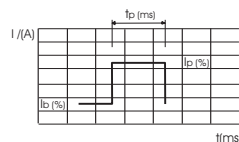
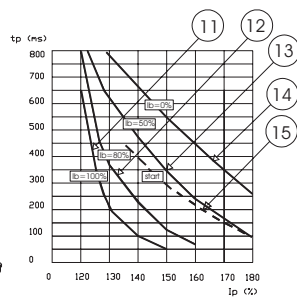
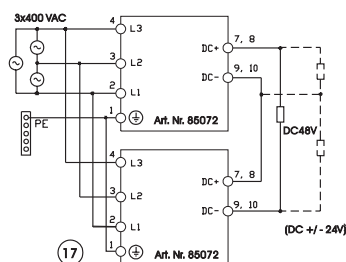
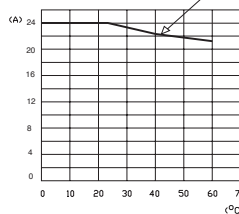
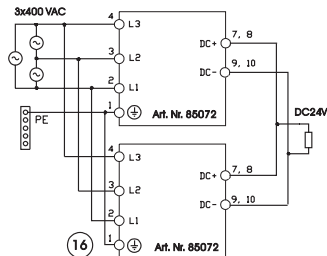
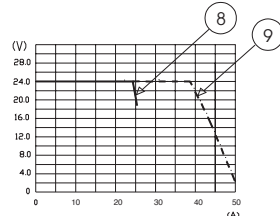
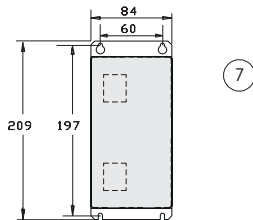
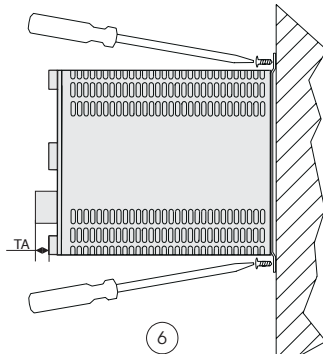
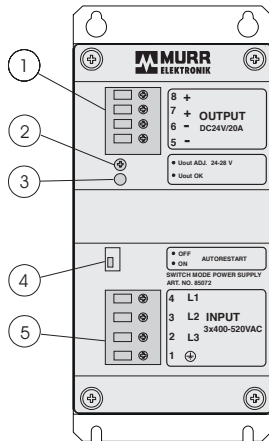


In order to take the best advantage of the features that this power supply has to offer and to ensure long term reliability for your equipment, please read these instructions carefully before installation and use. They should be retained for future reference.



## (1) General

This unit employs many features previously unavailable in an industrial power supply. It has been designed to withstand the high levels of interference found in heavy industry and has emission levels low enough for it to be used in residential, commercial and light industrial environments.

The MCS20-3x400-500/24 has a high level of reserve power. This enables loads with significant inrush current to be supported and will also ensure that circuit breakers will trip in event of short circuit.

A protective feature is provided which will take control as the unit approaches the power limit due to the overload or excessive temperature brought about by lack of ventilation.

| (2) Technical specification, Art. No. 85072   |   | V1.2 |
|---|---|------|
| Nominal voltage                               | 3 x 400 - 520 VAC 50/60 Hz                              |      |
| Input voltage range                           | 3 x 360 - 550 VAC 50/60 Hz                              |      |
| Short-term use allowed with two phases        | 3 x 450 - 550 VAC 50/60 Hz                              |      |
| Input current, $I_{nom}$                      | 1,2 A <sub>ms</sub> / 3 x 400 VAC                       |      |
| Inrush current                                | < 25 A / 3 x 400 VAC after 1 ms                         |      |
| Efficiency, typ.                              | 92% / 3 x 400 VAC - 91% / 3 x 520 VAC                   |      |
| Power factor, typ.                            | 0,75 / 3 x 400 VAC - 24 VDC / 20 A                      |      |
| External fuse max. 3 A                        | UL listed Bussmann Typ. 3 x BBS-3 or ABB-STOTZ S203-C3A |      |
| Safety class                                  | 1   |      |
| Output voltage, adjustable 24 - 28 VDC        | 24 VDC  |      |
| Static regulation accuracy                    | +/-1%   |      |
| Dynamic regulation accuracy typ.              | 0->100%, 5% 1ms / 100%->5%, 5% 1ms                      |      |
| Start-up time                                 | < 3 s   |      |
| Hold up time of the output                    | > 12ms / 3 x 400 VAC - > 30ms / 3 x 520 VAC             |      |
| Output current, continuous +60°C              | 20 A  |      |
| Output current, continuous +40°C              | 20 - 24 A   |      |
| Output current, transient typ. 50 ms          | 30 A  |      |
| Output current, short circuit, typ. 200 ms    | > 40 A  |      |
| Output ripple                                 | < 20 mV <sub>ms</sub>                                   |      |
| Overloading / temperature protection          | Yes   |      |
| Overvoltage shutdown, when auto restart = OFF | > 28,5 VDC  |      |
| Overcurrent shutdown (breaking off)           | > 25 A <sub>typ.</sub>                                  |      |
| Relative humidity                             | 5 - 95% , no condensing                                 |      |
| Operation temperature                         | 0°C - +60°C   |      |
| Storage temperature                           | -25°C - +85°C   |      |
| Protection class, case , EN 60529             | IP20  |      |
| Dimensions W x H x D x TA; Weight             | 84 x 209 x 227 x 20 mm; 3,0 kg                          |      |

## (3) Features

### [1] Output terminal:

#### Conductor sizes

Solid 4 - 6 mm<sup>2</sup> / 11 - 9 AWG

Stranded 4 mm<sup>2</sup> / 11 AWG

Stranded with ferrule without / with plastic sleeve 4 mm<sup>2</sup> / 11 AWG

Ferrule minimum length must be ≥ 12 mm

Tightening torque: min. 0,5 Nm / 7 lb. in.

### [2] Output voltage adjust 24 - 28V;

when over 24 V is used, must input voltage be accordingly higher

### [3] Output voltage "OK"

[4] Autorestart ON / OFF selection with jumper. **Change is only allowed after 5 minutes of disconnection from the mains.** Use flat nose pliers to change the position. "OFF" means shut down by over current or overvoltage or over temperature. Reset by disconnecting the mains for 2 min. "ON" means continuous pulsed restart operation instead of shut down (factory default).

### [5] Input terminal:

#### Conductor sizes

Solid 1,5 - 4 / 16 - 11 AWG

Stranded 1,5 - 4 / 16 - 11 AWG

Stranded with ferrule without / with plastic sleeve 1,5 mm<sup>2</sup> / 16 AWG

Ferrule minimum length must be ≥ 10 mm

Tightening torque: 0,5 - 0,6 Nm / 5 - 7 lb. in.

## (4) Location

The power supply is cooled by natural convection. It is important to maintain clearance to other components as much as possible to ensure best performance and long term stability. Top and bottom clearances should be 100 mm at minimum. Side clearance to other equipment should be 50 mm or >100 mm if that equipment is heat generating. The ambient temperature should be measured on the underside of the unit. There will be an increase of 25°C at the top. If natural convection is restricted, forced cooling should be used. Mounting should comply with EN 60950-1 point 4.7 and 4.6.1. Protection class of the case IP20 (EN 60529).

## (5) Mounting [7]

Use four M4 screws with washers to fix the power supply firm [6], □ 60 x 197 mm.

## (6) Switching on

Factory set, ready to use, check the connection diagrams for parallel and series connection.

## (7) Loading capacity

The nominal current is 20 A but due to the nature of industrial loading, the power supply has been designed to support loads with high inrush currents without damage or shutdown. Curve [8] shows the typical voltage / current curve. Decreasing part of the curve [8] shows the current limitation. Dashed line [9] shows the pulse over loading limitation. Curve [10] shows the typical overload / temperature limit. Curves [11] to [14] show the typical pulse loading characteristics with various base loads. Curve [15] shows unit's capability to supply higher current by start-up. To ensure correct convection cooling, the unit must always be mounted with rail horizontally.

## (8) Parallel connection [16]

Up to 5 units may be connected in parallel. The open circuit voltage of each unit should be set to same value. Accuracy of setting will determine how well the units share the load current. The gauge and length of the cable between each power supply and the common point should be the same. Units should only be used in parallel where the supply exceed 3 x 375 volts.

## (9) Series connection

Up to 2 units may be connected in series to give either 48 VDC or +/-24 VDC. Check the connection diagram [17].

## (10) Using circuit breakers on the power supply output:

On the short circuit, the power supply will trip, for example, the following ABB-STOTZ circuit breaker:

S201-C3A  
S201-Z10A

## (11) Standards

### Electrical safety

#### EMC

#### Immunity

EN 60950-1, UL 60950, UL 508, CSA 60950-00, SELV  
EN 61204-3 (2000): EMI: Class B, EMS: Industrial environment  
EN 61000-4-2 (1995) ESD 4/8 kV  
EN 61000-4-3 (1996) RF-field 10 V/m  
EN 61000-4-4 (1995) EFT/B 2/2 kV  
EN 61000-4-5 (1995), Surge 1/2 kV; 500 V  
EN 61000-4-6 (1996) Cond. RF 10 V  
EN 61000-4-8, (30 A/m)  
EN 61000-4-11  
ENV 50204 (1995) RF-field 10 V/m  
EN 55022 B, RF-emissions  
EN 61000-3-2, class A  
EN 60204-1 60 V / 1 s

We reserve the right to change this specification.