





# Q.PS-AD3-2405F



## Power supplies with 24 VDC output

- ▶ Input rated voltage 230 / 400...500 VAC
- ▶ Output: 24 VDC  $\pm 3\%$  / 5 A
- ▶ Power Boost: 7.5 A for at least 3 minutes, up to 60 °C
- ▶ 3 different modes for the short-circuit protection are selectable
- ▶ Overload protected
- ▶ Strong overload without switch-off
- ▶ „Power Good“-Relais
- ▶ IP 20
- ▶ Mounting on DIN rail
- ▶ Extremely small size

Figure	Input	Output	Protection	Features
 <p><b>Q.PS-AD1</b></p>	Single phase 24 VAC / 40 VDC	24 VDC, 3 A 24 VDC, 5 A 24 VDC, 7 A	Short circuit Overload	
 <p><b>Q.PS-AD2-24xxF</b></p>	Single phase 115 / 230 VAC	24 VDC, 1,5...3 A 24 VDC, 5...7.5 A 24 VDC, 10...14 A	Short circuit Overload Overvoltage	Adjustable output voltage 22...27 VDC
 <p><b>Q.PS-AD3</b></p>	Double-phase 230 / 400...500 VAC	24 VDC, 5...7.5 A	Short circuit Overload Overvoltage	Adjustable output voltage 22...26 VDC
 <p><b>Q.PS-ADB</b></p>	Single phase 115 / 230 VAC / 24 VDC battery	24 VDC, 5 A	Short circuit Overload Overvoltage	Adjustable charging current 1...5 A, battery diagnostic and different charging modes

## Applications

Control panels, where 24 VDC is required to supply PLC's, actors, sensors etc. But also power demanding loads such as solenoid valves, motors, lamps, etc. Can be used in applications for:

- ▶ Building automation
- ▶ Industrial automation
- ▶ Infrastructure plants, such as water or sewage treatment
- ▶ Machineries
- ▶ Material handling
- ▶ etc.

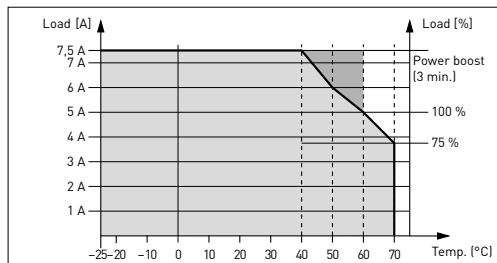
## Functions

Q.PS-AD3-2405F

Input data	
Input voltage	230 / 400...500 VAC
Input Voltage Range	187...264 / 330...550 VAC
Inrush Current (at $U_n$ and $I_n$ )	$\leq 17 \text{ A} \leq 5 \text{ ms}$
Frequency	47...63 Hz $\pm 6\%$
Input Current (Input Rated Voltage)	1.5...0.8 A
Internal Fuse	4 A
External Fuse	Fast 10 A
Output data	
Output Voltage ( $U_o$ ) / Nominal Current ( $I_n$ )	24 VDC $\pm 3\%$ / 5 A
Adjustment range ( $U_{adj}$ )	22...27 VDC
Turn-On delay after applying mains voltage	1 s (max.)
Start up with capacitive load	$\leq 50.000 \mu\text{F}$
Continuous running current	
Max. continuous current at $\leq 40^\circ\text{C}$	7.5 A
Max. continuous current at $\leq 50^\circ\text{C}$	6.0 A
Max. continuous current at $\leq 60^\circ\text{C}$	5.0 A
Power reserve (power boost) (within 3 min. $\leq 60^\circ\text{C}$ )	7.5 A
Short-circuit current ( $I_{cc}$ )	16 A
Hold-up Time (187...264 / 330...550 VAC)	in general 20 ms
Residual Ripple	$\leq 80 \text{ mVpp}$
Minimum load	No
Efficiency (at 50% $I_o$ )	$\geq 91\%$
Short-circuit protection	Yes
Overload protection	Yes
Over Voltage Output protection	Yes (max 35 VDC)
Parallel connection	Yes
Climatic data	
Ambient Temperature (operation)	$-25...+70^\circ\text{C}$ (Derating $>60^\circ\text{C}$ , 2.5%/°C)
Ambient Temperature (storage)	$-40...+85^\circ\text{C}$
Humidity; no moisture condensation	95% at $+25^\circ\text{C}$
General data	
Isolation Voltage (Input/Output)	3000 VAC
Input / Ground isolation PE	1605 VAC
Output / Ground isolation PE	500 VAC
Degree of protection	IP 20
Pollution Degree Environment	2
Protection class	I, with PE connected
Dimension (w x h x d)	55 x 110 x 105 mm
Weight	approx 0.60 kg

## Output characteristics

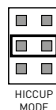
### Output Derating Curve



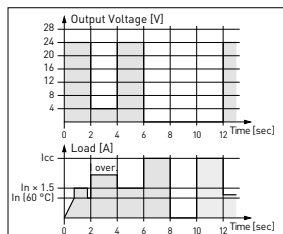
### Mode

#### Hiccup-Mode

Automatic restart (default setting). The device tries to re-establish output voltage about every 2 seconds.



HICCUP MODE



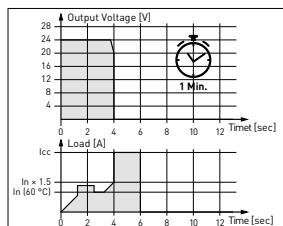
### Manual

#### Reset-Mode

In order to restart the output it is necessary to switch-off the input circuit for about 1 minute.



MANUAL RESET



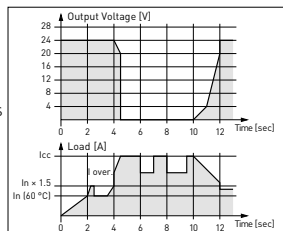
### Continuous Out

#### Mode

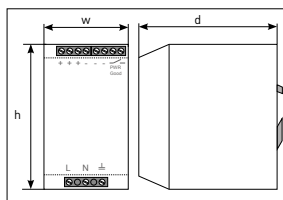
The output current is kept at high values with near zero voltage.



CONTINUOUS OUT MODE



### Dimensions



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Instruction manual 4 319 5134 0e 09.2015 Subjects to change without notice.

# 2 Phase Power supply Q.PS-AD3-2405F

## Primary switched power supply

Thank you for having chosen one of our products for your work. We are certain that it will give the utmost satisfaction and be a notable help on the job.

## Application

The power supplies Q.PS-AD3-24xxF can be used in areas with extreme industrial environment, and complies with the latest technical standard. Before working with the unit, read these instructions carefully and completely. All these power supplies are single output, IP20 and have Mounting DIN Rail IEC60715/TH35. Class 1 isolation devices suitable for SELV and PELV solutions.

## Connection

The following cable cross-sections may be used:

	Solid (mm <sup>2</sup> )	Stranded (mm <sup>2</sup> )	AWG	Torque (Nm)	Stripping Length
Input	0.2÷2.5	0.2÷2.5	24 ... 14	0.5...0.6Nm	7 mm
Output	0.2÷2.5	0.2÷2.5	24 ... 14	0.5...0.6Nm	7 mm
Signal	0.2÷2.5	0.2÷2.5	24 ... 14	0.5...0.6Nm	7 mm

## Signalling

Jumper Settings	Standard Conditions "LED VDC ok"	Overflow conditions "LED VDC ok"
MANUAL RESET	Lights up permanently when the output voltage is OK.	Switches off when there is an overload
HICCUP MODE		Blinks when there is an overload
CONTINUOUS OUT MODE		Switches off when there is an overload

## Rail Mounting

**Mounting on the Rail**

**Dismounting from the Rail**

With PLASTIC Hook

Other modules must have a minimum vertical 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!

## Installation

### WARNING!



**Explosion Hazard!** Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

**Explosion Hazard!** Substitution of components may impair suitability for class I, Division 2. Switch off the system before connecting the module. Never work on the machine when it is live. The device must be installed in according with EN60950. The device must have a suitable isolating facility outside the power supply unit, via which can be switched to idle. Danger of fatal injury!

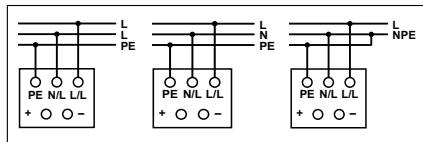
The connection is made by screw type 2.5 mm<sup>2</sup> terminal blocks. Use only copper cables that are designed for operating temperatures of >75 °C. Wiring terminals shall be marked to indicate the proper connection for the power supply.

**Input:** The input connection is made by N/L, L/L, ⊕.  
**Output:** 24 VDC is made via the + (+), - (-).

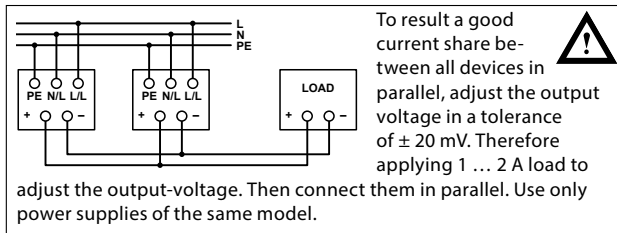
## Protection

On the primary side: the device is equipped with an internally fuse. If the internal fuse is activated, it is most probable that there is a fault in the device. If happen, the device must be checked in the factory.  
 On the secondary side: the device is electrically protected against: Over-load, output over-voltage and short circuit automatically.

## Connection



## Parallel Connection for Redundancy or Increased capacity



## Power Good Output Function:

The NC contact open any time the output voltage level goes below  $20$  VDC  $\pm 5\%$ . With this Power Good relay the output voltage can continuously be monitored. The maximum rates which can be switched are 30 VDC and 1 A.

## Setting of the modes for Short Circuit and Overload:

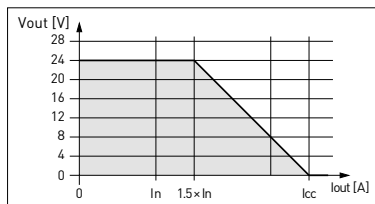
You must turn off the device before change settings.

- ▶ Jumper position in **MANUAL RESET** (Shut Down Mode): If Overload or Short Circuit happens, the output turns off. To restart the power supply it is necessary to turn off mains input for a few seconds. This protection mode is particularly suggested in applications where safety procedures require that a reset can be carried out only by an authorized person.
- ▶ Jumper in **HICCUP MODE** (Auto-Reset): In case of short-circuit or overloading, the output current is interrupted. The device tries again to re-establish the output voltage every 2 second till the problem is cleared. (default factory jumper setting)
- ▶ Jumper position in **CONTINUOUS OUT MODE**: If you need a constant power on your load, select this mode. The output power don't switch off. 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 transient behaviour.

## Characteristic Curves

### Short circuit and overload

The output of the device is electrically protected against overload and short circuit. At nominal voltage the device can supply 1.5 the nominal Current without switching off. In the case of higher overload, the operating point traces the curve illustrated in figure. As the overload increases, the output voltage is reduced until zero.



### Thermal behaviour

The rated maximal air temperature @ nominal current is  $60^\circ\text{C}$ . For ambient temperature above  $60^\circ\text{C}$ , the output current must be reduced by 2.5% per Kelvin increase in temperature. At the temperature of  $70^\circ\text{C}$ , the output current will be  $3/4 \times I_n$ . The equipment does not switch off in case of ambient temperature up to  $70^\circ\text{C}$  or thermal overload. The devices are protected for excess temperature conditions. In conditions where the power-supply inside temperature is over  $70^\circ\text{C}$  will the device shut-down the output and will be automatically restarted when the temperature inside the power-supply is decreased.

## Standards and Certification

### Electrical Safety:

**Assembling device:** UL508, IEC/EN60950 (VDE0805) and EN50178 (VDE0160)

**Isolation according:** IEC/EN60950

**Input/Output separation:** SELV EN60095-1 and PELV EN60204-1. Double or reinforced insulation

### EMC Standards (Surge, Transient Immunity):

**Immunity:** EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-6-2

**Emission:** EN61000-6-4, EN61000-3-2

### Standards Conformity:

Safety of Electrical Equipment Machines: EN60204-1.



In according to EMC2004/108/EC and EMC93/68/EEC  
Low voltage directive 2006/95/EU + ROHS 2011/65/EU



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