5-4.9. Power Connect Boards (DS200PCCA, 531X122PCN, and 531X121PCR)

The DS200PCCA Power Connect Card (PCCA), and the 531X122PCN and 531X121PCR Power Connect Boards (PCN, PCR) provide an interface between the DC2000 drive's control circuitry and the SCR power bridge.

Table 5-5 summarizes the applications of the various PCCA group numbers and the PCN and PCR boards.

The PCCA uses pulse transformers to provide gate drive to the SCR bridge. For low-to-medium horsepower controllers, the PCCA also includes snubber circuits to control spikes across the ac lines, dc bus, and gate drivers. For higher horsepower controllers, some or all of the snubber circuits are omitted from the PCCA, and are located elsewhere in the system.

The PCCA has ten group numbers. The group number used in a system is determined by the system voltage, frame size, and whether the system uses regenerative or non-regenerative power conversion.

The armature voltage scaling depends on which PCCA group number is used:

G1, G7, G9 – Regenerative, 240 – 630 volts
G2, G8, G10 – Non-regenerative, 240 – 700 volts

The PCN board is used in non-regenerative drives; the PCR board is used in regenerative drives. Both board types contain snubber circuits.

Section 6-12 defines I/O points for the PCCA, PCN, and PCR boards.

5-4.9.1. CONFIGURABLE HARDWARE. The PCCA has four wire jumpers, designated JP1, JP2, WP3, and WP4. Jumpers JP1 and JP2 must be connected to the appropriate stab terminals P3 through P10, as determined by the card group number and system voltage. Jumpers WP3 and WP4 are used to connect stab terminals P2A to P2B, and P1A to P1B, respectively. These jumpers are used to select whether the PCCA snubber capacitors are connected to the same point on the power bridge as the voltage feedback channel.

Figure 5-11 shows the layout of the PCCA card, including the locations of the stab terminals. Table 5-6 lists and defines the placement of the wire jumpers for various PCCA group numbers and system voltages.

Both the PCN and PCR boards also include wire jumpers that are connected between stab terminals on the boards to select the dc armature voltage.

Figure 5-12 shows the layout of the PCN board, including the locations of these jumpers. Table 5-7 lists and defines the PCN board jumpers.

Figure 5-13 shows the layout of the PCR board. Table 5-8 lists and defines the PCR board jumpers.

Table 5-5. Power Connect Board Applications

Board	PCN, PCR	PCCA	PCCA	PCCA	PCCA
Group	G1 – G3	G1, G2	G5, G6	G7, G8	G9, G10
Snubbers	Ac & dc	Ac & dc	None & no attenuation string	Ac & dc	Dc only
Frames	C, G	C, G	J, K, M	C, G	J, M
Power Supply Board	SDCI	DCFB	DCFB	SDCI	SDCI
Ac Volts	≤480 V rms	≤600 V rms	≤1500 V rms	≤600 V rms	≤600 V rms
Fuses	Line	Line	Leg	Line	Leg
Reactors	Line	Line	Leg	Line	Leg
Bus Transformer	Separate	Separate or common	Separate or common	Separate or common	Separate or common

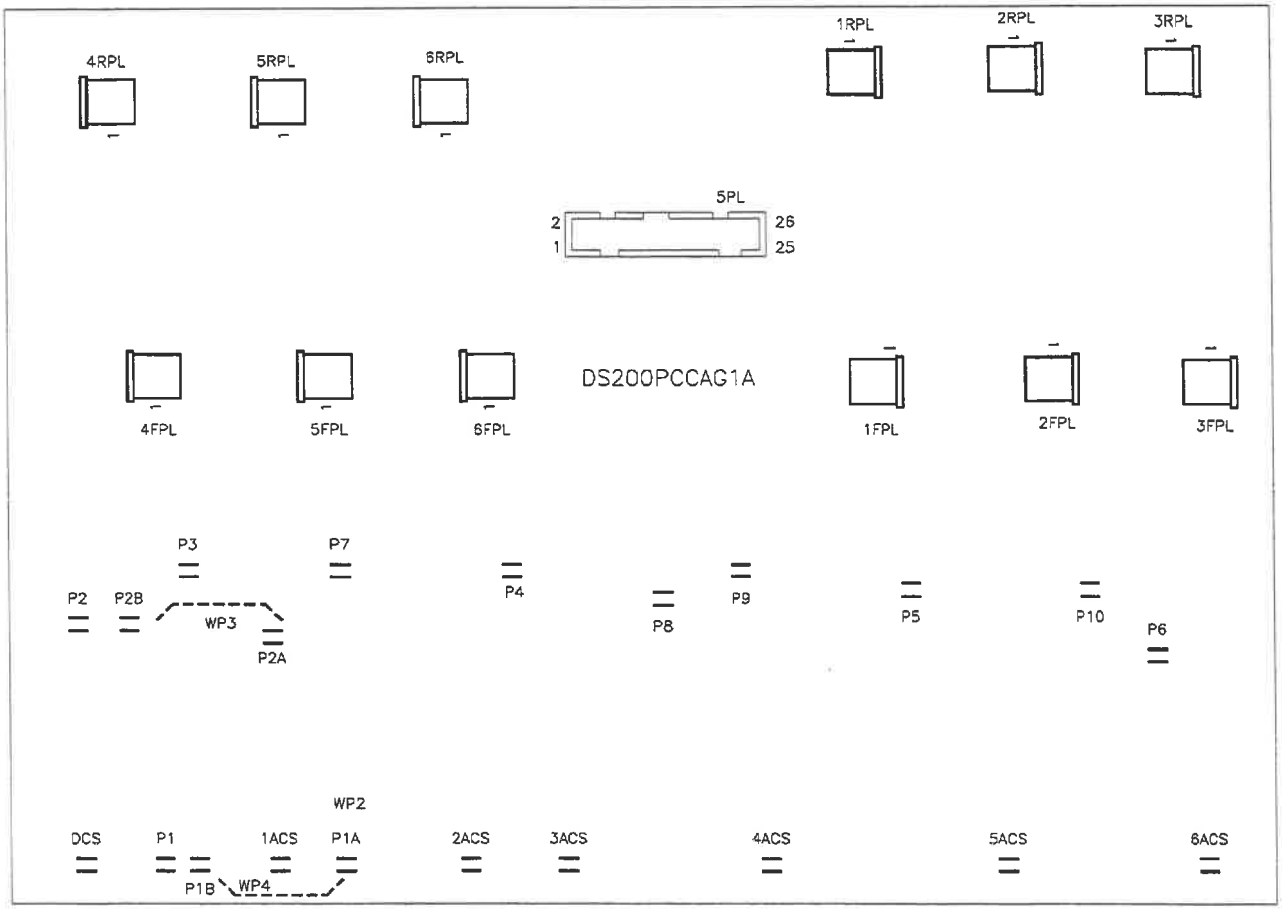

Figure 5-11. PCCA Card Layout

Table 5-6. PCCA Card Adjustable Hardware

Revision	Name	Description
All	JP1	*Groups 1, 3, 7, 9 only* – Selects dc armature voltage range 3.8 240 V dc; Also connect JP2 P6–P9 3.4 290 V dc; Also connect JP2 P5–P6 7.8 500 V dc; Also connect JP2 P9–P10 4.7 550 V dc; Also connect JP2 P5–P10 3.7 370 V dc; Also connect JP2 P6–P10 4.8 580 V dc; Also connect JP2 P5–P9 0 630 V dc; Leave all P3–P10 open
All	JP2	*Groups 1, 3, 7, 9 only* – Selects dc armature voltage range (see JP1, Groups 1,3,7) 6.9 240 V dc; Also connect JP1 P3–P8 5.6 290 V dc; Also connect JP1 P3–P4 10.9 500 V dc; Also connect JP1 P7–P8 10.5 550 V dc; Also connect JP1 P4–P7 10.6 370 V dc; Also connect JP1 P3–P7 5.9 580 V dc; Also connect JP1 P4–P8 0 630 V dc; Leave all P3–P10 open
All	JP1	*Groups 2, 4, 8, 10 only* – Selects dc armature voltage range 3.8 240 V dc; Also connect JP2 P6–P9 3.4 350 V dc; Also connect JP2 P5–P6 7.8 390 V dc; Also connect JP2 P9–P10 4.7 500 V dc; Also connect JP2 P5–P10 3.7 550 V dc; Also connect JP2 P6–P10 4.8 595 V dc; Also connect JP2 P5–P9 0 700 V dc; Leave all P3–P10 open

Table 5-6. PCCA Card Adjustable Hardware — Continued

Revision	Name	Description
All	JP2	*Groups 2, 4, 8, 10 only* – Selects dc armature voltage range (see JP1, Groups 2, 4, 8) 6.9 240 V dc; Also connect JP1 P3–P8 5.6 350 V dc; Also connect JP1 P3–P4 10.9 390 V dc; Also connect JP1 P7–P8 10.5 500 V dc; Also connect JP1 P4–P7 10.6 550 V dc; Also connect JP1 P3–P7 5.9 595 V dc; Also connect JP1 P4–P8 0 700 V dc; Leave all P3–P10 open
AAA–AAZ	JP1	*Group 5 only* – Selects dc armature voltage range 3.8 240 V dc; Also connect JP2 P6–P9 3.4 290 V dc; Also connect JP2 P5–P6 7.8 500 V dc; Also connect JP2 P9–P10 4.7 550 V dc; Also connect JP2 P5–P10 3.7 370 V dc; Also connect JP2 P6–P10 4.8 580 V dc; Also connect JP2 P5–P9 0 630 V dc; Leave all P3–P10 open
AAA–AAZ	JP2	*Group 5 only* – Selects dc armature voltage range (see JP1, Group 5) 6.9 240 V dc; Also connect JP1 P3–P8 5.6 290 V dc; Also connect JP1 P3–P4 10.9 500 V dc; Also connect JP1 P7–P8 10.5 550 V dc; Also connect JP1 P4–P7 10.6 370 V dc; Also connect JP1 P3–P7 5.9 580 V dc; Also connect JP1 P4–P8 0 630 V dc; Leave all P3–P10 open
ABA–Pres	JP1, JP2	*Group 5 only* – Jumpers deleted. Voltage attenuator string and jumpers no longer on Group 5.
AAA–AAZ	JP1	*Group 6 only* – Selects dc armature voltage range 3.8 240 V dc; Also connect JP2 P6–P9 3.4 350 V dc; Also connect JP2 P5–P6 7.8 390 V dc; Also connect JP2 P9–P10 4.7 500 V dc; Also connect JP2 P5–P10 3.7 550 V dc; Also connect JP2 P6–P10 4.8 595 V dc; Also connect JP2 P5–P9 0 700 V dc; Leave all P3–P10 open
AAA–AAZ	JP2	*Group 6 only* – Selects dc armature voltage range (see JP1, Group 6) 6.9 240 V dc; Also connect JP1 P3–P8 5.6 350 V dc; Also connect JP1 P3–P4 10.9 390 V dc; Also connect JP1 P7–P8 10.5 500 V dc; Also connect JP1 P4–P7 10.6 550 V dc; Also connect JP1 P3–P7 5.9 595 V dc; Also connect JP1 P4–P8 0 700 V dc; Leave all P3–P10 open
ABA–Pres	JP1, JP2	*Group 6 only* – Jumper deleted. Voltage attenuator strings and jumpers no longer on Group 6
All	WP3	*Groups 1–4, 7–10 only* – Separate/tie card snubbers and VFBK to same/different point(s) WP3 and WP4 are wire jumpers on the PCCA card which are connected between stab terminals P2A-P2B and P1A–P1B, respectively. If these jumpers are present the card snubber capacitors are attached to the same point on the bridge as the voltage feedback channel. WP3 & WP4 may be removed if the card snubbers and voltage feedback channel need to be connected to different bridge points. 1.2 Jumper IN – Connect snubbers & voltage feedback channel to same point 0 Jumper OUT – Separate snubbers & voltage feedback channel
All	WP4	*Groups 1–4, 7–10 only* – Separate/tie card snubbers and VFBK to same/different point(s) 1.2 Jumper IN – Connect snubbers & voltage feedback channel to same point 0 Jumper OUT – Separate snubbers & voltage feedback channel