

## General

The galvanic isolation of the input and output sides as well as the alteration of the mains voltage (i.e. into a low voltage) is achieved by the transformer.

The power supply units to EN 61558 are built with either top or side mounted bridge rectifier and electronics. This both protects the electronics and enables the units to meet touch protection guidelines BGV-A2 and EN 60529.

All transformers/power supply units are fitted with angled fixing brackets and key holes to aid simple mounting.

In applications where less than 5 A is required, it is often not practical to replace linear regulated units with primary switch mode units. This is particularly true where the whole system is supplied by an unregulated or large switch mode unit.

Output voltages can become corrupted due to long cable lengths, valves, contactors, other inductive loads and DC/DC converters.

This can lead to, in the worst case, destruction of sensitive equipment or electronics. Areas such as measurement, process control, and medical machinery are especially susceptible to these problems.

Of special note with this range of power supplies, is the capability to provide excess current when necessary. This can be anything up to many times the nominal current and dependent on the level of over current necessary, lasting up to a few minutes.

## Smoothed



### MEN

Power supplies with smoothed output voltage.

The units are touch protected and have an output fuse up to 7.5 A on the secondary AC-circuit.

Input voltage: 110/230 V AC and 230/400 V AC  $\pm 15\%$  reconnectable.

Output voltage: 24 V DC SELV

Output current: 1.0/ 2.5/ 5/ 7.5/ 10/ 15 or 20 A

from page 4.3.2



### MNG

Power supplies with smoothed output voltage.

The units are touch protected and have an output fuse on the secondary AC-circuit.

Input voltage: 110 V AC, 230 V AC or 400 V AC  $\pm 5\%$  reconnectable.

Output voltage: 24 V DC SELV

Output current: 1.0/ 2.5/ 3.5/ 5/ 7.5/ 10 A

from page 4.3.6

## Linear regulated



### NLS

The linear regulated power supplies in this series are very stable and have an extremely low ripple.

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

The integrated electronics allow a short term loading many times higher than the nominal current.

Input voltage: 230/400 V AC

Output voltage: 24 V DC SELV

Output current: 0.5/ 1/ 2/ 4 A

from page 4.3.12



### MKN

Linear regulated small DIN-rail mountable power supplies in the MCVO housing.

They require minimal space and have a stable output voltage.

Input voltage: 230 V AC

Output voltage: 5, 10,  $\pm 10$ ,  $\pm 15$  or 24 V DC as well as an adjustable version 9.5...15 V DC (each SELV)

Output current: 70...200 mA

page 4.3.14

Smoothed  
to EN 61558

Touch protected to  
EN 60529 (IP20)

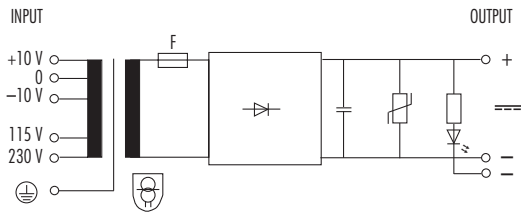
MEN  
Input voltage 115/ 230 V AC  
± 10 V tapings



Approvals:



Circuit diagram



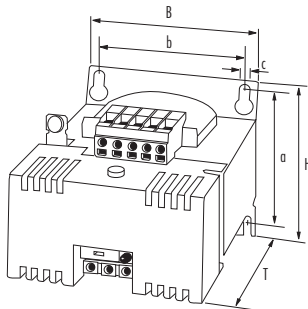
| Ordering data |       | Art.-No. | Art.-No. | Art.-No. | Art.-No. |
|---------------|-------|----------|----------|----------|----------|
| Output rating |       |          |          |          |          |
| 24V DC/ 1 A   | 24 W  | 8985360  |          |          |          |
| 24V DC/ 2.5 A | 60 W  |          | 8985361  |          |          |
| 24V DC/ 5 A   | 120 W |          |          | 8985362  |          |
| 24V DC/ 7.5 A | 180 W |          |          |          | 85363    |

| Input                 |  | 115/ 230 V AC ± 10 V |              |               |               |
|-----------------------|--|----------------------|--------------|---------------|---------------|
| Input voltage         |  |                      |              |               |               |
| Input current         |  | 0.54/ 0.27 A         | 1.0/ 0.5 A   | 2.0/ 1.0 A    | 2.84/ 1.42 A  |
| Input fuse (external) |  | 0.8/ 0.4 A T         | 1.6/ 1.8 A T | 3.15/ 1.6 A T | 2.0/ 1.25 A T |
| Frequency             |  | 50/60 Hz             |              |               |               |

| Output              |            | 24 V DC SELV                     |                           |                            |                            |
|---------------------|------------|----------------------------------|---------------------------|----------------------------|----------------------------|
| Output voltage      |            |                                  |                           |                            |                            |
| Max. output current | Ta 60/40°C | 1/ 1,5 A                         | 2,5/ 3 A                  | 5/ 6 A                     | 7,5/ 9 A                   |
| Effective ripple    |            | < 5 %                            |                           |                            |                            |
| Output fuse         |            | 3 A (automotive fuse FKS)        | 5 A (automotive fuse FKS) | 10 A (automotive fuse FKS) | 15 A (automotive fuse FKS) |
| Output filter       |            | LED, VDR and smoothing capacitor |                           |                            |                            |

| General data      |           |                                                        |                    |                  |                      |
|-------------------|-----------|--------------------------------------------------------|--------------------|------------------|----------------------|
| Guidelines        |           | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                    |                  |                      |
| Temperature range |           | -20...+60 °C, no condensation                          |                    |                  |                      |
| Mounting method   |           | key-hole mounting                                      |                    |                  |                      |
| Weight            |           | 1.25 kg                                                | 2.1 kg             | 3.0 kg           | 5.6 kg               |
| Dimensions        | H x B x T | 64 x 78 x 120 mm                                       | 83 x 84 x 124 mm   | 95 x 96 x 136 mm | 103 x 105 x 150.5 mm |
| Fixing centers    | a x b x c | 47.5 x 56 x 4.8 mm                                     | 65.5 x 64 x 4.8 mm | 75 x 84 x 5.8 mm | 86.5 x 90 x 5.8 mm   |

Dimension drawing/Fixing centers



Notes

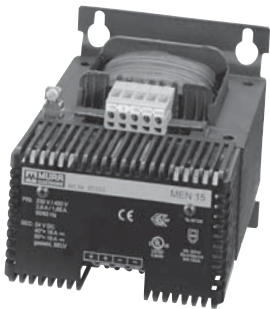
MEN power supply units meet the EN 61000-3-2 guideline. Products without snap on adapter Art.-No. change from 8985...into 85... (89 will drop). Suitable snap adapter and replacement fuses page see 4.9.2. Wall mounting with any orientation.

Smoothed  
to EN 61558  
  
Touch protected to  
EN 60529 (IP20)

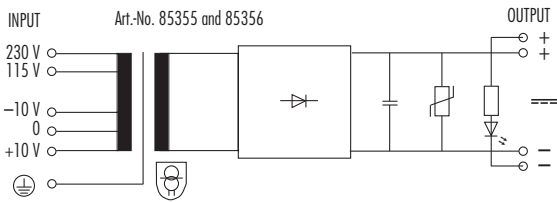
Approvals:



**MEN**  
Input voltage 115/ 230 V AC  
± 10 V tapings

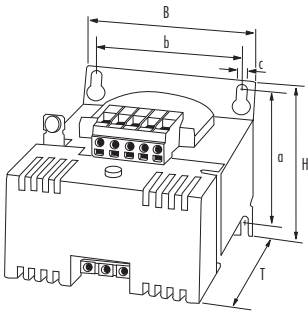


Circuit diagram



| Ordering data |              | Art.-No. | Art.-No. | Art.-No. |
|---------------|--------------|----------|----------|----------|
| Output rating | 24 V DC/10 A | 85364    |          |          |
|               | 24 V DC/15 A |          | 85355    |          |
|               | 24 V DC/20 A |          |          | 85356    |

| Input                            |            |                                                        |                        |                      |
|----------------------------------|------------|--------------------------------------------------------|------------------------|----------------------|
| Input voltage                    |            | 115/ 230 V AC ± 10 V                                   |                        |                      |
| Input current                    |            | 3.7/ 1.85 A                                            | 5.6/ 2.8 A             | 7.4/ 3.7 A           |
| Input fuse (external)            |            | 5.0/ 2.5 A T                                           | 8.0/ 4.0 A T           | 10/ 5.0 A T          |
| Frequency                        |            | 50/60 Hz                                               |                        |                      |
| Output                           |            |                                                        |                        |                      |
| Output voltage                   |            | 24 V DC SELV                                           |                        |                      |
| Max. output current              | Ta 60/40°C | 10/ 12 A                                               | 15/ 18 A               | 20/ 24 A             |
| Effective ripple                 |            | < 5 %                                                  |                        |                      |
| Output fuse                      |            | 20 A (automotive fuse FKS)                             | no                     |                      |
| Output filter                    |            | LED, VDR and smoothing capacitor                       |                        |                      |
| General data                     |            |                                                        |                        |                      |
| Guidelines                       |            | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                        | EN 55011 A           |
| Temperature range                |            | -20...+60 °C, no condensation                          |                        |                      |
| Mounting method                  |            | key-hole mounting                                      |                        |                      |
| Weight                           |            | 6.0 kg                                                 | 8.2 kg                 | 12.8 kg              |
| Dimensions                       | H x B x T  | 112.5 x 120 x 160 mm                                   | 138.5 x 135 x 181.5 mm | 127 x 174 x 213.5 mm |
| Fixing centers                   | a x b x c  | 94.5 x 90 x 5.8 mm                                     | 126 x 104 x 6.5 mm     | 102 x 135 x 7 mm     |
| Dimension drawing/Fixing centers |            |                                                        |                        |                      |



Notes

MEN power supply units meet the EN 61000-3-2 guideline, except Art.-No. 85356.  
Wall mounting with any orientation.

Smoothed  
to EN 61558

Touch protected to  
EN 60529 (IP20)

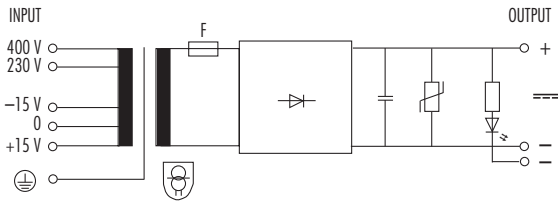
**MEN**  
Input voltage 230/ 400 V AC  
± 15 V tapings



Approvals:

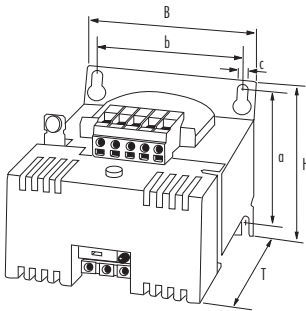


Circuit diagram



| Ordering data |       | Art.-No. | Art.-No. | Art.-No. | Art.-No. |
|---------------|-------|----------|----------|----------|----------|
| Output rating |       |          |          |          |          |
| 24 V DC/ 1 A  | 24 W  | 8985349  |          |          |          |
| 24 V DC/2.5 A | 60 W  |          | 8985350  |          |          |
| 24 V DC/ 5 A  | 120 W |          |          | 8985351  |          |
| 24 V DC/7.5 A | 180 W |          |          |          | 85357    |

| Input                            |            | 230/ 400 V AC ± 15 V                                   |                           |                            |                            |
|----------------------------------|------------|--------------------------------------------------------|---------------------------|----------------------------|----------------------------|
| Input voltage                    |            |                                                        |                           |                            |                            |
| Input current                    |            | 0.25/ 0.145 A                                          | 0.5/ 0.28 A               | 0.97/ 0.56 A               | 1.44/ 0.84 A               |
| Input fuse (external)            |            | 0.4/ 0.25 A T                                          | 0.8/ 0.5 A T              | 1.6/ 1.0 A T               | 2/ 1.25 A T                |
| Frequency                        |            | 50/60 Hz                                               |                           |                            |                            |
| Output                           |            |                                                        |                           |                            |                            |
| Output voltage                   |            | 24 V DC SELV                                           |                           |                            |                            |
| Max. output current              | Ta 60/40°C | 1/ 1.5 A                                               | 2.5/ 3 A                  | 5/ 6 A                     | 7.5/ 9 A                   |
| Effective ripple                 |            | < 5 %                                                  |                           |                            |                            |
| Output fuse                      |            | 3 A (automotive fuse FKS)                              | 5 A (automotive fuse FKS) | 10 A (automotive fuse FKS) | 15 A (automotive fuse FKS) |
| Output filter                    |            | LED, VDR and smoothing capacitor                       |                           |                            |                            |
| General data                     |            |                                                        |                           |                            |                            |
| Guidelines                       |            | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                           |                            |                            |
| Temperature range                |            | -20...+60 °C, no condensation                          |                           |                            |                            |
| Mounting method                  |            | key-hole mounting                                      |                           |                            |                            |
| Weight                           |            | 1.25 kg                                                | 2.1 kg                    | 3 kg                       | 5.6 kg                     |
| Dimensions                       | H x B x T  | 64 x 78 x 120 mm                                       | 83 x 84 x 124 mm          | 95 x 96 x 136 mm           | 103 x 105 x 150.5 mm       |
| Fixing centers                   | a x b x c  | 47.5 x 56 x 4.8 mm                                     | 65.5 x 64 x 4.8 mm        | 75 x 84 x 5.8 mm           | 86.5 x 90 x 5.8 mm         |
| Dimension drawing/Fixing centers |            |                                                        |                           |                            |                            |



Notes

MEN power supply units meet the EN 61000-3-2 guideline. Products without snap on adapter Art.-No. change from 8985...into 85... (89 will dropp). Suitable snap adapter and replacement fuses see page 4.9.2. Wall mounting with any orientation.

Smoothed

to EN 61558

Touch protected to  
EN 60529 (IP20)

Approvals:

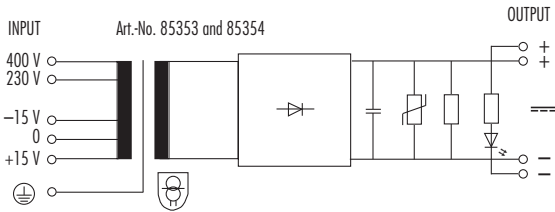


MEN

Input voltage 230/ 400 V AC  
± 15 V tapings



Circuit diagram



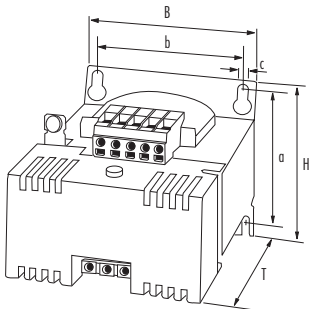
| Ordering data | Art.-No. | Art.-No. | Art.-No. |
|---------------|----------|----------|----------|
| Output rating |          |          |          |
| 24 V DC/ 10 A | 240 W    | 85352    |          |
| 24 V DC/ 15 A | 360 W    | 85353    |          |
| 24 V DC/ 20 A | 480 W    |          | 85354    |

| Input                 |                      |             |             |
|-----------------------|----------------------|-------------|-------------|
| Input voltage         | 230/ 400 V AC ± 15 V |             |             |
| Input current         | 1.7/ 0.97 A          | 2.8/ 1.65 A | 3.7/ 2.15 A |
| Input fuse (external) | 3.15/ 1.6 A T        | 4/ 2.5 A T  | 5/ 3.15 A T |
| Frequency             | 50/60 Hz             |             |             |

| Output              |                                  |          |          |
|---------------------|----------------------------------|----------|----------|
| Output voltage      | 24 V DC SELV                     |          |          |
| Max. output current | Ta 60/40°C                       | 10/ 12 A | 15/ 18 A |
| Effective ripple    | < 5 %                            |          | 20/ 24 A |
| Output fuse         | 20 A (automotive fuse FKS)       | no       |          |
| Output filter       | LED, VDR and smoothing capacitor |          |          |

| General data      |                                                        |                      |                        |
|-------------------|--------------------------------------------------------|----------------------|------------------------|
| Guidelines        | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                      | EN 55011 A             |
| Temperature range | -20...+60 °C, no condensation                          |                      |                        |
| Mounting method   | key-hole mounting                                      |                      |                        |
| Weight            | 6 kg                                                   | 8.2 kg               | 12.8 kg                |
| Dimensions        | H x B x T                                              | 112.5 x 120 x 160 mm | 138.5 x 135 x 181.5 mm |
| Fixing centers    | a x b x c                                              | 94.5 x 90 x 5.8 mm   | 127 x 174 x 213.5 mm   |

Dimension drawing/Fixing centers



Notes

MEN power supply units meet the EN 61000-3-2 guideline, except Art.-No. 85354.  
Wall mounting with any orientation.

Smoothed

to EN 61558

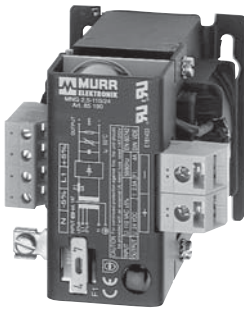
Touch protected to EN 60529 (IP20)

Approvals:

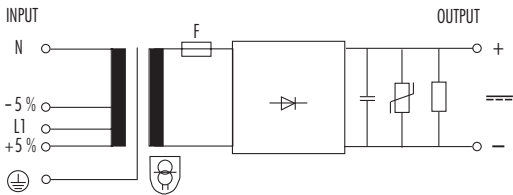


MNG

Input voltage 110 V AC  $\pm$  5 % tapings

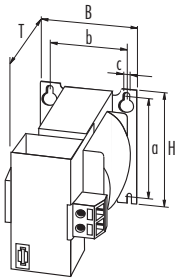


Circuit diagram



| Ordering data | Art.-No. | Art.-No. | Art.-No. | Art.-No. |
|---------------|----------|----------|----------|----------|
| Output rating |          |          |          |          |
| 24 V DC/ 1 A  | 24 W     | 85194    |          |          |
| 24 V DC/2.5 A | 60 W     |          | 85190    |          |
| 24 V DC/3.5 A | 84 W     |          |          | 85193    |
| 24 V DC/ 5 A  | 120 W    |          |          | 85191    |

|                                  |                                                        |                           |                               |                               |
|----------------------------------|--------------------------------------------------------|---------------------------|-------------------------------|-------------------------------|
| Input                            |                                                        |                           |                               |                               |
| Input voltage                    | 110 V AC, ± 5 %                                        |                           |                               |                               |
| Input current                    | 0.36 A                                                 | 0.82 A                    | 1.19 A                        | 1.6 A                         |
| Input fuse (external)            | 0.63 A T                                               | 1 A T                     | 1.5 A T                       | 2 A T                         |
| Frequency                        | 50/60 Hz                                               |                           |                               |                               |
| Output                           |                                                        |                           |                               |                               |
| Output voltage                   | 24 V DC SELV                                           |                           |                               |                               |
| Max. output current              | 1 A                                                    | 2.5 A                     | 3 A (60 °C); 3.5 A (50 °C)    | 5 A                           |
| Effective ripple                 | < 5 %                                                  |                           |                               |                               |
| Output fuse                      | 2 A (automotive fuse FKS)                              | 4 A (automotive fuse FKS) | 7.5 A (automotive fuse FKS)   | 10 A (automotive fuse FKS)    |
| Output filter                    | VDR and smoothing capacitor                            |                           |                               |                               |
| General data                     |                                                        |                           |                               |                               |
| Guidelines                       | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                           |                               |                               |
| Temperature range                | -20...+55 °C, no condensation                          |                           | -20...+60 °C, no condensation | -20...+55 °C, no condensation |
| Mounting method                  | key-hole mounting                                      |                           |                               |                               |
| Weight                           | 1.25 kg                                                | 1.7 kg                    | 2.2 kg                        | 3 kg                          |
| Dimensions                       | H x B x T                                              | 78 x 71 x 112 mm          | 78 x 80 x 111 mm              | 84 x 87 x 120 mm              |
| Fixing centers                   | a x b x c                                              | 56 x 47.5 x 4.8 mm        | 56.5 x 53.5 x 4.8 mm          | 64 x 62 x 4.8 mm              |
| Dimension drawing/Fixing centers |                                                        |                           |                               |                               |



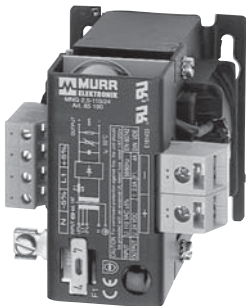
Notes

MNG power supply units meet the EN 61000-3-2 guideline.  
Suitable snap adapter and replacement fuses see page 4.9.2.

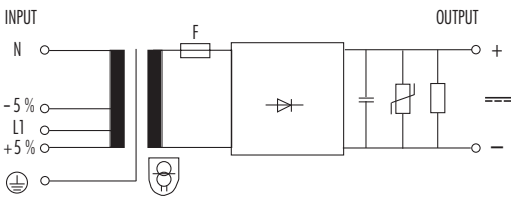
Smoothed  
to EN 61558  
  
Touch protected to  
EN 60529 (IP20)

Approvals: 

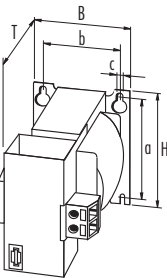
**MNG**  
Input voltage 110 V AC  $\pm$  5 % tapings



Circuit diagram



| Ordering data                    |               | Art.-No.                                               | Art.-No.                   |
|----------------------------------|---------------|--------------------------------------------------------|----------------------------|
|                                  | Output rating |                                                        |                            |
| 24 V DC/7.5 A                    | 180 W         | 85195                                                  |                            |
| 24 V DC/10 A                     | 240 W         |                                                        | 85192                      |
| Input                            |               |                                                        |                            |
| Input voltage                    |               | 110 V AC, $\pm$ 5 %                                    |                            |
| Input current                    |               | 2.5 A                                                  | 3.2 A                      |
| Input fuse (external)            |               | 3.2 A T                                                | 4 A T                      |
| Frequency                        |               | 50/60 Hz                                               |                            |
| Output                           |               |                                                        |                            |
| Output voltage                   |               | 24 V DC SELV                                           |                            |
| Max. output current              |               | 7.5 A                                                  | 10 A                       |
| Effective ripple                 |               | < 5 %                                                  |                            |
| Output fuse                      |               | 15 A (automotive fuse FKS)                             | 20 A (automotive fuse FKS) |
| Output filter                    |               | VDR and smoothing capacitor                            |                            |
| General data                     |               |                                                        |                            |
| Guidelines                       |               | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                            |
| Temperature range                |               | -20...+55 °C, no condensation                          |                            |
| Mounting method                  |               | key-hole mounting                                      |                            |
| Weight                           |               | 4.4 kg                                                 | 5.6 kg                     |
| Dimensions                       | H x B x T     | 105 x 105 x 145 mm                                     | 120 x 105 x 174 mm         |
| Fixing centers                   | a x b x c     | 84 x 86 x 5.8 mm                                       | 90 x 86.5 x 5.8 mm         |
| Dimension drawing/Fixing centers |               |                                                        |                            |



**Notes**  
MNG power supply units meet the EN 61000-3-2 guideline.  
Replacement fuses see page 4.9.2.

Smoothed  
to EN 61558

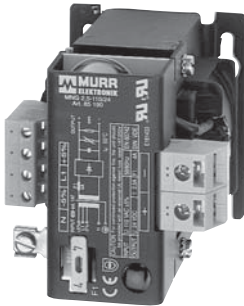
Touch protected to  
EN 60529 (IP20)

Approvals:

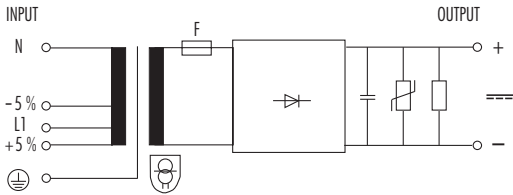


MNG

Input voltage 230 V AC  $\pm$  5 % tapings

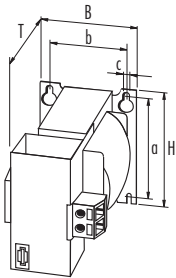


Circuit diagram



| Ordering data |       | Art.-No. | Art.-No. | Art.-No. | Art.-No. |
|---------------|-------|----------|----------|----------|----------|
| Output rating |       |          |          |          |          |
| 24 V DC/ 1 A  | 24 W  | 85204    |          |          |          |
| 24 V DC/2.5 A | 60 W  |          | 85200    |          |          |
| 24 V DC/3.5 A | 84 W  |          |          | 85203    |          |
| 24 V DC/ 5 A  | 120 W |          |          |          | 85201    |
|               |       |          |          |          |          |
|               |       |          |          |          |          |

| Input                            |           | 230 V AC, $\pm$ 5 %                                    |                           |                               |                               |
|----------------------------------|-----------|--------------------------------------------------------|---------------------------|-------------------------------|-------------------------------|
| Input voltage                    |           | 0.17 A                                                 | 0.4 A                     | 0.56 A                        | 0.8 A                         |
| Input current                    |           | 0.25 A T                                               | 0.5 A T                   | 0.8 A T                       | 1 A T                         |
| Input fuse (external)            |           | 50/60 Hz                                               |                           |                               |                               |
| Frequency                        |           |                                                        |                           |                               |                               |
| Output                           |           | 24 V DC SELV                                           |                           |                               |                               |
| Output voltage                   |           | 1 A                                                    | 2.5 A                     | 3 A (60 °C); 3.5 A (50 °C)    | 5 A                           |
| Max. output current              |           | < 5 %                                                  |                           |                               |                               |
| Effective ripple                 |           | 2 A (automotive fuse FKS)                              | 4 A (automotive fuse FKS) | 7.5 A (automotive fuse FKS)   | 10 A (automotive fuse FKS)    |
| Output fuse                      |           | VDR and smoothing capacitor                            |                           |                               |                               |
| Output filter                    |           |                                                        |                           |                               |                               |
| General data                     |           |                                                        |                           |                               |                               |
| Guidelines                       |           | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                           |                               |                               |
| Temperature range                |           | -20...+55 °C, no condensation                          |                           | -20...+60 °C, no condensation | -20...+55 °C, no condensation |
| Mounting method                  |           | key-hole mounting                                      |                           |                               |                               |
| Weight                           |           | 1.25 kg                                                | 1.7 kg                    | 2.2 kg                        | 3 kg                          |
| Dimensions                       | H x B x T | 78 x 71 x 109 mm                                       | 78 x 80 x 111 mm          | 84 x 87 x 120 mm              | 96 x 91.5 x 129 mm            |
| Fixing centers                   | a x b x c | 56 x 47.5 x 4.8 mm                                     | 56.5 x 53.5 x 4.8 mm      | 64 x 62 x 4.8 mm              | 84 x 75.5 x 4.8 mm            |
| Dimension drawing/Fixing centers |           |                                                        |                           |                               |                               |



| Notes | MNG power supply units meet the EN 61000-3-2 guideline.<br>Suitable snap adapter and replacement fuses see page 4.9.2. |
|-------|------------------------------------------------------------------------------------------------------------------------|
|-------|------------------------------------------------------------------------------------------------------------------------|

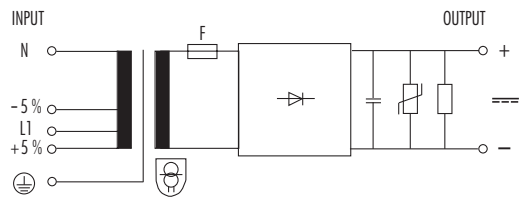
Smoothed  
to EN 61558  
  
Touch protected to  
EN 60529 (IP20)

Approvals: 

**MNG**  
Input voltage 230 V AC  $\pm$  5 % tapings



Circuit diagram



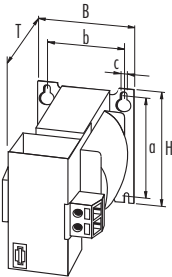
| Ordering data |               | Art.-No. | Art.-No. |
|---------------|---------------|----------|----------|
|               | Output rating |          |          |
| 24 V DC/7.5 A | 180 W         | 85199    |          |
| 24 V DC/10 A  | 240 W         |          | 85202    |

| Input                 |                     |
|-----------------------|---------------------|
| Input voltage         | 230 V AC, $\pm$ 5 % |
| Input current         | 1.18 A              |
| Input fuse (external) | 1.6 A T             |
| Frequency             | 50/60 Hz            |

| Output              |                             |
|---------------------|-----------------------------|
| Output voltage      | 24 V DC SELV                |
| Max. output current | 7.5 A                       |
| Effective ripple    | < 5 %                       |
| Output fuse         | 15 A (automotive fuse FKS)  |
| Output filter       | VDR and smoothing capacitor |

| General data      |                                                        |
|-------------------|--------------------------------------------------------|
| Guidelines        | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |
| Temperature range | -20...+55 °C, no condensation                          |
| Mounting method   | key-hole mounting                                      |
| Weight            | 4.4 kg                                                 |
| Dimensions        | H x B x T                                              |
| Fixing centers    | a x b x c                                              |

Dimension drawing/Fixing centers



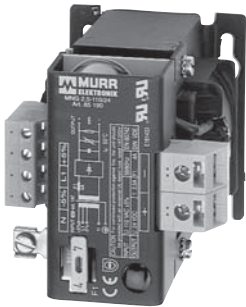
| Notes                                                                                                                  |  |
|------------------------------------------------------------------------------------------------------------------------|--|
| MNG power supply units meet the EN 61000-3-2 guideline.<br>Suitable snap adapter and replacement fuses see page 4.9.2. |  |

Smoothed  
to EN 61558

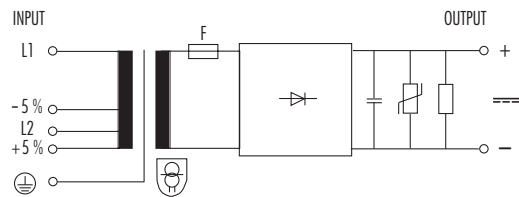
Touch protected to  
EN 60529 (IP20)

Approvals: 

MNG  
Input voltage 400 V AC  $\pm$  5 % tapings



Circuit diagram

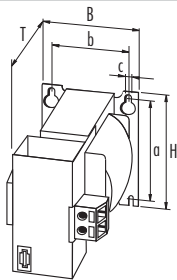


| Ordering data |       | Art.-No. | Art.-No. | Art.-No. | Art.-No. |
|---------------|-------|----------|----------|----------|----------|
| Output rating |       |          |          |          |          |
| 24 V DC/ 1 A  | 24 W  | 85209    |          |          |          |
| 24 V DC/2.5 A | 60 W  |          | 85205    |          |          |
| 24 V DC/3.5 A | 84 W  |          |          | 85208    |          |
| 24 V DC/ 5 A  | 120 W |          |          |          | 85206    |

| Input                 |  | 400 V AC, $\pm$ 5 %         |                           |                             |                            |
|-----------------------|--|-----------------------------|---------------------------|-----------------------------|----------------------------|
| Input voltage         |  |                             |                           |                             |                            |
| Input current         |  | 0.1 A                       | 0.23 A                    | 0.33 A                      | 0.44 A                     |
| Input fuse (external) |  | 0.2 A T                     | 0.25 A T                  | 0.4 A T                     | 0.6 A T                    |
| Frequency             |  | 50/60 Hz                    |                           |                             |                            |
| Output                |  |                             |                           |                             |                            |
| Output voltage        |  | 24 V DC SELV                |                           |                             |                            |
| Max. output current   |  | 1 A                         | 2.5 A                     | 3 A (60 °C); 3.5 A (50 °C)  | 5 A                        |
| Effective ripple      |  | < 5 %                       |                           |                             |                            |
| Output fuse           |  | 2 A (automotive fuse FKS)   | 4 A (automotive fuse FKS) | 7.5 A (automotive fuse FKS) | 10 A (automotive fuse FKS) |
| Output filter         |  | VDR and smoothing capacitor |                           |                             |                            |

| General data      |           |                                                        |                      |                               |                               |
|-------------------|-----------|--------------------------------------------------------|----------------------|-------------------------------|-------------------------------|
| Guidelines        |           | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                      |                               |                               |
| Temperature range |           | -20...+55 °C, no condensation                          |                      | -20...+60 °C, no condensation | -20...+55 °C, no condensation |
| Mounting method   |           | key-hole mounting                                      |                      |                               |                               |
| Weight            |           | 1.25 kg                                                | 1.7 kg               | 2.2 kg                        | 3 kg                          |
| Dimensions        | H x B x T | 78 x 71 x 109 mm                                       | 78 x 80 x 111 mm     | 84 x 87 x 120 mm              | 96 x 91.5 x 129 mm            |
| Fixing centers    | a x b x c | 56 x 47.5 x 4.8 mm                                     | 56.5 x 53.5 x 4.8 mm | 64 x 62 x 4.8 mm              | 84 x 75.5 x 4.8 mm            |

Dimension drawing/Fixing centers

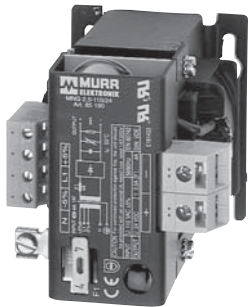


| Notes |  | MNG power supply units meet the EN 61000-3-2 guideline.<br>Suitable snap adapter and replacement fuses see page 4.9.2. |  |  |  |
|-------|--|------------------------------------------------------------------------------------------------------------------------|--|--|--|
|-------|--|------------------------------------------------------------------------------------------------------------------------|--|--|--|

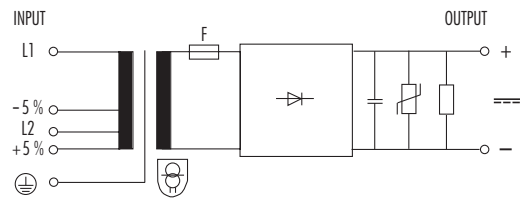
Smoothed  
to EN 61558  
  
Touch protected to  
EN 60529 (IP20)

Approvals: 

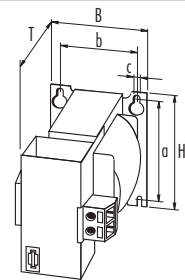
**MNG**  
Input voltage 400 V AC  $\pm$  5 % tapings



Circuit diagram



| Ordering data                    |                                                        | Art.-No.                   | Art.-No.           |
|----------------------------------|--------------------------------------------------------|----------------------------|--------------------|
| Output rating                    |                                                        |                            |                    |
| 24 V DC/7.5 A                    | 180 W                                                  | 85186                      |                    |
| 24 V DC/10 A                     | 240 W                                                  |                            | 85207              |
| Input                            |                                                        |                            |                    |
| Input voltage                    | 400 V AC, $\pm$ 5 %                                    |                            |                    |
| Input current                    | 0.88 A                                                 | 0.9 A                      |                    |
| Input fuse (external)            | 1.5 A T                                                | 1.25 A T                   |                    |
| Frequency                        | 50/60 Hz                                               |                            |                    |
| Output                           |                                                        |                            |                    |
| Output voltage                   | 24 V DC SELV                                           |                            |                    |
| Max. output current              | 7.5 A                                                  | 10 A                       |                    |
| Effective ripple                 | < 5 %                                                  |                            |                    |
| Output fuse                      | 15 A (automotive fuse FKS)                             | 20 A (automotive fuse FKS) |                    |
| Output filter                    | VDR and smoothing capacitor                            |                            |                    |
| General data                     |                                                        |                            |                    |
| Guidelines                       | EN 61558-2-6, EN 62041 Cat.1, EN 55011 B, EN 61000-3-2 |                            |                    |
| Temperature range                | -20...+55 °C, no condensation                          |                            |                    |
| Mounting method                  | key-hole mounting                                      |                            |                    |
| Weight                           | 4.4 kg                                                 | 5.6 kg                     |                    |
| Dimensions                       | H x B x T                                              | 105 x 105 x 145 mm         | 120 x 105 x 174 mm |
| Fixing centers                   | a x b x c                                              | 84 x 86 x 5.8 mm           | 90 x 86.5 x 5.8 mm |
| Dimension drawing/Fixing centers |                                                        |                            |                    |



Notes

MNG power supply units meet the EN 61000-3-2 guideline.  
Suitable snap adapter and replacement fuses see page 4.9.2.

Linear regulated to EN 61558

Stabilized output voltage

Short-circuit and overload protected

Touch protected to EN 60529 (IP20)

Approvals:



Circuit diagram

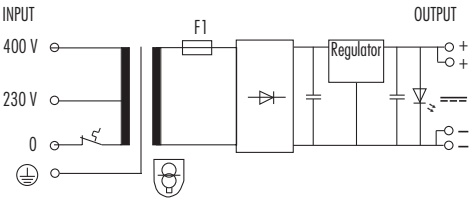
NLS 0.5

Input voltage 230/ 400 V



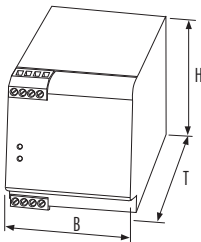
NLS 1

Input voltage 230/ 400 V AC



| Ordering data         |               | Art.-No.                                               | Art.-No.                  |
|-----------------------|---------------|--------------------------------------------------------|---------------------------|
|                       | Output rating |                                                        |                           |
| 24 V DC/ 0.5 A        | 12 W          | 85631                                                  |                           |
| 24 V DC/ 1.0 A        | 24 W          |                                                        | 85633                     |
| Input                 |               |                                                        |                           |
| Input voltage         |               | 230/ 400 V AC                                          |                           |
| Input current         |               | 120/ 70 mA                                             | 230/ 135 mA               |
| Input fuse (external) |               | 0.3/ 0.2 A T                                           | 0.6/ 0.4 A T              |
| Frequency             |               | 50/60 Hz                                               |                           |
| Protection            |               | thermal switch input side                              |                           |
| Output                |               |                                                        |                           |
| Output voltage        |               | 24 V DC ± 2 % SELV                                     |                           |
| Nom. output current   |               | 0.5 A                                                  | 1 A                       |
| Max. output current   |               | 2 A (short term)                                       | 4 A (short term)          |
| Efficiency            |               | 0.56                                                   | 0.58                      |
| Effective ripple      |               | < 2 mV                                                 |                           |
| Protection            |               | short-circuit and overload protection                  |                           |
| Output fuse F1        |               | 1.25 A T (5 x 20 internal)                             | 2.5 A T (5 x 20 internal) |
| Status indicator      |               | green LED operating, red LED fault                     |                           |
| General data          |               |                                                        |                           |
| Test voltage          |               | EN 61558-2-6, EN 62041 Cat.2, EN 55011 B, EN 61000-3-2 |                           |
| Temperature range     |               | 0...+60 °C, no condensation                            |                           |
| Mounting method       |               | DIN-rail mounting to EN 60715 (TH35)                   |                           |
| Weight                |               | 0.62 kg                                                | 0.92 kg                   |
| Dimension             | H x B x T     | 75 x 45 x 118 mm                                       | 75 x 67.5 x 118 mm        |

Dimension drawing/Fixing centers



Notes

NLS power supplies meet EN 61000-3-2 guideline.

# Power supplies – single-phase



Linear regulated to EN 61558

Stabilized output voltage

Short-circuit and overload protected

Touch protected to EN 60529 (IP20)

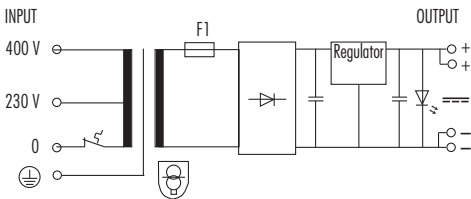
Approvals:

Circuit diagram

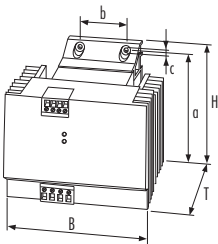
NLS 2  
Input voltage 230/ 400 V AC



NLS 4  
Input voltage 230/ 400 V AC



| Ordering data                        |               | Art.-No.                                                           | Art.-No.                 |
|--------------------------------------|---------------|--------------------------------------------------------------------|--------------------------|
|                                      | Output rating |                                                                    |                          |
| 24 V DC/ 2.0 A                       | 48 W          | 85635                                                              |                          |
| 24 V DC/ 4.0 A                       | 96 W          |                                                                    | 85637                    |
| Input                                |               |                                                                    |                          |
| Input voltage                        |               | 230/ 400 V AC                                                      |                          |
| Input current                        |               | 0.46/ 0.27 A                                                       | 0.85/ 0.49 A             |
| Input fuse (external)                |               | 1.0/ 0.6 A T                                                       | 1.6/ 1.0 A T             |
| Frequency                            |               | 50/60 Hz                                                           |                          |
| Protection                           |               | thermal switch input side                                          |                          |
| Output                               |               |                                                                    |                          |
| Output voltage                       |               | 24 V DC ± 2 % SELV                                                 |                          |
| Nom. output current                  |               | 2 A                                                                | 4 A                      |
| Max. output current                  |               | 6 A (short term)                                                   | 12 A (short term)        |
| Efficiency                           |               | 0.59                                                               | 0.63                     |
| Effective ripple                     |               | < 2 mV                                                             | < 10 mV                  |
| Protection                           |               | short-circuit and overload protection                              |                          |
| Output fuse F1                       |               | 5 A T (5 x 20 internal)                                            | 10 A T (5 x 20 internal) |
| Status indicator                     |               | green LED operating, red LED fault                                 |                          |
| General data                         |               |                                                                    |                          |
| Test voltage                         |               | EN 61558-2-6, EN 62041 Cat.2, EN 55011 B, EN 61000-3-2             |                          |
| Temperature rang (relative humidity) |               | 0...+60 °C, no condensation                                        |                          |
| Mounting method                      |               | DIN-rail mounting to EN 60715 (TH35); key hole fixing/screw fixing |                          |
| Weight                               |               | 2.5 kg                                                             | 4.5 kg                   |
| Dimension                            | H x B x T     | 110 x 128 x 135 mm                                                 | 110 x 172 x 161 mm       |
| Fixing centers                       | a x b x c     | 98 x 44 x 4.5 mm                                                   | 98 x 80 x 4.5 mm         |
| Dimension drawing/Fixing centers     |               |                                                                    |                          |



Notes  
NLS power supplies meet EN 61000-3-2 guideline.

Compact, linear regulated to EN 61558

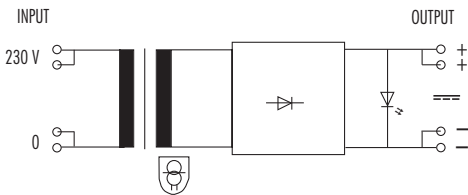
Stabilized output voltage

Touch protected to EN 60529 (IP20)

MKN  
Low power P.S.U  
Input voltage 230 V AC



Circuit diagram



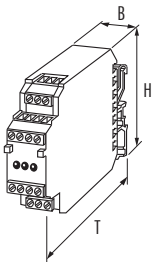
| Ordering data        | Art.-No. | Art.-No. | Art.-No. | Art.-No. |
|----------------------|----------|----------|----------|----------|
| 24 V DC/ 70 mA       | 85610    |          |          |          |
| 10 V DC/ 80 mA       |          | 85615    |          |          |
| 5 V DC/200 mA        |          |          | 85620    |          |
| 9.5...15 V DC/100 mA |          |          |          | 85625    |
|                      |          |          |          |          |
|                      |          |          |          |          |

| Input                 |               |               |               |
|-----------------------|---------------|---------------|---------------|
| Input voltage         | 230 V AC      |               |               |
| Input current         | approx. 10 mA | approx. 20 mA | approx. 30 mA |
| Input fuse (external) | 63 mA T       |               |               |
| Frequency             | 50/60 Hz      |               |               |

| Output              |                                             |                        |                       |                    |
|---------------------|---------------------------------------------|------------------------|-----------------------|--------------------|
| Output voltage      | 24 V DC $\pm$ 2 % SELV                      | 10 V DC $\pm$ 2 % SELV | 5 V DC $\pm$ 2 % SELV | 9.5...15 V DC SELV |
| Max. output current | 70 mA                                       | 80 mA                  | 200 mA                | 100 mA             |
| Effective ripple    | $\leq$ 10 mV ss                             |                        |                       |                    |
| Output fuse         | elec. short-circuit and overload protection |                        |                       |                    |
| Output suppression  | varistor and smoothing capacitor            |                        |                       |                    |
| Status indicator    | green LED operating                         |                        |                       |                    |

| General data      |                                                        |                    |  |  |
|-------------------|--------------------------------------------------------|--------------------|--|--|
| Test voltage      | EN 61558-2-6, EN 62041 Cat.2, EN 55011 B, EN 61000-3-2 |                    |  |  |
| Temperature range | 0...+60 °C, no condensation                            |                    |  |  |
| Mounting method   | DIN-rail mounting to EN 60715 (TH35) or (G32)          |                    |  |  |
| Weight            | 0.3 kg                                                 |                    |  |  |
| Dimension         | H x B x T                                              | 75 x 22.5 x 102 mm |  |  |

Dimension drawing/Fixing centers



| Notes | MKN power supplies meet EN 61000-3-2 guidelines. |  |  |  |
|-------|--------------------------------------------------|--|--|--|
|-------|--------------------------------------------------|--|--|--|

Compact, linear regulated  
to EN 61558

Stabilized output voltage

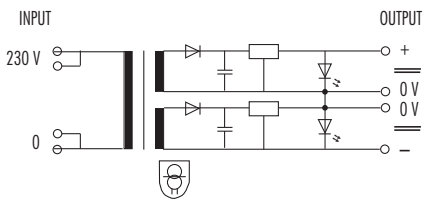
Touch protected to  
EN 60529 (IP20)

MKN

Low power P.S.U  
Input voltage 230 V AC



Circuit diagram



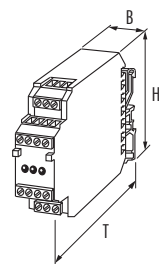
| Ordering data          | Art.-No. | Art.-No. |
|------------------------|----------|----------|
| 2 x 10 V DC/ 2 x 50 mA | 85616    |          |
| 2 x 15 V DC/ 2 x 35 mA |          | 85617    |
|                        |          |          |
|                        |          |          |
|                        |          |          |
|                        |          |          |

| Input                 |               |
|-----------------------|---------------|
| Input voltage         | 230 V AC      |
| Input current         | approx. 20 mA |
| Input fuse (external) | 63 mA T       |
| Frequency             | 50/60 Hz      |

| Output              |                                             |                            |
|---------------------|---------------------------------------------|----------------------------|
| Output voltage      | 2 x 10 V DC $\pm$ 5 % SELV                  | 2 x 15 V DC $\pm$ 5 % SELV |
| Max. output current | 2 x 50 mA                                   | 2 x 35 mA                  |
| Effective ripple    | $\leq$ 10 mV ss                             |                            |
| Output fuse         | elec. short-circuit and overload protection |                            |
| Output suppression  | green LED, varistor and smoothing capacitor |                            |
| Status indicator    | green LED operating                         |                            |

| General data      |                                                        |
|-------------------|--------------------------------------------------------|
| Test voltage      | EN 61558-2-6, EN 62041 Cat.2, EN 55011 B, EN 61000-3-2 |
| Temperature range | 0...+60 °C, no condensation                            |
| Mounting method   | DIN-rail mounting to EN 60715 (TH35) or (G32)          |
| Weight            | 0.3 kg                                                 |
| Dimension         | H x B x T                                              |
|                   | 75 x 22.5 x 102 mm                                     |

Dimension drawing/Fixing centers



| Notes | MKN power supplies meet EN 61000-3-2 guidelines. |
|-------|--------------------------------------------------|
|-------|--------------------------------------------------|