range (Vadj) 22 – 27 Vdc
- Start-up with Strong Load (capacitive load) ≤ 50.000 µF
- Turn-On delay after applying mains voltage 1 sec. (max)
- Rated Current at 24 V < 40°C (in) 25 A (permanent)
- Rated Current at 24 V < 50°C (in) 22 A (permanent)
- Rated Current at 24 V < 60°C (in) 20 A (permanent)
- Power Boost Current at 24 V 60°C (In) In x 1.5 ≥ 3 min.
- Current max. overload = 4Vdc (permanent) Imax = In 60°C x (1.8 - 2.2)
- Current Short Circuit Icc Max 60A
- Hold-up Time ( min. Vac) 24Vdc 5A Typ. 20 msec
- Residual Ripple ≤ 80 mVpp
- Over temperature Protection Yes. Shut-down output and automatic restart.
- Short-circuit protection modes Hiccup Mode Continuous Mode Restart After Main
- Dissipation power load max (W) 62
- Over Load protection Yes
- Over Voltage Output protection Yes (typ. 35 Vdc)
- Parallel connection Yes, "Easy Parallel"
- Power Good contact rating (EN60947.4.1): Max. DC1: 30VDC 1S; AC1: 60 VAC 1A
- Min. 1mA at 5 VDC

### Climatic Data
- Ambient Temperature operation -25 up to +70 °C (>60° derating 2.5% °C)
- Ambient Temperature Storage -40 up to +85 °C
- Humidity at 25 °C, no condensation 95 % to 25 °C

**General Data**
- Isolation Voltage (In / Out) 3000 Vac
- Isolation Voltage (In / PE) 1605 Vac
- Isolation Voltage (Out / PE) 500 Vac
- Protection Class (EN/IEC 60529) IP 20
- Reliability: MTBF IEC 61709 > 500.000 h
- Pollution Degree Environment 2
- Protection class I with PE connected
- Dimension (w-h-d) 85x120x140 mm
- Weight 0.75 kg approx.

### Terminal Connections

<table>
<thead>
<tr>
<th></th>
<th>Solid (mm²)</th>
<th>Stranded (mm²)</th>
<th>AWG</th>
<th>Torque (NM)</th>
<th>Stripped Length:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>4.0</td>
<td>6.0</td>
<td>30-10</td>
<td>0.8-1.0</td>
<td>7 mm</td>
</tr>
<tr>
<td>Output</td>
<td>4.0</td>
<td>6.0</td>
<td>30-10</td>
<td>0.8-1.0</td>
<td>7 mm</td>
</tr>
<tr>
<td>Signal</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
<td>7 mm</td>
</tr>
</tbody>
</table>

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Technical Information

FLEX Power Supplies

RoHS ✔

UL File E30862

Isolation Voltage (In / Out) 3000 Vac
Isolation Voltage (In / PE) 1605 Vac
Isolation Voltage (Out / PE) 500 Vac
Protection Class (EN/IEC 60529) IP 20
Reliability: MTBF IEC 61709 > 500.000 h
Pollution Degree Environment 2
Protection class I with PE connected
Dimension (w-h-d) 85x120x140 mm
Weight 0.75 kg approx.
## Technical Information

### FLEX9024B

**Input:** two-phase  230 / 400 … 500 V AC  
**Output:** 24 V DC 60°C  
**Efficiency up to 89%**  
**Strong overload without switch-off, up to 50%**  
**Flexible power continuity: 96 to 120 W**  
*Power Good* Contact  
**Selectable Protection Mode:**
- **Hiccup, Continuous Mode & Restart after Main**  
**DIN Rail Mountable**  
**Extremely small size**  

### Input Data

<table>
<thead>
<tr>
<th>Input Data</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Input Voltage (2 x Vac)</td>
<td>230 / 400 … 500 Vac</td>
<td></td>
</tr>
<tr>
<td>Manual select Input from 230 to 400-500</td>
<td>230 / 400 … 500 Vac</td>
<td></td>
</tr>
<tr>
<td>Input Voltage range (Vac)</td>
<td>187 – 264 (230)</td>
<td></td>
</tr>
<tr>
<td>330 – 550 (400-500)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inrush Current (Vn and In Load)</td>
<td>≤ 17 A</td>
<td></td>
</tr>
<tr>
<td>≤ 5 msec.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>47 – 63 Hz</td>
<td></td>
</tr>
<tr>
<td>± 6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Current (230/400…500 V AC)</td>
<td>1.0 – 0.56 – 0.46 A</td>
<td></td>
</tr>
<tr>
<td>Internal Fuse</td>
<td>1 A</td>
<td></td>
</tr>
<tr>
<td>External Fuse (recommended)</td>
<td>10 A (MCB curve B)</td>
<td></td>
</tr>
</tbody>
</table>

### Output Data

<table>
<thead>
<tr>
<th>Output Data</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Voltage (Vn)</td>
<td>Factory Setting ±3% 24 Vdc</td>
<td></td>
</tr>
<tr>
<td>Adjustment range (Vadj)</td>
<td>22 – 27 Vdc</td>
<td></td>
</tr>
<tr>
<td>Start up with Strong Load (capacitive load)</td>
<td>≤50.000µF</td>
<td></td>
</tr>
<tr>
<td>Turn-On delay after applying mains voltage</td>
<td>1 sec. (max)</td>
<td></td>
</tr>
<tr>
<td>Rated Current at 24 V &lt; 40°C (In)</td>
<td>5 A (permanent)</td>
<td></td>
</tr>
<tr>
<td>Rated Current at 24 V &lt; 50°C (In)</td>
<td>4.5 A (permanent)</td>
<td></td>
</tr>
<tr>
<td>Rated Current at 24 V &lt; 60°C (In)</td>
<td>4 A (permanent)</td>
<td></td>
</tr>
<tr>
<td>Power Boost Current at 24 V 60°C (In) L ≤ 0.5 in 1 min.</td>
<td>In (60°C) x 1.5</td>
<td></td>
</tr>
<tr>
<td>Current max overload ≥ 4 Vdc (permanent)</td>
<td>Imax = In 60°C x (1.8 - 2.2)</td>
<td></td>
</tr>
</tbody>
</table>
| Current Short Circuit | Icc Max 2 sec.: Hiccup mode  
Permanent: Continuous Mode mode 12A |  |
| Hold-up Time (min. Vac) 24Vdc 5A | Typ. 20 msec |  |
| Residual Ripple | ≤ 80 mVpp |  |
| Efficiency | ≥ 89% |  |
| Over temperature Protection | Yes. Shut-down output and automatic restart. |  |
| Short-circuit protection modes | Hiccup Mode  
Continuous Mode  
Restart After Main |  |
| Dissipation power load max (W) | 12 |  |
| Over Load protection | Yes |  |
| Over Voltage Output protection | Yes (typ. 35 Vdc) |  |
| Parallel connection | Yes, *Easy Parallel* |  |

### Climatic Data

<table>
<thead>
<tr>
<th>Climatic Data</th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| Ambient Temperature operation | -25 up to +70 °C  
(>60°derating 2.5% °C) |  |
| Ambient Temperature Storage | -40 up to +85 °C |  |
| Humidity at 25 °C, no condensation | 95% to 25% |  |
| General Data |  |  |
| Isolation Voltage (In / Out) | 3000 Vac |  |
| Isolation Voltage (In / PE) | 1605 Vac |  |
| Isolation Voltage (Out / PE) | 509 Vac |  |
| Protection Class (EN/IEC 60529) | IP 20 |  |
| Reliability: MTBF IEC 61799 | > 500.000 h |  |
| Pollution Degree Environment | 2 |  |
| Protection class | I with PE connected |  |
| Dimension (w-h-d) | 55x110x105 mm |  |
| Weight | 0.50 kg approx. |  |

### Terminal Connections

<table>
<thead>
<tr>
<th>Terminal Connections</th>
<th>Solid (mm²)</th>
<th>Stranded (mm²)</th>
<th>AWG</th>
<th>Torque (NM)</th>
<th>Stripped Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
<td>7</td>
</tr>
<tr>
<td>Output</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
<td>7</td>
</tr>
</tbody>
</table>
FLEX17024B

Input: two-phase 230 / 400 ... 500 V AC
Output: 24 V DC 60°C
Efficiency up to 89%
Strong overload without switch-off, up to 50%
Flexible power continuity: 120 to 180 W
*Power Good* Contact
Selectable Protection Mode:
Hiccup, Continuous Mode & Restart after Main

DIN Rail Mountable
Extremely small size

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### Input Data

- **Nominal Input Voltage (2 x Vac)**: 230 / 400 ... 500 Vac
- **Manual select Input from 230 to 400-500**: 230 / 400 ... 500 Vac
- **Input Voltage range (Vac)**: 187 – 264 (230)
  - 330 – 550 (400-500)
- **Inrush Current (Vn and In Load) Pt**: ≤ 28 A ≤ 5 m/sec.
- **Frequency**: 47 – 63 Hz ±6%
- **Input Current (230/400...500 V AC)**: 1.45 - 0.83 - 0.68 A
- **Internal Fuse**: T 4 A
- **External Fuse (recommended)**: 10 A (MCB curve B)

### Output Data

- **Output Voltage (Vn)**: 24 Vdc
- **Adjustment range (Vadj)**: 22 – 27 Vdc
- **Start up with Strong Load (capacitive load)**: ≤50.000 µF
- **Turn-On delay after applying mains voltage**: 1 sec. (max)
- **Rated Current at 24 V < 40°C (In)**: 7.5 A (permanent)
- **Rated Current at 24 V < 50°C (In)**: 5 A (permanent)
- **Rated Current at 24 V < 60°C (In)**: 5 A (permanent)
- **Power Boost Current at 24 V 60°C(In)**: In (60°C) x 1.5 ≥ 3 min.
- **Current max. Overload**: 4Vdc (permanent)
  - Imax = In 60°C x (1.8 - 2.2)
- **Current Short Circuit Icc**: Max 2 sec.: Hiccup mode
  - Permanent: Continuous Mode mode
  - 16A
- **Hold-up Time (min. Vac) 24Vdc 5A**: Typ. 20 m/sec
- **Residual Ripple**: ≤ 80 mVdc
- **Efficiency**: ≥ 89 %
- **Over temperature Protection**: Yes. Shut-down output and automatic restart.
- **Short-circuit protection modes**: Hiccup Mode
- **Dissipation power load max (W)**: 22
- **Over Load protection**: Yes
- **Over Voltage Output protection**: Yes (typ. 35 Vdc)
- **Parallel connection**: Yes
- **Power Good contact rating (EN60947.4.1)**:
  - Max. DC1: 30VDC 1S; AC1: 60 VAC 1A
  - Min. 1mA at 5 VDC

### Climatic Data

- **Ambient Temperature operation**: -25 up to +70 °C
  - (>60° derating 2.5% °C)
- **Ambient Temperature Storage**: -40 up to +85 °C
- **Humidity at 25 °C, no condensation**: 95 % to 25 °C

### General Data

- **Isolation Voltage (In / Out)**: 3000 Vac
- **Isolation Voltage (In / PE)**: 1050 Vac
- **Isolation Voltage (Out / PE)**: 500 Vac
- **Protection Class (EN/IEC 60529)**: IP 20
- **Reliability: MTBF IEC 61709**: ≥ 500,000 h
- **Pollution Degree Environment**: 2
- **Protection class**: I with PE connected
- **Dimension (w-h-d)**: 55x110x105 mm
- **Weight**: 0.60 kg approx.

### Terminal Connections

<table>
<thead>
<tr>
<th>Input</th>
<th>Solid (mm²)</th>
<th>Stripped (AWG)</th>
<th>AWG (mm²)</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>7 mm</td>
</tr>
</tbody>
</table>

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FLEX28024B

Input: two-phase  230 / 400 ... 500 V AC
Output: 24 V DC 60°C
Efficiency up to 89%
Strong overload without switch-off, up to 50%
Flexible power continuity: 240 to 336 W
*Power Good* Contact

Selectable Protection Mode:
Hiccup, Continuous Mode & Restart after Main

DIN Rail Mountable
Extremely small size

### Input Data
- Nominal Input Voltage (2 x Vac): 230 / 400 ... 500 Vac
- Manual select Input from 230 to 400-500
- Input Voltage range (Vac): 187 – 264 (230)
- Input Voltage range (Vac): 330 – 550 (400-500)
- Input Current (Vn and In Load) I<sub>1</sub>: <34 A < 5 msec
- Frequency: 47 – 63 Hz ±6%
- Input Current (230/400 ... 500 V AC): 2.49 – 1.44 - 1.15 A
- Internal Fuse: T 4 A
- External Fuse (recommended): 16 A (MCB curve B)

### Output Data
- Output Voltage (Vn): Factory Setting ±3% 24 Vdc
- Adjustment range (Vadj): 22 – 27 Vdc
- Start up with Strong Load (capacitive load): <50.000µF
- Turn-On delay after applying mains voltage: 1 sec. (max)
- Rated Current at 24 V < 40°C (In): 14 A (permanent)
- Rated Current at 24 V < 50°C (In): 12 A (permanent)
- Rated Current at 24 V < 60°C (In): 10 A (permanent)
- Power Boost Current at 24 V 60°C(In): In (60°C) x 1.5 < 3 min
- Current max. Overload = 4Vdc (permanent) max = ln 60°C x (1.8 - 2.2)
- Current Short Circuit Icc: Max 2 sec.: Hiccup mode 30A
- Permanent: Continuous Mode mode
- Hold-up Time ( min. Vac): 24Vdc 5A typ. 20 msec
- Residual Ripple: ≤ 80 mVpp
- Efficiency: ≥ 89 %
- Over temperature Protection: Yes, Shut-down output and automatic restart.
- Short-circuit protection modes: Hiccup Mode Continuous Mode Restart After Main
- Dissipation power load max (W): 40
- Over Load protection: Yes
- Over Voltage Output protection: Yes (typ. 35 Vdc)
- Parallel connection: Yes
- Power Good contact rating (EN60947.4.1): Max. DC1: 30VDC 1S; AC1: 60 VAC 1A
- Min. 1mA at 5 VDC
- Resistance load: Resistive load
- Min. permissive load

### Climatic Data
- Ambient Temperature operation: -25 up to +70 °C
- Ambient Temperature Storage: 40 up to +65 °C
- Humidity at 25 °C, no condensation: 95 % to 25 °C

### General Data
- Isolation Voltage (In / Out): 3000 Vac
- Isolation Voltage (In / PE): 1605 Vac
- Isolation Voltage (Out / PE): 500 Vac
- Protection Class (EN/IEC 60529): IP 20
- Reliability: MTBF IEC 61709: > 500,000 h
- Pollution Degree Environment: 2
- Protection class: 1 with PE connected
- Dimension (w-h-d): 72x115x135 mm
- Weight: 0.65 kg approx.

### Terminal Connections

|          | Solid | Stranded |  |  |  |  |
|----------|-------|----------|  |  |  |  |
| Torque   | (Nm)  | Length   |  |  |  |  |
| Stripped |       |          |  |  |  |  |
| Input    | 0.2-2.5 | 0.2-2.5 | 24-14 | 0.5-0.6 | 7 mm |
| Output   | 0.2-2.5 | 0.2-2.5 | 24-14 | 0.5-0.6 | 7 mm |
| Signal   | 0.2-2.5 | 0.2-2.5 | 24-14 | 0.5-0.6 | 7 mm |
FLEX50024B

Input: three-phase 400 ... 500 V AC
Output: 24 V DC 60°C
Efficiency up to 91%
Strong overload without switch-off, up to 50%
Flexible power continuity: 480 to 600 W
"Power Good" Contact
Selectable Protection Mode:
Hiccup, Continuous Mode & Restart after Main
DIN Rail Mountable
Extremely small size

Input Data
| Nominal Input Voltage (3 x Vac) | 400 ... 500 Vac |
| Input Voltage range (Vac)      | 330 – 550      |
| Inrush Current (Vn and In Load) | ≤ 35 A ≤ 5 msec |
| Frequency                     | 47 – 63 Hz ±5% |
| Input Current (400…500 V AC)  | 1.27 – 1.01 A  |
| Internal Fuse                  | T6.3 A         |
| External Fuse (recommended)   | 16 A (MCB curve B) |

Output Data
| Output Voltage (Vn) Factory Setting ±3% | 24 Vdc |
| Adjustment range (Vadi)                | 22 – 27 Vdc |
| Start up with Strong Load (capacitive load) | ≤50,000µF |
| Turn-On delay after applying mains voltage | 1 sec. (max) |
| Rated Current at 24 V < 40°C (ln)      | 25 A (permanent) |
| Rated Current at 24 V < 50°C (ln)      | 22 A (permanent) |
| Rated Current at 24 V < 60°C (ln)      | 20 A (permanent) |
| Power Boost Current at 24 V 60°C (In)  | In (60°C) x 1.5 ≥ 3 min. |
| Current max. Overload 4Vdc (permanent) | Imax = In (60°C) x (1.8 – 2.2) |
| Current Short Circuit Icc              | 60A |

Over temperature Protection: Yes. Shut-down output and automatic restart.

Short-circuit protection modes:
Hiccup Mode, Continuous Mode, Restart After Main

Dissipation power load max (W) 54
Over Load protection: Yes
Over Voltage Output protection: Yes (typ. 35 Vdc)
Parallel connection: Yes
Power Good contact rating (EN60947.4.1): Resitive load
Max. DC1: 30 VDC 1S; AC1: 60 VAC 1A
Min. 1mA at 5 VDC

Climatic Data
| Ambient Temperature operation | -25 up to +70 °C (>60°derating 2.5% °C) |
| Ambient Temperature Storage   | -40 up to +85 °C |
| Humidity at 25 °C, no condensation | 95 % to 25 °C |

General Data
| Isolation Voltage (In / Out) | 3000 Vac |
| Isolation Voltage (In / PE)  | 1605 Vac |
| Isolation Voltage (Out / PE)  | 500 Vac  |
| Protection Class (EN/IEC 60629) | IP 20 |
| Reliability: MTBF IEC 61709 | > 500,000 h |
| Pollution Degree Environment  | 2 |
| Protection class               | I with PE connected |
| Dimension (w-h-d)              | 85x120x140 mm |
| Weight                         | 0.75 kg approx. |

Terminal Connections
<table>
<thead>
<tr>
<th>Solid (mm²)</th>
<th>Stranded (mm²)</th>
<th>AWG</th>
<th>Torque (NM)</th>
<th>Stripped Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input:</td>
<td>4.0</td>
<td>6.0</td>
<td>30-10</td>
<td>0.8-1.0</td>
</tr>
<tr>
<td>Output:</td>
<td>4.0</td>
<td>6.0</td>
<td>30-10</td>
<td>0.8-1.0</td>
</tr>
<tr>
<td>Signal:</td>
<td>0.2-2.5</td>
<td>0.2-2.5</td>
<td>24-14</td>
<td>0.5-0.6</td>
</tr>
</tbody>
</table>

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Discount Schedule B9
### Dimensions

- Dimensions are in millimeters (inches).
- Dimensions not intended for manufacturing purposes.

<table>
<thead>
<tr>
<th></th>
<th>WIDTH</th>
<th>HEIGHT</th>
<th>DEPTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLEX6024A</td>
<td>50 (1.97)</td>
<td>120 (4.72)</td>
<td>50 (1.97)</td>
</tr>
<tr>
<td>FLEX9024A, 17024A</td>
<td>55 (2.17)</td>
<td>110 (4.33)</td>
<td>105 (4.13)</td>
</tr>
<tr>
<td>FLEX9024B, 17024B</td>
<td>72 (2.83)</td>
<td>115 (4.53)</td>
<td>135 (5.31)</td>
</tr>
<tr>
<td>FLEX50024A &amp; B</td>
<td>85 (3.35)</td>
<td>120 (4.72)</td>
<td>140 (5.51)</td>
</tr>
</tbody>
</table>

### Electrical Connection

#### Input - Output power connection:

<table>
<thead>
<tr>
<th>Input:</th>
<th>Output:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Phase Switching Power Supplies</td>
<td>20 Vdc is made via PE</td>
</tr>
<tr>
<td>1 Phase Switching Power Supplies</td>
<td>1 Phase L, N, PE</td>
</tr>
<tr>
<td>2 Phase Switching Power Supplies</td>
<td>2 Phase L1, L2, PE</td>
</tr>
<tr>
<td>2 Phase Switching Power Supplies</td>
<td>3 Phase L1, L2, L3, PE</td>
</tr>
</tbody>
</table>

#### Signaling:

- **Red LED (DC OK) Status:**
  - **Output voltage OK:** Lights up permanently
  - **Switch OFF, in Overload and Short Circuit conditions:** Blink, in Overload and Short Circuit conditions

#### Jumper Setting

<table>
<thead>
<tr>
<th>Hiccup Mode</th>
<th>Manual Reset</th>
<th>Continuous Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
</tbody>
</table>

### Parallel Connection, to Increase Output Power:

- Made parallel connection with same model of power supply to increase the output power.
- Adjust the output approximately to the same value (+/- 20mV) applying 1-2 A load to all devices output before connecting them in parallel.
- Easy parallel connections Jumper. In FLEX280xxX and FLEX500xxX for more power, you must change position of the jumper to enable parallel connection.
- In this mode you can put in parallel up to 4 power supply

#### Serial Connection:

- **a)** It is possible to connect as many units in series as needed, providing the sum of the output voltage does not exceed 150Vdc.
- **b)** Voltages with a potential above 60Vdc are not SELV any more and can be dangerous. Such voltages must be installed with a protection against touching.
- **c)** For serial operation use power supplies of the same type.
- **d)** Grounding of the output is required when the sum of the output voltage is above 60Vdc.
- **e)** Keep an installation clearance of 15mm (left/right) between two power supplies and avoid installing the power supplies on top of each other. Note: Avoid return voltage (e.g. from a decelerating motor or battery) which is applied to the output terminals.

### Rail Mounting:

- Assembly
- Disassembly
- Maximum angle assembly

Other models / modules must have a minimum vertical and horizontal distance of 10 cm to this power supply in order to guarantee sufficient auto convection. Depending on the ambient temperature and load of the device, the temperature of the housing can become very high!