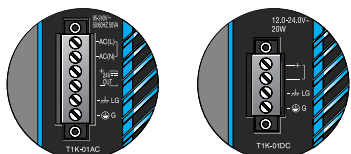


# Power Supplies and Power Requirements

## Power supplies

The Terminator I/O product line offers two power supply options: AC or DC. The power supplies are always positioned to the left of the modules to which they supply power. Consult the system configuration examples and the power budgeting example for more information on positioning power supplies.



## Power supply specifications

| Power Supply Specifications                                                     |                | T1K-01AC<br>\$176.00                                         | T1K-01DC<br>\$208.00           |
|---------------------------------------------------------------------------------|----------------|--------------------------------------------------------------|--------------------------------|
| Input Voltage Range                                                             |                | 110/220 VAC                                                  | 12/24 VDC                      |
| Input Frequency                                                                 |                | 50/60 Hz                                                     | N/A                            |
| Maximum Power                                                                   |                | 50VA                                                         | 30W                            |
| Max. Inrush Current                                                             |                | 20A                                                          | 10A                            |
| Insulation Resistance                                                           |                | > 10M $\Omega$ @ 500 VDC                                     |                                |
| Voltage Withstand                                                               |                | 1 min. @ 1500VAC between primary, secondary and field ground |                                |
| 5VDC PWR                                                                        | Voltage        | 5.25 VDC                                                     | 5.25 VDC                       |
|                                                                                 | Current Rating | 2000 mA max (see current option note below)                  | 2000mA max                     |
|                                                                                 | Ripple         | 5% max.                                                      | 5% max.                        |
| 24VDC PWR                                                                       | Voltage        | 24VDC                                                        | N/A                            |
|                                                                                 | Current Rating | 300mA max. (see current option note below)                   | N/A                            |
|                                                                                 | Ripple         | 10% max.                                                     | N/A                            |
| Fuse                                                                            |                | 1 (primary), not replaceable                                 |                                |
| Replacement Terminal Block (Phoenix Contact)                                    |                | MVSTBW<br>2.5/4-ST-<br>5.08 BK                               | MVSTBW<br>2.5/6-ST-<br>5.08 BK |
| Note: 500mA @ 24VDC can be achieved by lowering the 5VDC from 2000mA to 1500mA. |                |                                                              |                                |

## Power requirements

| Module                   | 5VDC | 24VDC | Module                                             | 5VDC | 24VDC | Module                                             | 5VDC | 24VDC |
|--------------------------|------|-------|----------------------------------------------------|------|-------|----------------------------------------------------|------|-------|
| <b>Interface Modules</b> |      |       | <b>DC Output Modules</b>                           |      |       | <b>Analog Input Modules</b>                        |      |       |
| <b>T1H-EBC100</b>        | 300  | 0     | <b>T1H-08TDS</b>                                   | 200  | 0     | <b>T1F-08AD-1</b>                                  | 75   | 50*   |
| <b>T1K-DEVNETS</b>       | 250  | 45    | <b>T1K-08TD1</b>                                   | 100  | 200*  | <b>T1F-08AD-2</b>                                  | 75   | 50*   |
| <b>T1K-MODBUS</b>        | 300  | 0     | <b>T1K-16TD1</b>                                   | 200  | 400*  | <b>T1F-16AD-1</b>                                  | 75   | 50*   |
| <b>DC Input Modules</b>  |      |       | <b>T1K-08TD2-1</b>                                 | 200  | 0     | <b>T1F-16AD-2</b>                                  | 75   | 50*   |
| <b>T1K-08ND3</b>         | 35   | 0     | <b>T1K-16TD2-1</b>                                 | 200  | 0     | <b>T1F-16RTD</b>                                   | 150  | 0     |
| <b>T1K-16ND3</b>         | 70   | 0     | <b>AC Output Modules</b>                           |      |       | <b>T1F-16TMST</b>                                  | 150  | 0     |
| <b>AC Input Modules</b>  |      |       | <b>T1K-08TA</b>                                    | 250  | 0     | <b>T1F-14THM</b>                                   | 60   | 70*   |
| <b>T1K-08NA-1</b>        | 35   | 0     | <b>T1K-16TA</b>                                    | 450  | 0     | <b>Analog Output Modules</b>                       |      |       |
| <b>T1K-16NA-1</b>        | 70   | 0     | <b>T1K-08TAS</b>                                   | 300  | 0     | <b>T1F-08DA-1</b>                                  | 75   | 150*  |
|                          |      |       | <b>Relay Output Modules</b>                        |      |       | <b>T1F-08DA-2</b>                                  | 75   | 150*  |
|                          |      |       | <b>T1K-08TR</b>                                    | 350  | 0     | <b>T1F-16DA-1</b>                                  | 75   | 150*  |
|                          |      |       | <b>T1K-16TR</b>                                    | 700  | 0     | <b>T1F-16DA-2</b>                                  | 75   | 150*  |
|                          |      |       | <b>T1K-08TRS</b>                                   | 400  | 0     | <b>Combination Analog Modules</b>                  |      |       |
|                          |      |       | <b>Specialty Modules</b>                           |      |       | <b>T1F-8AD4DA-1</b>                                | 75   | 60*   |
|                          |      |       | <b>T1H-CTRIO</b>                                   | 400  | 0     | <b>T1F-8AD4DA-2</b>                                | 75   | 70*   |
|                          |      |       | * Use either internal or external source for 24VDC |      |       | * Use either internal or external source for 24VDC |      |       |

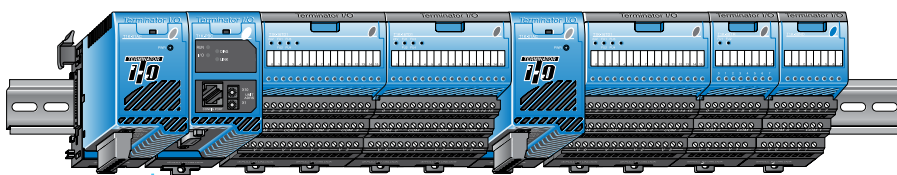
### Calculating the power budget

To calculate the power budget, read the available power (current rating) from the Power Supply Specifications table and subtract the power consumed by each module to the right of the power supply. Do not include modules to the right of an additional power supply.

### Adding additional power supplies

Each power supply furnishes power only to the network interface and I/O modules to its right. Inserting a second power supply closes the power loop for the power supply to the left, while also powering the modules to its right. Perform a power budget calculation for each power supply in the system.

| Power Budget Example |         |        |
|----------------------|---------|--------|
| Module               | 5VDC    | 24VDC  |
| <b>T1K-01AC</b>      | +2000mA | +300mA |
| <b>T1H-EBC100</b>    | -300mA  | -0mA   |
| <b>T1K-16ND3</b>     | -70mA   | -0mA   |
| <b>T1K-16TD2</b>     | -200mA  | -0mA   |
| <b>T1F-08AD-1</b>    | -75mA   | -50mA  |
| <b>Remaining</b>     | +1355mA | +250mA |



This power supply powers the network interface module and the next two I/O modules

This power supply powers these three I/O modules

# Dimensions and Installation

It is important to understand the installation requirements for your Terminator I/O system. This will ensure that the Terminator I/O products work within their environmental and electrical limits.

## Plan for safety

This catalog should never be used as a replacement for the technical data sheet that comes with the products or the **T1K-INST-M** Installation and I/O Manual (available online at [www.automationdirect.com](http://www.automationdirect.com).) The technical data sheet contains information that must be followed. The system installation should comply with all appropriate electrical codes and standards.

## Unit dimensions and mounting orientation

Use the following diagrams to decide if the Terminator I/O system can be installed in your application. Terminator I/O units should be mounted horizontally. To ensure proper airflow for cooling purposes, units should not be mounted upside-down. It is important to check the Terminator I/O dimensions against the conditions required for your application. For example, it is recommended to leave 2" depth for ease of access and cable clearance. However, your distance may be greater or less. Also, check the installation guidelines for the recommended cabinet clearances.



| Terminator I/O Environmental Specifications |                                                                                            |
|---------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Ambient Operating Temperature</b>        | 32°F to 131°F (0°C to 55°C)                                                                |
| <b>Storage Temperature</b>                  | -4°F to 158°F (-20°C to 70°C)                                                              |
| <b>Ambient Humidity</b>                     | 5% to 95% (Non-condensing)                                                                 |
| <b>Atmosphere</b>                           | No corrosive gases. The level of environmental pollution = 2 (UL 840)                      |
| <b>Vibration Resistance</b>                 | MIL STD 810C, Method 514.2                                                                 |
| <b>Shock Resistance</b>                     | MIL STD 810C, Method 516.2                                                                 |
| <b>Voltage Withstand (Dielectric)</b>       | 1500VAC, 1 minute                                                                          |
| <b>Insulation Resistance</b>                | 500 VDC, 10 Mq                                                                             |
| <b>Noise Immunity</b>                       | NEMA ICS3-304<br>Impulse noise 1μs, 1000V<br>FCC class A<br>RFI (144MHz, 430MHz 10W, 10cm) |
| <b>Agency Approvals</b>                     | UL, CE, FCC class A, NEC Class 1 Division 2                                                |

