

# KAM/PSU/012

+5V, ±7V and ±12V power supply unit for Acra KAM-500 chassis with 6-way connector

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## Key Features

- Supplies +5V, ±7V and ±12V for backplane
- Fully isolated
- No derating with temperature (-40°C to 85°C)
- Capacitor back-up: 24ms dropping from 28V@ 40W typical (not applicable for KAM/PSU/012/NC)
- Reverse polarity protection
- Indefinite short-circuit protection
- EMI filtering
- Supplies up to 5A on +5V power line

## Applications

- Power supplies for data acquisition systems

## Overview

The KAM/PSU/012 converts the nominal 28V aircraft power into the voltages needed by the Acra KAM-500 backplane.

The DC/DC converters used are the largest components of any Acra KAM-500 module, so the unit is split in two (one half at each end). This allows the components to be bolted to the housing and their weight to be evenly distributed in the Acra KAM-500 chassis.

The +5V supply is primarily for digital circuitry, the ±12V supply is primarily for analog circuitry, and the ±7V is exclusively for bridge excitation.

Unlike other Acra KAM-500 modules the KAM/PSU/012 can only be removed by first removing the sides. The KAM/PSU/012 is only supplied as part of the housing. The green LED indicates power on the +5V power line.

For the KAM/PSU/012/NC, power glitch reservoir capacitors are removed.

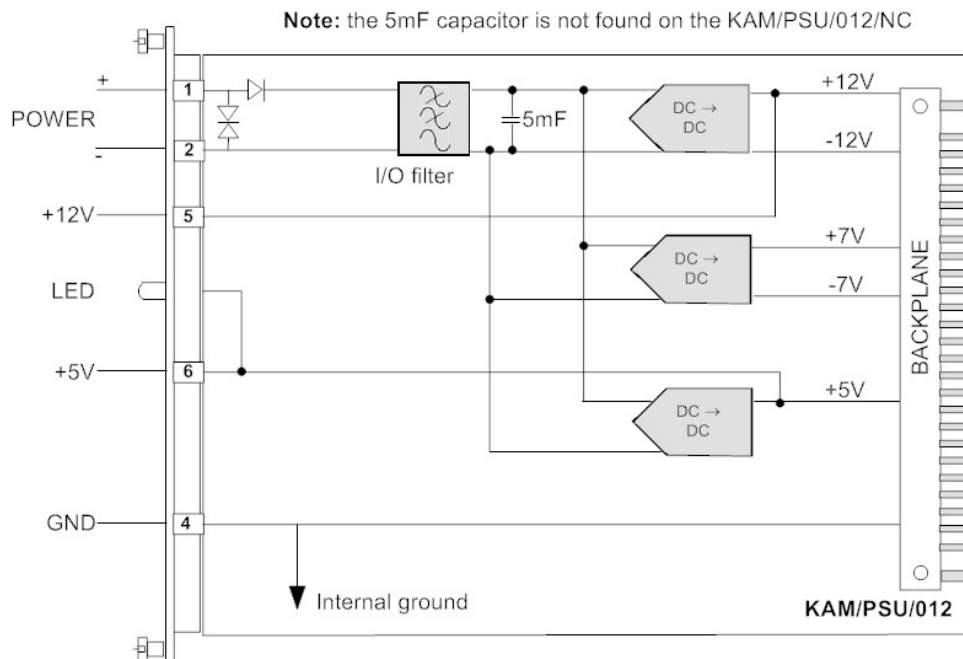


Figure 1: KAM/PSU/012 power supply

## Specifications

All values provided in the following specification tables are valid within the operating temperature range specified under “Environmental ratings” in the “General specifications” table.

TABLE 1		General specifications				
PARAMETER	MIN.	TYP.	MAX.	UNITS	CONDITION/DETAILS	
Slots	-	-	2	-	Occupies PSU slots at opposites ends of chassis.	
Mass						
	-	538	-	g		
	-	1.18	-	oz	Design metric is grams.	
Height above chassis					For recommended clearance requirements see the <i>CON/PSU/007/FL/100</i> data sheet.	
bare connector	-	-	10	mm		
bare connector	-	-	0.39	in.	Design metric is millimeters.	
Environmental ratings					See <i>Environmental Qualification Handbook</i> .	
operating temperature	-40	-	85	°C	Chassis base/side plate temperature.	
storage temperature	-55	-	105	°C		

**NOTE:** The KAM/PSU/012 is compliant with MIL-STD-704D and MIL-STD-704F input and transient requirements.

TABLE 2		Electrical specifications				
PARAMETER	MIN.	TYP.	MAX.	UNITS	CONDITION/DETAILS	
Input range	18	28	40	V	4.5A max. therefore 81W at 18V supply. The chassis operates with a supply voltage in the range of 18 to 40VDC.	
Reverse polarity protection	-40	-	-	V		
Current available					Particular combinations of chassis and Acra KAM-500 modules may have power or current limitations. For details, see <i>TEC/NOT/016 - Power dissipation</i> , <i>TEC/NOT/049 - Power estimation</i> , and the relevant chassis data sheet.	
+5V	-	-	5,000	mA	Short circuit protection; indefinite to GND.	
+7V	-	-	2,000	mA	Short circuit protection; indefinite to GND.	
-7V	-	-	2,000	mA	Short circuit protection; indefinite to GND.	
+12V	-	-	1,250	mA	Short circuit protection; indefinite to GND.	
-12V	-	-	1,250	mA	Short circuit protection; indefinite to GND.	
Glitch immunity	-	24	-	ms	For the KAM/PSU/012 and KAM/PSU/012/AG2, each 5mF capacitor has a 10% tolerance. (See “Getting the most from the KAM/PSU/012” on page 3.)	
Efficiency	-	75	-	%	At full load.	
Physical						
connector	-	-	-	-		
placement	-	-	-	-	Not removable.	
Peak inrush current	-	38	-	A	Typically 80µS: Tr = 20µS; Tf = 60µS.	

## Getting the most from the KAM/PSU/012

An Acra KAM-500 chassis with a KAM/PSU/012 is operational with a supply voltage in the range of 18 to 40VDC. The KAM/PSU/012 and KAM/PSU/012/AG2 incorporate a 5mF capacitor backup, which provides a glitch immunity of typically 24ms, dropping from 28V at 40W. The power glitch ride-through time depends on the load as shown in the following figure.

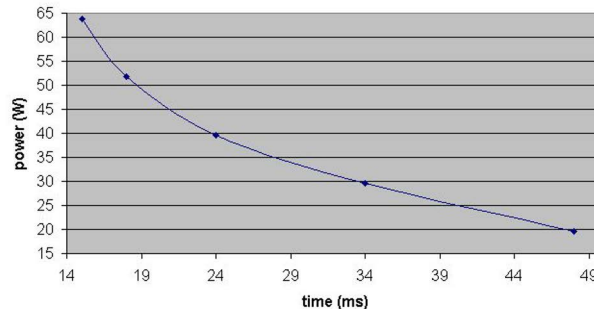


Figure 2: Glitch immunity versus load

### +12V connector limitation

The +12V from the KAM/PSU/012 connector is only meant to power sensors with a regulated power supply. Because this 12V is coming directly from the backplane, it is exposed to outside noise, which can cause unwanted interference. This +12V pin is also not protected.

## Connector pinout of the KAM/PSU/012 and KAM/PSU/012/NC

PIN	NAME	DESCRIPTION	COMMENT
1	POWER+	Nominal 28V supply	Isolated internally; aircraft power
2	POWER-	Return for nominal 28V	Isolated internally; aircraft power
3	CHASSIS	Chassis	
4	GND	Internal ground	
5	+12V	Internal +12V out	Current depends on internal loading
6	+5V	Internal +5V out	Current depends on internal loading

## Connector pinout of KAM/PSU/012/AG2

PIN	NAME	SEE SPECIFICATIONS TABLE	COMMENT
1	POWER+	Nominal 28V supply	Isolated internally; aircraft power
2	POWER-	Return for nominal 28V	Isolated internally; aircraft power
3	-12V	Internal -12V	
4	GND	Internal ground	
5	+12V	Internal +12V	Current depends on internal loading
6	+5V	Internal +5V	Current depends on internal loading

## Ordering information

PART NUMBER	DESCRIPTION
KAM/PSU/012/B	+5V, $\pm 7V$ and $\pm 12V$ power supply unit for Acra KAM-500 chassis with 6-way connector
KAM/PSU/012/B/AG2	+5V, $\pm 7V$ and $\pm 12V$ power supply unit for KAM-500 chassis with AG2 option
KAM/PSU/012/B/NC	+5V, $\pm 7V$ , and $\pm 12V$ power supply unit for KAM-500 chassis with NC option

By default, the standard mating connector, CON/PSU/007/FL/100, is included with each module in the shipment. Its part number will be added to the Confirmation of Order unless an alternative option is specified (see the *Cables* data sheet). In this data sheet, KAM/PSU/012 refers to all variations listed in “Specifications” on page 2.

## Revision history

REVISION	DIFFERENCES	STATUS
KAM/PSU/012/B	Supplies up to 5A on +5V power line	Recommended for new programs
KAM/PSU/012	First release	Not recommended for new programs

## Related documentation

DOCUMENT	DETAILS
DOC/DBK/001	Acra KAM-500 Databook
DOC/HBK/002	Environmental Qualification Handbook
DOC/MAN/018	KSM-500 Databook
TEC/NOT/016	Power dissipation
TEC/NOT/049	Power estimation