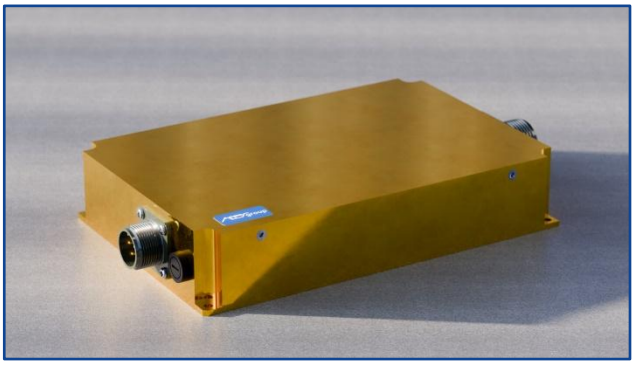
JETA-MIL-1300

Features

- **Output power up to 1300 W**
- **Operating case temperature -40 ... +95 °C**
- **Case dimensions**
  MAX 210x140x41 (mm)
- **Aluminum case with Yellow Chromate coating (Alodine), fully enclosed**
- **MIL-STD-461F CE102 built-in**
- **No external components needed for operation**



Description

JETA-MIL series of 1-phase AC/DC isolated power supply units meant for operation in harsh environmental conditions while providing built-in MIL-STD-461 CE102. The units feature a system of over-current protection and over-voltage protection. Its versatility allows you to implement the converter in a vast number of industrial applications, supplying capacitive, constant-power and impulse load. Application fields: low-high altitude, land transport, supercomputers, mining, equipment in high and low temperature regions, digital signage equipment, APAR radars and others - where there are needed low-profile and high efficiency.

1 channel, 90 VDC output					
Model part number	**Input voltage**	**Output power**	**Output voltage**	**Output current per channel**	**Typical efficiency at 70 % load**
JETA-MIL-1300-230S90	**185-264 VAC (230 VAC nom.)** or DC equivalent	**1300 W**	**90 VDC**	**14.4 A**	**92.5%**

Important parameters

INPUT PARAMETERS	
1.1 No-load power consumption	9.9 W measured @ 230 VDC
1.2 Power Factor correction	typ. 0.96
1.3 EMC compliance	MIL-STD-461F CE102 built-in filter
1.4 Connection scheme	operation with no additional components
1.5 Insulation	see table on Page 3
1.6 In-rush protection	YES
1.7 Input voltage monitor UVLO	unit starts @ 157 VAC
1.8 Input voltage monitor OVLO	unit shuts down @ 288 VAC

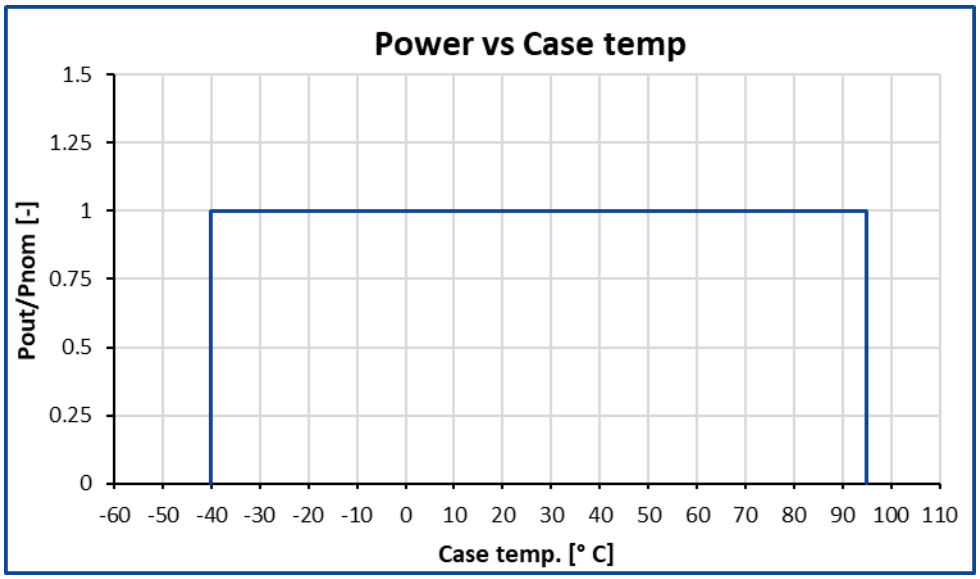
OUTPUT PARAMETERS	
2.1 Ripple and noise	< 0.3 % peak-to-peak (typ. 250 mV)
2.2 Regulation	< 0.3 % for 10-100 % load
2.3 Efficiency	93.5 % @ 70 % P_{out} at nominal input voltage

OTHER PARAMETERS	
3.1 Case operating temp.	–40 to +95 °C, preferred cooling method via heatsink or coldplate
3.2 Case type	metal case
3.3 Case material and coating	Alu 6061 (or equivalent) with Yellow Chromate coating (Alodine)
3.4 Weight	1650 max.
3.5 Dimensions	MAX 210 x 140 x 41
3.6 Connector type	D-SUB or CIRCULAR, MIL TYPE, with mating connectors

General characteristics [3]		
Switching frequency		140 kHz typ. (PWM modulation)
Temperature ranges	case operating temperature	–40° C ... +95° C
	storage temperature	–55° C ... +100° C
Over-temperature protection		+95° C typ.
Thermal mode and cooling method		Conductive - heatsink-coldplate
Thermal resistance	case to ambient	-
Humidity (non-condensing)		5-95 % rel. H
Insulation	in/case	1500 VAC
	in/out	3000 VAC
	out/case	500 VAC
	out/out	n.a
Isolating resistance @ 500 VDC		>20 MOhm
Thermal shock, mechanical shock & vibration		MIL-STD-810F
Safety standards		IEC/EN 60950-1
Typical MTBF	Pout = 0.7·Pout,max	537 000 hrs (Tcase = 25° C)
Weight (max)		*see "Important parameters"*
Input characteristics [3]		
Input voltage range (with power derating)	"230W"	185-264 VAC, nominal 230 VAC, 45-60 Hz
	DC equivalent	260-372 VDC, nominal 324 VDC
Start-up input voltage		typ. 157 VAC
EMC standard compliance	MIL-STD-461F CE102 built-in filter	
Power Factor typ.		0.96
Output characteristics [3]		
Power derating based on input voltage	no derating	-
Output voltage adjustment	typ. in range -8.5 % to +5 %. Connect ADJ to +OUTA to trim down, connect ADJ to –OUT to trim up.	
Output voltage regulation	input variance Uin,min to Uin,max	*see "Important parameters"*
	load variance 10 % to 100 %	*see "Important parameters"*
Ripple and noise (peak-to-peak)	20 MHz bandwidth	*see "Important parameters"*
Protection	over-current	current source behavior: current is limited at 110-125 % of Iout,nom
	over-voltage	<130 % Uout
Capacitive load (max)	-	**unlimited**
Remote OFF	Unit is shut down by applying 3-5VDC (2-10 mA) to +REM, -REM pins or by connecting AUX to +REM.	

1. -
2. -
3. All specifications are valid for normal climatic conditions, nominal output voltage and current, unless stated otherwise.

Power-temperature relationship



Additional application information

1. Value of case temperature

The case temperature is measured at the middle of the long side of the case base. When using a thermocouple, it is necessary to fixate the conductors (connected to the thermocouple end) to the base surface at a distance of at least 20 mm. The thermocouple measuring end and its conductors must be covered with a layer of heat-conducting paste 2-3 mm thick to provide correct measurements.

2. Cooling methods

Most of the unit's dissipated heat (93-95 %) is concentrated on the bottom surface of the unit, its base, which must be attached to the heatsink-coldplate or ribbed heatsink surface. Requirements for the heatsink surface (preferably CNC milled) - flatness tolerance of the heatsink surface must be lower than 0.1 mm per 100 mm of length.

3. Unit heatsink fixation

Mounting screws tightening order should be following: first the central screw (mandatory if available), then one pair of diagonally placed screws, then another pair of diagonally placed screws. First installation of the screws should be done without force. Then all the screws should be tightened with the recommended torque.

For quality contact between the unit and a heatsink - it's necessary to use thermal conductive paste with thickness less than 0.1 mm, with thermal conductivity **greater than 2 W/K.m**. The paste must be applied with mesh stencil in a pattern of squares (i.e. 2x2 mm to 4x4 mm squares mm with 0.5-1 mm spacing between the squares). This allows paste to be evenly spread in a thin layer and excess air to escape when tightening screws during unit mounting.

4. Short-term unit operation

If it's necessary to shortly turn on the unit for 3-5 minutes (for example for input-control testing), an aluminium (copper) coldplate must be used as a heatsink. Its width and length must be not less than of the unit itself, with thickness at least 15 mm. The unit must be placed on coldplate through a thin (0.15-0.3 mm) silicone-based heat-conducting sheet.

5. Thermal protection tripping

When internal unit's thermal protection is tripped (typ. +100°C) the unit is turned off (until automatic restart) and "OGOOD" outputs state becomes high-resistance (where available). **Such state should lead to measures of forced heatsink cooling, for example via fans turn-on.** Time before automatic restart of the unit after thermal protection tripping can last from several seconds up to several minutes depending on thermal inertia of the heatsink. **For units meant to operate in airtight equipment** - on request it's possible to include **additional thermal sensor** to monitor ambient temperature of air closest to the unit's surfaces.

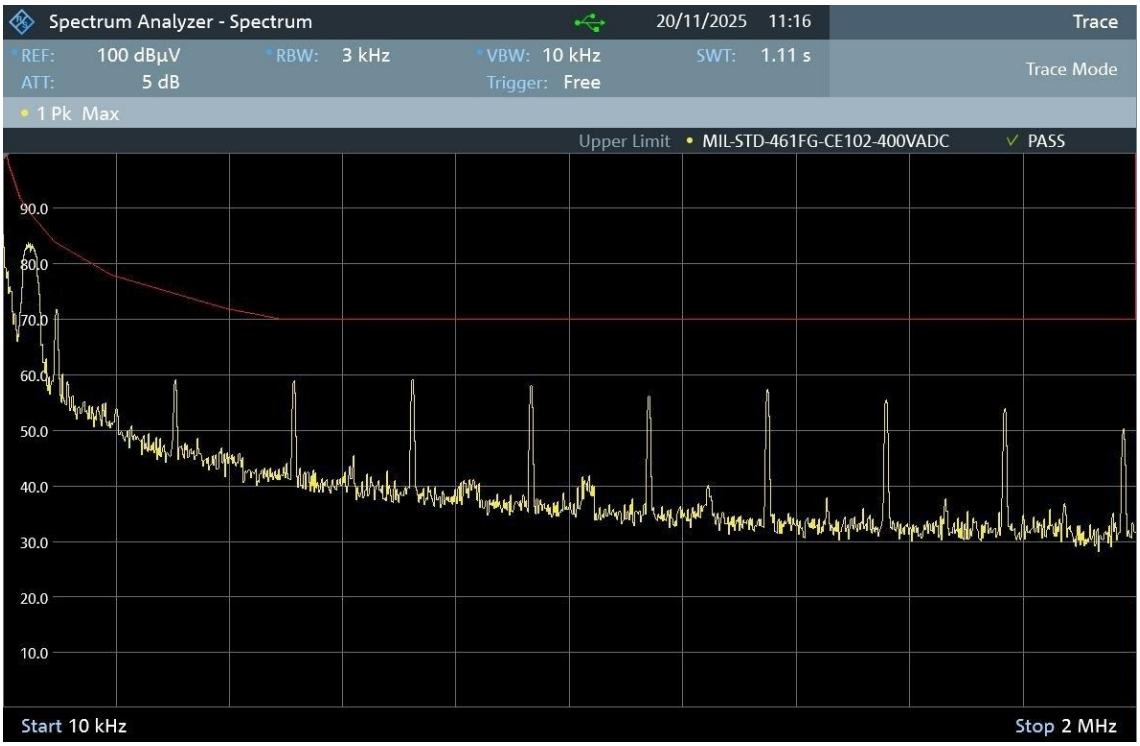
6. Operation with shorted outputs

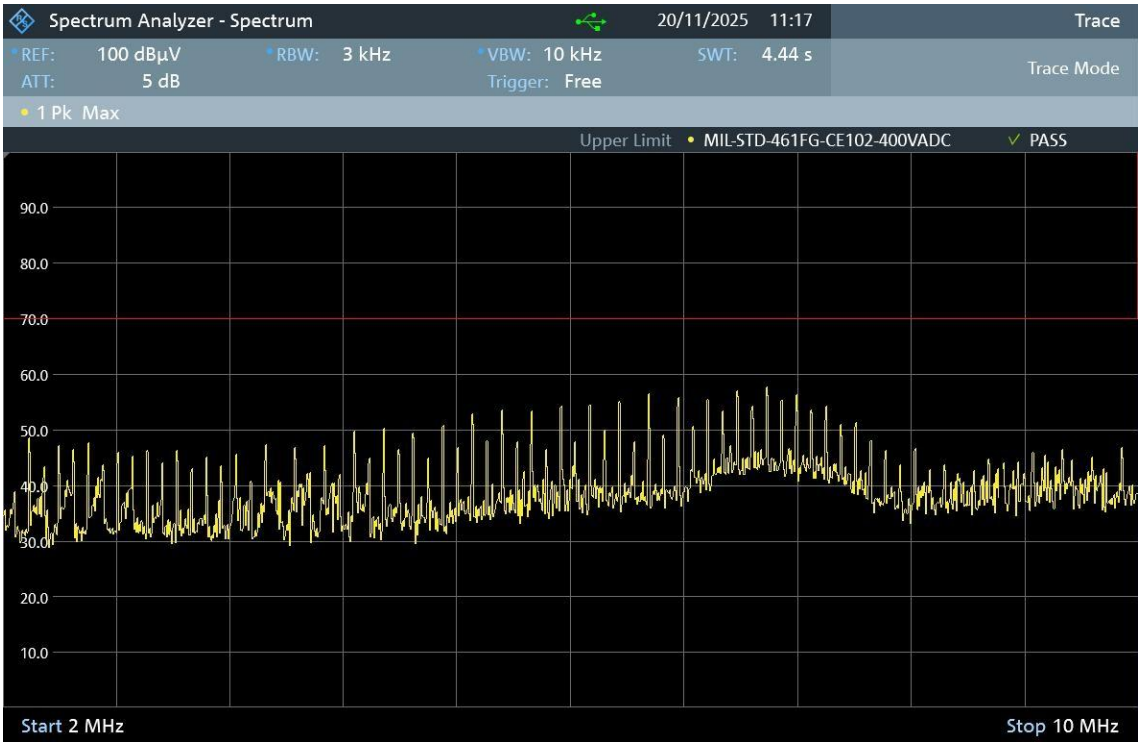
The units have a short-circuit output protection. **The protection is for emergency only, not for long-term operation. It’s prohibited to use the units with shorted outputs (the units have the special detectors inside).**

If you have any questions, please contact us directly at aeps@aeps-group.cz.

EMC graphs

EMC CE102 compliance is confirmed based on in-house measurements at a test-bench built as per guidelines of the MIL-STD-461 CE102 standard. EMC graphs for 10 kHz to 2 MHz and 2 MHz to 10 MHz are shown below.





Dimensions

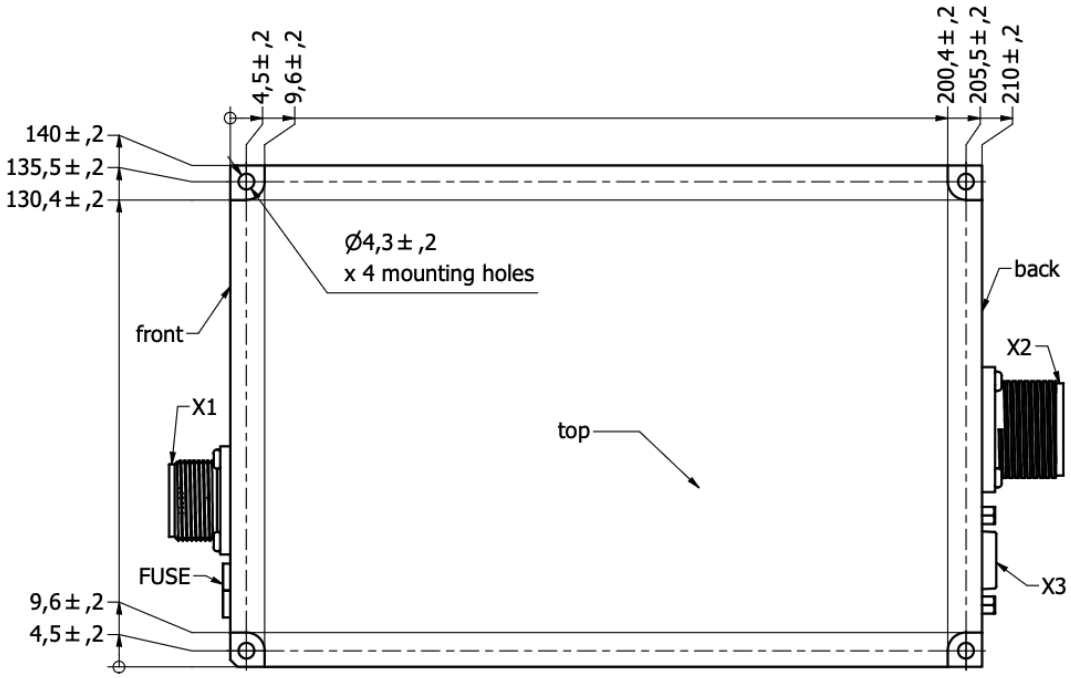
X1		
A	**B**	**C**
L	GND	N

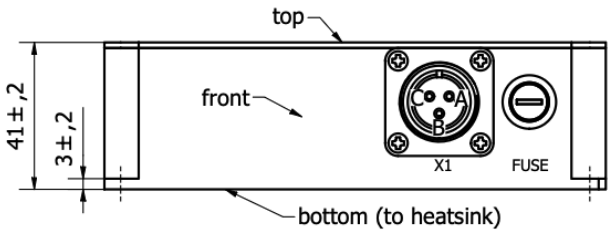
X2	
A,B	**C,D**
-OUT	+OUT

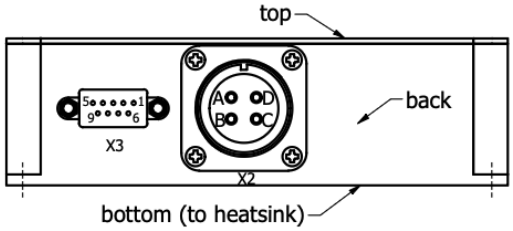
X3							
1	**2**	**3**	**4, 5**	**6**	**7**	**8**	**9**
-OUT	ADJ	+OUTA	*n.c.*	+AUX	+REM	-REM	*n.c.*

X1	Amphenol MS3102A14S-1P-RES Circular MIL-DTL-5015 Spec Connector, pin (male), 3 position
X2	Amphenol MS3102A18-10S Circular MIL-DTL-5015 Spec Connector, socket (female), 4 position
X3	D-Sub Mil Spec Connector ITT Cannon M24308/1-1F, socket (female), 9 position x 2 row
FUSE	Shock-Safe Fuseholder Schurter, screw type fuse carrier, fuse-link 5 x 20 mm, 10 A

Mating connectors are included







Additional information

After ordering the product - the customer is fully responsible for applying the product in strict compliance with mentioned rules and principles of use in the product datasheet and reference technical material (RTM) which is downloadable at www.aeps-group.com.

Please, note that all information in this material is for reference only. Further detailed information (including: additional requirements, manuals and circuit schemes, etc.) is found at www.aeps-group.com or provided via an email request at aeps@aeps-group.cz. All pictures shown are for illustration purpose only, actual product appearance may vary, incl. inner components choice and placement and connectors placement.

According to company's policy in view of constant improvements of the production design the manufacturer reserves the right to change the contents of specifications and promotional materials without prior notice! Make sure you are using the latest documentation downloadable at www.aeps-group.com.