

AC-DC and DC-DC power sources for process applications

8913/14 SERIES

system and field power supplies



- ◆ **System & field power for MTL8000 Process I/O**
- ◆ **12V/24V dc @ 5A/10A for system power**
- ◆ **24V dc @ 5A/10A for field power**
- ◆ **85–264 V ac input voltage**
- ◆ **Zone 2 / Div 2 mounting**
- ◆ **Supports load sharing for redundancy**

The 8913-PS-AC / 8914-PS-AC represent a family of DIN-rail mountable system and field power supplies with power factor correction. They have been designed according to the latest industry requirements and standards. The power supplies are ideal for use in demanding applications to power process automation equipment in harsh environments, including in Zone 2 and Division 2 hazardous areas, controls, PLCs, instrumentation, electromagnetic drives, fans and other DC loads.

Key features of the 8913-PS-AC/8914-PS-AC include power factor correction with low harmonic distortion, negligibly low inrush current, high immunity to transients and surges, low electromagnetic emissions. Internal protection circuits such as input over- and under-voltage lock-out, thermal protection, as well as output overvoltage protection by a second control loop ensure safe operation of the final system.

The outputs deliver an electrically isolated Safety Extra Low Voltage (SELV) with low output noise. They are no-load, overload and short-circuit proof. The thermal concept allows operation at full load up to an ambient temperature of 70°C in free air without forced cooling.

A unique feature of the 8913-PS-AC/8914-PS-AC is the extremely small and compact design of the metallic case. A rugged DIN snap-fit device allows easy and reliable fixing onto the various 35 mm DIN rail types. The units are fitted with pluggable screw type terminals easily accessible from the front panel. Screw terminals for use with pre-assembled harnesses, external adjustment of the output

voltage, remote On/Off as well as various safe Data signals are available as options.

The power supplies are primary controlled AC-DC and DC-DC flyback converters with a constant switching frequency of 130 kHz. The power factor corrected single step conversion of the line input voltage to a low output voltage results in an extremely high efficiency.

The input voltage is fed via an input fuse, filter and rectifier to the main transformer in planar technique which is located on the power train. The wide band input filter with very small input capacitance generates virtually no inrush current. An input transient suppressor protects the unit against high voltage peaks and surges. Input over- and under-voltage lockout as well as input current limitation protect the unit from operation outside its specification. The input voltage waveform is sensed by the primary control logic to allow active power factor correction, forcing the input current to follow the line voltage waveform.

The secondary of the main transformer feeds via the rectifier diode into a large electrolytic output storage capacitor and an efficient output filter providing for the hold-up time as well as low output ripple and noise. Both output voltage and output current are measured and fed back to the primary control logic via an opto-coupler. A second control loop monitors the output voltage and inhibits the unit in the case of a failure in the main control circuit thus avoiding the SELV limit being exceeded. Built-in temperature sensors monitor the maximum internal temperature.



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8913-PS-AC HAZARDOUS-AREA POWER SUPPLY



MODULE SPECIFICATION

Location of power supply

safe area or
Zone 2, IIC T4 hazardous area or
Class 1, Div 2, Groups A, B, C, D T4 hazardous location

ELECTRICAL

EMC compliance

To EN 61000-2,3,4,5,6,11
EN 55011/22, EN 55014

Electrical safety

To EN 60950

INPUT

Input voltage

85–264 V ac

Input frequency

47–65 Hz

Efficiency

up to 87 %

Connections (Fig. 3)

2-part pluggable connector

Input protection

slow-blow fuse and VDR*

OUTPUTS

Output 1

24.7 V dc \pm 10%

Output 2

11.95 V dc \pm 5%

Output 1 current (see Fig. 1)

5 A (nom.)

Output 2 current

5 A

Connections (Fig. 4)

2-part pluggable connector

Input-output isolation

2800 V dc

Hold-up time (at full rated load)

15 ms (typ.)

Thermal protection

reduced output power

Supply health indicator

LED

POWER-FAIL SIGNALLING - OUTPUT 2 ONLY

Threshold to trigger "power-fail" signal

11.33 V (max.)

10.30 (min.)

Power-fail signal output (open collector)

Power supply "OK" Low impedance to –ve of o/p 2

Power supply "failure" High impedance to –ve of o/p 2

(Up to 8 power fail signals can be monitored by the 8510-NS-MO module when it is fitted on the 8718-CA-NS carrier.)

*voltage dependent resistor

ENVIRONMENTAL

Operating amb. temperature

–40° to +70°C

Maximum operating case temperature

+80°C

Storage temperature

–40° to +100°C

Relative humidity

93%, 40°C for 56 days

MECHANICAL

Dimensions (see Fig 4)

103 (w) x 138 (h) x 113.6 (d) mm

Mounting methods

35 mm x 7.5 mm T-section DIN rail (see also Accessories)

Weight

750 g

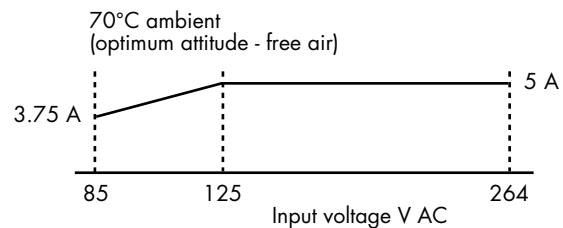
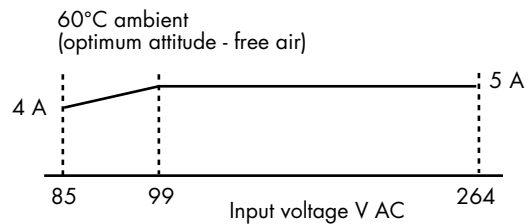


Figure 1 - Output current de-rating
(24 V output only)

ACCESSORIES

Heavy duty DIN rail mounting kit† 8413-FK-DN
Surface panel mounting kit 8414-FK-SU

† For large amplitude vibration environments

APPROVALS

Authority	Standards	Certificate No.
FM	No. 3600/3611	3011821
TÜV	EN50021	TÜV01ATEX1774X

Applicable standards:

- Factory Mutual Research Class No. 3600/3611 for Class I, Division 2, Groups A, B, C, D hazardous locations
- ATEX Directive 94/9/EC Category 3 - Ex II 3 G
- CENELEC standard EN50021:1999 EEx n A II T4



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8914-PS-AC HAZARDOUS-AREA POWER SUPPLY



MODULE SPECIFICATION

HAZARDOUS AREA APPROVALS

Location of power supply

- safe area or
- Zone 2, IIC T4 hazardous area or
- Class 1, Div 2, Groups A, B, C, D T4 hazardous location

Applicable standards:

- Factory Mutual Research Co., Class No. 3600/3611 for Class I, Division 2, Groups A, B, C, D hazardous locations
- ATEX Category 3
- CENELEC standard EN50021:1999 EEx n A II T4

ELECTRICAL

EMC compliance

To EN 61000-2,3,4,5,6,11
EN 55011/22, EN 55014

Electrical safety

To EN 60950

INPUT

Input voltage

85–264 V ac

Input frequency

47–65 Hz

Efficiency

up to 87%

Connections (Fig. 3)

2-part pluggable connector

Input protection

slow-blow fuse and VDR*

OUTPUT

Output

24 V dc \pm 10%

Output current (see also Fig.2)

10 A (nom.)

Connections (Fig. 4)

2-part pluggable connector

Input-output isolation

2800 V dc

Hold-up time (at full rated load)

15 ms (typ.)

Thermal protection

reduced output power

Supply health indicator

LED

POWER-FAIL SIGNALING

Threshold to trigger "power-fail" signal

23.3 V (max.)

22.0 V (min.)

Power-fail signal output (open collector)

Power supply "OK"

Low impedance to ground

Power supply "failure"

High impedance to ground

(Up to 8 power fail signals can be monitored by the 8510-NS-MO module when it is fitted on the 8718-CA-NS carrier.)

*voltage dependent resistor

ENVIRONMENTAL

Operating amb. temperature

–40° to +70°C

Maximum operating case temperature

+80°C

Storage temperature

–40° to +100°C

Relative humidity

93%, 40°C for 56 days

MECHANICAL

Dimensions (see Fig 5)

103 (w) x 138 (h) x 113.6 (d) mm

Mounting methods

35 mm x 7.5mm T-section DIN rail (see also Accessories)

Weight

750 g

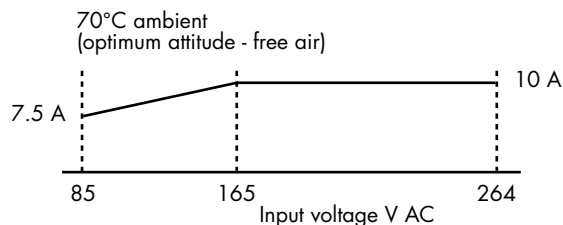
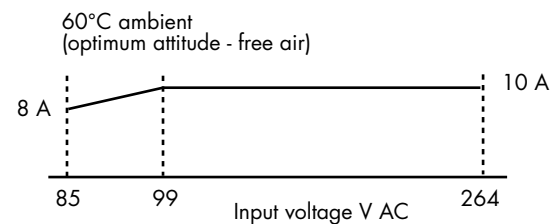


Figure 2 - Output current de-rating

ACCESSORIES

Heavy duty DIN rail mounting kit† 8413-FK-DN
Surface panel mounting kit 8414-FK-SU

† For large amplitude vibration environments

APPROVALS

Authority	Standards	Certificate No.
FM	No. 3600/3611	3011821
TÜV	EN50021	TÜV01ATEX1774X



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MTL8913/8914

COMMON SPECIFICATIONS



TERMINAL ASSIGNMENTS

Input connector screw terminals

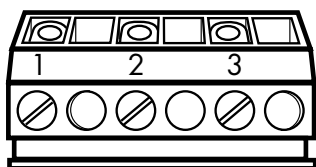


Figure 3 - ac input power

Pin No.	Pin Designation	Electrical Determination
1	⊕	Protective Earth
2	N ~	Input Neutral
3	L ~	Input Live

Output connector screw terminals

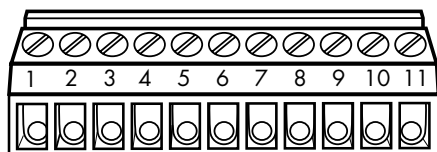


Figure 4 - dc output power

Terminal	Des.	Description	
		MTL8914	MTL8913
1	⊕	Protective earth	Protective earth
2	+	Output +ve	Output 1 +ve
3	+	Output +ve	Output 1 +ve
4	-	Output -ve	Output 1 -ve
5	-	Output -ve	Output 1 -ve
6	+	Output +ve	Output 2 +ve
7	+	Output +ve	Output 2 +ve
8	-	Output -ve	Output 2 -ve
9	-	Output -ve	Output 2 -ve
10	Aux	Power fail signal	Power fail signal
11	⊕	Protective earth	Protective earth

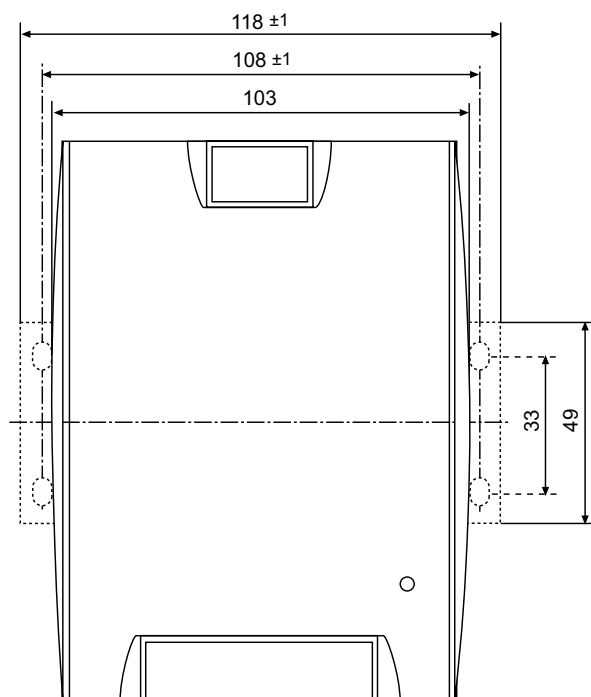
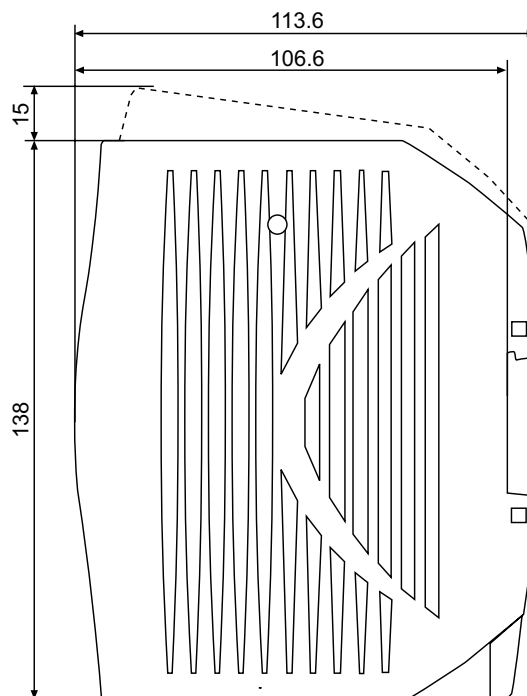


Figure 5 - Outline and fixing dimensions

