

24V Power Supply Module (NPB-PWR)

INSTALL SHEET

This document covers the mounting and wiring of the 24V Power Supply Module for Tridium® JACE® controllers, including models T-200/300E/600/600E (JACE 2/3E/6/6E) and T-700 (JACE 7). You can also use the module to power remote I/O modules (T-IO-16-485) that are RS485-wired to any of the controllers above, or to a JACE-8000 controller.

Table 1 24V Power Supply Module model / description.

Model / Description	Notes
NPB-PWR 24 Vac or 24 Vdc input, 15Vdc output, 30W power supply. Intended for mounting on 35mm DIN rail.	Older versions of this NPB-PWR module have only the 20-position output connector on the left side. This version has an <i>additional</i> 6-position output connector on the right side. See Figure 1 . Note installation uses only <i>one side's</i> power output connector—either the <i>left side</i> or the <i>right side</i> . The connector on the other side of the module is <i>unused</i> .

Refer to the specific *Mounting and Wiring Guide* for each of the products mentioned above for complete mounting and wiring details.

Included in this Package

Included in this package you should find the following items:

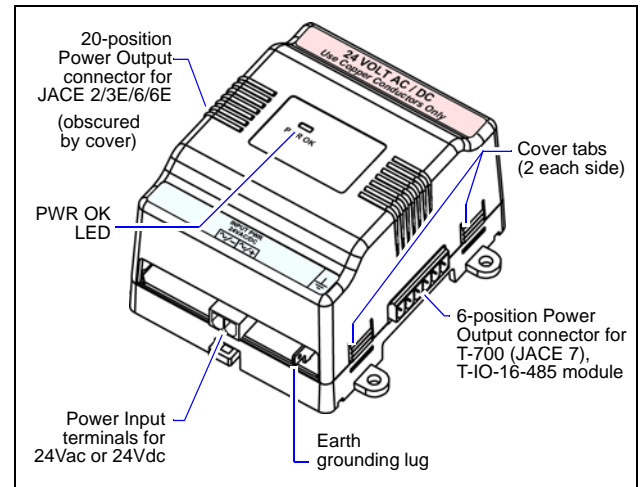
- The power supply module, with a 2-position power input connector, and grounding wire with quick-disconnect 0.187" female connector.
- This document, *24V Power Supply Module (NPB-PWR) Install Sheet*, Document 11840 Rev 2.0

Material and Tools Required

The following tools and supplies may be required for installation:

- One of the following:
 - UL listed, Class 2, 24Vac transformer, rated at minimum of 15-30VA depending on the load connected to the power supply. If powering a JACE controller, a dedicated transformer is required—meaning, it cannot also power additional equipment.
 - 24Vdc power supply, capable of supplying at least 1A (24W).
- See ["Ground and Input Power,"](#) page 3, for more details.
- DIN rail, type NS35/7.5 (35mm x 7.5mm) and end clips (stop clips), as needed.
 - Small flat-blade screwdriver: for making wiring connections to the 2-position power input terminals.

Figure 1 NPB-PWR power supply module.



Applications

The module is a DIN-mountable, 24Vac or 24Vdc input, power supply to power JACE controllers and/or connected accessory modules. The module furnishes 15Vdc at 30VA maximum, and provides *two* different output connectors:

- Left side:** 20-position connector that mates to the right side of a T-200/300E/600/600E controller (JACE 2/3E/6/6E), or to a T-IO-16 (I/O module) directly attached on that controller's accessory module chain. Along with the controller, up to four T-IO-16 modules can be powered by this 24V Power Supply Module. See ["T-200/300E/600/600E controller usage,"](#) page 2.
- Right side:** 6-position connector that mates either to the left side of a T-700 controller (JACE 7), or to an assembly of one or more remote I/O modules (T-IO-16-485). The I/O modules are RS485-wired back to a JACE controller. See ["T-700 controller usage"](#) and ["T-IO-16-485 module usage,"](#) page 2.

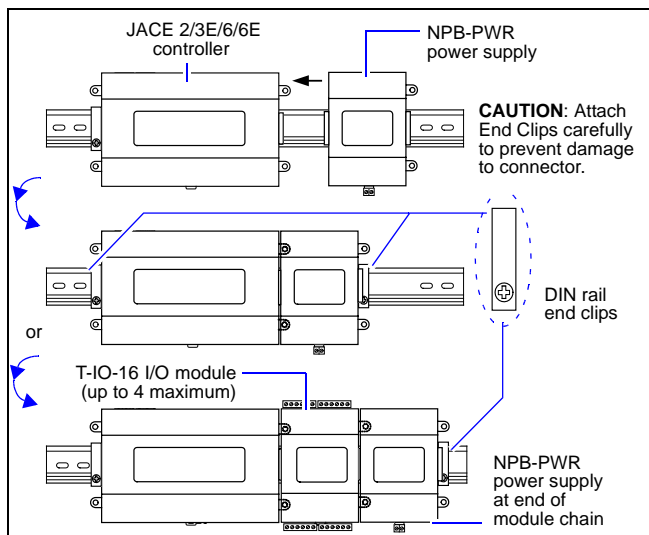


Note Before this latest version 24V Power Supply Module (with the right-side connector), right-side connector applications were unavailable. If needed, you can use this newer 24V Power Supply Module to power remote I/O modules (T-IO-16-485) that are RS485-wired to a JACE-8000 series controller.

T-200/300E/600/600E controller usage

Figure 2 shows the 24V Power Supply Module used to power a T-200/300E/600/600E controller (JACE 2/3E/6/6E), with or without IO (NDIO) modules.

Figure 2 NPB-PWR powering JACE 2/3E/6/6E controller.

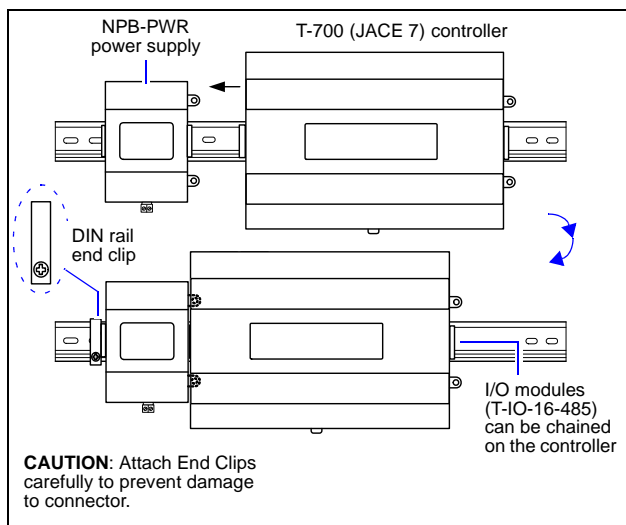


As shown, up to four (4) T-IO-16 modules can be mounted between the JACE 2/3E/6/6E controller and the NPB-PWR power supply module.

T-700 controller usage

Figure 3 shows the 24V Power Supply Module used to power a T-700 (JACE 7) controller.

Figure 3 NPB-PWR powering T-700 controller.

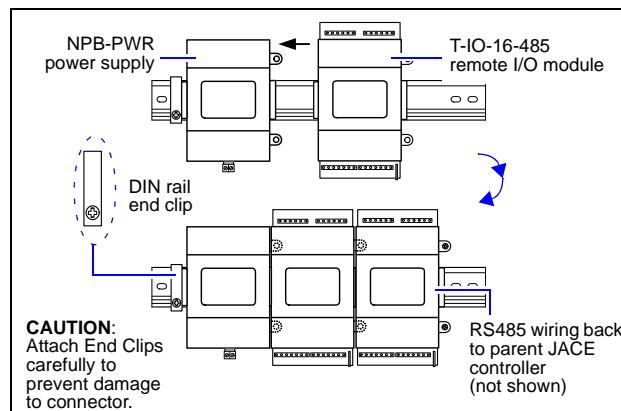


Note that T-IO-16-485 (NRIO) modules can be chained directly onto the other (right) side of the T-700 controller.

T-IO-16-485 module usage

Figure 4 shows the 24V Power Supply Module used to power an assembly of one or more T-IO-16-485 (NRIO) modules. These can be located either in the same enclosure with the JACE controller, or in a different enclosure.

Figure 4 NPB-PWR for remote T-IO-16-485(s).



Note if the JACE is a T-700 controller, other T-IO-16-485 modules can be directly chained onto the controller.



Note

Although T-IO-16-485 modules can be directly powered by a 24V Power Supply Module this way, other power options may provide better operation through power “bumps”. See the “About battery backup operation” section in the T-IO-16-485 *Mounting and Wiring Guide* for more details.

Power supply application notes

- In all applications, DIN rail mounting is the preferred method, to ensure accurate alignment between connectors on the powered devices and the connector used on the 24V Power Supply Module.
- DIN rail “end clips” are recommended to secure chained device assemblies, whenever possible. See [Figure 2](#), [3](#), and [4](#).
- If DIN rail mounting is impractical, you can use screws in mounting tabs on the devices. Refer to the various mounting and wiring guides for mounting tab dimensions for device assemblies.
- Input wiring to the power supply module is the same for all applications covered in this document.

Be sure to connect the included grounding wire to a nearby earth ground, and disconnect power to the AC or DC circuit before wiring power input connections. See the [Warning](#) on page 3.

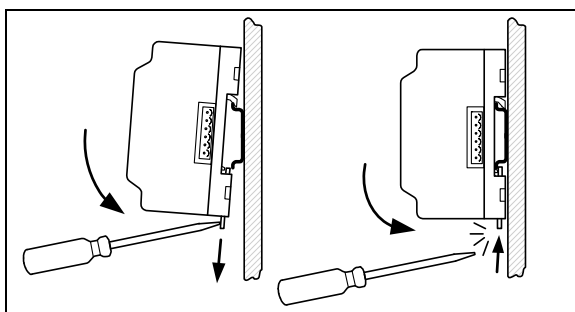
Mounting

Regardless of application, the 24V Power Supply Module mounts on installed 35mm DIN rail as shown below. Orientation can be in any direction.

Procedure 1 Mounting on DIN rail.

1. Position the power module on the rail, tilting to hook DIN rail tabs over one edge of the DIN rail.

Figure 5 Hook top of rail, pry plastic clip downwards.

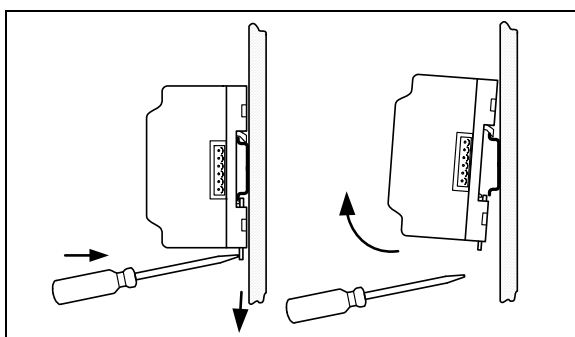


2. Use a screwdriver to pry down the plastic locking clip, then push **down** and **in** on the module. This forces the clip to snap over the other edge of the DIN rail. See the figure above.
3. Slide the module along the DIN rail to connect either
 - its *left-side* 20-position plug into the JACE 2/3E/6/6E (or its last T-IO-16 accessory module), or
 - its *right-side* 6-position socket into the JACE 7 (or a T-IO-16-485 module).
4. Refer to other *Mounting and Wiring Guides* for additional mounting details.



Note To *remove* the module from a DIN rail, use a screwdriver to pry down the plastic locking clip, then pull down and out at the bottom. See [Figure 6](#).

Figure 6 Removing module from DIN rail.



Wiring



Warning A 24Vac or 24Vdc circuit powers the power supply module. Disconnect power to this circuit before installation to prevent electrical shock or equipment damage. Make all connections in accordance with national and local electrical codes. Use copper conductors only. Do not exceed the 30W output capacity of the module by the powered devices.

Ground and Input Power

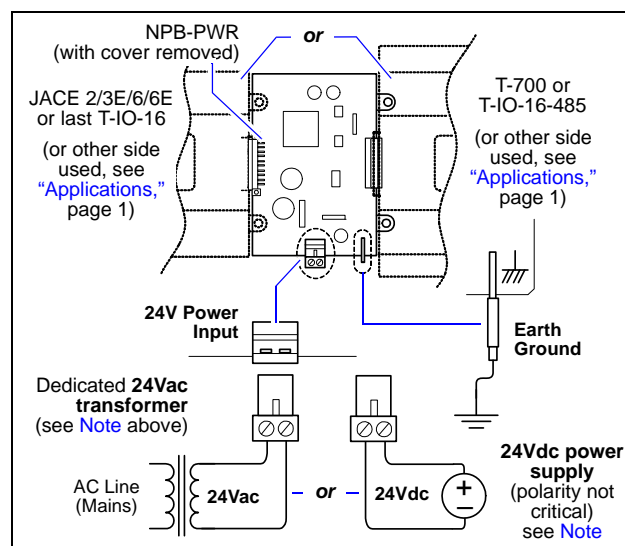
You can use either a Class 2, 24Vac transformer or a 24Vdc power supply as input to the 24V Power Supply Module.



Note If using a transformer and powering a JACE controller, use a dedicated 24V transformer with neither secondary side tied to ground. If using a 24Vdc power supply and powering a JACE, neither 24V supply side (+ or -) should be tied to ground. These measures help ensure proper noise immunity.

See [Figure 7](#) and [Procedure 2](#).

Figure 7 NPB-PWR power and earth ground.



Procedure 2 Wiring earth ground and input power.

1. Remove power from the AC or DC circuit being wired to the module—see previous [Warning](#).
2. Connect the supplied earth grounding wire to a nearby grounding point. See [Figure 7](#).
3. Unplug the power connector plug from the module and make connections to it as shown in [Figure 7](#).

4. If any device covers were removed, replace them. Make sure all modules in the mounted assembly are firmly connected together and secured.
5. Before restoring power to the module, complete any other wiring connections on the JACE controller and/or its accessory modules. Refer to the appropriate *Mounting and Wiring Guide(s)* for more details.



Warning If T-IO-16 (NDIO) modules are installed, it is **important not to remove power after first applying it, for a period of up to 4 minutes, in case an automatic “firmware upgrade” from the JACE 2/3E/6/6E controller to attached IO modules is in progress. Otherwise, IO modules can be rendered inoperable. Refer to the T-IO-16 *Installation and Configuration Guide* for additional details.**

6. To apply power, insert the power connector plug.

Output Power

Once power is restored by inserting the power connector plug into the 24V Power Supply Module, 15Vdc power is supplied to devices attached via its used output connector. On all chained devices, power is passed through these type connectors.

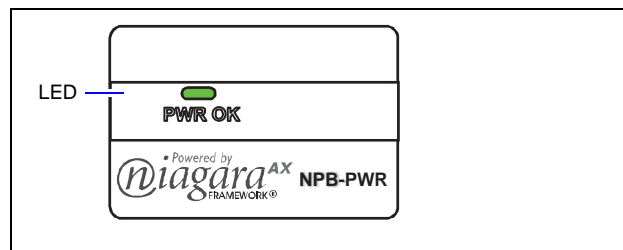


Note If T-IO-16 (NDIO) modules are installed, see the previous [Warning](#) given above in [Procedure 2](#).

LED

A single LED is visible on the power supply module's cover, to show supplied 15Vdc power. See [Figure 8](#).

Figure 8 LED “PWR OK”.



Whenever 24V power is applied to the input connector of the 24V Power Supply Module, this LED should remain lit.