7800 Series PSU Overview

June 2025
78-0503-03

Important

- Installation of this equipment must comply with local and national electrical codes.

- If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

7800R Series AC Power Supplies

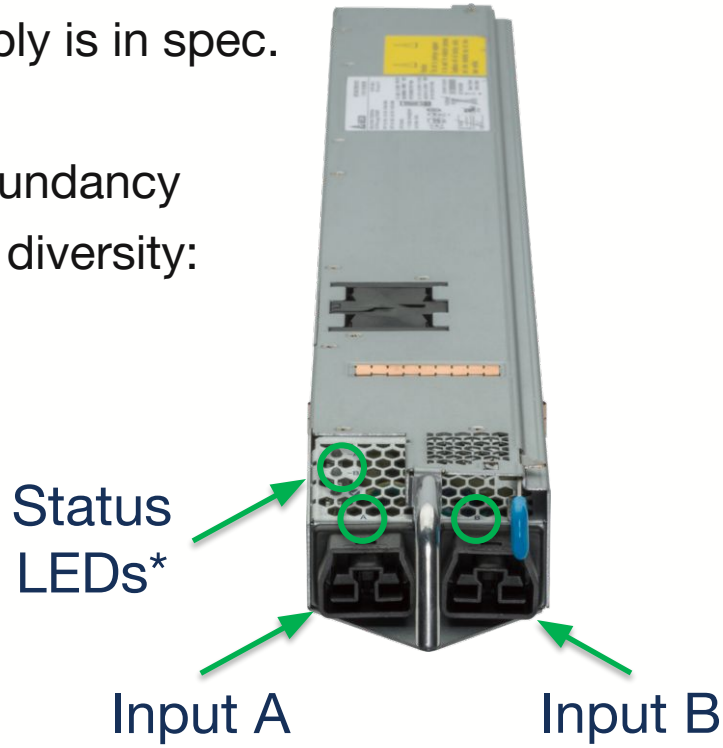
- Common power supply for all 7800R Series
- Over 94% Efficient with Hot-swap / load balancing
- Single power domain internal to switch
- PSU has Integrated redundancy
  - Dual AC inputs (200-240Vac, 16A max)
  - Allow for auto-transfer (ATS) switchover
- Single 20A Input for 3kW power output
  - Only single input required for 3kW
  - Second input provides resilience, not more power
  - Grid redundant with N supplies dual connected
  - PSU redundant with N+1, recommend N+2
  - SAF-D-GRID connector (smaller than C19) to C20

PWR-D1-3041-AC-BLUE

Dual Input AC Power Supply Overview

- Input A is always used by default while the supply is in spec.
- If Input A fails, hitless switch-over to input B
- No requirement for separate PSUs for Grid Redundancy
- Suggested connection plan to provide 1+1 grid diversity:

PSU#	PSU Connector	Grid Feed
First PSU	Primary(A)	GRID1
	Secondary(B)	GRID2
Second PSU	Primary(A)	GRID2
	Secondary(B)	GRID1
Third PSU	Primary(A)	GRID1
	Secondary(B)	GRID2
Fourth PSU	Primary(A)	GRID2
	Secondary(B)	GRID1
etc.		



* Status LEDs are lit whenever the chassis is energized - PSUs with no grid supply will draw power from the system to indicate status

7800R Series DC Power Supplies

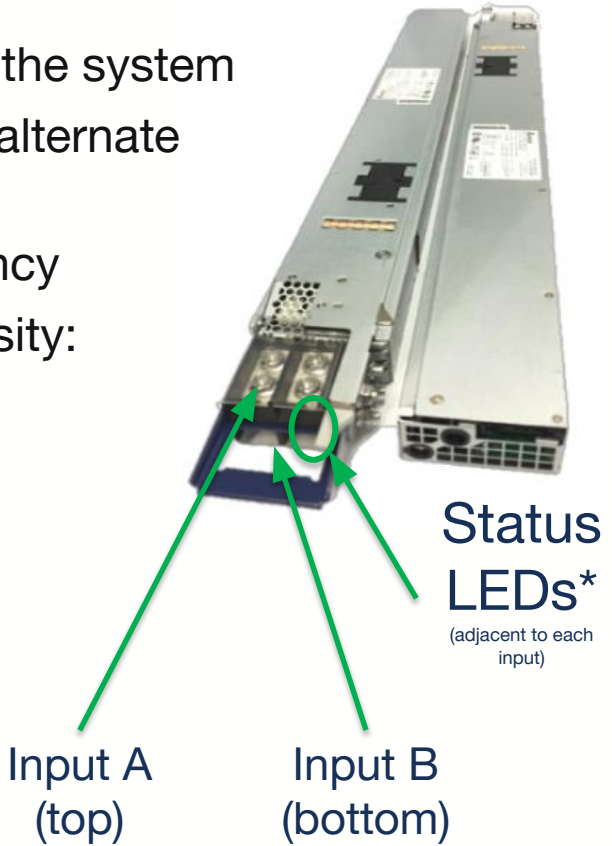
- Common power supply for all 7800R Series
- Over 93% Efficient with Hot-swap / grid redundancy
- Single power domain internal to switch
- PSU has Integrated redundancy
  - Dual DC inputs (-48 to -60Vdc, 70A max)
  - Support for +48-60Vdc for use in ORv3 deployments
  - A/B redundant operation
- Single 70A Input for 3kW power output
  - Only single input required for 3kW
  - Second input provides resilience, not more power
  - Grid redundant with N supplies dual connected
  - PSU redundant with N+1, recommend N+2
  - 2 x M6 studs per terminal
    - 2x (-48V, RTN, GND)

PWR-D2-3041-DC-BLUE

Dual Input DC Power Supply Overview

- The input with the highest voltage provides power to the system
- If the active input fails or its voltage drops below the alternate input, supply is switched hitlessly to the other input
- No requirement for separate PSUs for Grid Redundancy
- Suggested connection plan to provide 1+1 grid diversity:

PSU#	PSU Connector	Grid Feed
First PSU	Primary(A)	GRID1
	Secondary(B)	GRID2
Second PSU	Primary(A)	GRID2
	Secondary(B)	GRID1
Third PSU	Primary(A)	GRID1
	Secondary(B)	GRID2
Fourth PSU	Primary(A)	GRID2
	Secondary(B)	GRID1
etc.		



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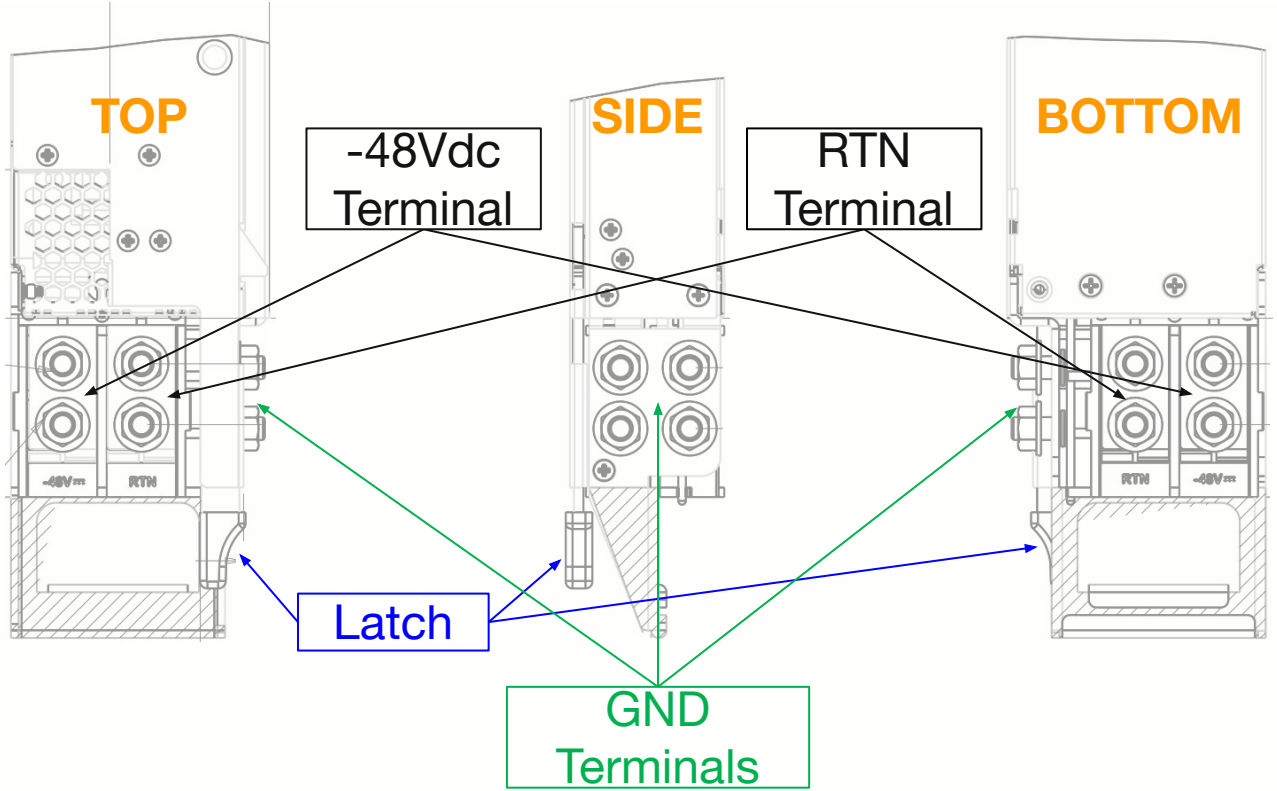
Dual Input DC Supply - Terminal Overview



IMPORTANT: FOLLOW NATIONAL AND LOCAL WIRING CODE - IMAGES FOR GUIDANCE ONLY

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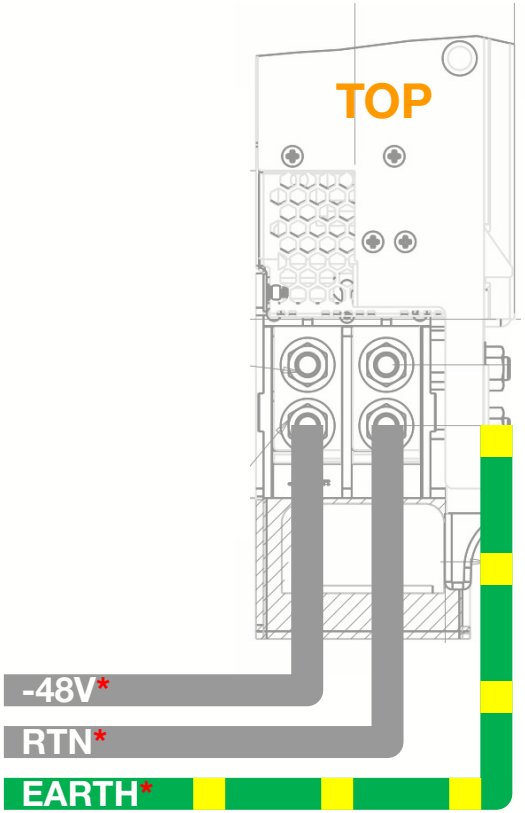
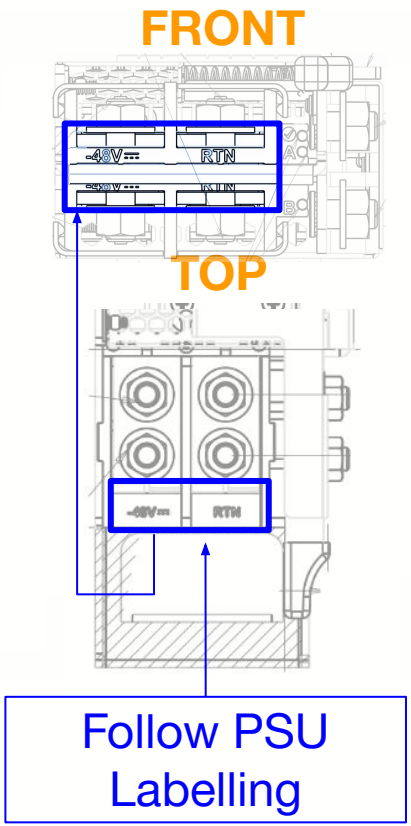
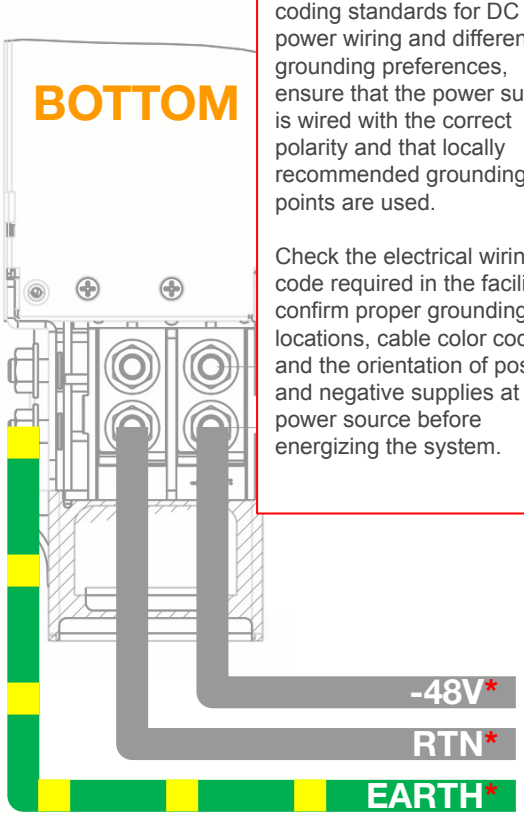
Example Wiring for -48Vdc







***IMPORTANT:**

Due to the lack of color coding standards for DC power wiring and different grounding preferences, ensure that the power supply is wired with the correct polarity and that locally recommended grounding points are used.

Check the electrical wiring code required in the facility, confirm proper grounding locations, cable color coding and the orientation of positive and negative supplies at the power source before energizing the system.

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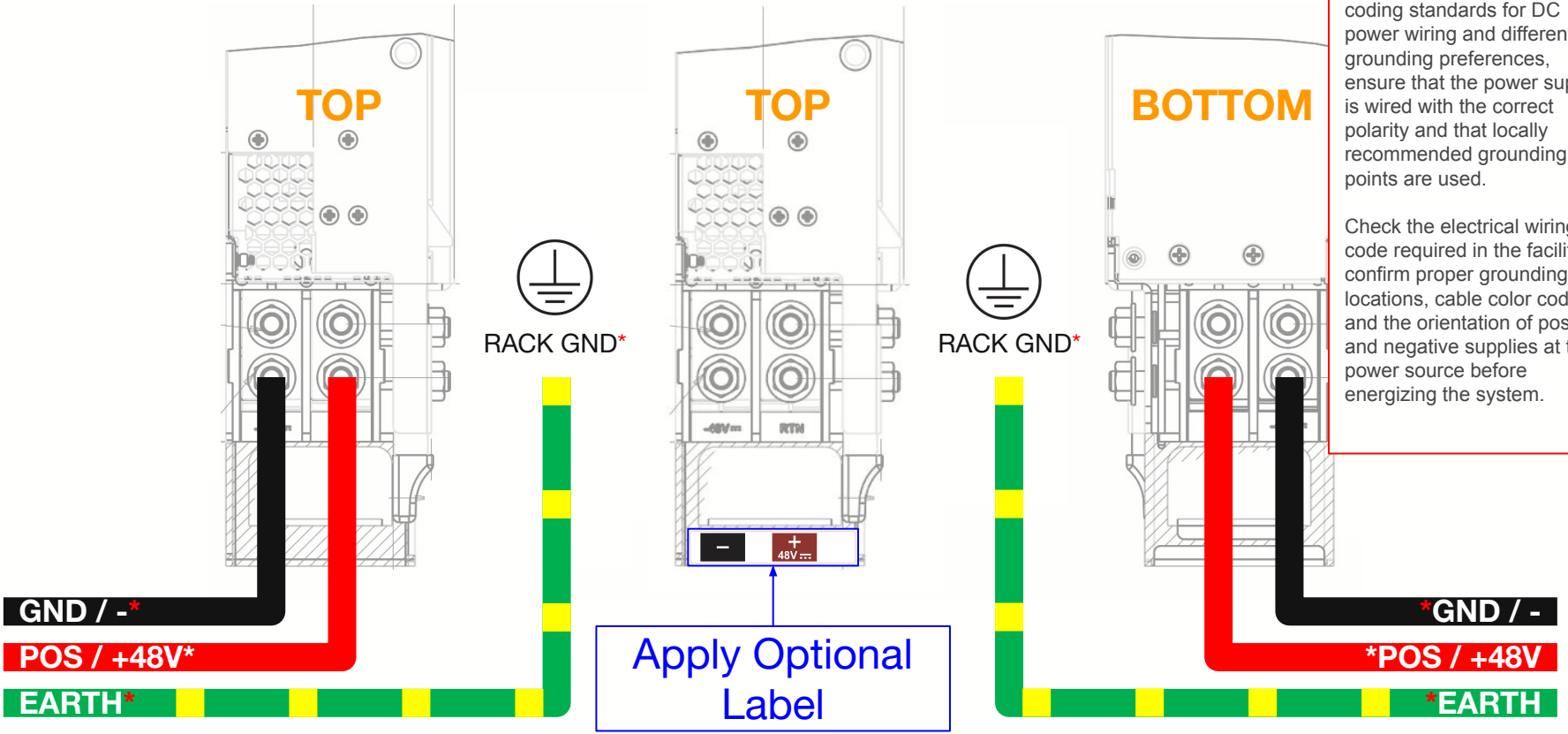
Example Wiring for +48Vdc (e.g. ORv3N)



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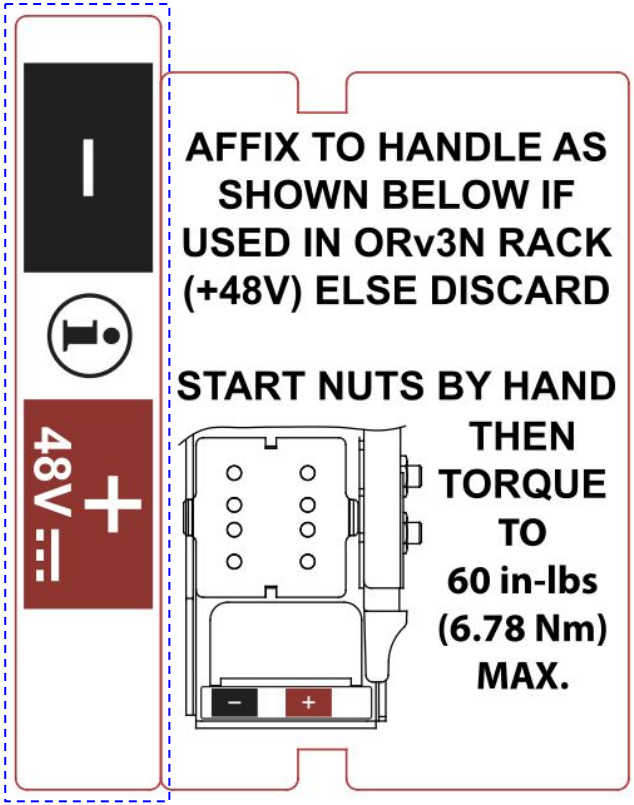
Optional Label for +48Vdc Usage

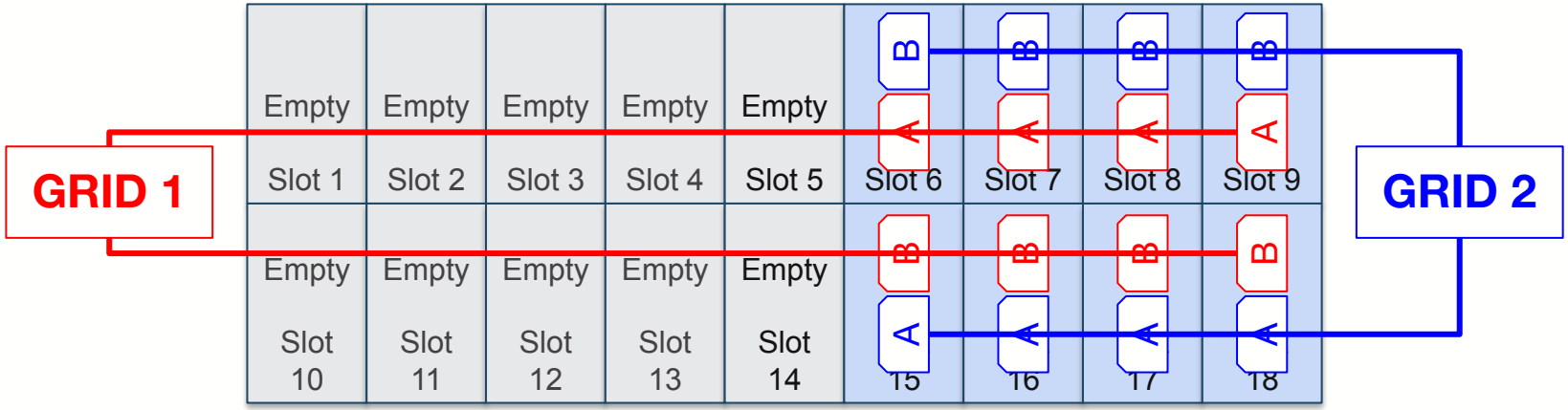
Detach Label and Apply to Top Side of PSU Handle



Recommended Wiring for N+2 3kW PSUs (loadsharing grids)

System	PSU Slots	Max System Pwr
7804	8	24 kW
7808	12	36 kW
7812	18	54 kW
7816 / 7816L	24	72 kW

- N+2 Power is the **recommended** minimum configuration
- Dual-input PSUs provide integrated N+N grid redundancy
  - no additional PSUs are required for grid redundancy
- Additional PSUs provide coverage for PSU failure
- Example shows N+2 configuration for 18kW predicted max load (with loadsharing grids)



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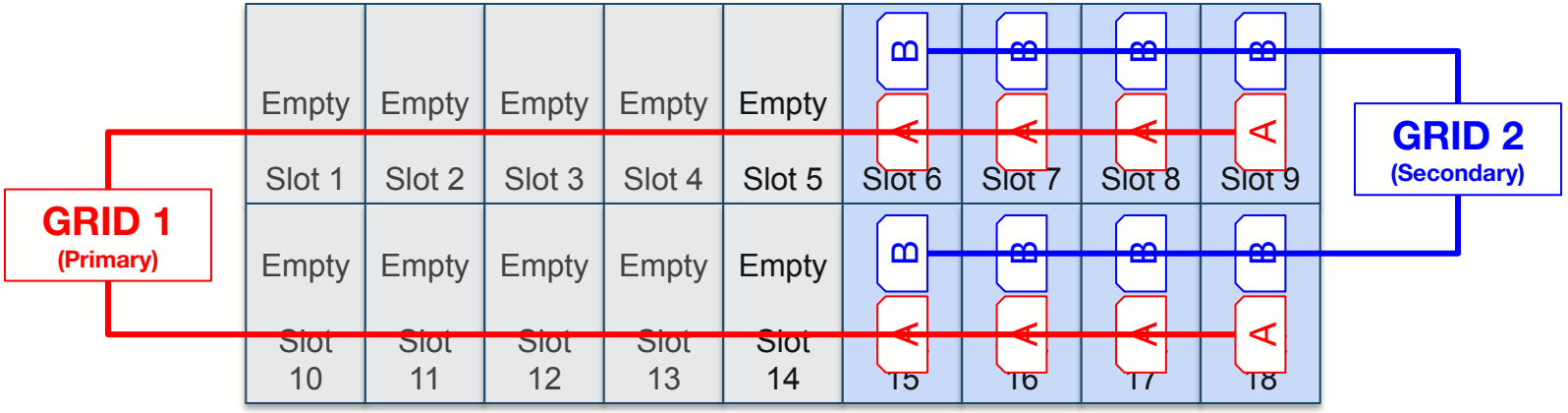
Recommended Wiring for N+2 3kW PSUs (active/standby grids)

System	PSU Slots	Max System Pwr
7804	8	24 kW
7808	12	36 kW
7812	18	54 kW
7816 / 7816L	24	72 kW

- N+2 Power is the **recommended** minimum configuration
- Dual-input PSUs provide integrated N+N grid redundancy
  - no additional PSUs are required for grid redundancy
- Additional PSUs provide coverage for PSU failure
- Example shows N+2 configuration for 18kW predicted max load (with active-standby grids)



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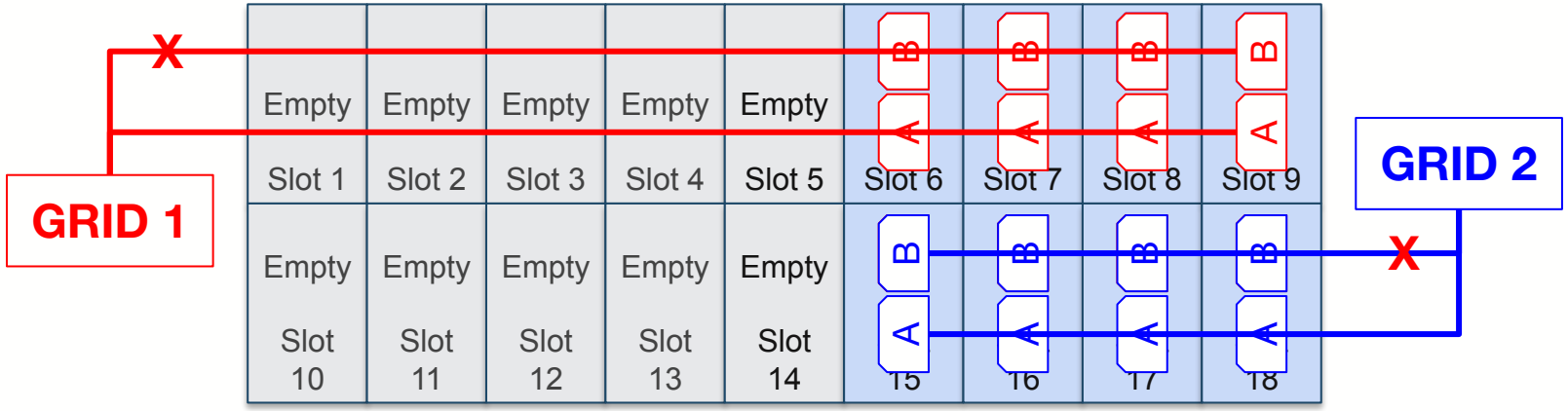
Common mistakes with N+2 3kW PSUs

Example target of 18kW + 2 x PSU redundancy

- Wiring the same grid to both A+B feeds does not provide redundancy
  - Unless there are redundant PDUs and the goal is to protect against a PDU or single circuit failure
- Result of wiring as below is N+N (12kW + 12kW) - when considering grid failure
  - Not N+2 (18kW + 2 x 3kW)
- Double wiring of each grid uses 2x cables, PDU ports and may require breaker oversizing



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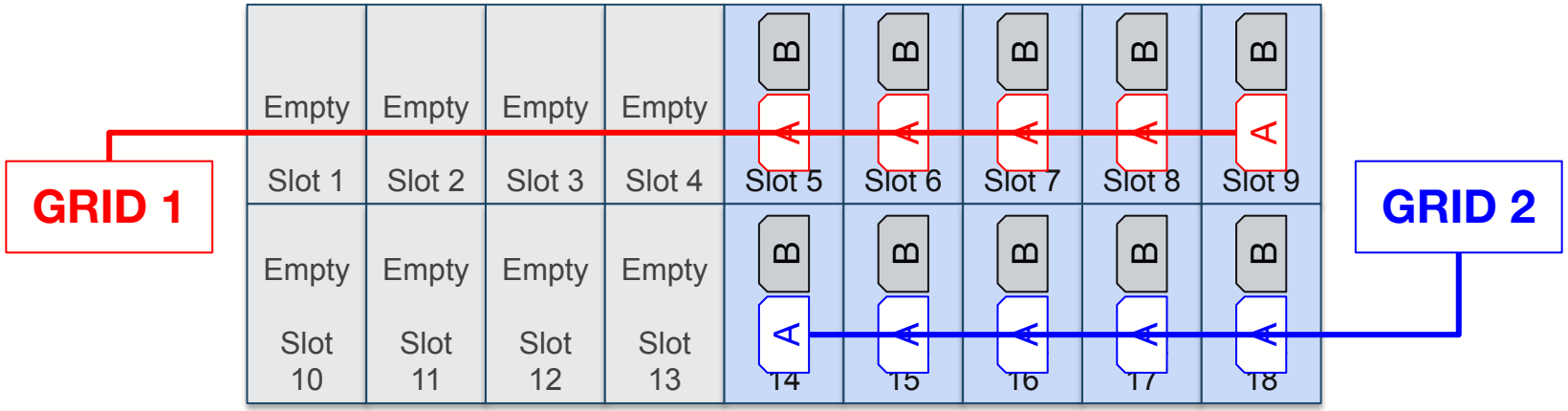
Recommended Wiring for N+N 3kW PSUs

System	PSU Slots	Max System Pwr
7804	8	24 kW
7808	12	36 kW
7812	18	54 kW
7816 / 7816L	24	72 kW

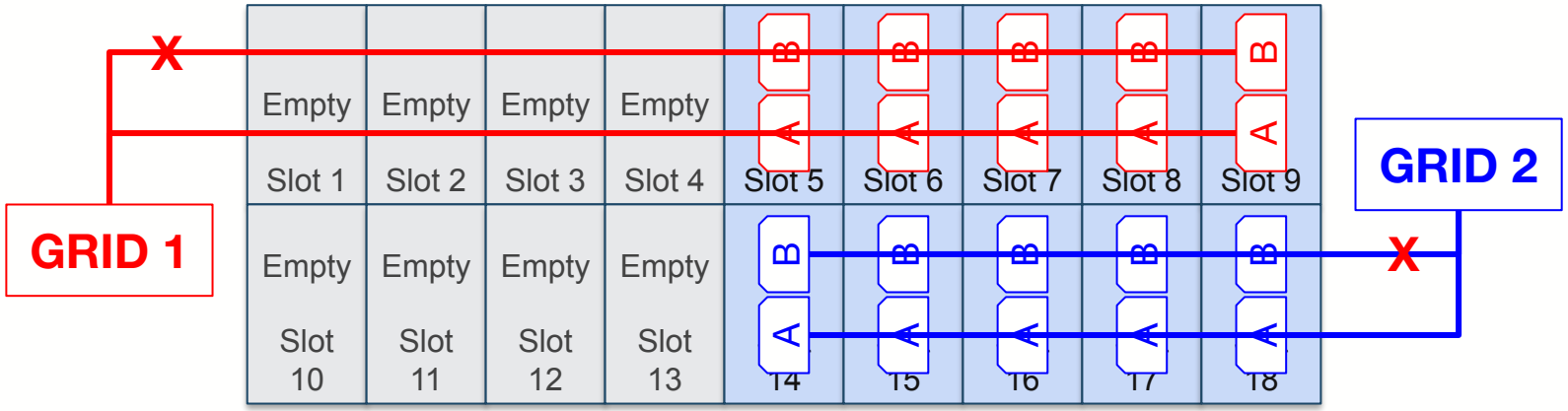
- N+N Power is supported where system load ≤ half of total system power capacity
- In N+N configuration, half of the PSUs should be connected to each grid
- With N+N redundancy it is not necessary to use the B-feed on each PSU
- Example below shows N+N configuration for 15kW with load-sharing grid redundancy



Common mistakes with N+N 3kW PSUs

Example target of 15kW + 15kW redundancy

- Wiring both A and B feed to the same grid
  - PSU A and B feeds are for switchover, not load sharing
  - Extra connections require 2x cables and PDU sockets, may require breaker oversizing.
  - No value unless there are 2 independent PDUs for each Grid to protect against PDU failure



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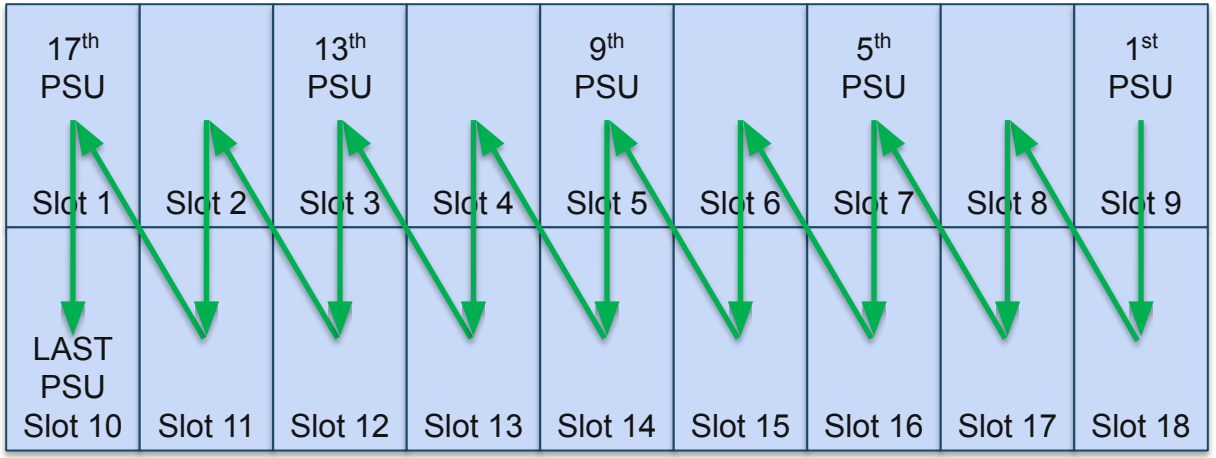
Optional: Power Supply Installation Strategy

For Maximum Efficiency

- To maximize power efficiency, PSUs may be installed in the order shown below. (This is optional and not a system requirement)
- Top right to bottom left principle applies to all systems
  - Example show 18 PSU bays across two rows (7812)
- Other combinations are allowed, but reduce system efficiency by a small amount



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