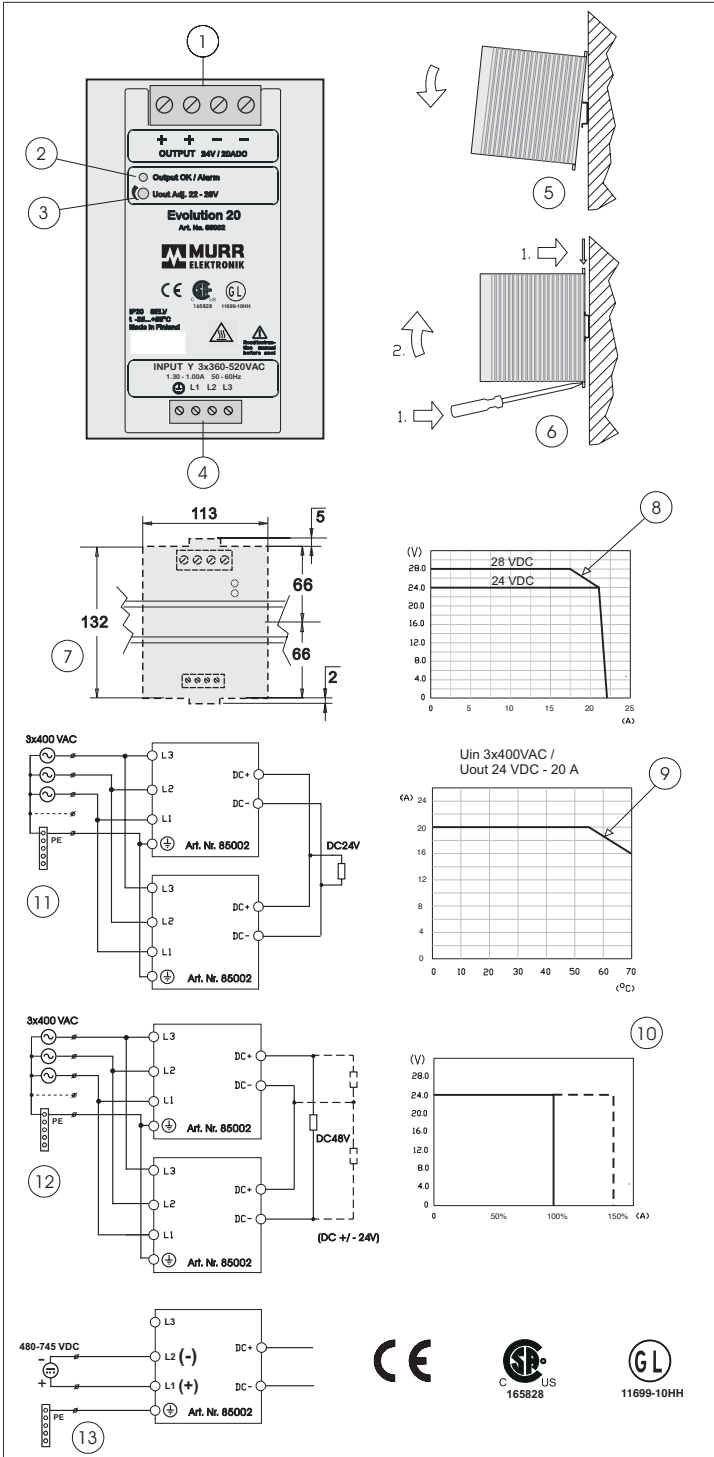


In order to take the best advantage of the features that this power supply has to offer and to ensure long term reliability for your equipment, please read these instructions carefully before installation and use. They should be retained for future reference.

## EVOLUTION 3 PHASE 20



### (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 Evolution 20-3x360-520/24 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.

If input voltage drops down to 3 x 300 VAC for 4 sec, output voltage still complies to PLC standard EN 61131-2 ( $\geq 20,4$  VDC).

Use only in star-architecture networks TN, TT and IT ( $< 3x440$  VAC).

(2) Technical specification, Art. No. 85002	V1.2
Nominal voltage (*)	3 x 360 - 520 VAC, 480 - 745 VDC
Input voltage range	3 x 324 - 572 VAC
Use allowed with two phases	2 x 360 - 572 VAC
Nominal frequency	50 / 60 Hz $\pm 6\%$
Input current, $I_{nom}$	1,3 A <sub>rms</sub> / 3x360 VAC - 1,0 A <sub>rms</sub> / 3x520 VAC
Input current with two phase	2,3 A <sub>rms</sub> / 2x360 VAC - 1,7 A <sub>rms</sub> / 2x520 VAC
Inrush current	$< 19$ A / 3 x 400 VAC after 1 ms
Efficiency, typ.	91% / 3 x 400 VAC - 90% / 3 x 520 VAC
Power factor, typ.	0,7 / 3 x 400 VAC and 24 VDC / 20 A
External fuse max.	3 x 20 A (T) in building installations. Circuit breaker type B or C recommended.
Safety class	1
Output voltage, adjustable 22 - 28 VDC	24 VDC
Static regulation accuracy	$\pm 1\%$
Dynamic regulation accuracy typ.	0->100%, 5% 1ms / 100%>5%, 5% 1ms
Start-up time	$< 700$ ms
Hold up time of the output	$> 19$ ms / 3 x 400 VAC and 24 VDC / 20 A
Output current, continuous 24 VDC	20 A (+55°C) / 15,8 A (+70°C)
Output current, continuous 28 VDC	17,5 A (+55°C) / 13,3 A (+70°C)
Output current (power boost)	30 A / $> 4$ s
Output current, short circuit, typ.	22 A
Output ripple	$< 50$ mV <sub>rms</sub>
Overloading / temperature protection	Yes
Overvoltage shutdown	$< 35$ VDC
Relative humidity	5 - 95%, no condensing
Operation temperature	-25°C - +70°C ( $> +55^\circ\text{C}$ derating)
Storage temperature	-40°C - +85°C
Protection class, case, EN 60529	IP 20
Dimensions W x H x D; Weight	113 x 132 x 136 mm; 2,0 kg

(\*) GL type approvals are fulfilled with nominal input voltage of 3 x 380 - 520 VAC (-15% / +10%)

### (3) Features

#### [1] Output terminal:

##### Conductor sizes

Solid 2,5 - 16 mm<sup>2</sup> / 13 - 5 AWG

Stranded 2,5 - 16 mm<sup>2</sup> / 13 - 5 AWG

Stranded with ferrule without / with plastic sleeve

2,5 - 16 mm<sup>2</sup> / 13 - 5 AWG

Ferrule minimum length must be

$\geq 10$  mm

Wire insulation temperature rating 75°C

Tightening torque: min. 1,2 Nm / 11 lb. in.

[2] Bi-colour LED, output voltage "OK" - green, Alarm - red

[3] Output voltage adjust 22 - 28 VDC;

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

#### [4] Input terminal:

##### Conductor sizes

Solid 1,5 - 6 mm<sup>2</sup> / 15 - 9 AWG

Stranded 1,5 - 4 mm<sup>2</sup> / 15 - 11 AWG

Stranded with ferrule without / with plastic sleeve

1,5 - 4 mm<sup>2</sup> / 15 - 11 AWG

Ferrule minimum length must be

$\geq 8$  mm

Wire insulation temperature rating 75°C

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

### (4) Location

The power supply is cooled by natural convection. Top and bottom clearances should be 50 mm at minimum. Evolution three phase power supplies can be used side by side without any distance. 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]

The rail should be fixed solidly so that it cannot twist when mounting or removing the unit. Mounting instructions [5], Removing instructions [6].

### (6) Switching on

Factory set, ready to use, check the connection diagrams for parallel and series connection. Check the connection diagram for DC use [13].

### (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. Curve [9] shows the typical overload / temperature limit. To ensure correct convection cooling, the unit must always be mounted with rail horizontally. Power supply is designed to give 150% output power (power boost) for min. 4 seconds [10].

### (8) Parallel connection [11]

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.

### (9) Series connection.

Up to 2 units may be connected in series to give either 48 VDC or  $\pm 24$  VDC. Check the connection diagram [12].

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

Using circuit breakers on the power supply output side up to 28 VDC we recommend "MICO". For example: MICO 4.10, Art. No. 9000-41034-0401000.

More models on request or on our homepage: [www.murrelektronik.com](http://www.murrelektronik.com)

For higher output voltages (series connection) and standard circuit breakers, power supply will trip, for example the following ABB-STOTZ circuit breaker:

- S201-C3A
- S201-Z10A

### (11) Standards

#### Electrical safety

IEC / EN 60950-1 (CB Scheme), CSA, SELV

CSA C22.2 No 14, ANSI/UL508

#### EMC immunity

EN 61204-3 (2000); EMI: Class B, EMS: Industrial environment, GL

EN 61000-4-2 (1995) ESD 4/8 kV

EN 61000-4-3 (2002) RF-field 10 V/m

EN 61000-4-4 (1995) EFT/B 2/2 kV

EN 61000-4-5 (1996), Surge 1/2 kV; 500 V

EN 61000-4-6 (1996) Cond. Rf 10 V

EN 61000-4-11 (1994)

#### Emissions

EN 55022 B, RF-emissions

EN 61000-3-2 (2006) (valid with three phase use)

EN 61000-3-3 (1995)

EN 60204-1 60 V / 1 s

We reserve the right to change this specification.