Data Sheet
Off-Line Front Ends
Single or Three Phase
Strappable

Features

- 250 W, 500 W, 750 W, 115/230 Vac strappable single-phase
- 1.5, 3, 5 kW, 208 Vac three-phase
- 20 – 50 mS holdup
- UL, CSA, TÜV, VDE, BABT
- FCC/VDE Class B (single-phase)
- FCC/VDE Class A (three-phase)
- BUS OK, AC OK, DC OK status signal
- 96 – 98% efficiency
- PC and chassis mount
- VI-26X, VI-J6X series compatible
- CE Marked

Product Highlights

From AC line in, to highly regulated DC out, Vicor offers the total design solution through a complete family of off-line front end and DC-DC modular power components.

Vicor’s family of off-line front ends interface VI-260 and VI-J60 series DC-DC converters, and MegaMods, to 100, 115, 230 or 240 Vac single-phase and 208 Vac three-phase mains. In addition, front ends provide conducted EMI/RFI filtering to FCC/VDE (Class B single-phase, Class A three-phase), transient surge protection, active inrush limiting, a BUS OK status output (suitable for controlling Vicor DC-DC converter modules via their Gate In pin) and an AC OK status output for system use in the event of loss of the AC line.

Operating Temperature

(Free Convection)
C: 0°C to +50°C (750 W: +45°C)
I: -20°C to +50°C (750 W: +45°C)

Storage Temperature
-40°C to +80°C
THERMAL CONSIDERATIONS

Free Convection Derating
- 250 W: Derate output power linearly at 7.2 W/˚C over 50˚C.
- 500 W: Derate output power linearly at 14.3 W/˚C over 50˚C.
- 750 W: Derate output power linearly at 18.8 W/˚C over 45˚C.

Forced Convection
The curves below represent worst case data for chassis mounted (enclosed) front ends, i.e., low line, full load. System conditions such as higher line voltage, lighter load or PC mount versions of the front ends will increase reliability if the data here is used as the nominal design criteria.

The sigmoid shape of the curves at low air flows is due to the chassis mount cover restricting the airflow to the inboard components until an airflow of approximately 200 LFM is achieved. Thereafter, the velocity of air rushing over the cover causes air to be pulled in through the side perforations, causing a rapid improvement of cooling of internal components.

Max. Amb. Temp. vs. Airflow (LFM) Over Cover
(Full Load, 90 Vac In, Chassis Mount)

Front End Selection Chart

<table>
<thead>
<tr>
<th>Model</th>
<th>PC Mounting</th>
<th>Output Power (Watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Phase</td>
<td>Chassis</td>
<td>250</td>
</tr>
<tr>
<td>VI-FPE6-CUX</td>
<td>■■</td>
<td></td>
</tr>
<tr>
<td>VI-FKE6-CUX</td>
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<tr>
<td>VI-FPE6-CQX</td>
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<td>VI-FKE6-CQX</td>
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<tr>
<td>VI-FPE6-CMX</td>
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<tr>
<td>VI-FKE6-CMX</td>
<td>■■</td>
<td></td>
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<tr>
<td>Three Phase</td>
<td>1,500</td>
<td>3,000</td>
</tr>
<tr>
<td>VI-TKY6-CHX</td>
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<tr>
<td>VI-TKY6-CEX</td>
<td>■■</td>
<td></td>
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<tr>
<td>VI-TRY6-CCX</td>
<td>■■</td>
<td></td>
</tr>
</tbody>
</table>

End of Life - Not Recommended for New Designs
**Single Phase Front End Connection Diagram**

**INPUT**
- Earth Ground
- A.C. Mains
- CONNECT ST1 TO ST2 FOR 115 Vac OPEN FOR 230 Vac

**OUTPUT**
- GND
- AC-OK+
- AC-OK-
- BUS-OK
- VDC–
- VDC+

(500 W, 750 W front end only)

**FUSING INFORMATION**

FOR SAFE OPERATION, REPLACE ONLY WITH RECOMMENDED FUSES

- **250 W** — FUSE 1: 6.3 A / 250 V (IEC 5 x 20 mm) BUSSMAN GDB-6.3 OR 7 A / 250 V (3AG 1/4" x 1 1/4") LITTLEFUSE 314-007 OR BUSSMAN MTH-7 OR ABC-7 FUSES 2,3,4,...n: 3 A / 250 V BUSSMAN PC-TRON
- **500 W** — FUSE 1: 12A/250V BUSSMAN ABC-12, LITTLEFUSE 314-012 FUSES 2,3,4,...n: 3 A / 250 V BUSSMAN PC-TRON
- **750 W** — FUSE 1: 15 A / 250 V BUSSMAN ABC-15, LITTLEFUSE 314-015 FUSES 2,3,4,...n: 3 A / 250 V BUSSMAN PC-TRON

**Notes:**

1. If input power is applied with the DC output BUS shorted, the active inrush circuitry will usually prevent Fuse 1 from blowing. Remove power, clear shorts, wait a few minutes and reapply input power.

2. If unit is strapped for 115V operation and 230V is applied, the internal overvoltage crowbar will clear Fuse 1. Replace fuse, strap correctly and reapply power.

3. To control EMI/RFI most effectively, the return path to earth ground from either the front end or modules should be made via a good RF ground. User must assure proper grounding for safe operation.

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**End of Life - Not Recommended for New Designs**
Three Phase Front End Connection Diagram (1.5 kW, 3.0 kW only)

CAUTION: External capacitors connected to +Vdc and –Vdc will significantly increase inrush current. Also these capacitors are subject to AC ripple voltages of approximately 40 V at full load.

[a] To control EMC most effectively, the return path to ground from either the front-end or modules should be made via a good RF ground (i.e., a braided wire) if possible.

Three Phase Front End Connection Diagram (5.0 kW only)

CAUTION: External capacitors connected to +Vdc and –Vdc will significantly increase inrush current. Also these capacitors are subject to AC ripple voltages of approximately 40 V at full load.

[a] To control EMC most effectively, the return path to ground from either the front-end or modules should be made via a good RF ground (i.e., a braided wire) if possible.

NOTE: x,y capacitors not shown for clarity
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