



Fermilab/AD/TEV  
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Version 2.0

## **Tevatron BPM Consolidated Crate Specification**

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### **Introduction**

The following is to be considered the minimum specification to be applied to each "BPM Project VME Crate". This is a controlled document.

### **Features**

The following is to be considered the minimum specification to be applied to each "BPM Project VME Crate" :

Each is a 19" rack mount VME64x powered enclosure with :

1. 2" (+/-1") recessed 21-slot card cage (see 02 below),  
6U by 160 mm front vertical orientation card cage with top and bottom front inject/eject extrusions.
2. 21-Slot monolithic standard VME64x J1/J2 (no J0) backplane with
  - a. 5 row, 160 pin DIN connectors with 5 mm pin lengths with no rear P1 shrouds in all J1 slots,
  - b. 5 row, 160 pin DIN connectors with 17 mm pin lengths with rear P2 shrouds in all J2 slots,
  - c. On-Board Termination, automatic Bus Grant/IACK jumpering.
  - d. Install top and bottom transition card guides mating with the rear of the backplane slots.
3. A full 21-slot width backplane stiffener.
4. Full 21-Slot width +3.3V/+5V/Ground backplane power busbar set.

5. Real-time monitoring and remote control (over ethernet) of system power, system cooling and automatic individual fan speed control in the event of a fan failure. To control system power, the status monitor/control system must be independently powered. Must have password protected user programming of default alarms and limits parameters through the ethernet port.
6. A front panel chassis mounted alpha-numeric LED display (or better) must be provided as a local visual system status monitor interface.
7. Must use DC fans with tachometer outputs, arranged to provide a bottom front input to top rear output air path as follows:
  - a. Solid bottom and top chassis panels allow placement of immediately adjacent hardware without affecting airflow patterns.
  - b. Fan(s) suck ambient room air in thru a filter near the bottom of the front panel of the chassis.
  - c. Fan(s) push air up, bottom to top, across the inserted modules in a fairly laminar airflow pattern.
  - d. (Other) Fan(s) exhaust air from the top of the back panel of the chassis, achieving a push/pull effect, bottom/front to top/rear.
  - e. Each fan speed is monitored and controlled by a system status monitor (see 05 above).
8. At least three Temperature Sensors. Given the minimum set of three, they shall be placed as follows:
  - a. Two mounted in the frame above the card cage, and
  - b. One mounted in the exhaust air path,all connected to, and report through the system status monitor (see 05 above).
9. Autoranging Power Supply, providing at least 60A of +3.3V, 120A of +5V, 10A of +12V, and 4A of -12V, powered by 110VAC.
10. Front panel mounted Main Power and System Reset switches, with front panel main power ON indicator LED.
11. Chassis mounted metal carrying handles.
12. Fully assembled, wired, tested, with power cord and ready to use.

## **Quantity**

The total number of crates to ordered is 31.

## Delivery Schedule

Two crates shall be delivered first for approval, the rest within 4 weeks of approval.

## Acceptance Criteria

Delivered crates must meet manufacturer minimum specifications. Incoming acceptance testing at Fermilab will be performed by the PREP Equipment Pool staff.

## References

## Change Log

Version	Issue Date	Concurrence	Description of Change
1.0	Jan 27, 2004	SW	Original
1.1	Mar 3, 2004	RGF	Fixed Outline. Shortened backplane to 12 slots in (2), (3) & (4). Added top & bottom transition card guides to (2.f). Propose incoming crates tested by PREP.
2.0	Mar 22, 2004	RGF	Lengthened backplane to full 21 slots throughout.

## **Concurrence**

The following persons concur with this document.

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Steve Wolbers, Project Manager (date)

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Bob Webber, Deputy Project Manager (date)

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Jim Steimel, Technical Coordinator (date)