MEGGITT

DATA SHEET

Vibro-Meter®

APF202
24 V_{DC} 5 A power supply with Ex certification

KEY FEATURES AND BENEFITS

- From the Vibro-Meter® product line
- Input: 85 to 277 V_{AC} or 48 to 410 V_{DC}
- Output: 24 V_{DC} 5 A
- Certified for use in potentially explosive atmospheres
- Status indicators
- Rugged compact design
- Metal enclosure with DIN-rail mounting adaptor

APPLICATIONS

- Outputs can be connected in parallel for increased output current or power supply redundancy
- Ideal for use with VM600 and/or VibroSmart® machinery monitoring systems

DESCRIPTION

The APF202 is a high-performance 24 V_{DC} 5 A power supply with Ex certification for use in industrial applications such as machinery monitoring.

A single APF202 power supply can be used to power any equipment requiring a 24 V_{DC} up to 5 A (120 W), for example, external hardware such as GSI12x galvanic separation units or VibroSmart® devices. Up to ten APF202 power supplies can be connected in parallel in order to increase performance.

The APF202 is a compact and robust switched-mode power supply that works with either AC or DC inputs. It includes a front-panel LED (ON/Fail) to indicate the status of the power supply locally and a relay that can be used to monitor the status of the power supply remotely.

The APF202 is DIN-rail mounting and is typically installed in a cubicle containing other equipment such as VM600 and/or VibroSmart® monitoring systems.

For specific applications, contact your local Meggitt representative.

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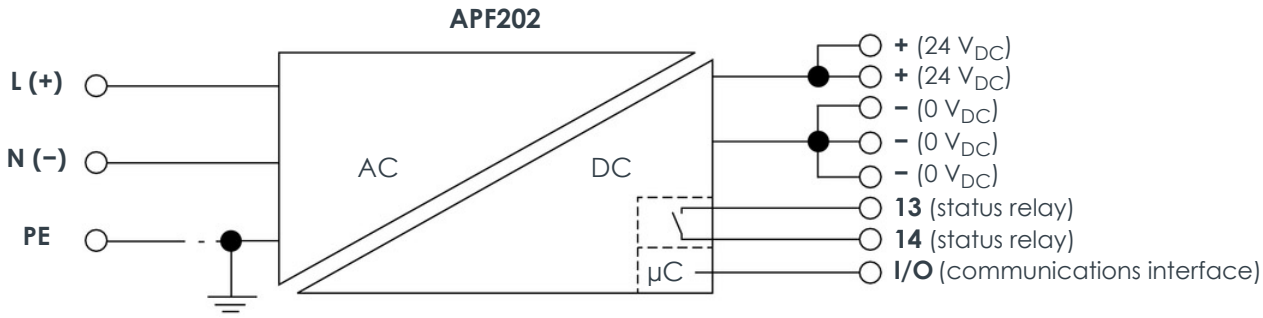
SYSTEM OVERVIEW



Notes
The APF202 power supply accepts either an AC or a DC input. When using a DC input, ensure that the correct input polarity is observed (+ and − inputs as shown above).
Up to ten APF202 power supplies can be connected and operated in parallel:
- APF202 power supplies can be connected with a common input voltage connection if increased output current is required, with no redundancy.
- APF202 power supplies can be connected with separate input voltage connections if APF202 power supply redundancy is required.

External diodes are not required when operating APF202 power supplies in parallel as they are included internally. However, the wiring should be symmetrical in order to ensure an even current distribution.
See also **Configuration on page 5**.

SPECIFICATIONS

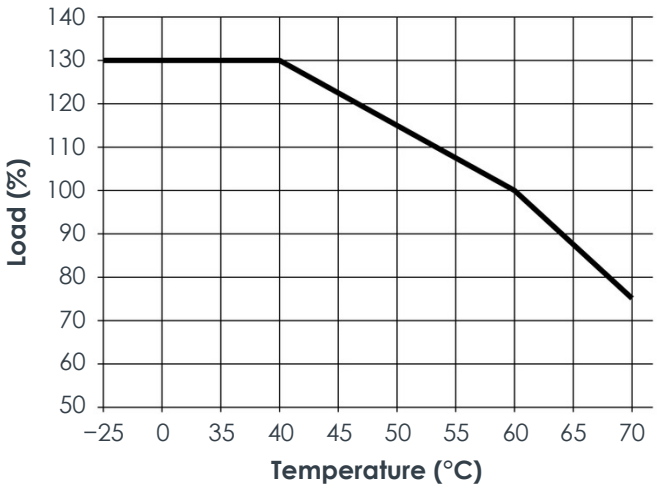
Electrical

Rated Input voltage	: 100 to 240 V_{AC} / 120 to 340 V_{DC}
Input voltage	
• *AC*	: 85 to 277 V_{AC} (45 to 65 Hz)
• *DC*	: 48 to 410 V_{DC} Note: Output power derating of 40% is required at 48 V_{DC}.
Current consumption	
• *AC*	: 1 A at 230 V_{AC} / 2.5 A at 115 V_{AC} approx.
• *DC*	: 1.5 A at 370 V_{DC} / 2.5 A at 120 V_{DC} approx.
Efficiency	: 91% typ.
Inrush current	: 5 A max.
Input fuse	: Yes (internal)
Surge protection	: Varistor (internal). Note: The internal varistor found in a switch-mode power supply does not replace the need for surge protection within a system.
Nominal output	
• *Voltage*	: 24 V_{DC}
• *Current*	: 5 A
• *Power*	: 120 W
Output stability (regulation)	: ±1%
Residual ripple	: <50 mV_{PK-PK}
Output voltage range	: 22.5 to 28.8 V_{DC} (adjustable via front-panel potentiometer)

SPECIFICATIONS *(continued)*

Continuous output current (at 24 V_{DC})	
• *At 45°C (113°F)*	: 6.5 A
• *At 60°C (140°F)*	: 5 A. Note: Output power derating is required above 60°C (see **Derating curve on page 3**).
• *At 70°C (158°F)*	: 3.75 A
Parallel connection	: Yes, up to a maximum of ten APF202 power supplies (see **System overview on page 2** and **Configuration on page 5**)
Short-circuit protection	: Yes
Inverse-voltage protection	: Yes
Protection against reverse voltages	: Yes
Protection against over-heating	: Yes. Automatic shut off at over-temperature with automatic restart after cooling. Note: Output power derating is required above 60°C (see **Derating curve on page 3**).

Derating curve



Note: Output power derating of 2.5%/°C is required for operating temperatures above 60°C (140°F).

Environmental

Temperature	
• *Operating*	: −40 to 70°C (−40 to 158°F)
• *Storage*	: −40 to 85°C (−40 to 185°F)
Humidity	: 5 to 100% RH (non-condensing)
Protection rating (according to IEC 60529)	: IP20
MTBF (according to IEC 61709 (SN 29500))	: >1000000 hours
Vibration (according to IEC 60068-2-6)	: 2.3 g (DIN rail). 4 g (direct mounting).
Shock acceleration (according to IEC 60068-2-27)	: 30 g (in all directions)

SPECIFICATIONS *(continued)*

Potentially explosive atmospheres

Ex certified for use in hazardous areas

Type of protection Ex ec: increased safety, Ex nC: encapsulated / non-incendive / sealed		
Europe	Type examination certificate	TPS 18 ATEX 033299 0431 X II 3 G (Zone 2) Ex ec nC IIC T4 Gc
International	IECEx certificate of conformity	IECEx TPS 18.0009X Ex ec nC IIC T4 Gc
North America	cULus certificate	UL E470829 Class I, Division 2, Groups A, B, C and D

⚠ **For specific parameters of the mode of protection concerned and special conditions for safe use, refer to the Ex certificates that are available from Meggitt SA.**

⚠ **When using protection mode "Ex ec" (increased safety) or "Ex nC" (encapsulated / non-incendive / sealed), the user must ensure that the power supply is installed in an industrial housing or enclosure that ensures a protection rating of at least IP54 (or equivalent).**

Approvals

Conformity	: CE marking, European Union (EU) declaration of conformity
Other standards	: cULus and TÜV Rheinland
Electromagnetic compatibility	: EN 61000-3-2 and EN 61000-3-3. EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8 and EN 61000-4-11. IEC 61204.
Electrical safety	: EN 60204
Extra-low voltage systems	: SELV, according to EN 60950. PELV, according to EN 60204.
Environmental management	: RoHS compliant (2011/65/EU)
Hazardous areas	: Ex approved (see **Potentially explosive atmospheres on page 4**)

SPECIFICATIONS *(continued)*

Configuration

Mode of operation

- *Single* : Configured by setting S/P DIP switch to S.
  Allows one APF202 power supply to operate alone.
- *Parallel* : Configured by setting S/P DIP switch to P.
  Allows to ten APF202 power supplies to operate together.
  Note: An APF202 power supply output is automatically and safely isolated from the load in the event of an internal short-circuit (external diodes are not required).

Short-circuit operating mode

- *Continuous-current operation* : Configured by setting C/S DIP switch to C.
  In the event of a short-circuit, allows current to be supplied continuously.
- *Shut-off operation* : Configured by setting C/S DIP switch to S.
  In the event of a short-circuit, allows current to be supplied for approx. 5 seconds before automatically turning off.
  Note: After automatically turning off, an APF202 power supply must be reset by either (1) briefly isolating if from the external mains supply or (2) briefly applying a closed contact (via a relay or transistor switch) between the communications interface (I/O) and the minus/reference potential of the power supply output (−).

Control inputs

Communications interface (I/O) : To reset the APF202 power supply.

DIP switch : S/P DIP switch to configure the mode of operation.
C/S DIP switch to configure the short-circuit operating mode.

Adjust potentiometer : To adjust the output voltage.

Status indicators

ON/Fail LED (green/red) : Green indicates normal operation (I ≤ 90%).
Green blinking slowly indicates overload pre-warning (I = 90 to 150%).
Red blinking indicates overload (I > 150%) or voltage outside the rated output voltage range.
Red blinking slowly indicates voltage outside the rated output voltage range (V ≤ 85%) or short-circuit (continuous-current operation).
Green/red blinking slowly indicates short-circuit (shut-off
Red indicates other APF202 power supply problem or power-on self-test.

Attn LED (yellow) : Off indicates local operation (control of APF202 power supply via DIP switch and potentiometer).
Yellow indicates remote operation (control of APF202 power supply via communications interface (I/O), that is, DIP switch and potentiometer bypassed).

Status relay (single-pole single-throw) : Energised (closed contacts between 13 and 14) indicates normal operation.
De-energised (open contacts between 13 and 14) indicates an output problem.
Note: The status relay supports signals and resistive loads up to 30 $V_{AC/DC}$ and 1 A.

SPECIFICATIONS *(continued)*

Connectors

Screw-terminal connector (bottom front)	: Three contacts for the power supply input: L(+) for live, N(−) for neutral and PE for protective earth.
Screw-terminal connector (top front)	: Five contacts for the power supply output: +, + for 24 V_{DC} and −, −, − for 0 V_{DC}.
Screw-terminal connector (top front)	: Two contacts for the status relay: 13 and 14. One contact for the communications interface: I/O. Note: See **System overview on page 2**.
Input and output conductor cross-section	
• *Flexible / rigid*	: 0.2 to 4 mm^2
• *AWG*	: 30 to 12
Signal conductor cross-section	
• *Flexible / rigid*	: 0.2 to 1.5 mm^2
• *AWG*	: 28 to 16
Insulation stripping length	: 6 mm
Tightening torque	: 0.5 to 0.6 N•m

Physical

Housing	: Corrosion resistant metal
Mounting	: Mounts on a TH 35 DIN rail (according to EN 50022 / IEC 60715). For example, TH 35-15 or TH 35-7.5. Note: 50 mm (1.97 in) of vertical clearance at the top and bottom of the housing is required for air circulation (cooling). With full load, 10 mm(0.39 in) of horizontal clearance is required to adjacent active devices and 5 mm(0.20 in) of horizontal clearance is required to adjacent passive devices for air circulation so APF202 power supplies cannot be mounted directly side-by-side (adjacent to each other). With 90% rated load, no horizontal clearance is required and APF202 power supplies can be mounted directly side-by-side.
Dimensions (height × width × depth)	: 130 × 35 × 125 mm (5.12 × 1.38 × 4.92 in)
Weight	: 850 g (1.9 lb) approx.

ORDERING INFORMATION

To order please specify

Type	Designation	Ordering number (PNR)
APF202	24 V_{DC} 5 A power supply with Ex certification	957.07.21.2007

RELATED PRODUCTS

APF195	24 V_{DC} 0.26 A power supply	Refer to corresponding data sheet
APF196	24 V_{DC} 3 A power supply	Refer to corresponding data sheet
APF197	24 V_{DC} 5 A power supply	Refer to corresponding data sheet
APF198	24 V_{DC} 7.5 A power supply	Refer to corresponding data sheet
APF200	24 V_{DC} 3.75 A power supply with Ex certification	Refer to corresponding data sheet
APF201	24 V_{DC} 7.5 A power supply with Ex certification	Refer to corresponding data sheet
ASPS	VM600 auxiliary sensor power supply	Refer to corresponding data sheet

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The Energy & Equipment division includes the Energy Sensing and Controls product group that specialises in sensing and monitoring solutions for a broad range of energy infrastructure, and control valves for industrial gas turbines, primarily for the Power Generation, Oil & Gas and Services markets. Energy & Equipment is headquartered in Switzerland (Meggitt SA) and incorporates the Vibro-Meter® product line, which has over 65 years of sensor and systems expertise and is trusted by original equipment manufacturers (OEMs) globally.

In this publication, a dot (.) is used as the decimal separator and thousands are separated by thin spaces. Example: 12345.67890.

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