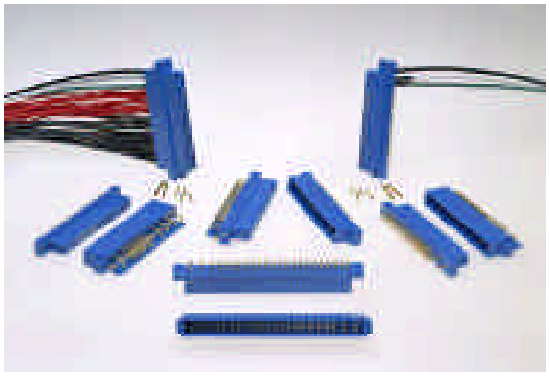
POSITRONIC INDUSTRIES

# PICMG 2.11 Specification



## INTRODUCTION

As computing systems continue to grow, so does the demand for the power to drive them. This increasing demand is because of the availability of more computing capability in a given space. Also, reductions in the voltages that are required to drive modern electronic devices have caused a shift in the power mix. These factors will continue to contribute to the need for higher density power supplies into the future. This is particularly true when the system design calls for power supplies to be placed into the subrack, which serves to displace system features.

## POWER SUPPLY CHALLENGES

Higher power density is only one of the challenges that power supply manufacturers face. Other features add to the complexity of power supply design, such as:

- Hot-swap capability
- Communication with the host system
- Redundancy
- Regulation of bus voltages
- Cooling considerations

In addition, reduced price, greater availability and time-tested quality are important to power supply users. Although individual manufacturers shoulder much of the responsibility for price, availability, and quality, power supply standardization can aid in this effort.

In April of 1998, the PCI Industrial Computer Manufacturers Group (PICMG) 2.11 Power Interface Specification Subcommittee was charged with the task of developing a new specification. The subcommittee members represented a consortium of industry experts from more than 20 companies. The goal of the subcommittee was to develop a power supply specification that would provide for the power needs and feature requirements of today's systems, while allowing for a growth path into the future.

## SPECIFICATION FEATURES

On October 1, 1999, the PICMG 2.11 R1.0 Power Interface Specification was adopted. This specification details in-rack power supplies for CompactPCI applications and includes these fetures:

- Standardized form factor and connector interface, which details placement of power supplies within the subrack along with the location of the power interface
- Multivoltage output of up to 600W within a single connector (See fig. 1)
- Standardized electrical interface (See table 1)
- Alternating Current (AC) or direct current (DC) power input
- Keying for input and output power configurations
- Regulation of bus voltages to ensure compliance with CompactPCI requirements
- Hot-swap capability
- Communication with the host system
- 3U and 6U options
- Compliance to common international safety requirements

In addition, the PICMG 2.11 specification provides some guidance for common performance requirements that may be applicable in certain situations, such as when network equipment building system (NEBS) requirements are a consideration in telecommunications applications. Other requirements can be included as the need arises.

Although the PICMG 2.11 specification creates certain mechanical and electrical parameters for pluggable power supplies, the innovation of individual manufacturers is preserved. This encourages solutions for a variety of general system requirements at the best performance-to-cost ratios for a specific system. The specification allows for independent design regarding:

- Power factor correction
- Filtering
- Current sharing
- Cooling characteristics

## POWER CONNECTOR INTERFACE

The PICMG 2.11 specification details a 47-contact power connector with three input, 24 signal and 20 output contacts (See fig. 1). The connector is 93.82 mm (3.7") long and 12.54 mm (0.5") high. It was specifically designed so that a single connector could be used in 3U and 6U power supplies that are capable of delivering up to 600W. Table 2 shows certain characteristics of the PICMG 2.11 power connector.

## CONCLUSION

As the popularity of PICMG 2.11 grows, the interface connector and contact assignments are being used in applications for CompactPCI and other architectures that are outside the scope of PICMG 2.11. Visit www.picmg.com for more information about 2.11 and CompactPCI.

| Table 1. PICMG 2.11 power connector contacts assignments | | | |
|---|---|---|---|
| **Pin number*** | **Staging Number** | **Signal Name** | **Description** |
| 1 through 4 | M | V1 | V1 output |
| 5 through 12 | M | RTN | V1 and V2 return |
| 13 through 18 | M | V2 | V2 output |
| 19 | M | RTN | V3 return |
| 20 | M | V3 | V3 output |
| 21 | M | V4 | V4 output |
| 22 | M | RTN | Signal return |
| 23 | M | RESERVED | Reserved |
| 24 | M | RTN | V4 return |
| 25 | M | GA0 | Geographic address bit 0 |
| 26 | M | RESERVED | Reserved |
| 27 | S | EN# | Enable |
| 28 | M | GA1 | Geographic address bit 1 |
| 29 | M | V!ADJ | V1 adjust |
| 30 | M | V1 SENSE | V! remote sense |
| 31 | M | GA2 | Geographic address bit 2 |
| 32 | M | V2ADJ | V2 adjust |
| 33 | M | V2 SENSE | V2 remote sense |
| 34 | M | S RTN | Sense return |
| 35 | M | V1 SHARE | V1 current share |
| 36 | M | V3 SENSE | V3 remote sense |
| 37 | M | IPMB_SCL** | Reserved for system management bus |
| 38 | M | DEG# | Degrade signal |
| 39 | M | INH# | Inhibit |
| 40 | M | IPMB_SDA** | Reserved for system management bus |
| 41 | M | V2 SHARE | V2 current share |
| 42 | M | FAL# | Fail signal |
| 43 | M | IPMB_PWR** | Reserved for system management bus |
| 44 | M | V3 SHARE | V3 current share |
| 45 | L | CGND | Chassis ground (safety ground) |
| 46 | M | ACN/+DC IN | AC input - neutral; +DC Input |
| 47 | M | ACL/-DC IN | AC input - line; -DC input |

*Pin numbers are of the female backplane connector; L = long-length pins (first mate/ last break); M = Medium-length pins; S = short-length pins (last mate/first break)
**to be defined by the PICMG 2.9 Secondary System Management Bus

| Table 2. PICMG 2.11 power connector characteristics |
|---|
| Number of output contacts = 20 |
| UL rating of output contacts, all contacts under load = 28 A each |
| Total output current = 560 A (20 contacts x 28 A) |
| Functional output current = 280 A |
| (This value assumes that output contacts must be divided equally between |
| The functional output current is one-half of the total current |
| x,y envelope dimensions = 93.82 mm (3.7 inches) x 12.54 mm (0.5 inches) |