SITE PLANNING DATA – LIEBERT® TRINERGY™ CUBE

Electrical and Thermal Data

UPS Rating		Capacity/ Redundant	Input/ Output Voltage, VAC	Rectifier AC Input Current			Bypass/Output AC Output Current		Battery			Efficiency AC-AC 100%	Efficiency DC-AC 100%	Max. Heat Dissipation 50% Load BTU/H	Max. Heat Dissipation Full Load, BTU/H	Cooling Air CFM
kVA	KW			Nominal	Maximum	External Breaker Trip Amp (100% Rated)	Nominal	External Breaker Trip Amp (100% Rated)	Nominal VDC	Maximum Current at EOD	External Breaker Trip Amp					
400	400	Capacity	480	499	548	600	481	500	480	1036	1200	≥96.3%	≥96.1%	22560	52440	3225
400	400	Redundant	480	499	548	600	481	500	480	1036	1200	≥96.3%	≥96.1%	22838	52719	3572
800	800	Capacity	480	999	1099	1200	962	1000	480	1036	1200	≥96.3%	≥96.1%	45119	104880	4976
800	800	Redundant	480	999	1099	1200	962	1000	480	1036	1200	≥96.3%	≥96.1%	45398	105159	5323
1200	1200	Capacity	480	1499	1649	2000	1443	1600	480	1036	1200	≥96.3%	≥96.1%	67679	157319	6727
1200	1200	Redundant	480	1499	1649	2000	1443	1600	480	1036	1200	≥96.3%	≥96.1%	67957	157599	7074
1600	1600	Capacity	480	1998	2198	2500	1925	2000	480	1036	1200	≥96.3%	≥96.1%	90238	209760	8478
1600	1600	Redundant	480	1998	2198	2500	1925	2000	480	1036	1200	≥96.3%	≥96.1%	90517	210038	8825

NOTES:

1. Nominal rectifier AC input current (considered continuous) is based on full rated output load. Maximum current includes nominal input current and maximum battery recharge current (considered non-continuous). Continuous and non-continuous current limits are defined in NEC 100. Values shown for maximum current are 110% of nominal input current.
2. Nominal AC output current (considered continuous) is based on full rated output load.
3. Bypass AC input current (considered continuous) is based on full rated output load.
4. Vertiv™ recommends that feeder protection (by others) for the rectifier AC input and the bypass AC input be provided by separate overcurrent protection devices.
5. UPS output load cables must be run in separate conduit from input cables.
6. Power cable from module DC bus to battery should be sized for a total maximum 2.0 volt line drop (power cable drop plus return cable drop as measured at the module) at maximum discharge current.
7. Grounding conductors to be sized per NEC 250-95. Neutral conductors to be sized for full capacity—per NEC 310-16, Note 10—for systems with 4-wire loads and 20% minimum capacity for 3-wire loads.
8. Rectifier AC Input: 3-phase, 3-wire, plus ground
   AC Output to Load: 3-phase, 3-wire, plus ground
   Bypass AC Input: 3-phase, 3-wire, plus ground
   Module DC Input from Battery: 2-wire (positive and negative), plus ground
9. All wiring is to be in accordance with National and Local Electrical Codes.
10. 24in. (610mm) minimum clearance above unit required for air exhaust. 50in. (1270mm) front access is required for service.
11. Top or bottom cable entry through removable access plates. Cut plate to suit conduit size.
12. Control wiring and power cables must be run in separate conduits. Control wiring must be stranded tinned conductors.
13. Cores are connected to I/O Box via core disconnects. One core disconnect accommodates two cores. Maximum of two core disconnects on the left and two core disconnects on the right of the I/O box.
14. Battery breaker sizing is for distributed battery system with one MBD per core or centralized battery system utilizing DC switchboard with one MBD per core. If battery breaker sizing is required for centralized battery system without DC switchboard, contact Vertiv Representative for support.
15. If the UPS is fed from an automatic transfer switch, the UPS can transfer to and from an alternate out-of-phase source in double conversion mode without applying a break-before-make delay to the automatic transfer switch operation.

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Dimensions and Weights - Components

Component	Dimensions			Approx. Weight Unpackaged (lb.)
	Width (in.)	Depth (in.)	Height (in.)	
Core 400 kW	26.8	36.1	77.0	1300
Core Disconnect	16.8	36.1	80.3	435
I/O Box 2400A	62.2	36.1	80.4	2050

Dimensions and Weights - Final Confugurations

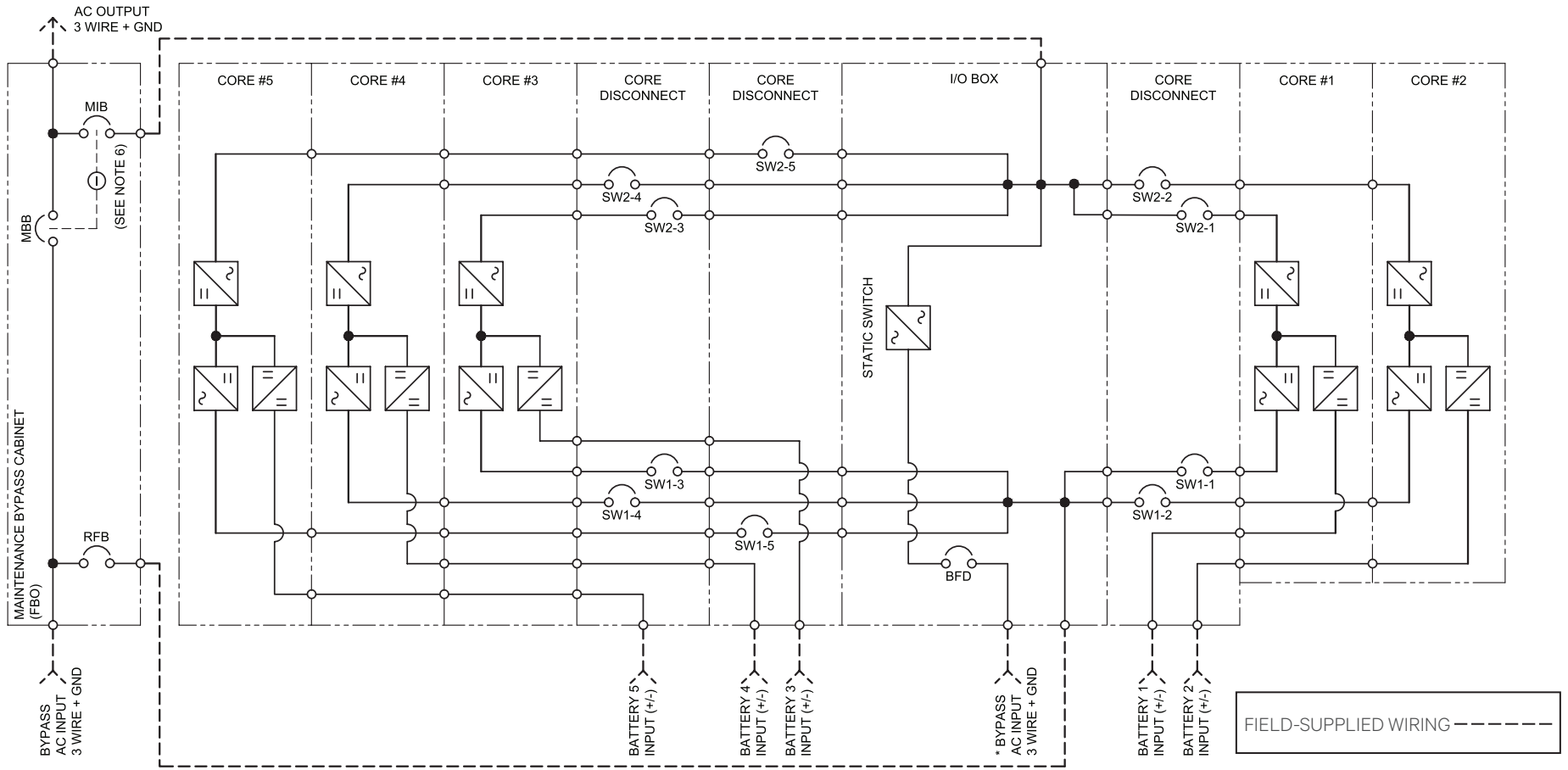
UPS Rating		Capacity/ Redundant	Dimensions			Approx. Weight Unpackaged (lb.)
			Width (in.)	Depth (in.)	Height (in.)	
400	400	Capacity	105.5	36.1	80.4	3785
400	400	Redundant	132.1	36.1	80.4	5085
800	800	Capacity	132.1	36.1	80.4	5085
800	800	Redundant	175.4	36.1	80.4	6820
1200	1200	Capacity	175.4	36.1	80.4	6820
1200	1200	Redundant	202.0	36.1	80.4	8120
1600	1600	Capacity	202.0	36.1	80.4	8120
1600	1600	Redundant	245.3	36.1	80.4	9855

NOTES:

1. 24in. (610mm) minimum clearance above unit required for air exhaust. 50in. (1270mm) front access is required for service.
2. Top or bottom cable entry through removable access plates. Cut plate to suit conduit size.
3. Control wiring and power cables must be run in separate conduits. Control wiring must be stranded tinned conductors.
4. Cores are connected to I/O Box via core disconnects. One core disconnect accommodates two cores. Maximum of two core disconnects on the left and two core disconnects on the right of the I/O box.

One-line Diagram, Dual-input 3-breaker External Maintenance Bypass (RFB)

Note: The diagram depicts a Liebert® Trinergy™ Cube 1600-kVA with four cores for capacity and one core for N+1 redundancy. Actual customer configuration may vary.



NOTES:

1. Input of the UPS must be fed from a solidly-grounded Wye source.
2. Grounding conductors are recommended.
3. Power cables from UPS DC link to batteries should be sized for a total maximum 2-Volts drop at maximum discharge current.
4. UPS-module input and output cables must be run in separate conduits.
5. Control wiring and power wiring must be run in separate conduits.
6. Optional interlock shown.
7. The exact number and position of cores and core disconnections may vary depending on the customer's configuration.
8. Must be fed by synchronous sources for both the rectifier and bypass feed.
9. Power-cable lengths for UPS to DC source should be closely matched.

FBO - Furnished by Others
MBB - Maintenance Bypass Breaker
MIB - Maintenance Isolation Breaker
RBB - Remote Backfeed Breaker
RFB - Rectifier Feed Breaker
BFD - Backfeed Disconnect
SW1-X - Rectifier Input Switch
SW2-X - Inverter Output Switch
* External overcurrent protection by others.

One-line Diagram, Distributed Battery System (MBD and BIS)

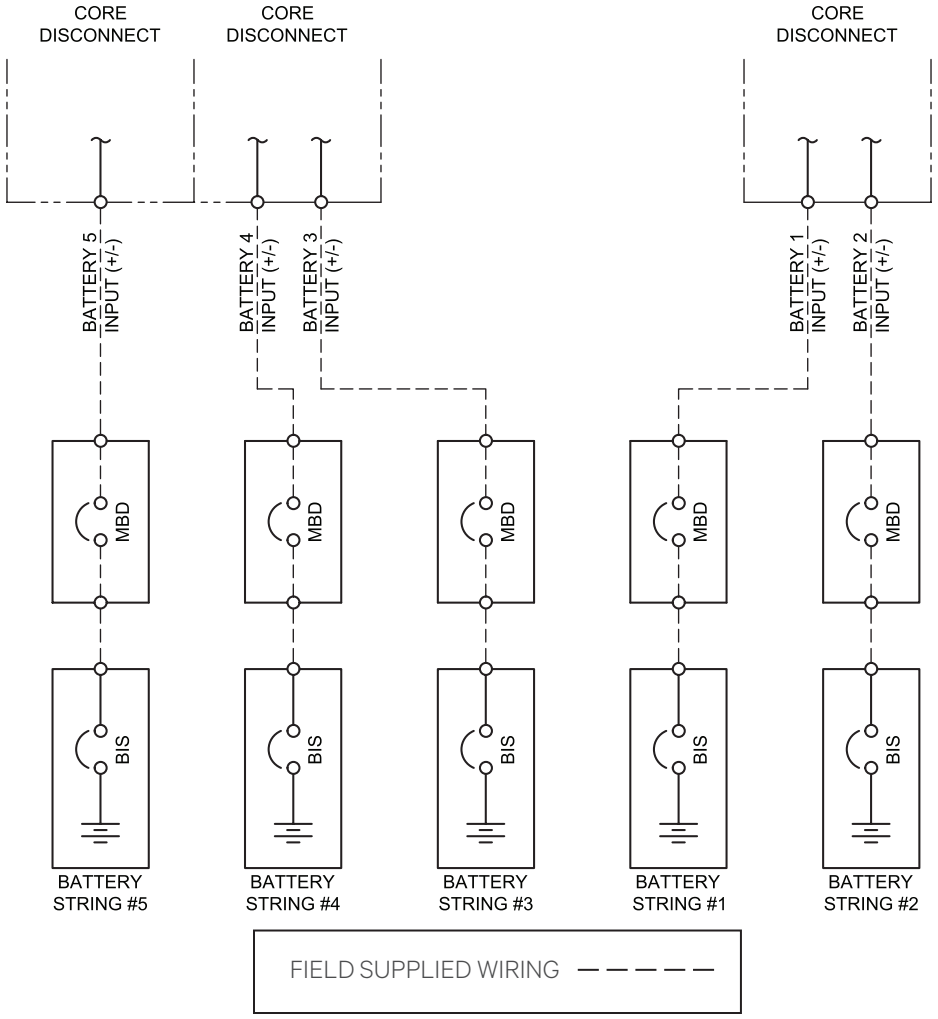
NOTES:

1. Grounding conductors are recommended.
2. Power cables from UPS DC link to batteries should be sized for a total maximum 2-Volts drop at maximum discharge current.
3. Control wiring and power wiring must be run in separate conduits.
4. The exact number of core disconnects, MBD, BIS, and battery strings may vary depending on the customer's configuration.
5. Battery-voltage and temperature sensing are optional.
6. There can be more than one battery string per MBD.
7. Power-cable lengths for UPS to DC source should be closely matched.

MBD - Module Battery Disconnect

BIS - Battery Isolation Switch

* External overcurrent protection by others.



One-line Diagram, Centralized Battery System (MBD and BIS) DC Switchboard

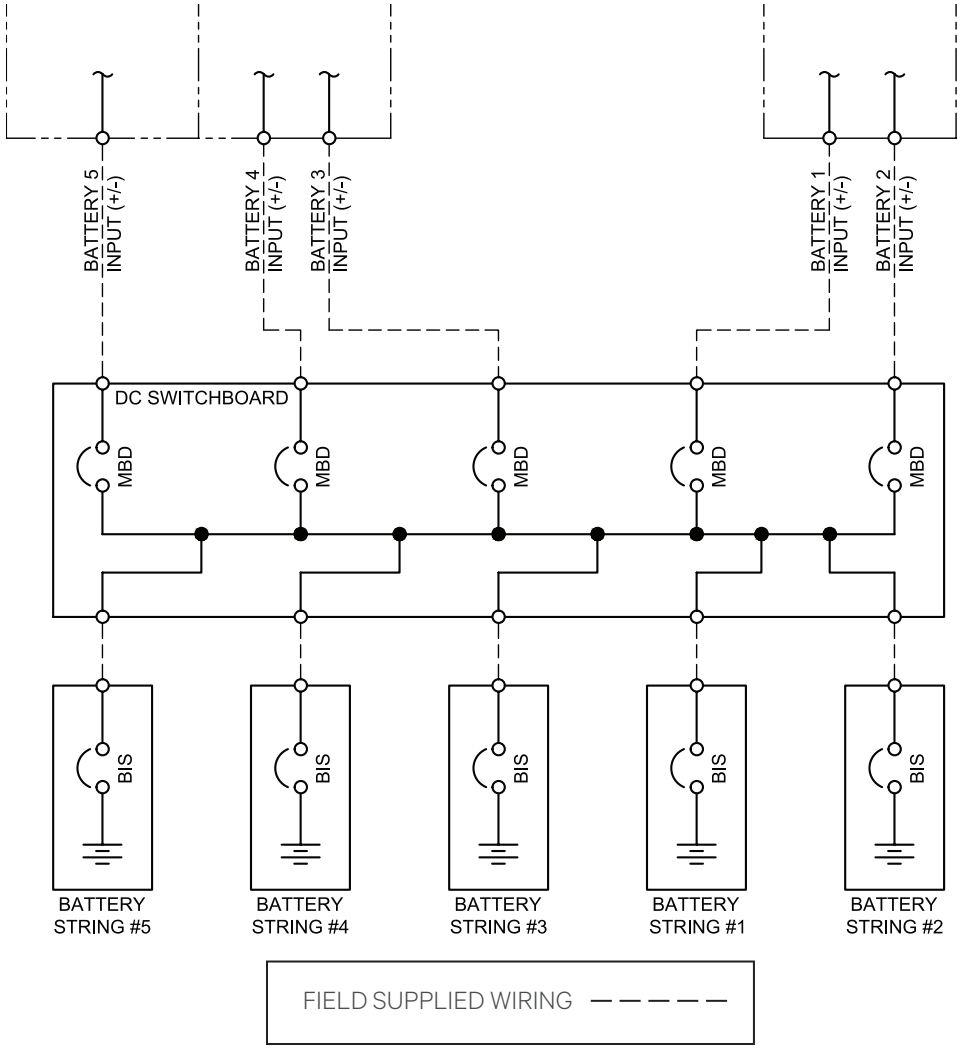
NOTES:

1. Grounding conductors are recommended.
2. Power cables from UPS DC link to batteries should be sized for a total maximum 2-Volts drop at maximum discharge current.
3. Control wiring and power wiring must be run in separate conduits.
4. The exact number of core disconnects, MBD, BIS and battery strings may vary depending on the customer's configuration.
5. Battery-voltage and temperature sensing are optional.
6. There can be more than one battery strings per BIS.
7. Power cable lengths for UPS to DC source should be closely matched.

MBD - Module Battery Disconnect

BIS - Battery Isolation Switch

* External overcurrent protection by others.



One-line Diagram, Centralized Battery System (MBD) Junction Cabinet

NOTES:

1. Grounding conductors are recommended.
2. Power cables from UPS DC link to batteries should be sized for a total maximum 2-Volts drop at maximum discharge current.
3. Control wiring and power wiring must be run in separate conduits.
4. The exact number of core disconnects, MBD and battery strings may vary depending on the customer's configuration.
5. Battery-voltage and temperature sensing are optional.
6. There can be more than one battery string per MBD.
7. Power cable lengths for UPS to DC source should be closely matched.

MBD - Module Battery Disconnect

BIS - Battery Isolation Switch

* External overcurrent protection by others.