75 Volt Intelligent Power Center

Amazon IPC-3 and IPC-5 power supplies deliver stiff, responsive 75 VDC power to Eclipse, Meridian, and ClearPath servo systems. These DSP-based supplies feature tight power regulation and high peak output to support high performance motion control. And, with a small footprint and attractive pricing, the IPC saves on space, weight, and machine cost as well.

IPC-3 / IPC-5 Features

- 75 VDC output with tight regulation, even with large peak loads.
- Dual AC input voltage ranges: 95-125VAC; 190-250VAC.
- High peak output relative to continuous rating (2.5x), optimized for servo drive peak demand requirements.
- Rapid output bus discharge upon AC power removal.
- Built-in, automatic regenerated power management.
- Large output capacitance for reduced ripple and increased efficiency.
- Fan mounting holes provided for increased continuous power (IPC-5 only).
- IPC-5 is fully enclosed; IPC-3 is open frame.
- Three year warranty.

Mating Components

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<th>Mating Components</th>
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**Mating Components List**

- **Housing:** Molex/44441-2002
- **Terminals:** Molex/43375-0001
- **Crimp Tool:** Molex/63811-7200
- **Cable:** 14-16AWG, 600V, stranded

- **AC Input Mating Connector**
  - **Housing:** Molex/39-01-2080
  - **Terminals:** Molex/39-00-0039
  - **Crimp Tool:** Molex/63819-0900
  - **Cable:** 18AWG, 300V, stranded

**Note:** No user serviceable parts inside

Install jumper (18AWG min.) when wiring to 95-125VAC
Omit jumper (see page 7 for how to remove jumper) when wiring to 190-250 VAC
Safety and Use Instructions

IMPORTANT: Read this section before attempting to install, apply power to, or operate an IPC power supply. Failure to understand and follow the safety and use information presented in this document could result in property damage, bodily injury or death.

Precautionary Statement
Always follow appropriate safety precautions when installing and using a power supply. Equipment should be designed and utilized to prevent personnel from coming into contact with moving parts and electrical contacts that could potentially cause injury or death. Read all cautions, warnings and notes before attempting to operate or service power supplies and motion control devices. Follow all applicable codes and standards when using this equipment. Failure to apply this equipment as described may impair or neutralize protections built into the product.

General Disclaimer
The User is responsible for determining the suitability of products for their different applications. The User must ensure that Teknic’s products are installed and utilized in accordance with all local, state, federal and private governing bodies and meet all applicable health and safety standards.

Teknic has made all reasonable efforts to accurately present the information in the published documentation and shall not be responsible for any incorrect information which may result from unintentional oversights. Due to continuous product improvements, the product specifications as stated in the documentation are subject to change at any time and without notice. The User is responsible for consulting a representative of Teknic for detailed information and to determine any changes of information in the published documentation.

Should Teknic’s products be used in an application that is safety critical, the User must provide appropriate safety testing of the products, adequate safety devices, guarding, warning notices and machine-specific training to protect the operator from injury.

IPC-3 Special Safety Note
The IPC-3 is an open frame power supply with user-accessible, hazardous voltages present. Improper handling of this device while powered by AC mains may result in electrical shock, burns, or death.

Users of this device, and any equipment or system that incorporates this device, must be protected from exposure to electrical shock through the installation of appropriate shields, access guards, interlocks, warning signs and user manuals that include safe handling practices for open frame power supplies.

IPC-3 Power Supply

General Safety Instructions (all models)
1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Do not use this apparatus near water.
5. Clean only with a dry cloth.
6. Do not block any ventilation openings. Install in accordance with manufacturer’s instructions.
7. Do not install near any heat sources.
8. Protect the power cord and plug from being walked on or pinched particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.
9. Only use attachments and accessories specified by Teknic.
10. Refer all servicing to qualified service personnel.
11. The plug on the power cord is the AC mains disconnect device and must remain readily operable. To completely disconnect this apparatus from the AC mains, disconnect the power supply cord plug from the AC receptacle.
12. This apparatus shall be connected to a mains socket outlet with a protective earthing connection. Equipment may be located above or below this apparatus, but some equipment may generate too much heat and degrade the performance of this apparatus.
13. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, shall be placed on the apparatus.

IPC Use Instructions
To connect your IPC power supply to a load:
- Disconnect IPC from AC mains power.
- Connect DC power cable from IPC to the load.
- Apply AC power to IPC.

To disconnect your IPC Power Supply from a load
- Turn off (unplug) IPC.
- Disconnect DC power cable from the load.

Additional Use Notes
- Do not wire multiple IPCs together; they are not designed to operate in series or in parallel configurations.
- Always use recommended wire gauge (or larger) for all cables connected to an IPC power supply.
- Understand and follow all safety markings and warnings printed on the IPC and described within this document.
LED Codes

<table>
<thead>
<tr>
<th>Regen Indicator (Green LED)</th>
<th>IPC State</th>
<th>Description</th>
<th>LED Blink Freq. / Duty Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid Blink (16 blinks/second)</td>
<td>On (normal)</td>
<td><strong>No action required.</strong> The power supply is working properly. No significant regen detected.</td>
<td>16 Hz (DC = 50% on)</td>
</tr>
<tr>
<td>LED intermittently turns on solid but returns to rapid blink.</td>
<td>Regenerated energy was detected.</td>
<td><strong>No action required.</strong> The power supply is working properly. LED turns on solid when DC bus voltage rises above nominal while staying below the Regen Control Threshold.</td>
<td>INTERMITTENTLY ON SOLID</td>
</tr>
<tr>
<td>Blink (3 blinks/second)</td>
<td>Regen control circuit was activated.</td>
<td><strong>No action required.</strong> The power supply is working properly. This latching signal indicates that the bus voltage has gone over the Regen Control Threshold and activated the internal regen control circuit. <strong>Note:</strong> This blink code will persist until AC power is cycled.</td>
<td>3 Hz (DC = 50% on)</td>
</tr>
<tr>
<td>Strobe (One short blink every two seconds)</td>
<td>Regen capacity was exceeded.</td>
<td><strong>Action required.</strong> This latching signal indicates that the power supply’s ability to absorb regenerated energy was exceeded at least once since AC power was applied. When this occurs, the regen control circuit is automatically disabled as a protective measure, <strong>but the DC output is still on.</strong> Solution: Upgrade to higher regen capacity supply. <strong>Note:</strong> This blink code will persist until AC power is cycled.</td>
<td>0.5 Hz (DC = 2.5% on)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information LED (Yellow LED)</th>
<th>IPC State</th>
<th>Description</th>
<th>LED Blink Freq. / Duty Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Momentarily on</td>
<td>Mode transition</td>
<td><strong>No action required.</strong> The power supply is working properly. The LED will pulse on momentarily when the internal regulator changes operating modes. This may be accompanied by an audible &quot;click&quot; of the internal relay.</td>
<td>N/A</td>
</tr>
<tr>
<td>LED blinks intermittently during operation</td>
<td>Temporary overload occurred</td>
<td>A transient voltage event occurred (but was below the IPC’s shutdown threshold). Action may be required to prevent future shutdowns.</td>
<td>N/A</td>
</tr>
<tr>
<td>LED on solid</td>
<td>Shutdown</td>
<td>A critical voltage or temperature overload occurred. IPC is in protective shutdown state. Remove power until LED turns off and unit has sufficiently cooled. Reapply power.</td>
<td>ON SOLID</td>
</tr>
</tbody>
</table>

IPC Accessory Cables

The accessories listed below are available at www.teknic.com.

- **Teknic Part # IPC35-CABLE110**
  - **Description:** AC line cord (110V) for Amazon IPC-3 and IPC-5 power supplies. Includes NEMA 5-15P to Minifit 8 pin connector, 78" in length (nominal).

- **Teknic Part # PC-SBR-72**
  - **Description:** Power cable, Sabre to Sabre. From IPC to Eclipse or Meridian 4xx/5xx series drives. 72" in length (nominal).

- **Teknic Part # CPM-CABLE-PWR-MS120**
  - **Description:** Power cable, Sabre to Molex Minifit Jr. 4-position plug. From IPC to ClearPath Motor. 120" in length (nominal).

Third-party Accessories

**Phoenix Contact part # UTA-89 (aka part # 2853970)**

Mounting Hole Dimensions

DIN Rail Adapter (optional, available from third-party)

NOTE: The IPC casting includes holes for mounting the Phoenix Contact UTA-89 DIN rail adapter. If you use this DIN rail adapter, and the DIN rail itself is screwed to a solid wall or cabinet, you will have to install standoffs as shown below to provide sufficient clearance for mounting.

Use three mounting screws and standoffs in indicated positions.

Standoffs, unthreaded (qty. 3)
Metric: Length 10mm, inner diameter >3mm
English: Length 3/8", inner diameter >3mm

Screws for use with standoffs (qty. 3)
Metric: M3 x 0.5, Class 6H, length: 16-18mm

Phoenix PN UTA-89 (also PN 2853970) DIN Rail Adapter

DIN Rail Clip

For Direct Mount

Dia. 3.45mm [0.136”]
Qty. 3, 8-32 UNC-2B
Max. penetration into case = 0.25 in.

For DIN Rail Clip*

Dia. 2.50mm [0.098”]
Qty. 3, M3 x 0.5 - 6H
Max. penetration into case = 5.5mm

A size holes for use with Phoenix UTA-89 DIN Rail Adapter. (item not sold by Teknic)
Mounting Orientation

- Mount IPC in one of the orientations shown below. Vertical mounting improves air flow and is preferable.
- Allow minimum 2” clearance above IPC, and at least 1” at sides and bottom.
- Do not mount IPC where ambient temperature exceeds 40ºC.

Fan Mounting *(IPC-5 only)*

The IPC-5 can be optionally equipped with a standard 80 mm or 40 mm case fan, to get up to 40% more continuous power output. If you intend to use a fan follow, these guidelines:

- Use non-conductive hardware to secure fan to case, such as rubber screws, rubber fan "push pins" or similar by manufacturers such as Nexus and Lamptron.
- Use "open corner" (open frame) style fans for easier mounting.
- Select a fan with medium to high CFM (cubic feet per minute) rating.
- Install fans to exhaust air (draw air out) from case.

### Top Mount Fan Mechanical Dimensions

**UNITS = mm**

- 40mm fan
  - 32
  - 13.46
  - 16
  - 32
  - 4x Ø 4

**Mounting hole pattern for 40 mm top-mount fan**

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### Side Mount Fan Mechanical Dimensions

**UNITS = mm**

- 80mm fan
  - 71.5
  - 12.6
  - 71.5
  - 3x Ø 4mm

**Mounting hole pattern for 80mm side-mount fan**

**NOTE: DO NOT DRILL INTO CASE.**
Use only the (3) mounting holes indicated to attach fan to case.
## Specifications

<table>
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<tr>
<th><strong>Power</strong></th>
<th><strong>IPC-3</strong></th>
<th><strong>IPC-5</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage (230 VAC nominal range)</td>
<td>190-250VAC, single phase</td>
<td></td>
</tr>
<tr>
<td>Input Voltage (115 VAC nominal range)</td>
<td>108-125VAC (start under load at ambient temps 0-15°C)</td>
<td>95-125VAC (load independent at ambient temps 15-40°C)</td>
</tr>
<tr>
<td>Input Frequency Range</td>
<td>50-60Hz</td>
<td></td>
</tr>
<tr>
<td>Nominal Output Voltage</td>
<td>75VDC ± 0.5V</td>
<td></td>
</tr>
<tr>
<td>Continuous RMS Power Output at 115VAC or 230VAC in; convection cooled</td>
<td>225W RMS 0-40°C ambient</td>
<td>350W RMS 0-40°C ambient</td>
</tr>
<tr>
<td>Continuous RMS Power Output at 115VAC or 230VAC in; fan cooled</td>
<td>N/A</td>
<td>500W RMS 0-40°C ambient</td>
</tr>
<tr>
<td>Peak Power Capability at 115VAC or 230VAC in</td>
<td>600W for 3 sec. (single pulse load at 40°C)</td>
<td></td>
</tr>
<tr>
<td>Peak In-rush Current</td>
<td>&lt; 65A</td>
<td></td>
</tr>
<tr>
<td>Regenerated Energy / Power Absorption</td>
<td>12.7 joules / 13.3 watts RMS at 40°C</td>
<td>19.1 joules / 20 watts RMS at 40°C</td>
</tr>
<tr>
<td>Capacitive Energy Storage</td>
<td>53 joules at 75VDC</td>
<td></td>
</tr>
<tr>
<td>Allowable (user added) output capacitance</td>
<td>10,000 uF maximum</td>
<td></td>
</tr>
<tr>
<td>Input Leakage Current</td>
<td>&lt; 500uA @ 250VAC/60Hz</td>
<td></td>
</tr>
<tr>
<td>Ripple</td>
<td>&lt; 500mV P-P, zero to full load</td>
<td></td>
</tr>
<tr>
<td>Min. equivalent startup load</td>
<td>16 ohms @ AC input 105/210V min.</td>
<td></td>
</tr>
<tr>
<td>Output Resistance</td>
<td>~300 milliohms</td>
<td></td>
</tr>
</tbody>
</table>

### Physical

| Weight | 2.11 lbs. | 2.25 lbs. |
| Dimensions | 181mm x 132mm x 57.3mm | 183mm x 132mm x 57.3mm |
| Finger Safe | No. User must be protected from shock hazard. | Yes |
| Enclosure | None | Perforated, epoxy coated aluminum |

### Operating Environment

| Temperature Range | 0-40°C | |
| Humidity | 10% - 90% (non-condensing) | |
| Pollution Level | 2 | |
| Acoustic Noise @ 1 distance = meter | <50 dBA (variable, dependent on load and AC line) | |

### Certifications/Compliance

| Safety | UL-508C, EN61010 | |
| RF Emissions | Meets EN55011/22 Class A requirements when used with AC line filter part number: EPCOS B84112G0000B110. | |
| RoHS | Compliant | |

### Protective Features

| Over-Voltage Protection | Halts power delivery until voltage returns to specified output voltage | |
| Over-Current Protection | Hiccup mode with auto-recovery | |
| Output Short-Circuit Protection | Hiccup mode with auto-recovery | |
| Thermal Overload | Halts power delivery until power removal/reapplication | |
| Output bus dump load control | During Regeneration: Initiated at 92VDC, off at 88VDC; At power-off: Initiated within 200mS of AC power removal, off when output is below ~12VDC. | |
Usage Note: How to Modify the IPC35-CABLE110 for use with 190-250VAC

Teknic AC power cable for the IPC-3 and IPC-5 power supply (part number IPC35-CABLE110) is natively designed for use with a standard “single-phase” AC 110VAC nominal power source (think a typical US household convenience outlet). If you plan to power your IPC-3 or IPC-5 with 220VAC nominal power, you must modify this cable as shown below.

**DO NOT MODIFY THIS CABLE** If you intend to use it with 110-120VAC mains power.

Follow this procedure *only* if you intend to use 190-250VAC mains power.

1. Remove this jumper if supply is to be powered by 190-250 VAC mains power.

2. Cut off standard 110VAC plug and replace with a properly rated, 190-250VAC grounded plug.

How to remove or cut jumper wire (for use with 190-250 VAC only)

**NOTE:** Disconnect cable from AC before modifying.

**Preferred Method**
Remove terminals with Molex extraction tool.

**Alternative Method**
Cut wire and insulate with heatshrink or tape.

*Note:* Exposed leads are a shock hazard.
Usage Note: Line Filter for CE Emissions Compliance (optional)

ClearPath conducted and radiated emissions—even with no additional filtering—are unlikely to disturb other equipment, so a line filter is not necessary for most installations. However, for users seeking CE certification for their machine, Teknic recommends the line filter shown below (EPCOS part# B84112G0000B110).

AC Line Filter Installation

Recommended Filter
Mfg: EPCOS
Part#: B84112G0000B110

*Directly connect the body of the EPCOS filter to a large, continuous metal RF ground plane such as the machine chassis.

*The filter (and all other system components) should be mounted to an area of exposed bare metal to provide the best conductivity. Powder coated surfaces do not provide good electrical connection.

*Only use electrically conductive mounting hardware.

*Incoming AC Power and Protective Earth (PE) conductor

*Minimize the distance between the filter and the IPC-3/5. Keep the connections as short as possible for best performance. If connections must be greater than 12" long, consider using shielded cable.

*A representative system was proven to comply with EN55011 class A conducted emissions standards.