

Dell™ PowerEdge™ 2950 Systems

Cabling Instructions for the –48 VDC Power Supply

Dell™ PowerEdge™ 2950 系统
有关 -48 VDC 电源设备的
布线说明

Dell™ PowerEdge™ 2950 Systems

Cabling Instructions for the –48 VDC Power Supply

Notes, Notices, and Cautions



NOTE: A NOTE indicates important information that helps you make better use of your computer.



NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

Information in this document is subject to change without notice.

© 2006–2007 Dell Inc. All rights reserved.

Reproduction in any manner whatsoever without the written permission of Dell Inc. is strictly forbidden.

Trademarks used in this text: *Dell*, the *DELL* logo, and *PowerEdge* are trademarks of Dell Inc.


Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Inc. disclaims any proprietary interest in trademarks and trade names other than its own.

This document describes the requirements and wiring instructions for a –48 VDC power cable and safety ground wire for systems equipped with a –48 VDC power supply.

 **CAUTION:** This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. See installation instructions.

This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. If this connection is made, all of the following conditions must be met:

- This equipment shall be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment shall be located in the same immediate area (such as, adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.
- The DC supply source shall be located within the same premises as this equipment.
- Switching or disconnecting devices shall not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

 **CAUTION:** A qualified electrician must perform all connections to DC power and safety grounds. The system must be safety grounded at the cabinet frame. All electrical wiring must comply with applicable local or national codes and practices.

 **CAUTION:** The system chassis must be positively grounded to the rack cabinet frame. Do not attempt to connect power to the system until grounding cables are connected.

 **CAUTION:** An energy hazard will exist if the safety ground cable is omitted or disconnected.


Precaution Statements

This product is intended for restricted access locations (dedicated equipment rooms, equipment closet, or the like) in accordance with the National Electrical Code, American National Standards Institute (ANSI)/National Fire Protection Association (NFPA) 70.

Wire the unit with copper only, unless otherwise specified, 10 American Wire Gauge (AWG) wire rated minimum 90°C in parallel for source and return. Protect the –48 V (1 wire) with a branch circuit overcurrent protection rated 30-A rated for DC with a high interrupt current rating.

Connect the equipment to a –48 VDC supply source that is electrically isolated from the AC source (reliably grounded 48 VDC SELV source). Ensure that the –48 VDC source is efficiently secured to earth (ground).

A readily accessible disconnect device that is suitably approved and rated shall be incorporated in the field wiring.

 **CAUTION:** When stranded wiring is required, use approved wiring termination, such as closed-loop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and must be double crimped, one on the conductor and one on the insulation.

 **CAUTION:** When installing the unit, the ground connection must always be made first and disconnected last to prevent an energy hazard.



CAUTION: Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Input Requirements

Supply voltage: –(48–60) VDC

Current consumption: 20 A maximum

Kit Contents

- Tyco 556879-3 connector housing (1) or equivalent
- Tyco 556880-2 connector contacts (3) or equivalent
- AMP 2-320568-2 ring-tongue terminal (1) or equivalent
- #8-32 nut equipped with lock washer (1)

Required Tools

- Wire-stripper pliers capable of removing insulation from size 10 AWG solid or stranded, insulated copper wire



NOTE: Use alpha wire part #3080 or equivalent (65/30 stranding)

- One UL 1015 10 AWG, 2 m maximum (stranded) black wire (–48 VDC)
- One UL 1015 10 AWG, 2 m maximum (stranded) red wire (48 VDC return)
- One UL 1015 10 AWG, 2 m maximum green, stranded wire (optional connector ground)
- One UL 1015 10 AWG, 2 m maximum green/yellow, green with a yellow stripe, stranded wire (safety ground)
- AMP 90871-1 hand-crimping tool or equivalent

Assembling the DC Input Power Cable

⚠ CAUTION: Before connecting safety ground or power cables to the connector, ensure that the power is removed from the DC circuit. To ensure that the power is off, locate the circuit breaker on the DC source circuit. Switch the circuit breaker to the off position and, if available, install an approved safety locking device to the circuit breaker or switch, to prevent against another person energizing the circuit.

To construct the DC input power cable, perform the following steps:

- 1 Strip the insulation from the ends of the DC power wires, exposing approximately 4.5 mm (0.175 inches) of copper wire.
- 2 Using a hand-crimping tool, crimp a connector contact to each DC power wire.
- 3 To connect the optional connector ground, insert the green 48 VDC ground into connector housing position 1 (see Figure 1-1 and Table 1-1).

➡ NOTICE: Figure 1-1 shows the connector housing and pin locations as viewed from the *back* of the connector.

- 4 Insert the black -48 VDC wire into connector housing position 2 (see Figure 1-1 and Table 1-1).
- 5 Insert the red 48 VDC return wire into connector housing position 3 (see Figure 1-1 and Table 1-1).

Figure 1-1. Tyco Connector 556879-3 Housing Positions (Viewed from Back of Connector)

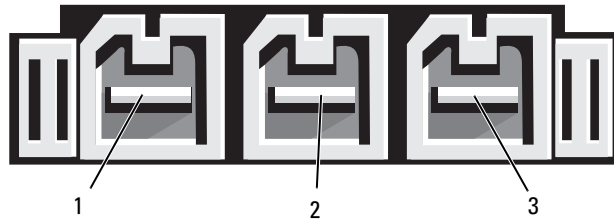


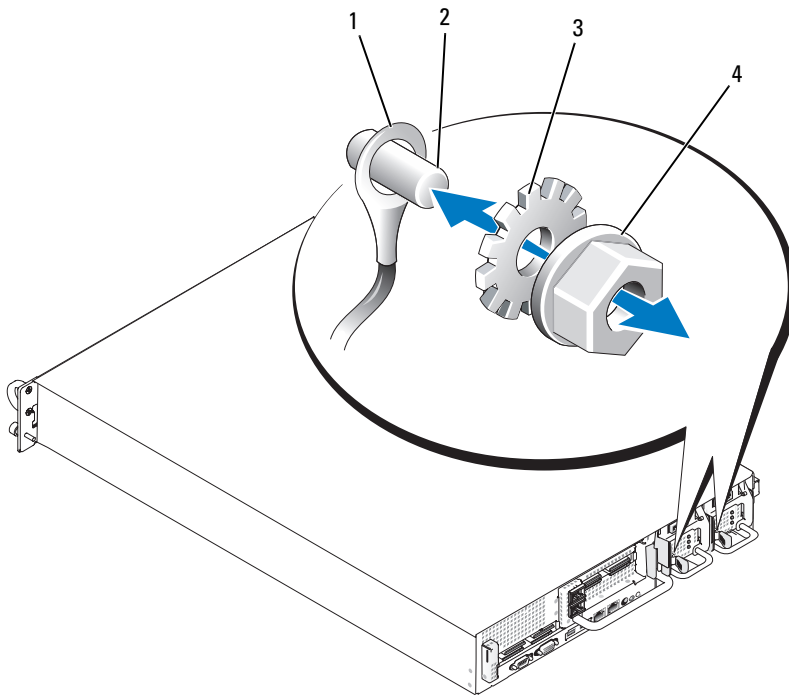
Table 1-1. Connector Housing Pin Assignments

Pin	Description	Wire Color and Size
1	48 VDC ground (optional)	Green 10 AWG
2	-48 VDC	Black 10 AWG
3	48 VDC return	Red 10 AWG

Assembling and Connecting the Safety Ground Wire

- 1 Strip the insulation from the end of the green/yellow wire, exposing approximately 4.5 mm (0.175 inches) of copper wire.
- 2 Using a hand-crimping tool, crimp the ring-tongue terminal to the green/yellow wire.
- 3 Connect the safety ground to the grounding post on the back of the system using a #8-32 nut equipped with a locking washer (see Figure 1-2).

Figure 1-2. Power Supply Safety Ground



- | | | | | | |
|---|----------------------------|---|----------------|---|----------------|
| 1 | green/yellow safety ground | 2 | grounding post | 3 | locking washer |
| 4 | #8-32 nut | | | | |

Connecting the -48 VDC Power Cable

To connect the -48 VDC power cable, plug the -48 VDC power cable into the system power supply.

Dell™ PowerEdge™ 2950 系统
有关 -48 VDC 电源设备的
布线说明

注、注意和警告



注：注表示可以帮助您更好地使用计算机的重要信息。



注意：注意表示可能会损坏硬件或导致数据丢失，并告诉您如何避免此类问题。



警告：警告表示可能会导致财产损失、人身伤害甚至死亡。

本说明文件中的信息如有更改，恕不另行通知。

© 2006–2007 Dell Inc.。版权所有，翻印必究。

未经 Dell Inc. 书面许可，严禁以任何形式进行复制。

本文中使用的商标：**Dell**、**DELL** 徽标和 **PowerEdge** 是 Dell Inc. 的商标。

本说明文件中提及的其它商标和产品名称是指拥有相应商标和产品名称的公司或其制造的产品。Dell Inc. 对其它公司的商标和产
品名称不拥有任何所有权。

针对配备有 -48 VDC 电源设备的系统，本说明文件提供了有关 -48 VDC 电源电缆和安全接地线的要求和布线说明。

⚠ 警告： 此设备设计为允许直流供电电路的接地导线与设备上的接地导线相连接。请参阅安装说明。此设备设计为允许直流供电电路的接地导线与设备上的接地导线相连接。如果要进行此连接，则必须符合以下所有条件：

- 此设备应直接连接至直流电源设备的接地电极导线，或连接至直流电源设备的接地电极导线所连接的接地端子棒或总线的搭接片。
- 如果其它设备的接地导线也连接到同一直流供电电路的接地导线，则这两台设备应位于同一临近区域（例如，邻近的机柜），同时直流电路的接地点也应位于此区域中。直流系统不应在其它位置接地。
- 直流电源应与此设备放置在同一工作场所中。
- 交换设备或断开设备连接不应在直流电源和接地电极导线的连接点之间的接地电路导线中进行。

⚠ 警告： 所有直流电源连接和安全接地连接必须由合格的电工完成。该系统必须通过机架柜安全接地。所有供电线路都必须符合本地或国家的适用标准和惯例。

⚠ 警告： 请务必将系统机箱通过机架柜接地。在完成接地电缆的连接之前，请勿将电源连接到系统。

⚠ 警告： 如果未使用电缆安全接地或接地电缆断开，则电源设备存在高能危害。

预防措施说明

本产品应在严格受限的场所（专用设备室、设备橱或类似的地方）使用，这些场所应符合国家电工标准、美国国家标准协会 (ANSI)/ 国家消防协会 (NFPA) 70 的标准。

如无专门指定，请仅使用铜电线连接装置，电线为符合美国电线规格 (AWG) 10 的电线，在并行输入输出时的最小额定温度为 90°C。请使用具有 30 A 过流保护的分支电路来保护 -48 V（1 线），该分支电路是针对高中断直流电的。

请将设备连接至与交流电源电气隔离的 -48 VDC 供电电源（可靠接地的 48 VDC SELV 电源）。请确保已将 -48 VDC 电源接地。

现场布线时，应准备好一个已经过相应核准和评级的可用断开连接设备。

⚠ 警告： 需要绞线时，请使用认可的电线接口，例如闭环型或接线片朝上的平板型。这些接口的尺寸应与电线的尺寸匹配，并且必须是双层褶皱的，一层在导线上，一层在绝缘体上。

⚠ 警告： 为防止高能危害，安装装置时，须先行接地，拆卸装置时，须最后断开接地连接。

⚠ 警告： 绝对不要断开接地导线或在没有安装适当的接地导线的情况下操作设备。如果您无法确定是否已适当接地，请与相关电气检查机构或电工联络。

输入要求

电源电压： - (48–60) VDC
电流消耗： 20 A（最大）

套件内容

- Tyco 556879-3 连接器外壳（1 个）或同类产品
- Tyco 556880-2 连接器接点（3 个）或同类产品
- AMP 2-320568-2 圆舌接线端（1 个）或同类产品
- 配有锁定垫片的 #8-32 螺帽（1 个）

所需工具

- 可以除去尺寸为 10 AWG 的绝缘的实芯或绞合铜导线的绝缘层的剥线钳



注：使用 Alpha 电线部件 #3080 或同类产品（65/30 绞合）

- 一根 UL 1015 10 AWG、2 m（最长）（绞合的）的黑色电线（-48 VDC）
- 一根 UL 1015 10 AWG、2 m（最长）（绞合的）的红色电线（48 VDC 反向）
- 一根 UL 1015 10 AWG、2 m（最长）绿色绞合电线（可选的连接器接地线）
- 一根 UL 1015 10 AWG、2 m（最长）带黄条的绿色绞合电线（安全接地线）
- AMP 90871-1 手动压接工具或同类产品

制作直流输入电源电缆



警告：在将安全接地线或电源电缆连接至连接器之前，请确保直流电路已经断电。要确保关闭电源，请在直流电源电路上找到电路断路器。将电路断路器切换到关闭位置，如果可以的话，将一个认可的安全锁定设备安装至电路断路器或开关，以防止其他人重新开通电路。

要制作直流输入电源电缆，请执行以下步骤：

- 1 剥去直流电源电线的末端绝缘层，露出长约 4.5 mm（0.175 英寸）的铜线。
- 2 使用手动压接工具，在每根直流电源电线上压接出连接器接点。
- 3 为连接可选的连接器接地线，将绿色 48 VDC 接地线插入连接器外壳的位置 1（请参见图 1-1 和表 1-1）。



注意：图 1-3 显示了（从连接器背面看）连接器外壳和插针的位置。

- 4 将黑色 -48 VDC 电线插入连接器外壳的位置 2（请参见图 1-1 和表 1-1）。
- 5 将红色 48 VDC 反向电线插入连接器外壳的位置 3（请参见图 1-1 和表 1-1）。

图 1-3. Tyco 连接器 556879-3 外壳的各个位置 (从连接器背面看)

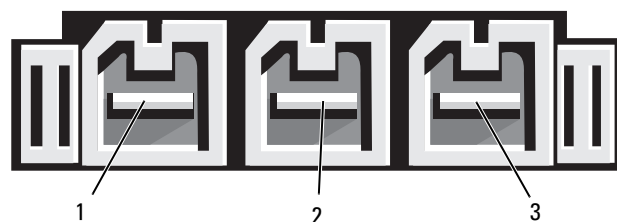


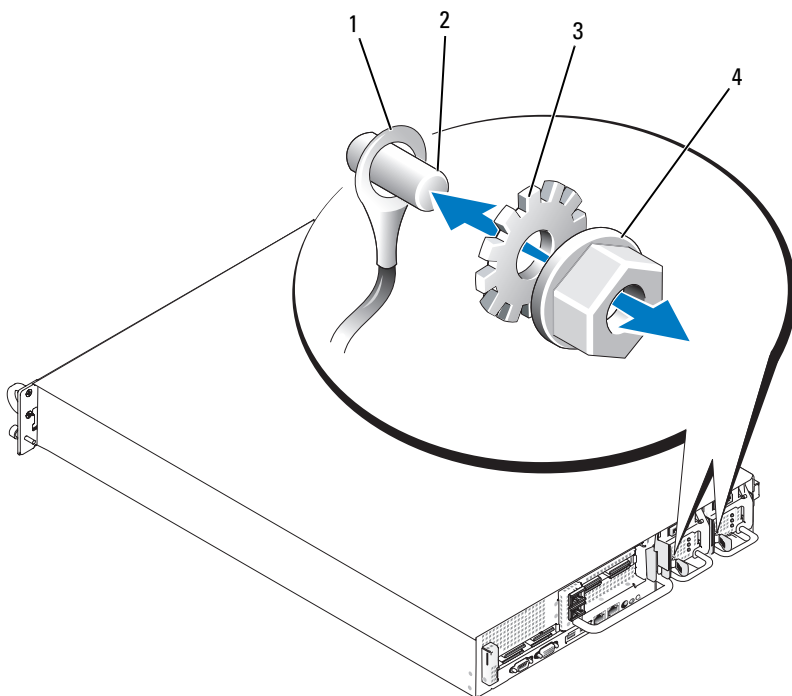
表 1-2. 连接器外壳的插针分配

插针	说明	电线的颜色和尺寸
1	48 VDC 接地线 (可选)	绿色 10 AWG
2	-48 VDC	黑色 10 AWG
3	48 VDC 反向	红色 10 AWG

制作和连接安全接地线

- 1 剥去带黄条的绿色电线的末端绝缘层，露出长约 4.5 mm (0.175 英寸) 的铜线。
- 2 使用手动压接工具，在带黄条的绿色电线上压接出圆舌接线端。
- 3 使用配有锁定垫片的 #8-32 螺帽将安全接地线连接至系统背面的接地杆 (请参见图 1-2)。

图 1-4. 电源设备安全接地线



- 1 带黄条的绿色安全接地线 2 接地杆 3 锁定垫片
4 #8-32 螺帽

连接 -48 VDC 电源电缆

要连接 -48 VDC 电源电缆，请将 -48 VDC 电源电缆插入系统电源设备。

DELLTM



0GJ891A04



Printed in the U.S.A.
美国印制。