Inverter AC input conductors, distributed from AC input panel via breakers and separate sets of conductors to each Radian

FM80 DC- and DC+ outputs are routed (1) to GSLC’s for GFDI and OCPD breakers, then routed to DCBS (2). If a DC Panelboard is used (Page 3) only DC- needs to be routed to FP3’s for the GFDI’s.

Notes:
A) GSLCs:
  A1) have breaker spaces for up to four charge controllers
  A2) are used as a raceway for AC in and AC out conductors
  A3) house each inverter’s:
      a) AC input breakers
      b) AC output breakers
      c) battery DC breakers
  A4) house the FNDC battery monitor if the system has one
B) Bypass switch
  B1) Rated for 50A x QTY of inverters,
  B2) Requires two poles for 120/240V systems, one pole for 230V systems, and 3 poles for 230V/400V systems.

Document description:
This drawing set is a guide for wiring for up to ten Radian inverter/chargers. PV charge controller wiring is also shown on its own sheet. Always check with AHJ for specific installation requirements.

Sheet list:
1) System Block Diagram & cover sheet
2) Three-line: DC Bussing Using Components
3) Three-line: DC Bussing Using DC Panelboard
4) Three-line: AC Combining Panels and Bypass Switches
5) Three-line: GSLC 120/240V
6) Three-line: GSLC 230V
7) Three-line: GSLC DC Wiring
8) Hub wiring

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This is example system consists of:
- 3 battery banks
- 3 inverters
- 4 charge controllers
Notes:
1) The intent of this drawing is to show how DC circuits can be combined using DC rated panelboards. PV conductors, equipment ground and bonding and other elements are omitted for drawing clarity.
2) Indicated breaker sizes are a minimum. Due to voltage drop larger wires and consequently breakers may be required.
3) GFDI’s can be mounted in any available breaker spaces within GSLCs.
4) For drawing clarity only some of the GFDI wiring is shown. The same principle applies for all remaining GSLC’s.
Notes:
*Since neutral is not switched, it passes through input to loads, regardless of bypass switch position.
**For input panels, breakers distribute source power to inverters. For output panels, breakers consolidate inverter outputs into a single output.
***Equipment grounding conductors omitted for drawing clarity.
From Breakers in AC input panel *50A, 2-pole breaker for 120/240V applications. 230V or 230V/400V applications implement 50A, single single pole breakers.

DC circuits shown on sheet 6

Through adjacent GSLC and ultimately AC Out Panel

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From Breakers in AC input panel

Through Adjacent GSLC's to AC Out Panel

DC circuits shown on sheet 6

To AC Out Panel

GSLC

DC circuits shown on sheet 6

GSLC

DC circuits shown on sheet 6

GSLC

From Breakers in AC input panel
For document clarity, wiring for only 8 charge controllers shown and equipment ground wires are omitted.

2) Use PNL-GFDI-80 to add a single extra FM80.
3) Use PNL-GFDI-80D to add two extra GFDI's.
4) Use PNL-GFDI-80Q to add three charge controllers, leaving one of the four poles unused.

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Example system 1:
10 Radians
20 FM80s
3 battery banks

Example system 2:
3 Radians
6 FM80s
1 FNDC
3 battery banks

Notes:
A) Master inverter must be in port 1 of Hub.
B) RTS must be installed in port 1 device.
C) No more than three Radians can be used with an FNDC.
D) If a Hub has only charge controllers connected to it and does not include a MATE3, each controller needs its own RTS.