Primary switch mode — three-phase

**General**

The heart of a primary switch unit is the test insulator. The concept equals, smooths and highly frequenced the primary voltage, which will be transformed and stabilized into a lower secondary voltage. A compact form and less weight is an advantage.

Higher demand for the power supply technology in automation, sensor and actorn technology requires new solutions. The problem of not reliable power supply causes a higher risk. Exactly defined voltage levels come to a bad end. To meet those requirements, the use of a regulated power supply is unavoidable.

Designed for the world-wide use, the MCS and MPS units have all the important and required international approvals.

MCS allows usage in applications where space is at a premium.

MPS exceeds all expectations. Extensive standards, such as PLC and automation systems, are now available for these power supply units.

Further information about primary switch modes single phase is located in chapter 4.5 . . .

---

**Valid for units, which don’t meet the EN 61000-3-2 guideline.**

**Attention**

This unit was designed for application in industrial environment (closed energy networks) and do not fulfills the requirements of the EN61000-3-2: 1995 + A1 + A2 + A14/2000 regarding harmonic.

The power supply may only be connected to public energy networks

- If the total measured power is greater than 1 kW
- If the total input current per conductor exceeds 16 A
- If the measured power is under 75 W (in the future 50 W) and does not have loads for illumination.

**Notice**

At parallel operation should be considered the sum of the individual power measurements

- If the unit is supplied with less than 220 V (neutral outgoing connection)

This restrictions are valid from January 1, 2001 in all European countries. Other countries can also make use of these.

---

**Primary switch mode**

---

**MCS with PFC (EN 61000-3-2)**

Primary switch mode power supply for demanding applications. The units are touch protected, overload and short-circuit protected. Snap on to DIN-rail, small units for limited space requirements.

Input voltage: 3 x 400 V AC resp. wide voltage input (3 x 360 . . . 550 V AC)

Output voltage: 24 . . . 28 V DC adjustable

Output current: 10/ 20/ 40 A

PIP - Power +

For industrial use is also available a version without PFC.

---

**MPS**

Primary switch mode power supply for demanding applications and integrated UPS function.

The units are touch protected, overload and short-circuit protected. DIN-rail mountable.

Input voltage: 3 x 400 V AC resp. wide voltage input (3 x 360 . . . 550 V AC)

Output voltage: 22 . . . 28 V DC adjustable

Output current: 10/ 20/ 40 A

PIP - Power +

---

from page 4.6.2
Primary switch mode – three-phase

Stabilized output voltage
Short-circuit and overload protected
Wide voltage input
Touch protected to EN 60529 (IP20)

Primary switch mode – three-phase
MCS with PFC
Input voltage 3 x 360…550 V AC

Ordering data

<table>
<thead>
<tr>
<th>Output rating</th>
<th>Art.-No.</th>
<th>Art.-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC/ 5 A 120 W</td>
<td>857814</td>
<td></td>
</tr>
<tr>
<td>24 V DC/10 A 240 W</td>
<td>85071</td>
<td></td>
</tr>
</tbody>
</table>

Input

<table>
<thead>
<tr>
<th>Input voltage</th>
<th>3 x 360…550 V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input current</td>
<td>3 x 0.33 A</td>
</tr>
<tr>
<td>Inrush current</td>
<td>&lt; 15 A</td>
</tr>
<tr>
<td>Input fuse</td>
<td>3 x 2 A</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
</tr>
</tbody>
</table>

Output voltage 24 V DC SELV, ± 1 %; 24…28 V adjustable
Nominal output current 5 A (60 °C); 6 A (40 °C)
Efficiency 0.9
Mains failure bridging > 25 ms (400 V AC)
Ripple < 20 mV eff
Spikes < 100 ms
Protection short-circuit and overload protected
LED-indicator green LED for output voltage
Switch off mode choosable front sided bridging link (self activating re-start or definite shutoff)
Parallel usage/Serial usage yes/yes

General data

Guidelines EN 60950-1, EN 61204-3, EN 55022 B
Temperature range 0…+60 °C
Relative humidity 5…95 %, no condensation
Mounting method DIN-rail mounting to EN 60715 (TR35)
Weight 1.3 kg
Dimensions H x B x T x TA 1) 127 x 68 x 178 x 201) mm

Notes

MCS primary switch mode meets EN 61000-3-2 guideline.

1) TA = terminal depth

1.5.2
Primary switch mode – three-phase

Stabilized output voltage
Short-circuit and overload protected
Wide voltage input
Touch protected to EN 60529 (IP20)

MCS with PFC
Input voltage 3 x 360…550 V AC

Input voltage 3 x 360…550 V AC

Input current 3 x 1.2 A

Inrush current < 20 A

Input fuse 3 x 3 A

Frequency 50/60 Hz

Output
Output voltage 24 V DC SELV, ± 1 %; 24…28 V adjustable

Nominal output current 20 A (60 °C); 24 A (40 °C)

Efficiency 0.9

Mains failure bridging > 12 ms (400 V AC) typ. 8 ms (440 V AC)

Ripple < 20 mV eff

Spikes < 100 ms < 150 mV ss

Protection short-circuit and overload protected

LED-indicator green LED for output voltage

Switch off mode choosable front sided bridging link (self activating re-start or definite shutoff)

Parallel usage/Serial usage yes/yes

General data
Guidelines EN 60950-1, EN 61204-3, EN 55022 B
Temperature range 0…+60 °C
Relative humidity 5…95 %, no condensation

Mounting method screw mounting M 4, 4 pieces, 60 x 197 mm screw mounting M 4, 4 pieces, 81 x 230 mm

Weight 2.3 kg 4.5 kg

Dimensions H x B x T x TA 1) 209 x 84 x 227 x 201) mm 242 x 106 x 270 mm

Notes
MCS primary switch mode meets EN 61000-3-2 guideline.

1) TA = terminal depth
Primary switch mode – three-phase

Stabilized output voltage
Short-circuit and overload protected
Wide voltage input
Touch protected to EN 60529 (IP20)

**MCS**
Input voltage 3 x 340…460 V AC

---

**Circuit diagram**

---

### Ordering data

<table>
<thead>
<tr>
<th>Output rating</th>
<th>Art.-No.</th>
<th>Art.-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC/10 A 240 W</td>
<td>85095</td>
<td></td>
</tr>
<tr>
<td>24 V DC/20 A 480 W</td>
<td></td>
<td>85097</td>
</tr>
</tbody>
</table>

### Input

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>3 x 340…460 V AC</td>
</tr>
<tr>
<td>Input current</td>
<td>3 x 0.7 A, 3 x 1.4 A</td>
</tr>
<tr>
<td>Inrush current</td>
<td>&lt; 25 A</td>
</tr>
<tr>
<td>Input fuse</td>
<td>3 x 4 A, 3 x 3 A</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
</tr>
</tbody>
</table>

### Output

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>24 V DC SELV, ± 1 %; 24…28 V adjustable</td>
</tr>
<tr>
<td>Nominal output current</td>
<td>10 A, 20 A</td>
</tr>
<tr>
<td>Efficiency</td>
<td>0.9</td>
</tr>
<tr>
<td>Mains failure bridging</td>
<td>&gt; 10 ms (400 V AC)</td>
</tr>
<tr>
<td>Ripple</td>
<td>&lt; 20 mV eff</td>
</tr>
<tr>
<td>Spikes</td>
<td>&lt; 100 ms</td>
</tr>
<tr>
<td>Protection</td>
<td>short-circuit and overload protected</td>
</tr>
<tr>
<td>LED indicator</td>
<td>green LED for output voltage</td>
</tr>
<tr>
<td>Switch off mode choosable</td>
<td>front sided bridging link (self activating re-start or definite shutoff)</td>
</tr>
<tr>
<td>Parallel usage/Serial usage</td>
<td>yes/yes</td>
</tr>
</tbody>
</table>

### General data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidelines</td>
<td>EN 60950-1, EN 61204-3, EN 55011 A</td>
</tr>
<tr>
<td>Temperature range</td>
<td>0…+60 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>30…90 %, no condensation</td>
</tr>
<tr>
<td>Mounting method</td>
<td>DIN-rail mounting to EN 60715 (TH35)</td>
</tr>
<tr>
<td>Weight</td>
<td>1.2 kg, 2.1 kg</td>
</tr>
<tr>
<td>Dimensions H x B x T</td>
<td>127 x 68 x 160 mm, 170 x 84 x 201 mm</td>
</tr>
</tbody>
</table>

### Dimension drawing

---

### Notes

Mounting adapter for side mounting see page 4.9.2
Primary switch mode – three-phase

**MPS 10**
- Input voltage 3 x 340...460 V AC
- Input current 3 x 0.42 A
- Input fuse max. 10 A
- Output voltage 24 V DC SELV, ± 1%; 22...28 V adjustable
- Nominal output current 10 A (60 °C); 12 A (40 °C)
- Efficiency 0.9
- mains failure bridging > 3 ms (400 V AC)
- ripple, spikes < 20 mV eff; < 100 mV ss
- protection short-circuit and overload, switch off at phase failure, pre-warning and switching off when overloaded, signaling over alarm output
- phase monitoring switch off when phase is lost
- LED-indicator green LED in operation, red LED shut down, yellow LED, pre-warning of overload or high temperature
- parallel usage/serial usage yes/yes
- alarm output 1) relay contact max. 60 V DC/ 0.2 A; collective alarm for all faults and pre-warnings, quit via green reset button
- test stop button for test purposes, secondary voltage can be switched off short term via test stop button

**MPS 20**
- Input voltage 3 x 340...460 V AC
- Input current 3 x 0.84 A
- Input fuse max. 10 A
- Output voltage 24 V DC SELV, ± 1%; 22...28 V adjustable
- Nominal output current 20 A (60 °C); 24 A (40 °C)
- Efficiency 0.9
- mains failure bridging > 3 ms (400 V AC)
- ripple, spikes < 20 mV eff; < 100 mV ss
- protection short-circuit and overload, switch off at phase failure, pre-warning and switching off when overloaded, signaling over alarm output
- phase monitoring switch off when phase is lost
- LED-indicator green LED in operation, red LED shut down, yellow LED, pre-warning of overload or high temperature
- parallel usage/serial usage yes/yes
- alarm output 1) relay contact max. 60 V DC/ 0.2 A; collective alarm for all faults and pre-warnings, quit via green reset button
- test stop button for test purposes, secondary voltage can be switched off short term via test stop button

**Ordering data**

<table>
<thead>
<tr>
<th>Output rating</th>
<th>Art.-No.</th>
<th>Art.-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC/10 A</td>
<td>240 W</td>
<td>85065</td>
</tr>
<tr>
<td>24 V DC/20 A</td>
<td>480 W</td>
<td>85067</td>
</tr>
</tbody>
</table>

**Input**
- Input voltage 3 x 340...460 V AC
- Input current 3 x 0.42 A
- Input fuse max. 10 A
- Frequency 50/60 Hz

**Output**
- Output voltage 24 V DC SELV, ± 1%; 22...28 V adjustable
- Nominal output current 10 A (60 °C); 12 A (40 °C)
- Efficiency 0.9
- mains failure bridging > 3 ms (400 V AC)
- ripple, spikes < 20 mV eff; < 100 mV ss
- protection short-circuit and overload, switch off at phase failure, pre-warning and switching off when overloaded, signaling over alarm output
- phase monitoring switch off when phase is lost
- LED-indicator green LED in operation, red LED shut down, yellow LED, pre-warning of overload or high temperature
- parallel usage/serial usage yes/yes
- alarm output 1) relay contact max. 60 V DC/ 0.2 A; collective alarm for all faults and pre-warnings, quit via green reset button
- test stop button for test purposes, secondary voltage can be switched off short term via test stop button

**General data**
- Guidelines EN 60950-1, EN 61204-3, EN 55022 B
- Temperature range 0...+60 °C
- Relative humidity 30...90 %, no condensation
- Mounting method DIN-rail mounting to EN 60715 (TH35), additional plate for screw mounting Art.-No. 89500
- Weight 1.7 kg 2.4 kg
- Dimensions H x B x T 132 x 198 x 97 mm 132 x 243 x 123 mm

**Dimension drawing**

**Notes**
MPS primary switch mode meets EN 61000-3-2 guideline.
1) if units used in parallel decoupling of units via diode block. UPS components see page 4.9.3
Primary switch mode – three-phase

Stabilized output voltage

Short-circuit and overload protected

Wide voltage input

Touch protected to EN 60529 (IP20)

PIP- Power +

Approvals: UL 508 Listed

Circuit diagram

Ordering data

<table>
<thead>
<tr>
<th>Output rating</th>
<th>Art.-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC/10 A</td>
<td>240 W</td>
</tr>
<tr>
<td>85066</td>
<td></td>
</tr>
<tr>
<td>24 V DC/20 A</td>
<td>480 W</td>
</tr>
<tr>
<td>85068</td>
<td></td>
</tr>
<tr>
<td>24 V DC/40 A</td>
<td>960 W</td>
</tr>
<tr>
<td>85069</td>
<td></td>
</tr>
</tbody>
</table>

Technical data

Input

<table>
<thead>
<tr>
<th>Input voltage</th>
<th>Input current</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 x 360...550 V AC</td>
<td>3 x 0.41 A</td>
</tr>
<tr>
<td>3 x 360...550 V AC</td>
<td>3 x 0.84 A</td>
</tr>
<tr>
<td>3 x 360...550 V AC</td>
<td>3 x 1.7 A</td>
</tr>
</tbody>
</table>

Output

<table>
<thead>
<tr>
<th>Output voltage</th>
<th>Nominal output current</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC SELV, ± 1%; 22...28 V adjustable</td>
<td>10 A (60 °C); 12 A (40 °C)</td>
<td>0.9</td>
</tr>
<tr>
<td>20 A (60 °C); 24 A (40 °C)</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td>40 A (60 °C); 48 A (40 °C)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mains failure bridging: > 3 ms (400 V AC)
Ripple, Spikes: < 20 mV eff; < 100 mV ss
Protection: short-circuit and overload, switch off at phase failure, pre-warning and switching off when overloaded, signaling over alarm output
Phase monitoring: switch off when phase is lost
LED-indicator: green LED in operation, red LED shut down, yellow LED pre-warning of overload or high temperature
Parallel usage/Serial usage: yes/yes
Alarm output: relay contact max. 60 V DC/0.2 A, collective alarm for all faults and pre-warnings, quit via green reset button
Test stop button: for test purposes, secondary voltage can be switched off short term via test stop button

General data

Guidelines: EN 60950-1, EN 61204-3, EN 55022 B
Temperature range: 0...+60 °C
Relative humidity: 30...90 %, no condensation
Mounting method: DIN-rail mounting to EN 60715 (TH35); additional plate for screw mounting Art.-No. 89500
DIM-rail is also delivered
Weight: 1.8 kg 2.4 kg 5.8 kg
Dimensions: H x B x T 132 x 198 x 97 mm 132 x 243 x 123 mm 193 x 282 x 132 mm

Notes

MPS primary switch mode meets EN 61000-3-2 guideline. UPS components see page 4.9.3

If units used in parallel decoupling of units via diode block.

Right angle foot brackets for screw mounting Art.-No. 89504.