



## Site Planning Data

Refer to the following tables.

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## Technical Specifications

NetSure™ ITM – Technical Specifications				
DC UPS	Primary Module 1	Expansion Module 2	Expansion Module 3	Expansion Module 4
Power Rating (full) – kW	70	70	70	70
Power Rating (N + 1) – kW	64	70	70	70
<b>AC Input Specifications</b>				
Phase	3			
Power Factor	0.99 at full load, 0.97 at 50% load			
Frequency – Hz	45-65			
Input Voltage – Nominal	400 / 480V, 3 wire + ground			
Input Voltage – Range	304-530 VAC; shall withstand up to 600 VAC input without damage.			
Input Breaker Rating / AIC Rating – A	150 / 65,000			
Max Input Current / DC UPS Module	480V: 111A @ 384V; 89A @ 480V			
	400V: 133A @ 320V; 107A @ 400V			
	380V: 140A @ 304V; 112A @ 380V			
Inrush Current	Inrush current does not exceed 150% of the rated input steady state peak value			
Total Harmonic Distortion	<5% from 50-100% of load			
<b>DC Output Specifications</b>				
Voltage	Nominal: -48VDC; normal operation: -54.5 VDC (battery float)			
	Range: -42 to -58 VDC			
System Efficiency	96% peak; >95.5% from 40-100% load (system level including branch distribution losses)			
Energy Optimization Mode: Intelligent Power Matching	Allows operation at near-peak efficiency down to 5% overall load			
Branch Distribution Options	22 circuit breakers, 100-200A each; optional: 6 fuses, 2x500A + 4x200A			
<b>Battery Specification</b>				
Type	VRLA, Emerson Excellence EB4, 200 Ah			
Arrangement	3 strings; eight 6V blocks per string			
Backup Time	See backup time table at various loads			
Design Life	15 years @ 20 °C ; 10 years @ 25 °C			
Recharge Time (to 97% of nominal capacity)	Less than 3 hours for > 35% load; Less than 4 hours > 15% load			
<b>Physical Data</b>				
Form Factor	Rack			
Installed Dimensions (H x W x D) – in. (mm)	85 x 24 x 41 (2150 x 600 x 1050)			
Installed Weight – lb. (kg)	2925 (1325)			
<b>Environmental Specifications</b>				
System Operating Temp. – °F (°C)	-5 °C to +35 °C; recommended operation with battery: 20 °C to 25 °C air inlet			
System Storage Temp. – °F (°C)	-40 to 158 °F (-40 °C to +70 °C)			
Relative Humidity	0 to 95%, non condensing			
Operating Elevation – ft. (m)	6562 (2000) at full power			
Audible Noise	< 62dB			
Heat Rejection at Full Load – BTU/hr. (kW)	9,554 (2.8) per DC UPS module			
EMI	FCC class A			
<b>Safety Certifications</b>				
Agency Approved	CE Marked to EN 60 950-1:2006			
	UL Listed to 60 950-1 + UL 1801; CSA certified			
<b>Monitoring Capability</b>				
Standard	Web-based monitoring, alarm reporting via SNMP, and integration with SiteScan via SiteLink-E module			
Optional	Energy Master Remote Supervision			

# NetSure™ ITM with eSure™ Technology

## Site Planning Data and System Drawings – 48V DC UPS

### Section 6037 (Revision D, June 22, 2018)

#### eSure™ PCU (R48-6000Ne) – Technical Specifications

DC Output	
Output Power	5833W maximum
Regulation	Steady state output voltage remains within +/-0.25% for any combination of input voltage from 5% to 100% load
Wide Band Noise	Does not exceed 250 mv peak-to-peak, or 100 mv rms per Telcordia GR-947-CORE
Psophometric Noise	Does not exceed 1 mv from 10% to 100% load
Protection	
Current Limiting	The output current is limited to 110 amps
Over Current	Internal fuse
Physical Characteristics	
Mounting	Plug-in installation, hot swappable
Dimensions (H x W x D) – in. (mm)	3.36 x 8.83 x 14.62 (85.5 x 224.5 x 371.5)
Weight – lb. (kg)	22 (10)

### Battery Run Times

#### Battery Back-up Time (minutes)

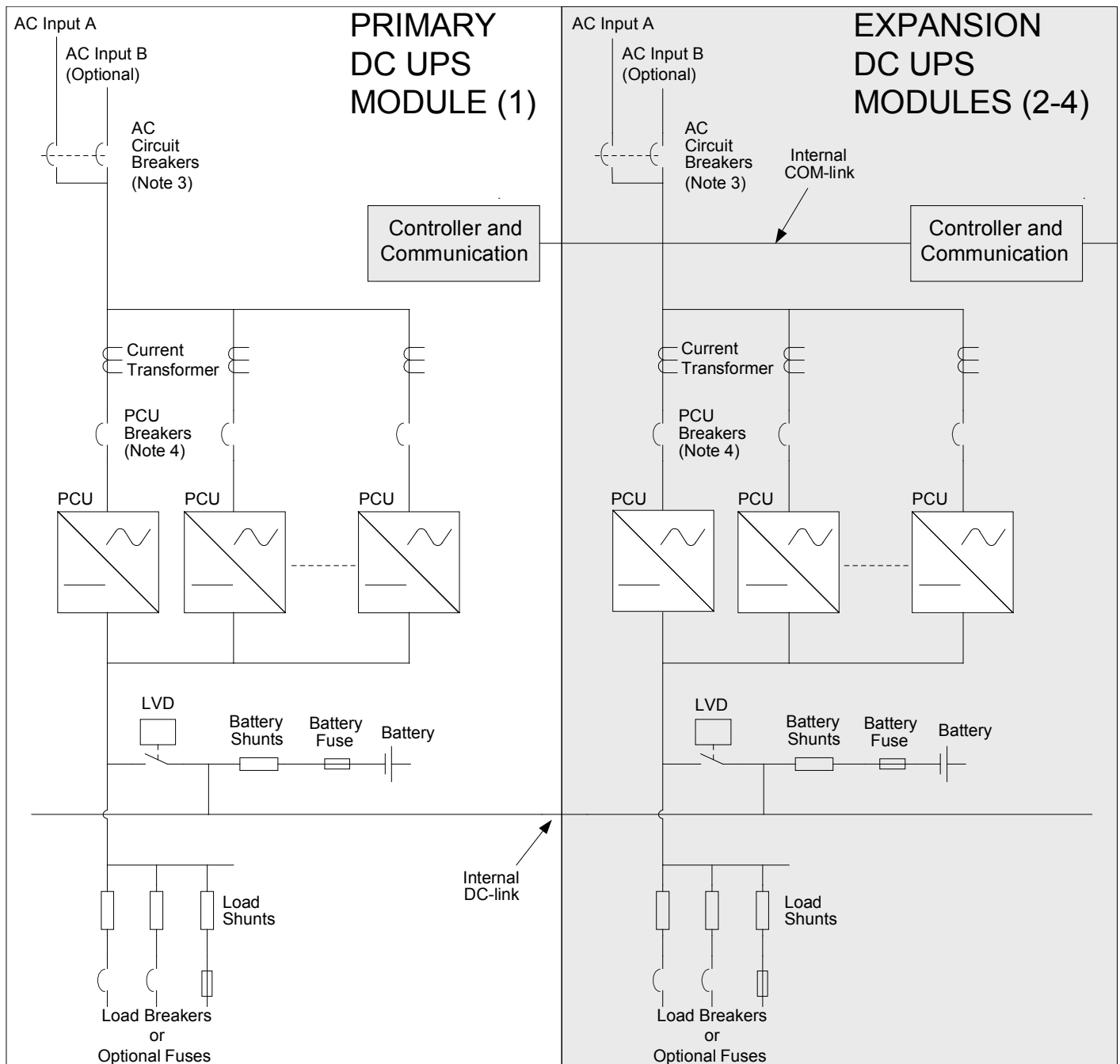
DC UPS Load	Single module 70kW	Two modules 140kW	Three modules 210kW	Four modules 280kW
10kW	130	300	480	630
20kW	55	130	210	300
30kW	28	90	130	180
40kW	17	55	90	130
50kW	12	41	70	100
64kW	7	24	50	75
70kW	3	21	43	69
80kW		17	34	55
90kW		14	27	47
100kW		12	22	40
110kW		10	19	34
120kW		8	17	28
134kW		6	16	25
140kW		3	14	22
150kW			12	19
160kW			10	17
170kW			9	15
180kW			8	14
190kW			7	13
204kW			4	11
210kW			2	10
220kW				9
230kW				9
240kW				8
250kW				7
260kW				6
274kW				3
280kW				1

# NetSure™ ITM with eSure™ Technology

Site Planning Data and System Drawings – 48V DC UPS

Section 6037 (Revision D, June 22, 2018)

## One Line Diagram



### NOTES

1. DUAL AC INPUT VERSION OPTIONAL.
2. RECOMMENDED INPUT WIRE SIZE 2/0 AWG, 90°C (194°F), SEE NEC TABLE 310.16.
3. MAX INPUT CURRENT:
  - 480V: 111A @ 384V; 89A @ 480V
  - 400V: 133A @ 320V; 107A @ 400V
  - 380V: 140A @ 304V; 112A @ 380V
3. SYSTEM AC INPUT BREAKER(S) RATED 150A, 65kAIC.
4. PCU AC INPUT BREAKERS RATED 32A, 5000AIC. TWO (2) PCUs PER BREAKER.

# NetSure™ ITM with eSure™ Technology

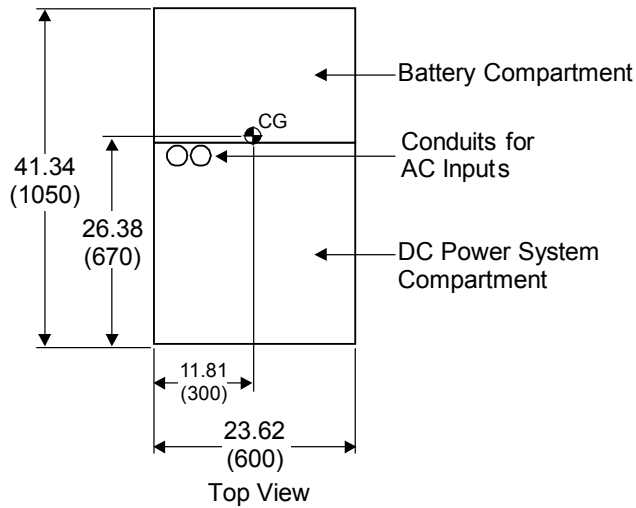
Site Planning Data and System Drawings – 48V DC UPS

Section 6037 (Revision D, June 22, 2018)

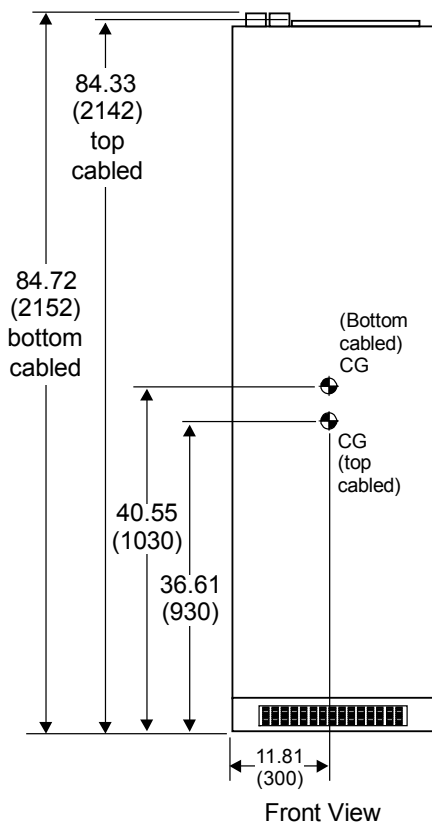
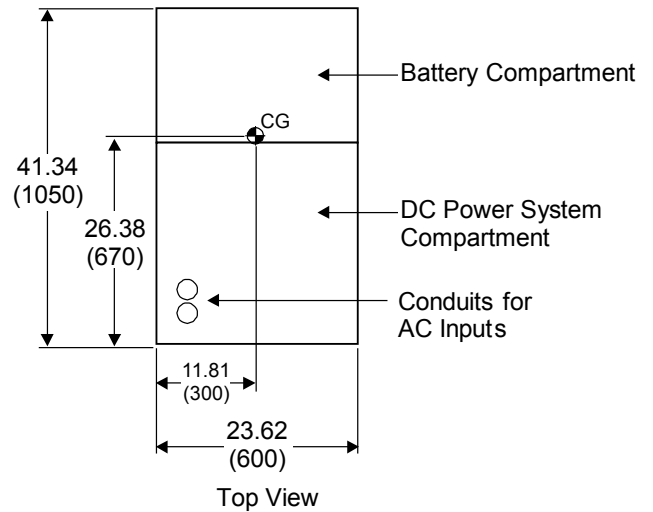
## Mechanical Installation and Outline Drawings

### Individual Cabinet Mechanical Data

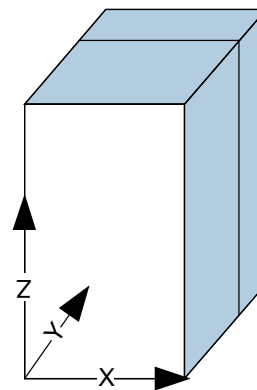
DC UPS MODULE WITH  
BOTTOM FEED DC DISTRIBUTION



DC UPS MODULE WITH  
TOP FEED DC DISTRIBUTION



### CENTER OF GRAVITY



Top Cabled Version

X = 11.81 (300)  
Y = 26.38 (670)  
Z = 36.61 (930)

Bottom Cabled Version

X = 11.81 (300)  
Y = 26.38 (670)  
Z = 40.55 (1030)

### Notes:

1. Dimensions are in inches (millimeters).
2. Weight (fully loaded): 2925 lbs / 1325 kg.
3. Heat Rejection: 9554 BTU/h at full load (per module).
4. May be installed on concrete slab or raised floor.

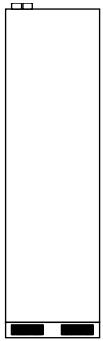
# NetSure™ ITM with eSure™ Technology

Site Planning Data and System Drawings – 48V DC UPS

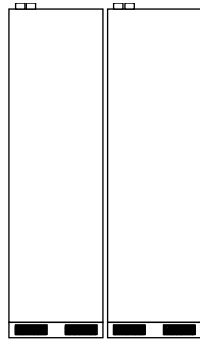
Section 6037 (Revision D, June 22, 2018)

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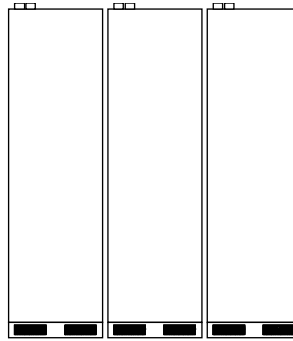
## System Configurations



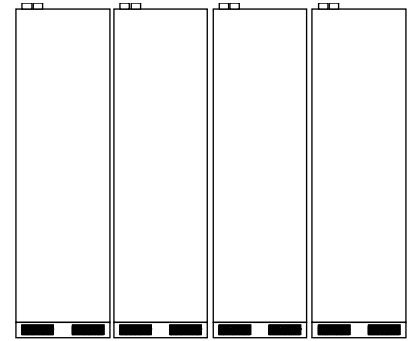
Single Module  
70kW (full)  
64kW (n+1)



Two Modules  
140kW (full)  
134kW (n+1)



Three Modules  
210kW (full)  
204kW (n+1)



Four Modules  
280kW (full)  
274kW (n+1)

System can be expanded either to the left or the right of the Primary Module.

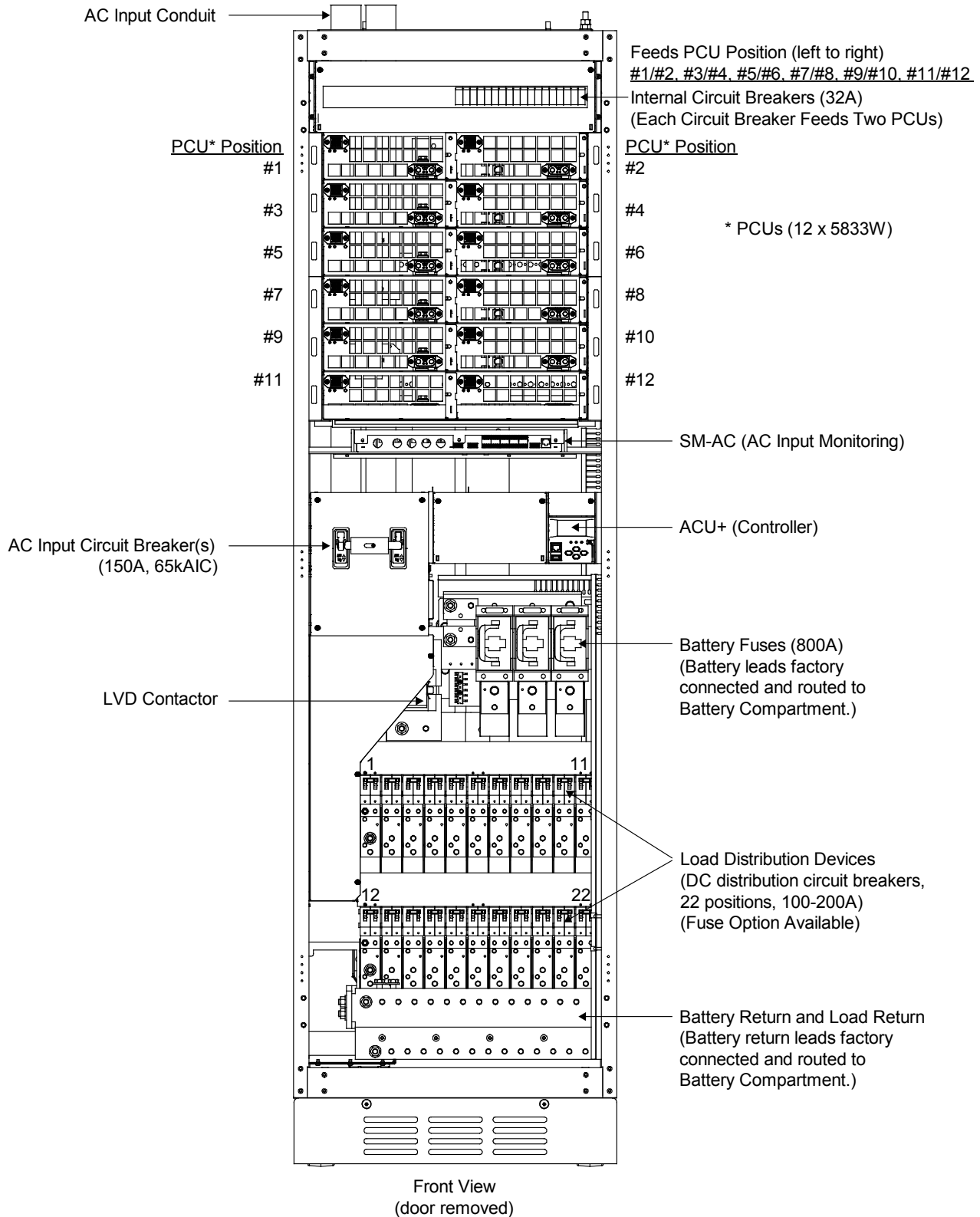
# NetSure™ ITM with eSure™ Technology

Site Planning Data and System Drawings – 48V DC UPS

Section 6037 (Revision D, June 22, 2018)

## Main Components

### Bottom Cabled Configuration - Circuit Breaker Load Distribution (Standard)

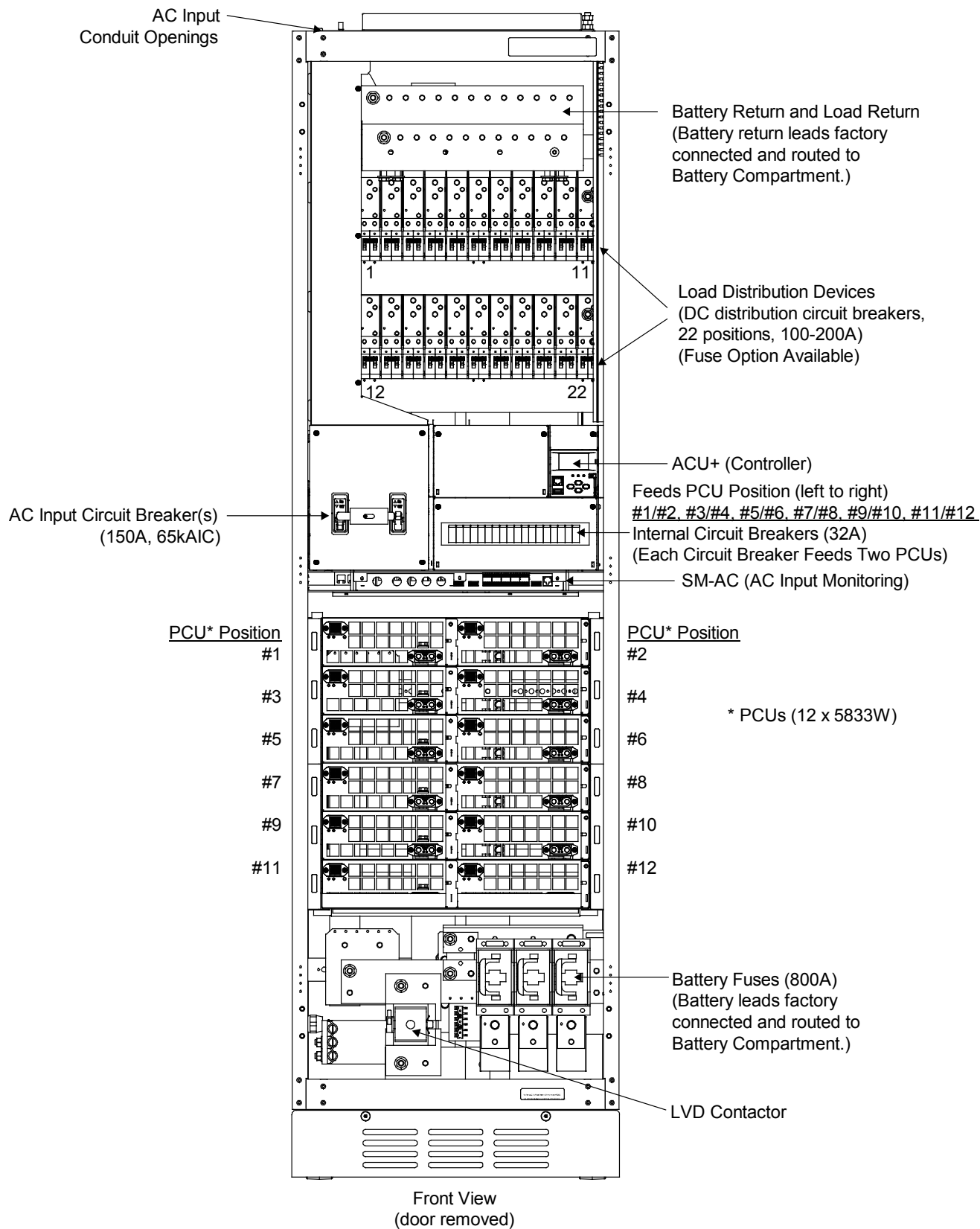


# NetSure™ ITM with eSure™ Technology

Site Planning Data and System Drawings – 48V DC UPS

Section 6037 (Revision D, June 22, 2018)

## Top Cabled Configuration - Circuit Breaker Load Distribution (Standard)

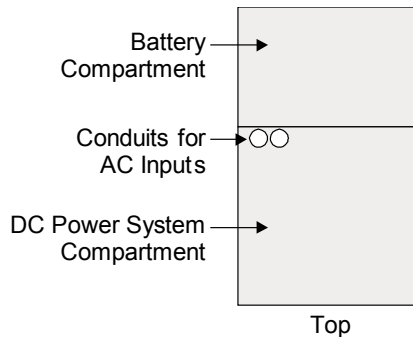


# NetSure™ ITM with eSure™ Technology

Site Planning Data and System Drawings – 48V DC UPS

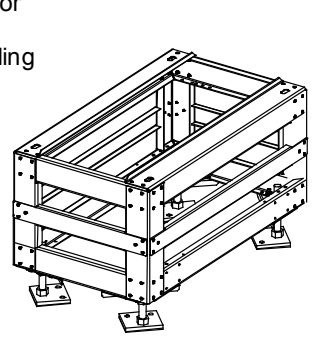
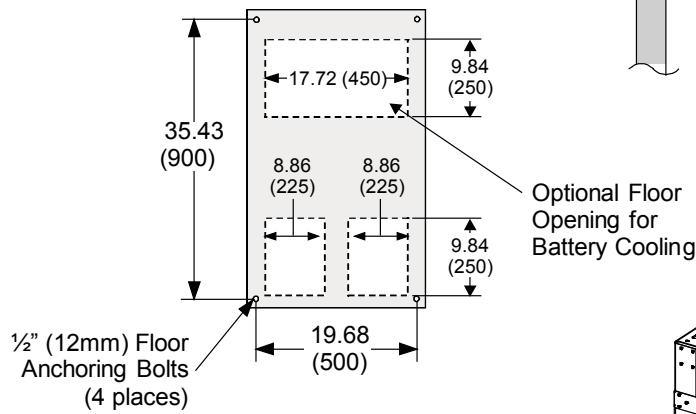
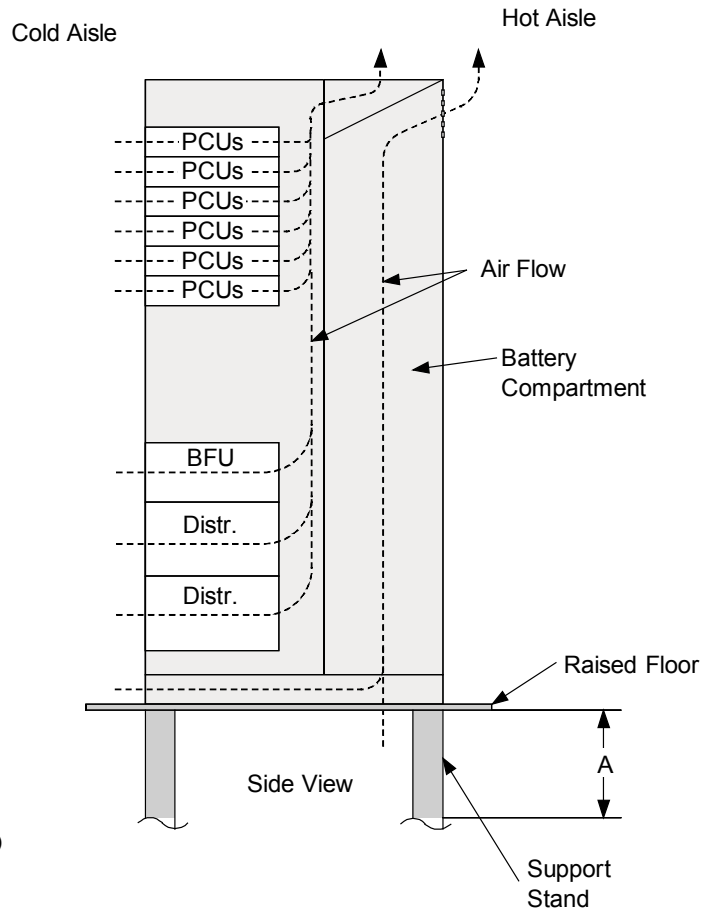
Section 6037 (Revision D, June 22, 2018)

## Bottom Cable Entry

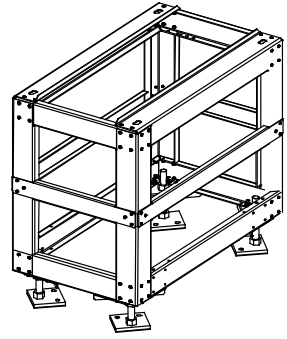


**Notes:**

1. Dimensions are in inches (millimeters).
2. Do not block air intake openings.
3. Minimum under floor space for under floor output cable runs:  $A=1f$  (300mm).
4. Run cables not to block air openings for battery cooling.



P/N 547822  
24" Tall Floor Stand



P/N 547823  
36" Tall Floor Stand

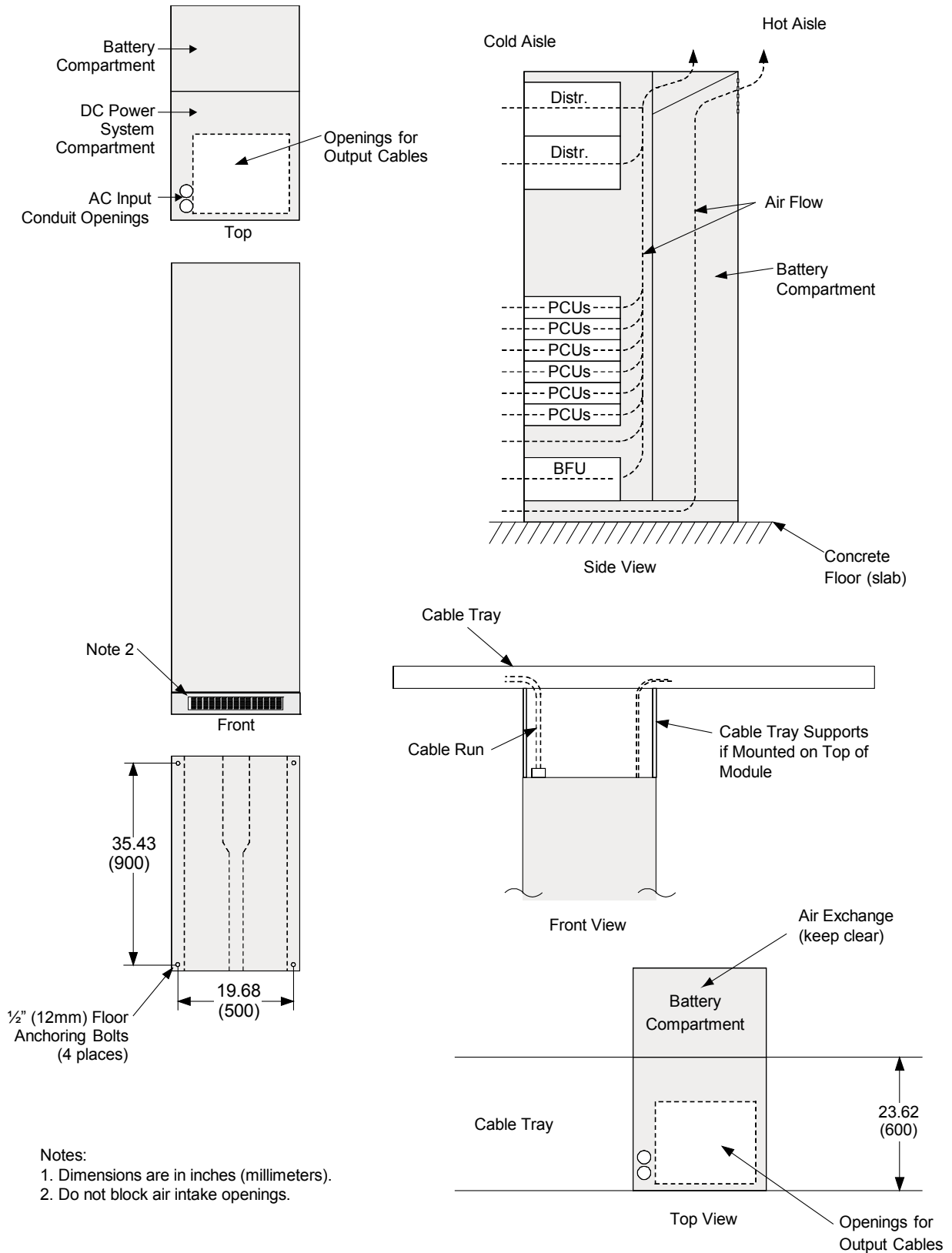


# NetSure™ ITM with eSure™ Technology

Site Planning Data and System Drawings – 48V DC UPS

Section 6037 (Revision D, June 22, 2018)

## Top Cable Entry



- Notes:
1. Dimensions are in inches (millimeters).
  2. Do not block air intake openings.

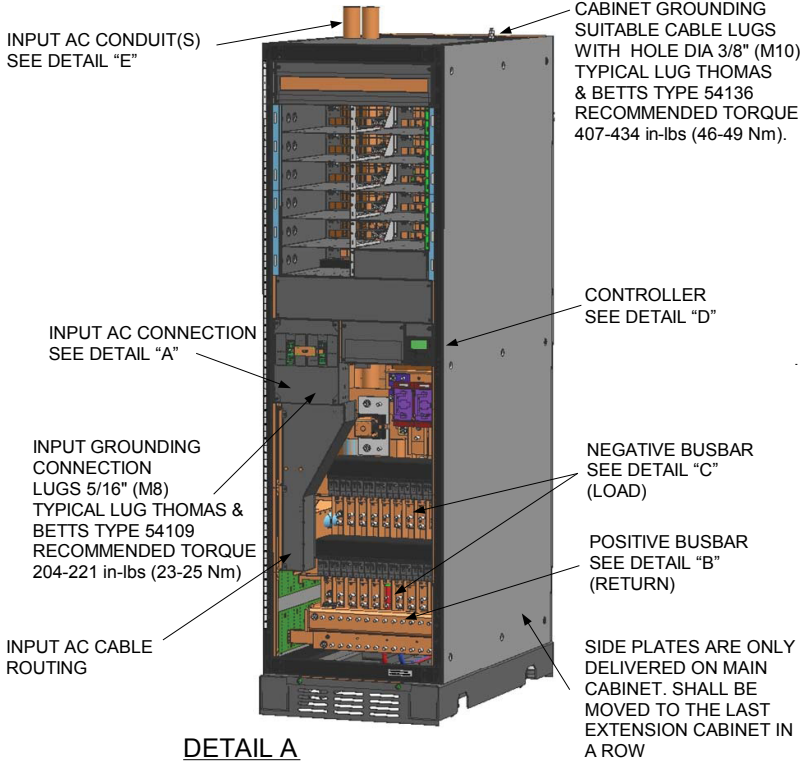
# NetSure™ ITM with eSure™ Technology

Site Planning Data and System Drawings – 48V DC UPS

Section 6037 (Revision D, June 22, 2018)

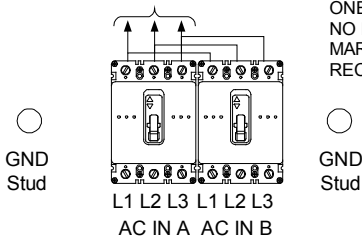
## Connection Details

### Bottom Cable Entry Electrical Connection Detail

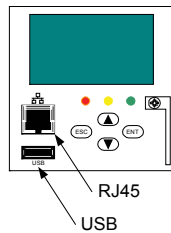


**DETAIL A**

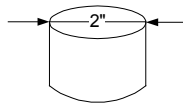
factory wiring



**DETAIL D**



**DETAIL E**



RECOMMENDED COUPLING:  
RACO TYPE 2628  
(GRAINGER 3LV08) OR  
THOMAS BETTS TYPE  
TK126US

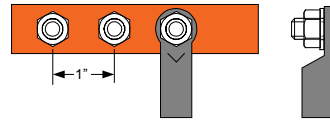
**COMMUNICATION LINKS BETWEEN CABINETS:**

1. RS-485 BUS WIRES (TWISTED YELLOW/WHITE WIRES) SHALL BE CONNECTED TO SM-AC.
2. CAN-BUS WIRES (TWISTED BLACK/WHITE WIRES) SHALL BE INTERCONNECTED.
3. CONTACTOR CONTROL CABLES SHALL BE INTERCONNECTED.

**NOTE**

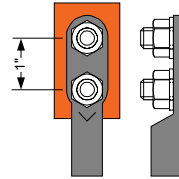
1. WHEN CONNECTING OUTPUT DISTRIBUTION CABLES – START WITH INNER ROW FIRST.
2. THE DC DISTRIBUTION GROUND/RETURN BUSBAR MUST BE CONNECTED VIA A SOLID SINGLE-POINT GROUNDING LEAD TO THE MAIN BUILDING GROUND. REFER TO NEC, TABLE 250-122 FOR GROUNDING CONDUCTOR SIZE.

**DETAIL B (Circuit Breaker Option)**



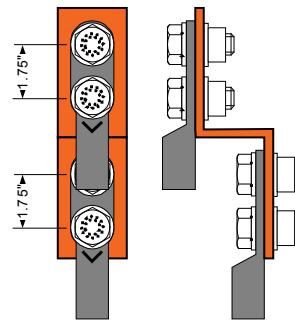
SUITABLE CABLE LUGS WITH HOLE DIA 3/8" (M10)  
TYPICAL LUG THOMAS & BETTS TYPE 54109  
RECOMMENDED TORQUE 407-434 in-lbs (46-49 Nm)

**DETAIL C (Circuit Breaker Option)**



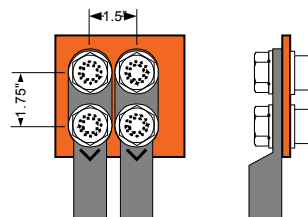
SUITABLE CABLE LUGS WITH HOLE DIA 3/8" (M10)  
TYPICAL LUG THOMAS & BETTS TYPE 54209  
RECOMMENDED TORQUE 407-434 in-lbs (46-49 Nm)

**DETAIL B (Fuse Option)**



SUITABLE CABLE LUGS WITH HOLE DIA 1/2" (M12)  
TYPICAL LUG THOMAS & BETTS TYPE 54282 (350kcmil)  
RECOMMENDED TORQUE 690-743 in-lbs (78-84 Nm)

**DETAIL C (Fuse Option)**



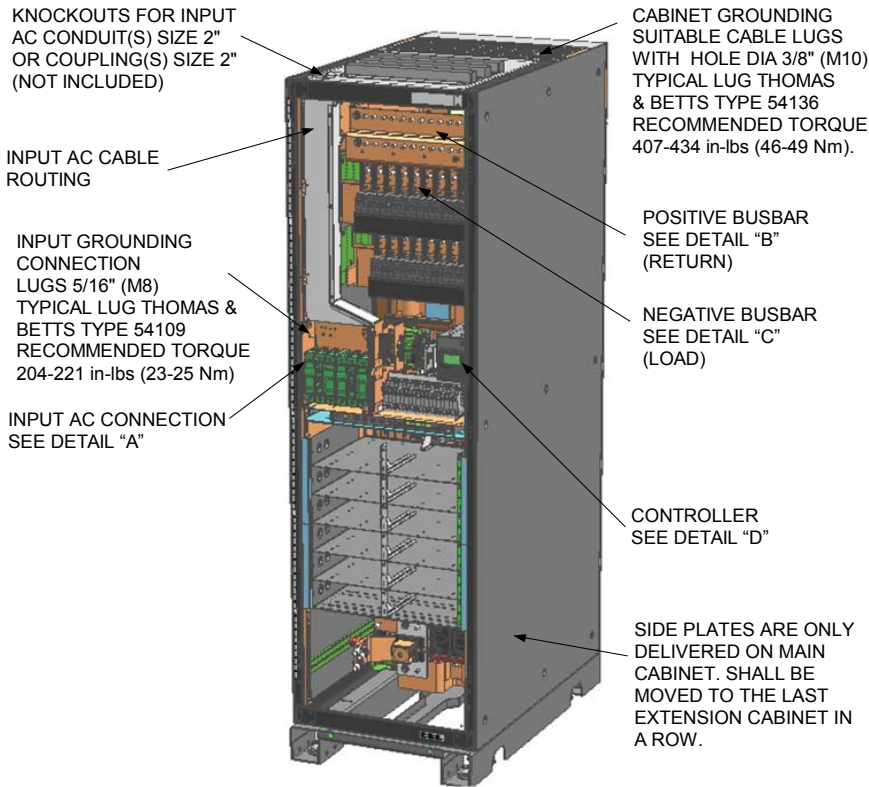
SUITABLE CABLE LUGS WITH HOLE DIA 1/2" (M12)  
TYPICAL LUG THOMAS & BETTS TYPE 54282 (350kcmil)  
RECOMMENDED TORQUE 690-743 in-lbs (78-84 Nm)

# NetSure™ ITM with eSure™ Technology

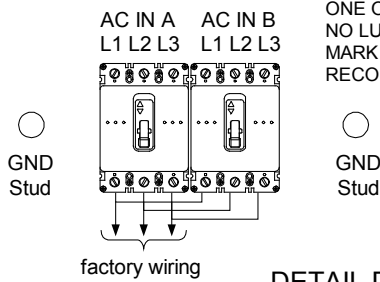
Site Planning Data and System Drawings – 48V DC UPS

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## Top Cable Entry Electrical Connection Detail

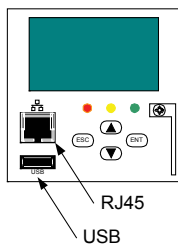


### DETAIL A

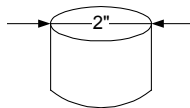


ONE OR TWO AC CIRCUIT BREAKERS, NO LUGS NEEDED. MARK CABLES A-L1, A-L2 AND A-L3 (B-L1, B-L2, B-L3) RECOMMENDED TORQUE 124 in-lbs (14 Nm)

### DETAIL D



### DETAIL E



RECOMMENDED COUPLING: RACO TYPE 2628 (GRAINGER 3LV08) OR THOMAS BETTS TYPE TK126US

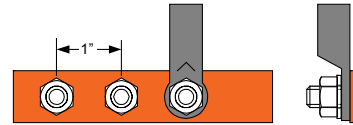
### COMMUNICATION LINKS BETWEEN CABINETS:

1. RS-485 BUS WIRES (TWISTED YELLOW/WHITE WIRES) SHALL BE CONNECTED TO SM-AC.
2. CAN-BUS WIRES (TWISTED BLACK/WHITE WIRES) SHALL BE INTERCONNECTED.
3. CONTACTOR CONTROL CABLES SHALL BE INTERCONNECTED.

### NOTE

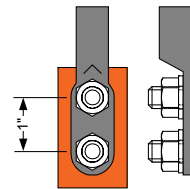
1. WHEN CONNECTING OUTPUT DISTRIBUTION CABLES – START WITH INNER ROW FIRST.
2. THE DC DISTRIBUTION GROUND/RETURN BUSBAR MUST BE CONNECTED VIA A SOLID SINGLE-POINT GROUNDING LEAD TO THE MAIN BUILDING GROUND. REFER TO NEC, TABLE 250-122 FOR GROUNDING CONDUCTOR SIZE.

### DETAIL B (Circuit Breaker Option)



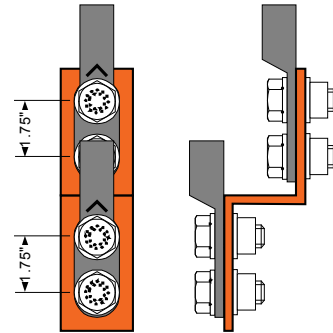
SUITABLE CABLE LUGS WITH HOLE DIA 3/8" (M10) TYPICAL LUG THOMAS & BETTS TYPE 54109 RECOMMENDED TORQUE 407-434 in-lbs (46-49 Nm)

### DETAIL C (Circuit Breaker Option)



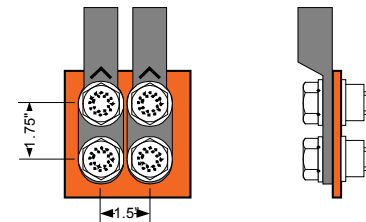
SUITABLE CABLE LUGS WITH HOLE DIA 3/8" (M10) TYPICAL LUG THOMAS & BETTS TYPE 54209 RECOMMENDED TORQUE 407-434 in-lbs (46-49 Nm)

### DETAIL B (Fuse Option)



SUITABLE CABLE LUGS WITH HOLE DIA 1/2" (M12) TYPICAL LUG THOMAS & BETTS TYPE 54282 (350kcmil) RECOMMENDED TORQUE 690-743 in-lbs (78-84 Nm)

### DETAIL C (Fuse Option)



SUITABLE CABLE LUGS WITH HOLE DIA 1/2" (M12) TYPICAL LUG THOMAS & BETTS TYPE 54282 (350kcmil) RECOMMENDED TORQUE 690-743 in-lbs (78-84 Nm)

**NetSure™ ITM with eSure™ Technology**  
Site Planning Data and System Drawings – 48V DC UPS  
Section 6037 (Revision D, June 22, 2018)

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