

KAM/PSU/012

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



Key Features

- Supplies +5V, $\pm 7V$ and $\pm 12V$ 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 $\pm 12V$ supply is primarily for analog circuitry, and the $\pm 7V$ 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.

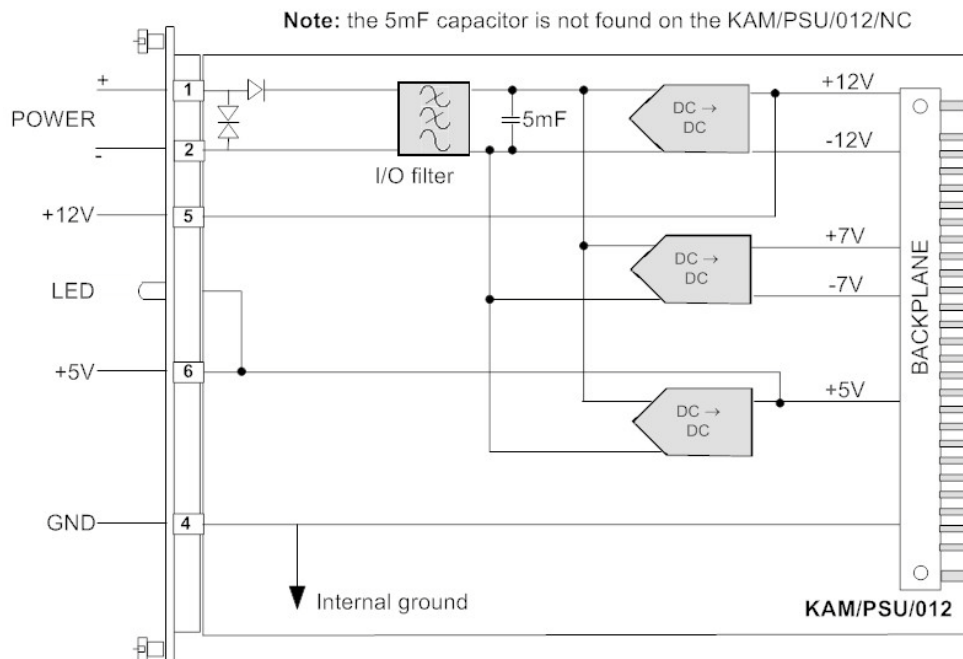


Figure 1: KAM/PSU/012 power supply

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 | |

| 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.

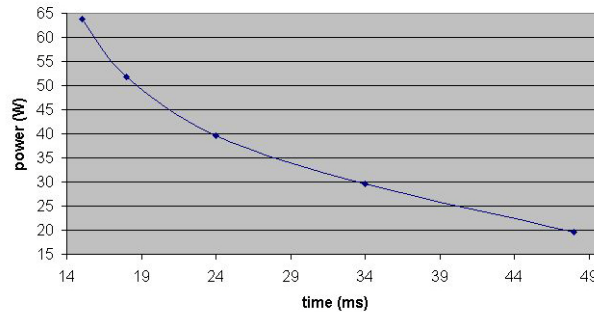


Figure 2: Glitch immunity versus load

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 |