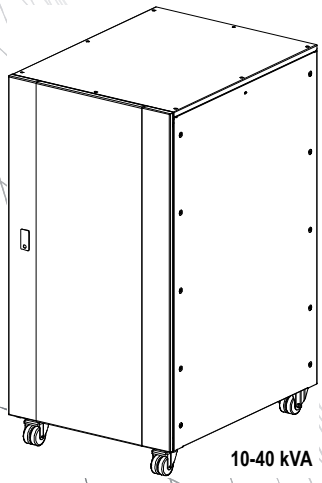
APC
by Schneider Electric

Battery Installation

MGE™ Galaxy™ 300

10-40 kVA
380/400/415 V



Contents

Overview

IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS

Warning: ALL safety instructions in the Safety Sheet (990-3620) must be read, understood and followed when installing the UPS and XR Battery enclsoure(s). Failure to do so could result in equipment damage, serious injury, or death.

Warning: The maximum storage time of the UPS is limited to six months due to the need of recharging the integrated batteries. If the UPS remains de-energised for a long period, we recommend that you energise the UPS for a period of 24 hours, at least once every month. This charges the battery, thus avoiding possible irreversible damage.

Caution: All electrical power and power control wiring must be installed by a qualified electrician, and must comply with local and national regulations for maximum power rating.

Product Overview

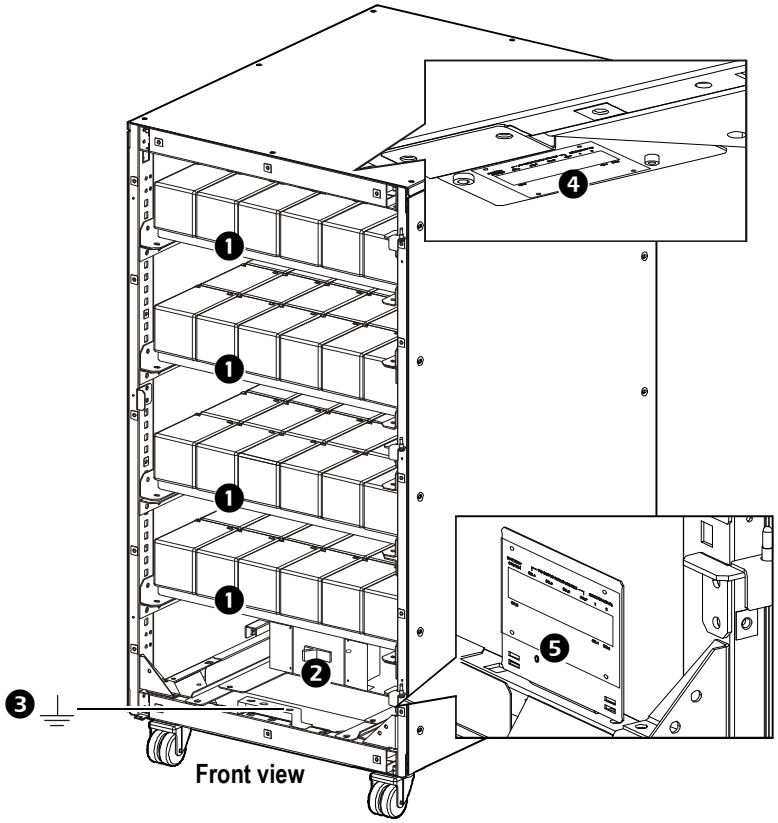
❶ Battery shelves

❷ Battery circuit breaker

❸ Ground cable connection (from the UPS)

❹ Battery temperature sensor (ATIZ)

❺ Connection terminal

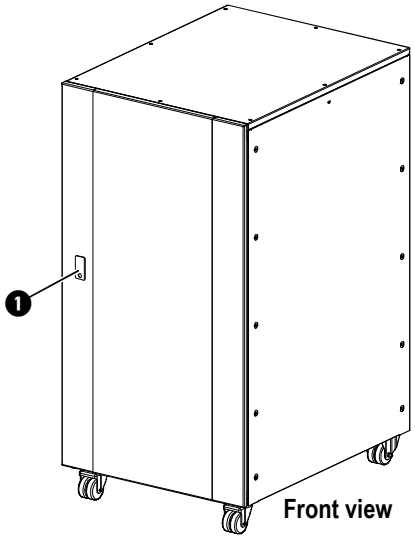


Cables and Batteries

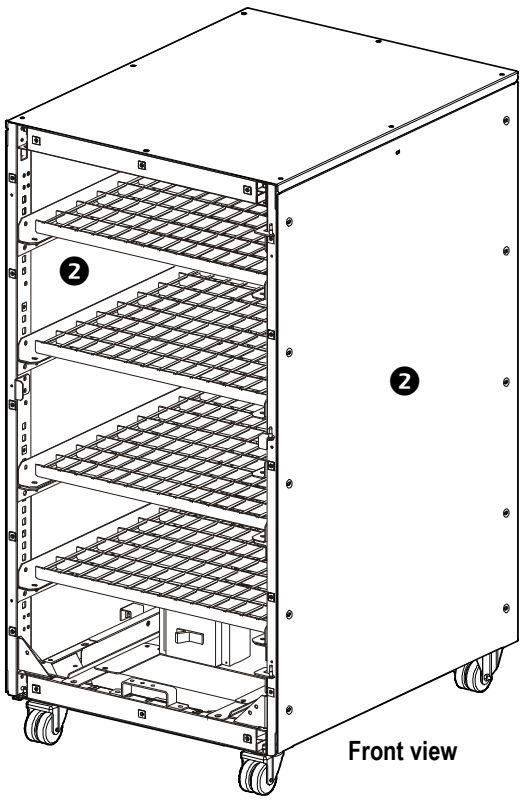
Note: The battery enclosure must be installed on a non-inflammable, level and solid floor.

Prepare for Cables

1. Open the front door.



2. Remove both side panels.

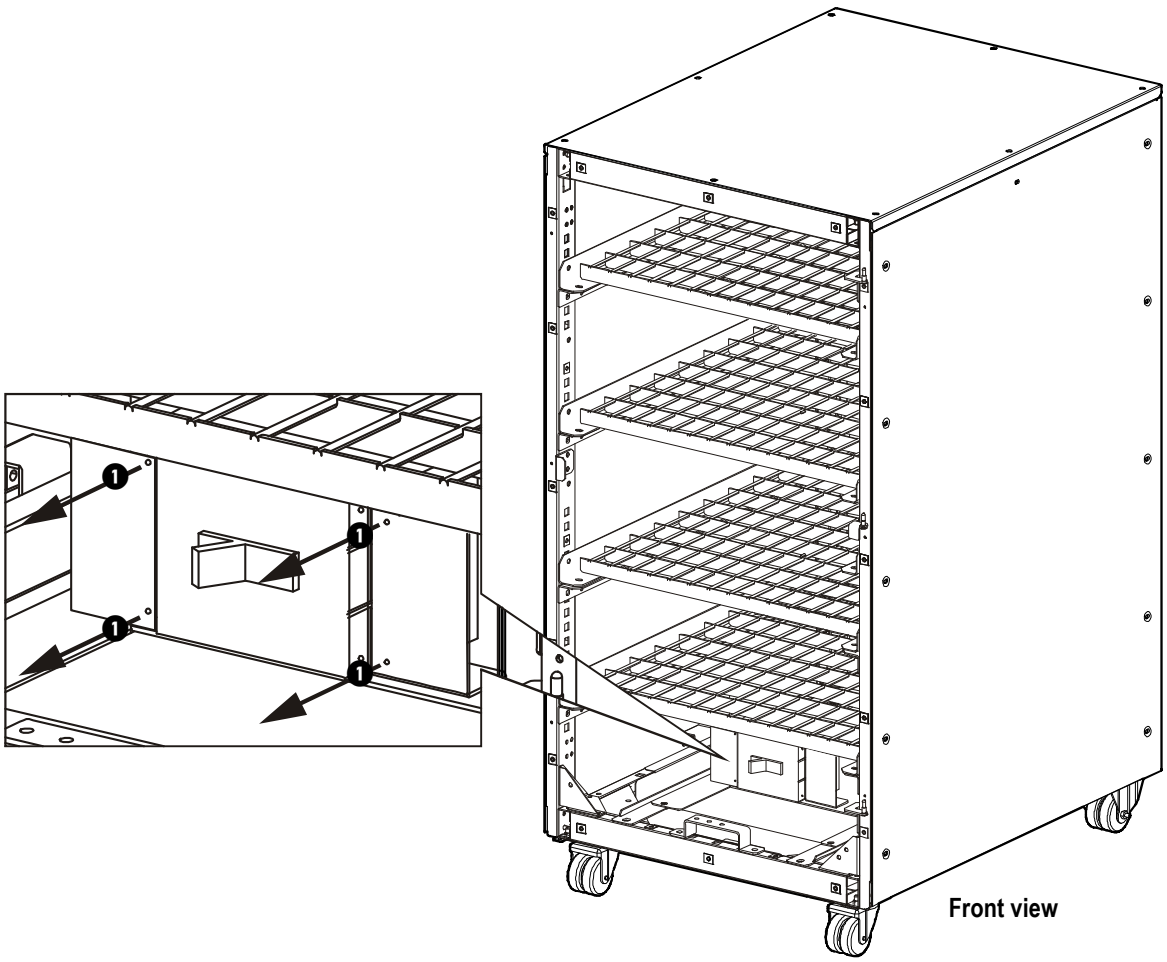


Battery enclosure with pre-installed batteries

Warning: Remove all cardboard used to protect the batteries during transport. Make sure that cables and copper bars are separated.

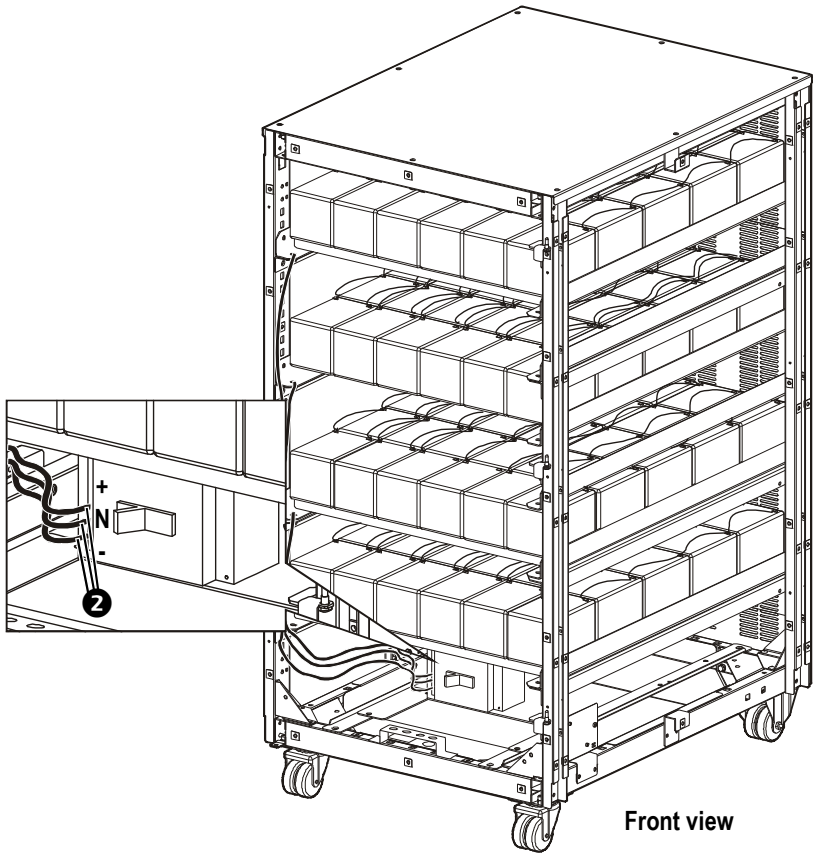
Note: A maximum of two battery enclosures can be connected to the UPS (one XR Battery enclosure with a circuit breaker plus one enclosure without a circuit breaker) by a batch cable between the UPS and the circuit breaker in the battery enclosure.

1. Remove the left and right plastic cover from the battery breaker by removing the two screws fastening each plastic cover.



Front view

2. Connect the batteries to the battery breaker by running the cables from the battery breaker to each shelve. Note! Make sure to run the cables in this order.



Front view

Battery enclosure without pre-installed batteries

Warning: APC by Schneider is not responsible for the wiring of external non-APC batteries.

Warning: Remove all cardboard used to protect the batteries during transport. Make sure that cables and copper bars are separated.

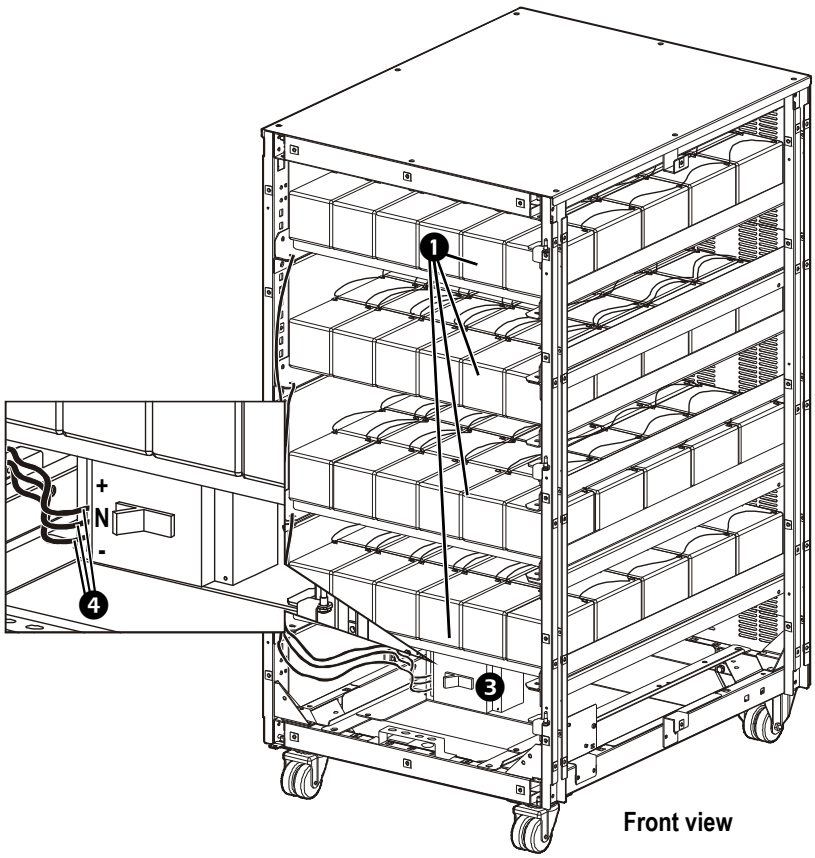
Note: Before the installation of batteries, you must select and follow the diagram under “Appendix” on page 16 which applies to your configuration.

Note: The maximum weight of each battery shelf is 155 kg.

Note: A maximum of four battery shelves can be installed.

Note: A maximum of two battery enclosures can be connected to the UPS (one XR Battery enclosure with a circuit breaker plus one enclosure without a circuit breaker) by a batch cable between the UPS and the circuit breaker in the battery enclosure.

1. Insert the batteries on the shelves starting from the bottom according to the relevant diagram for your configuration under “Appendix” on page 16.
2. Connect the batteries according to the chosen configuration diagram.
3. Install a battery breaker.
4. Connect the batteries to the battery breaker by running the cables from the battery breaker to each shelve. Note! Make sure to run the cables in this order.



Front view

Connect Communication Cables between the UPS and Battery Enclosure

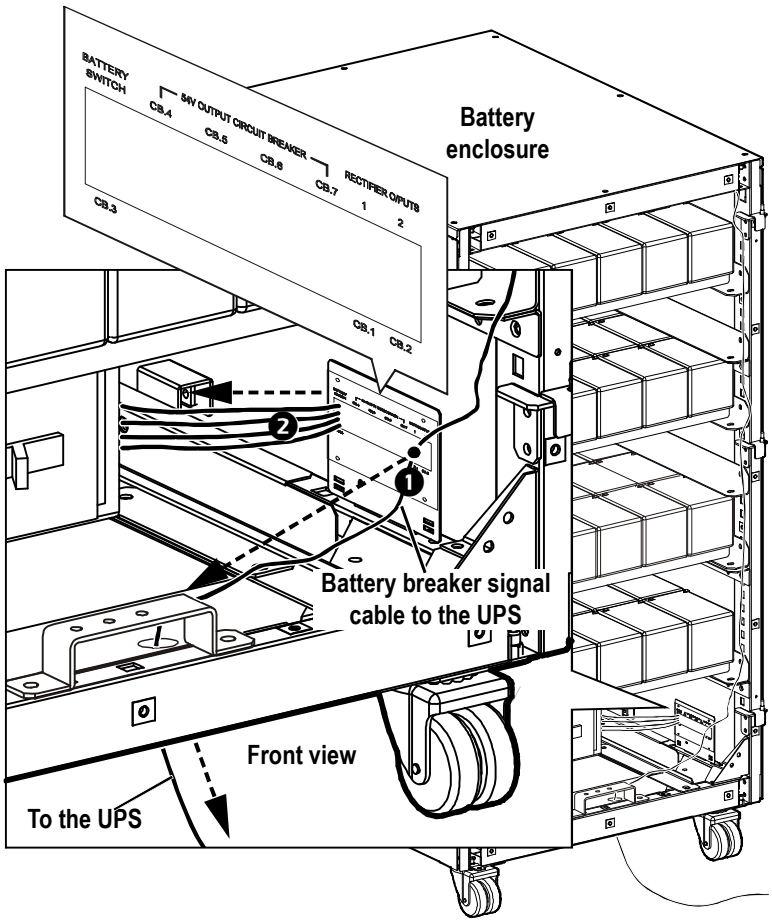
External battery temperature (ATIZ) and external battery breaker signal

Note: The ATIZ cable is for external battery temperature detection signal (cable is pre-installed).

Note: The battery cable is for external battery breaker signal (cable is pre-installed).

Note: The connection of communication cables is only applicable between the UPS and XR1. For the connection of XR2, follow step 2 only.

1. Run the combined battery breaker and ATIZ signal cable from the XR connection terminal as shown. Note! See the UPS installation manual for information on where to connect the other end of the cable(s) to the UPS.
2. Run the four cables from the XR connection terminal to the XR battery breaker (see the below table for cable description).



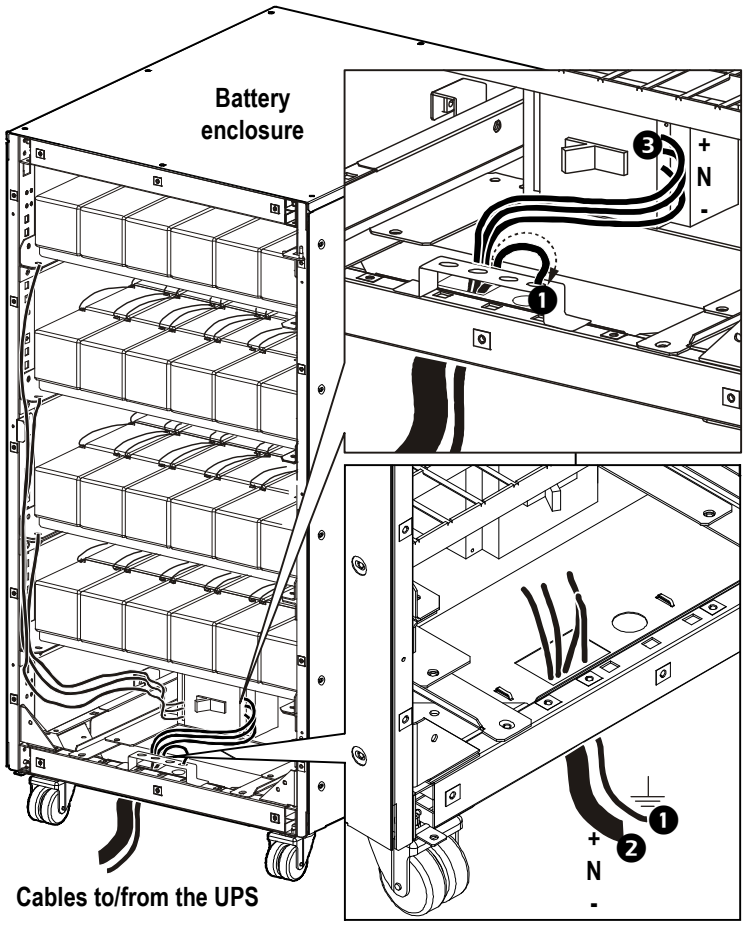
Cable description (step 2)		
Cable color	**Cable label**	**Description**
Yellow	QB OF-11	CB contactor signal
White	QB OF-14	CB contactor signal
Red	QB OF-D4	+12 V power supply
Black	QB OF-D1	-12 V power supply

Connect the Battery Cables between the UPS and Battery Enclosure

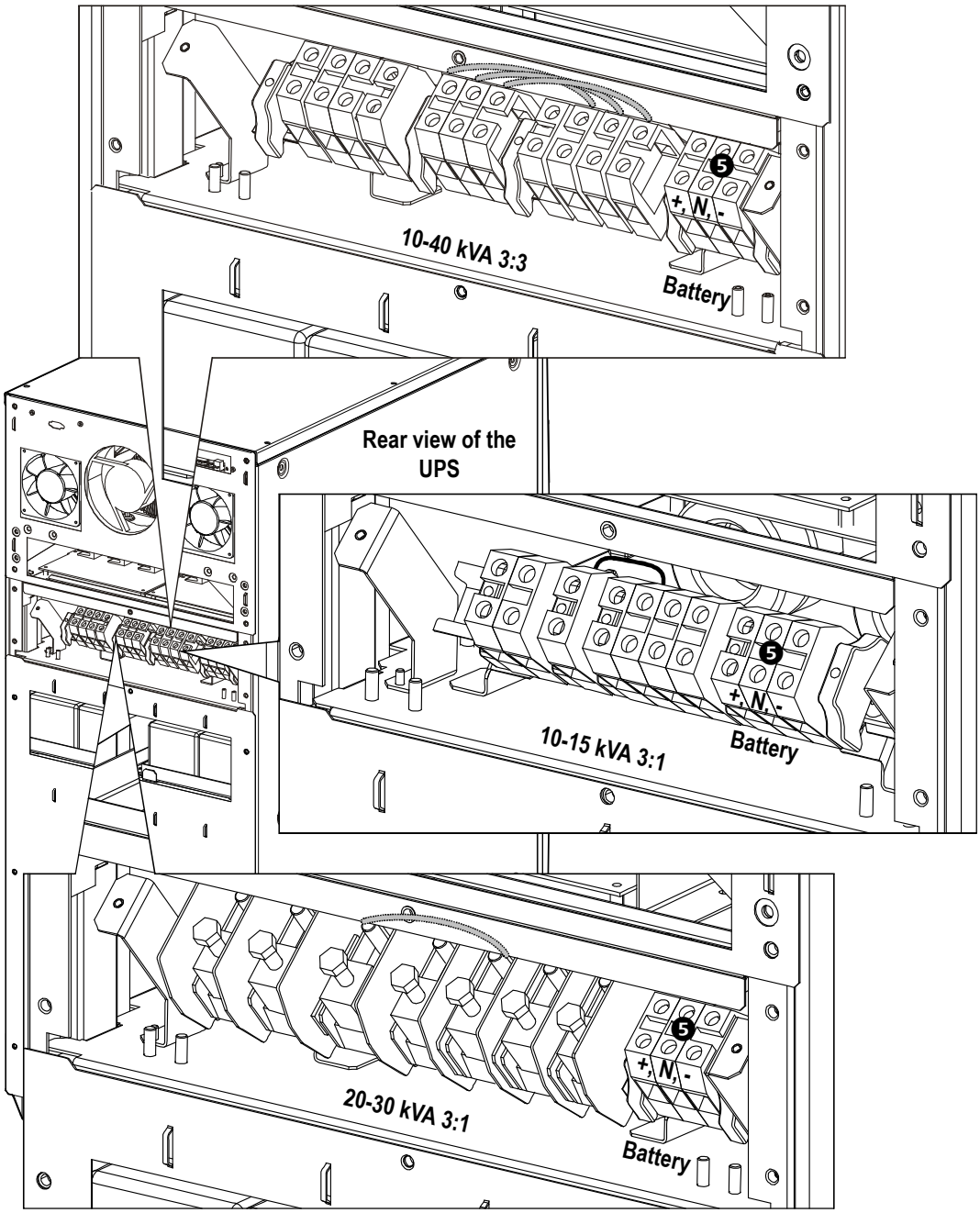
Warning: This procedure describes how to connect the <u>initial</u> battery cables between the UPS and XR before start-up. If the UPS is up running, see "Connect an XR Battery Enclosure to a running UPS" on page 10.

BAT+, BAT-, and N

1. Run the ground cable up through the bottom front hole of the XR and connect it to the busbar.
2. Run the BAT+, N, and BAT- cables up through the bottom front hole.
3. Attach the cables to the right side of the battery breaker.
4. Reinstall the side panels.



Front view



5. Connect the battery cables to the battery terminals in the UPS. See the UPS installation manual for information on how to remove the I/O sheet metal cover.
6. Re-install the UPS covers. See the UPS installation manual for more information.

Connect an XR Battery Enclosure to a running UPS

Warning: Before connecting an XR battery enclosure, ALL safety instructions in the Safety Sheet (990-3620) must be read, understood and followed. Failure to do so could result in equipment damage, serious injury, or death.

Note: This procedure describes how to connect an XR battery enclosure to a UPS running in normal operation.

Note: A maximum of two battery enclosures can be connected to the UPS (one XR Battery enclosure with a circuit breaker plus one enclosure without a circuit breaker) by a batch cable between the UPS and the circuit breaker in the battery enclosure.

Note: Before carrying out the below procedure, make sure that the UPS is running in normal operation with no internal UPS faults displayed. In normal operation all breakers must be in the **ON (closed)** position except for the maintenance bypass breaker which must be in the **OFF (opened)** position.

1. Turn the UPS into maintenance bypass operation:
   a. Turn the static bypass breaker **(QM2)** to the **ON (closed)** position.
   b. Turn the maintenance bypass breaker **(Q3BP)** to the **ON (closed)** position.
   c. Turn the static bypass breaker **(QM2)** to the **OFF (opened)** position.
   d. Turn the output breaker **(QOP)** to the **OFF (opened)** position.
2. Isolate the batteries by turning the UPS battery breaker **(QB)** (and the existing XR battery breaker **(QFB),** if present) to the **OFF (opened)** position.
3. Remove all internal batteries in the UPS enclosure.
4. Prepare for cables. See “Prepare for Cables” on page 3.
5. Install the batteries. See “Battery enclosure with pre-installed batteries” on page 4 or “Battery enclosure without pre-installed batteries” on page 5.
6. Connect the communication cables between the UPS and the XR. See “Connect Communication Cables between the UPS and Battery Enclosure” on page 7.
7. Connect the XR Battery enclosure according to the relevant, electrical diagram under “Appendix” on page 16, and according to the chapter “Connect the Battery Cables between the UPS and Battery Enclosure” on page 8.
8. Verify the battery wiring as described under “Battery enclosure with pre-installed batteries” on page 4 or “Battery enclosure without pre-installed batteries” on page 5

Electrical Hazard: Check the DC voltages with a DC voltage multimeter versus the battery voltage before continuing.

7. Turn the XR battery breaker **(QFB)** to the **ON (closed)** position.
8. Turn the UPS back into normal operation:
    a. Turn the static bypass breaker **(QM2)** to the **ON (closed)** position.
    b. Turn the output breaker **(QOP)** to the **ON (closed)** position.
    c. Turn the maintenance bypass breaker **(Q3BP)** to the **OFF (opened)** position.
    d. Turn the UPS battery breaker **(QB)** to the **ON (closed)** position.
    e. Turn the input breaker **(QM1)** to the **ON (closed)** position.

9. Check the LEDs to see if the UPS is running in normal operation:
    - PFC LED: green
    - INVERTER LED: green
    - LOAD LED: green
    - LOAD PROTECTED LED: green
    - Other LEDs: **OFF**

Replace the Batteries

Warning: Before battery replacement, ALL safety instructions in the Safety Sheet (990-3620) must be read, understood and followed. Failure to do so could result in equipment damage, serious injury, or death.

Caution: Batteries must be replaced by qualified electricians only.

Note: For the replacement of batteries, please refer to the relevant diagram for your configuration under “Appendix” on page 16.

Note: Before replacing batteries, make sure that the UPS is running in normal operation with no internal UPS faults displayed. In normal operation all breakers must be in the **ON (closed)** position except for the maintenance bypass breaker which must be in the **OFF (opened)** position.

Note: Replacing batteries in the UPS and in the XR enclosure(s) requires that the UPS is turned into maintenance bypass operation and that the batteries are disconnected. Follow the procedure described under “Connect an XR Battery Enclosure to a running UPS” on page 10.

Specifications

Battery Output

Battery	Description
Nom voltage (V)	12 v/block
I_{Nom} discharge[1]	See the battery input table in the UPS installation manual 990-3618
I_{Max} discharge[2]	See the battery input table in the UPS installation guide 990-3618
End Voltage	9.9 v/block
[1] Nominal battery discharge current based on rated load and nominal battery voltage. [2] Maximum battery discharge current based on rated load at the end of the discharge.	

Recommended Cable Sizes

Caution: All wiring must comply with all applicable national and/or electrical codes.

Note:
AC cable sizes are determined for:
- the TNS system for copper, single-core cables, type U1000 R02V, 100 m long with a line voltage drop <3%, installed on perforated cable trays, XLPE-type insulation, single-layer trefoil formation, THDI between 15% and 33%, 35°C, at 400 V, grouped in four touching cables.

Battery cable sizes are determined for:
- copper, single-core cables, type U1000 R02V, maximum length 25 m with a line voltage drop <1%.

	3:3										3:1							
kVA	10		15		20		30		40		10		15		20		30	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Mains input (mm²)	10	35	10	35	10	35	16	35	25	35	10	35	10	35	10	90	16	90
AC output (mm²)	10	35	10	35	10	35	16	35	25	35	10	35	25	35	35	90	70	90
Battery (mm²)	10	35	10	35	16	35	25	35	35	35	10	35	10	35	16	25	25	35
Bypass (mm²)	10	35	10	35	10	35	16	35	35	35	10	35	25	34	35	90	70	90

Recommended Bolt and Lug Size

Torque specifications

Battery	Terminal	Bolt size	Torque
CSB			
910-0631	clip		
910-0633		M6	5.4 NM (max 8.2 NM)
YUASA			
912-0001		M5	2.5 NM (max 6 NM)
910-0632		M6	4.8 NM (max 6 NM)

Checklist

- ❑ Make sure that all cardboard and strappings have been removed.
- ❑ Check that the power wiring is torqued as described in the torque specification table above.
- ❑ Verify clockwise phase-rotation (BAT+, N and BAT-) and make sure that a neutral connection is present.
- ❑ Leave a wiring diagram on site for service personnel.
- ❑ Re-install all wiring access panels on the UPS.
- ❑ For any optional equipment, refer to product-specific manuals.
- ❑ Make sure that all battery breakers (on the UPS unit and XR Battery Enclosure(s) if applicable) are in the **OFF (opened)** position.

Appendix

One-line diagrams

Note: Use the below table as a help to find the diagram that fits your system.

	YUASA			CSB		
	15 KVA 60 min	20 KVA/ 30 KVA 60 min	40 KVA 60 min	15 KVA 60 min	30 KVA 60 min	40 KVA 60 min
Part no.	885-4766B	885-4767B	885-4770B	885-4769A	885-4773A	885-4774A
Name	G3HTBAT1	G3HTBAT2	G3HTBAT3	G3HTBAT1	G3HTBAT2	G3HTBAT3
Battery enclosure qty.	1	2	2	1	2	2

Note:

——— - marked cables are assembled by the manufacturer.

 - marked cables are assembled on site by APC by Schneider or a sub contractor.

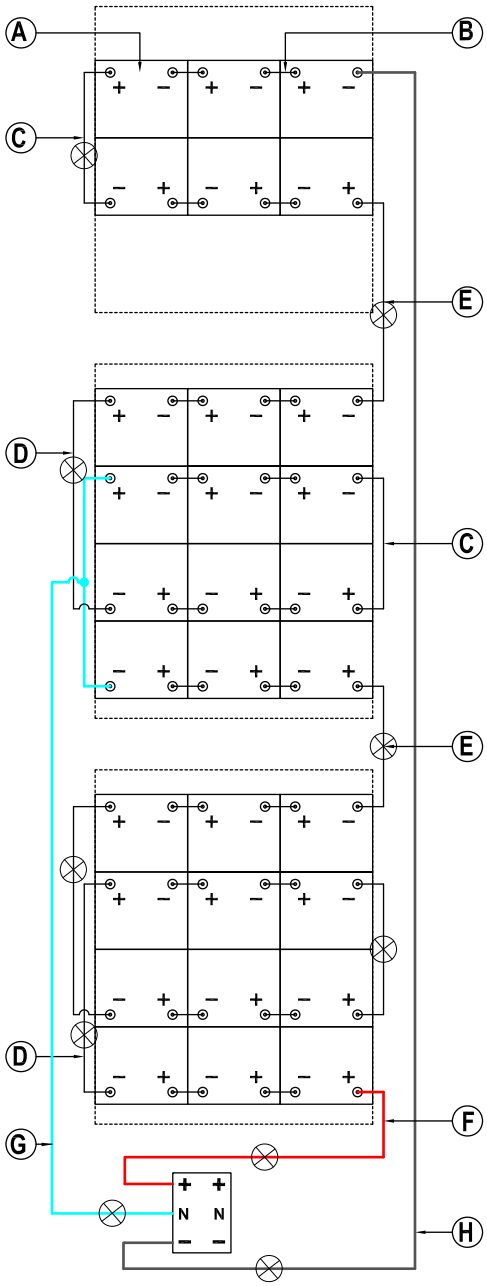
Black diagram lines represent white cables.

Battery cabling YUASA 15 kVA 60 min.

No.	Item	Description	Part no.	Qty.
A	Battery	Yuasa battery SWL 1100	912-0001	30
B	Copper bar	70*25*2	880-2755	20
C	Power cable	Wire 16 mm^2 Ivory 380 mm	0W5032	3
D	Power cable	Wire 16 mm^2 Ivory 640mm	0W5035	3
E	Power cable	Wire Assy 16 mm^2 Ivory 1200 mm	0W5034	2
F	Power cable	Wire Assy 16 mm^2 red 900 mm CB+	0W4982	1
G	Power cable	Wire Assy 1 string CBN	0W4989	1
H	Power cable	Wire Assy 16 mm^2 White 900 mm CB-	0W4986	1

***Torque for screws to link batteries is 2.5 Nm**

MGE Galaxy 300 G3HTBAT1
YUASA Battery Cabling

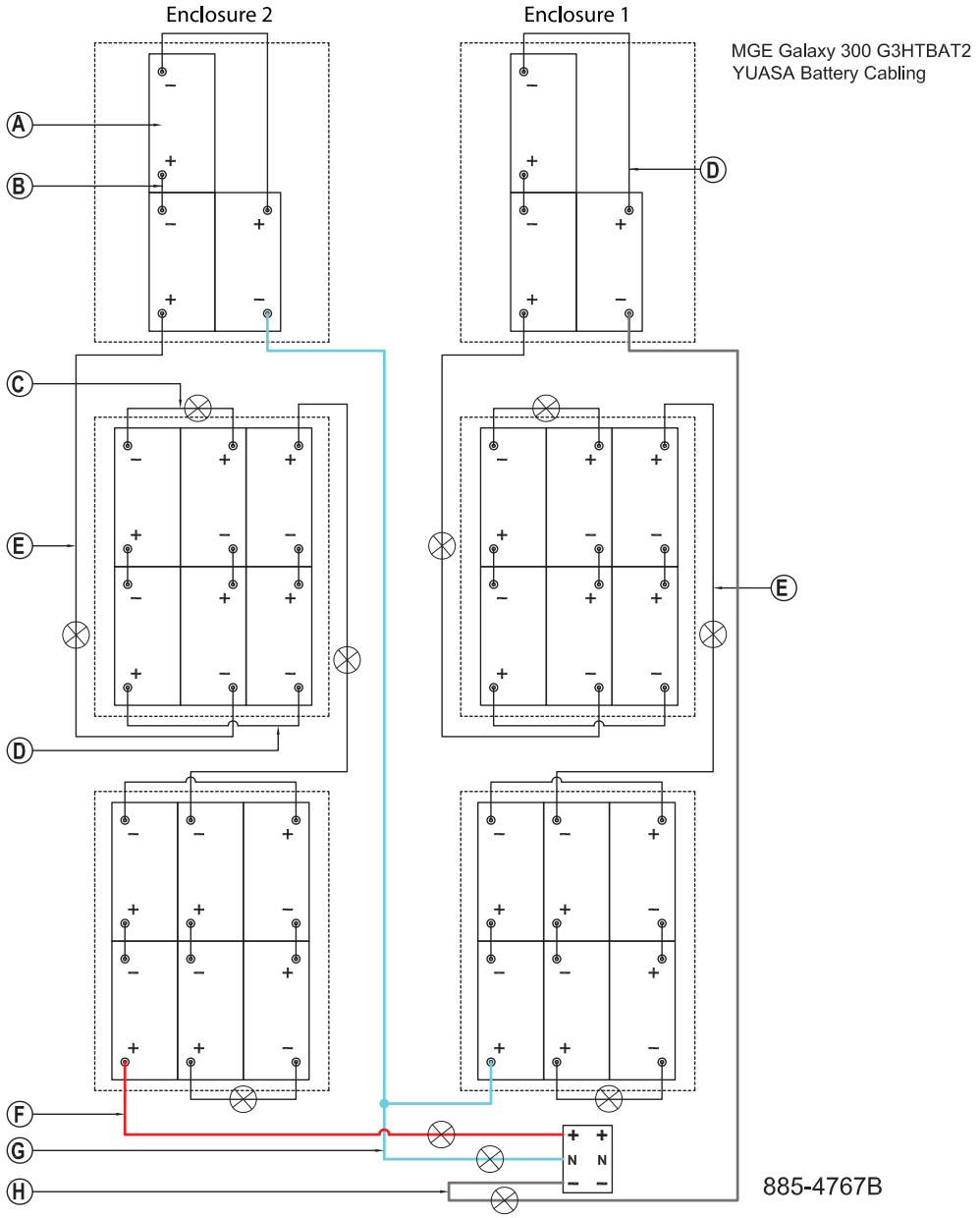


885-4766B

Battery cabling YUASA 20/30 kVA 60 min.

No.	Item	Description	Part no.	Qty.
A	Battery	Yuasa battery SWL 1850	910-0632	30
B	Copper bar	110*25*3	880-2754	14
C	Power cable	Wire 16 mm^2 Ivory 380 mm	0W5032	4
D	Power cable	Wire 16 mm^2 Ivory 640mm	0W5035	6
E	Power cable	Wire Assy 16 mm^2 Ivory 1200 mm	0W5034	4
F	Power cable	Wire Assy 16 mm^2 red 1800 mm CB+	0W4983	1
G	Power cable	Wire Assy 1 string CBN	0W4991	1
H	Power cable	Wire Assy 16 mm^2 White 900 mm CB-	0W4986	1

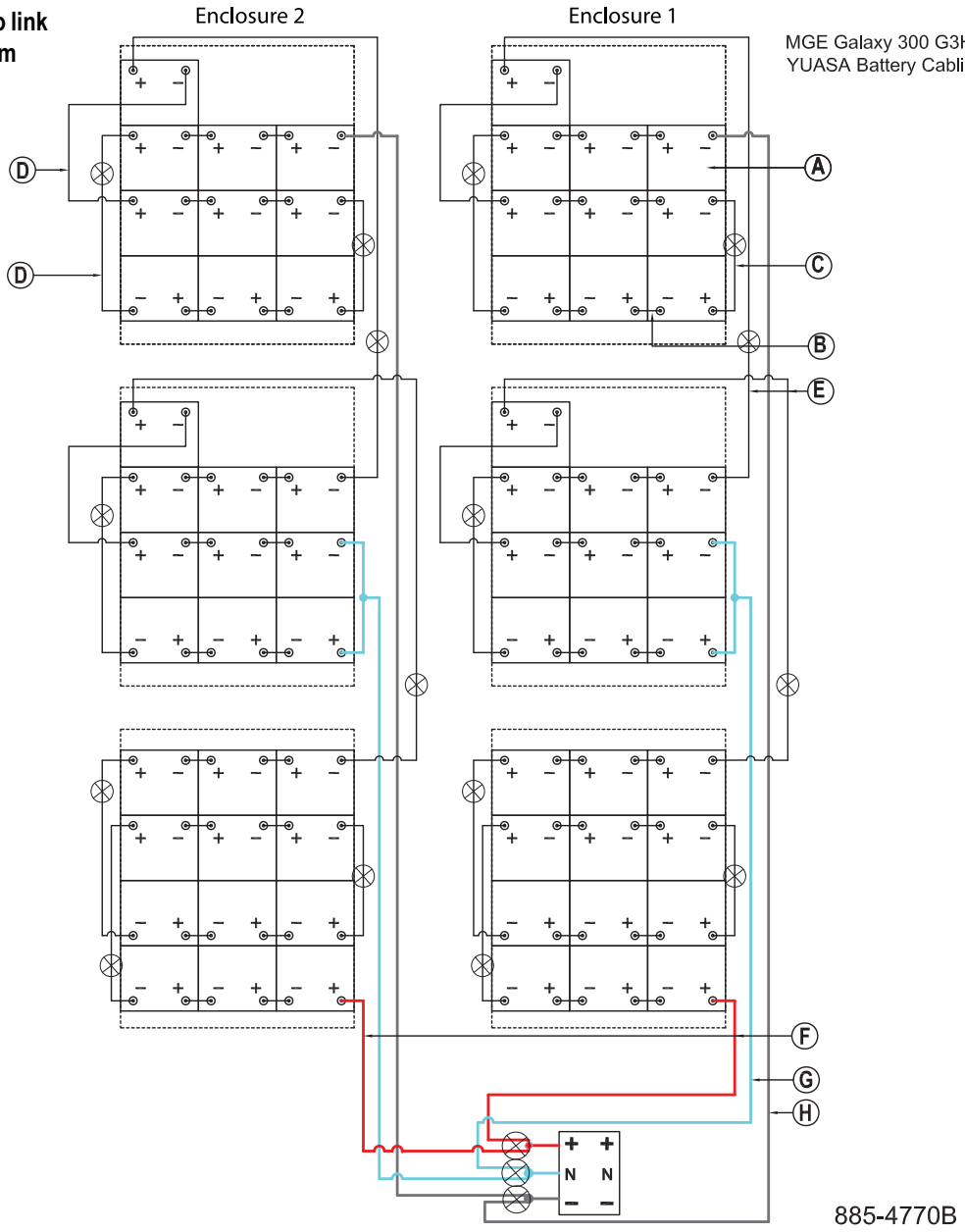
***Torque for screws to link batteries is 4.8 Nm**



Battery cabling YUASA 40 kVA 60 min.

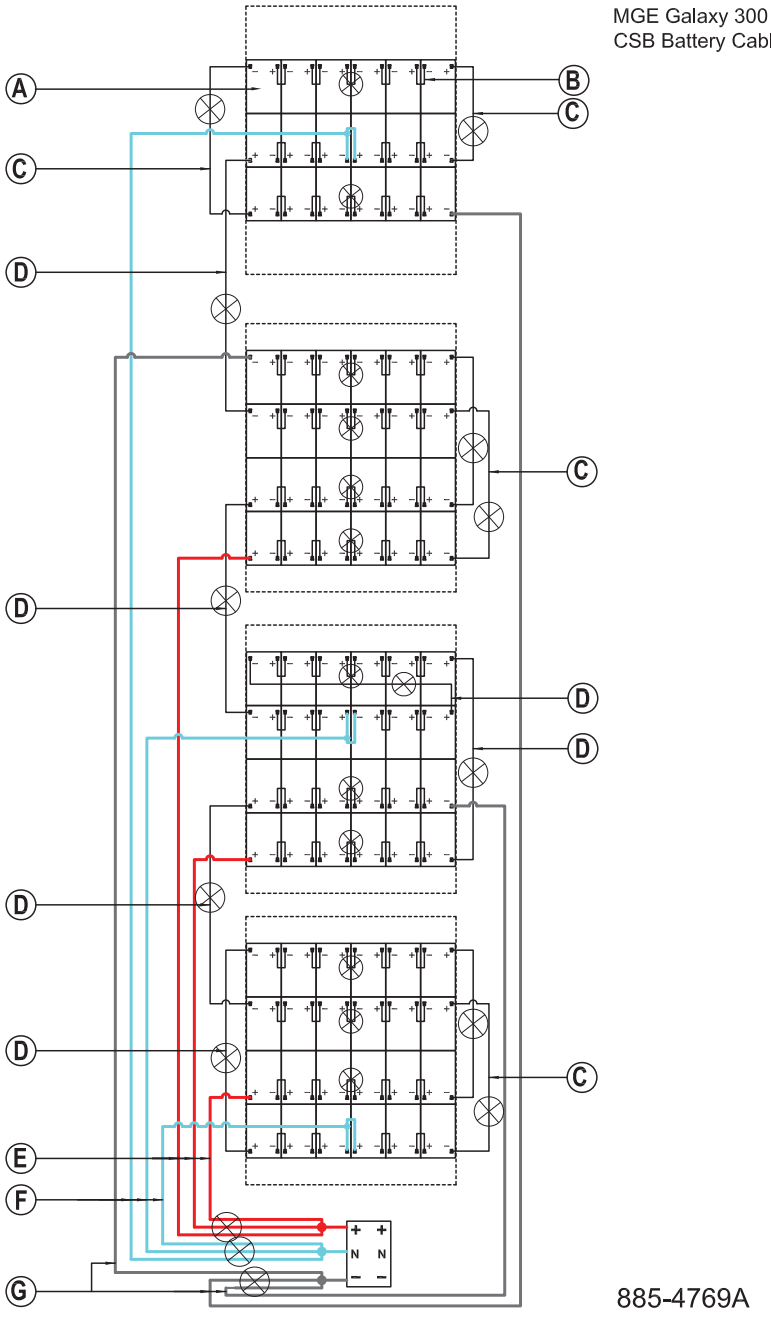
No.	Item	Description	Part no.	Qty.
A	Battery	Yuasa battery SWL 1100	912-0001	64
B	Copper bar	70*25*2	880-2755	40
C	Power cable	Wire 16 mm^2 Ivory 380 mm	0W5032	4
D	Power cable	Wire 16 mm^2 Ivory 640mm	0W5035	12
E	Power cable	Wire Assy 16 mm^2 Ivory 1200 mm	0W5034	4
F	Power cable	Wire Assy 2 strings CB+	0W4984	1
G	Power cable	Wire Assy 2 strings CBN	0W4992	1
H	Power cable	Wire Assy 2 strings CB-	0W4987	1

***Torque for screws to link batteries is 2.5 Nm**



Battery cabling CSB 15 kVA 60 min.

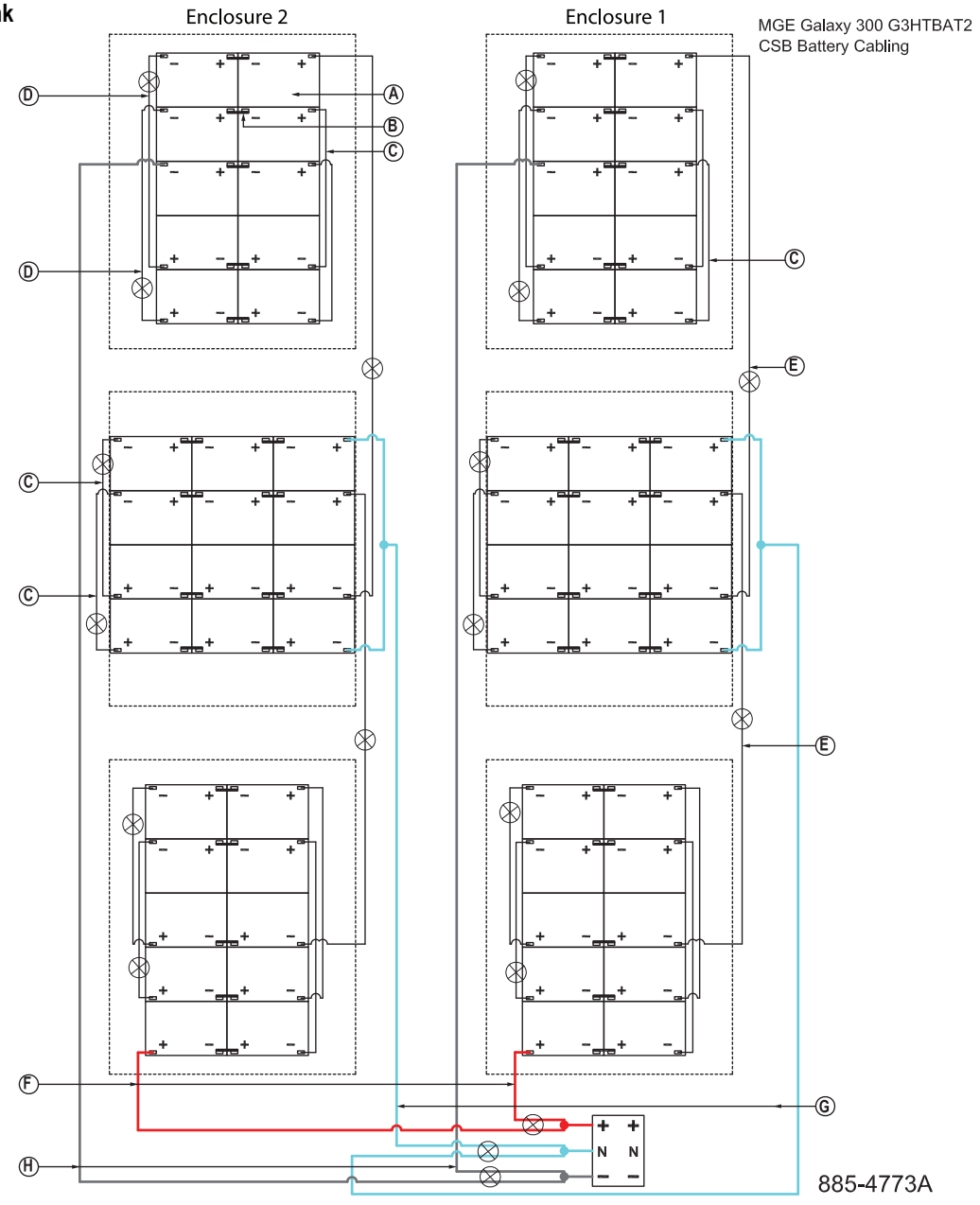
No.	Item	Description	Part no.	Qty.
A	Battery	CSB battery GP12120	910-0631	90
B	Power cable	Wire 10 BLK 120 mm	0W4946	72
C	Power cable	Wire Awg 10 BLK 520 mm	0W4969	6
D	Power cable	Wire Awg 10 BLK 640 mm	0W4971	6
E	Power cable	Wire Assy 3 strings CB+	0W4973	1
F	Power cable	Wire Assy 3 strings CBn	0W4981	1
G	Power cable	Wire Assy 3 strings CB-	0W4976	1



Battery cabling CSB 30 kVA 60 min.

No.	Item	Description	Part no.	Qty.
A	Battery	CSB battery GP12340	910-0633	64
B	Copper bar	Copper bar CU-ETP Battery GP12340	880-6019	36
C	Power cable	Wire 16mm^2 Ivory 520 mm	0W5033	12
D	Power cable	Wire 16mm^2 Ivory 640 mm	0W5035	8
E	Power cable	Wire 16mm^2 Ivory 1200 mm	0W5034	4
F	Power cable	Wire Assy 2 strings CB+	0W4984	1
G	Power cable	Wire Assy 2 strings CBn	0W4992	1
H	Power cable	Wire Assy 2 strings CB-	0W4987	1

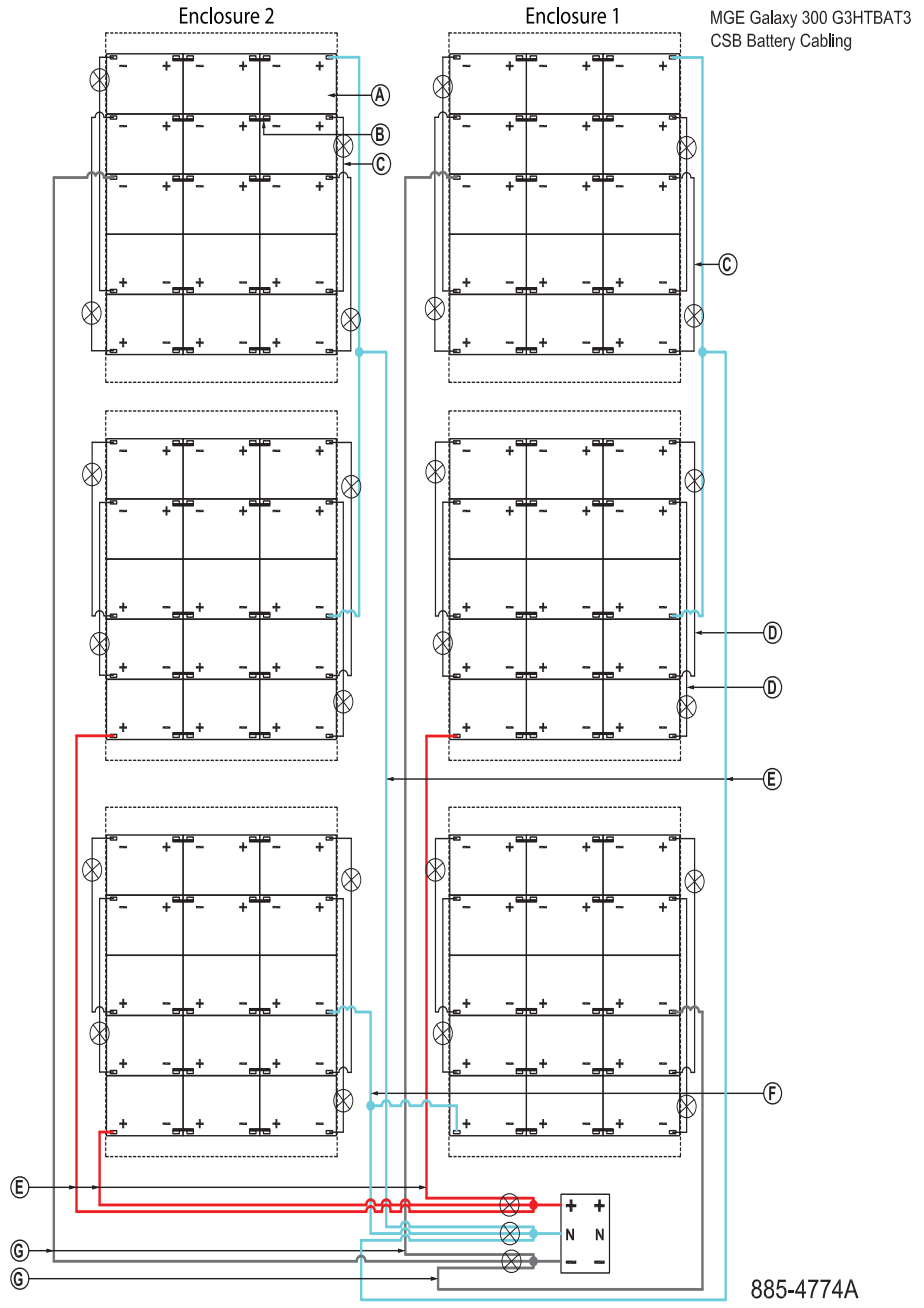
***Torque for screws to link batteries is 5.4 Nm**



Battery cabling CSB 40 kVA 60 min.

No.	Item	Description	Part no.	Qty.
A	Battery	CSB battery GP12340	910-0633	90
B	Copper bar	Copper bar CU-ETP Battery GP12340	880-6019	60
C	Power cable	Wire 16 mm^2 Ivory 520mm	0W5033	12
D	Power cable	Wire 16 mm^2 Ivory 640 mm	0W5035	12
E	Power cable	Wire Assy 3 strings CB+	0W4985	1
F	Power cable	Wire Assy 3 strings CBn	0W4993	1
G	Power cable	Wire Assy 3 strings CB-	0W4988	1

***Torque for screws to link batteries is 5.4 Nm**



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    Global support searching APC Knowledge Base and using e-support.
- Contact the APC Customer Support Center by telephone or e-mail.
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