IGDPS Boards

MV SMC units provided with optional stop capabilities (soft stop or pump control) utilize isolated gate drive power supply (IGDPS) boards. These boards provide a continuous source of power to the gate drive boards. The IGDPS boards are fed from a 50 V DC power supply provided with the MV SMC.

The circuitry for the IGDPS is encapsulated in epoxy. As a result the board can not be field repaired and there are no internal test points or adjustments available. If one of the six (6) isolated 20 V DC outputs fails, the entire board must be replaced.

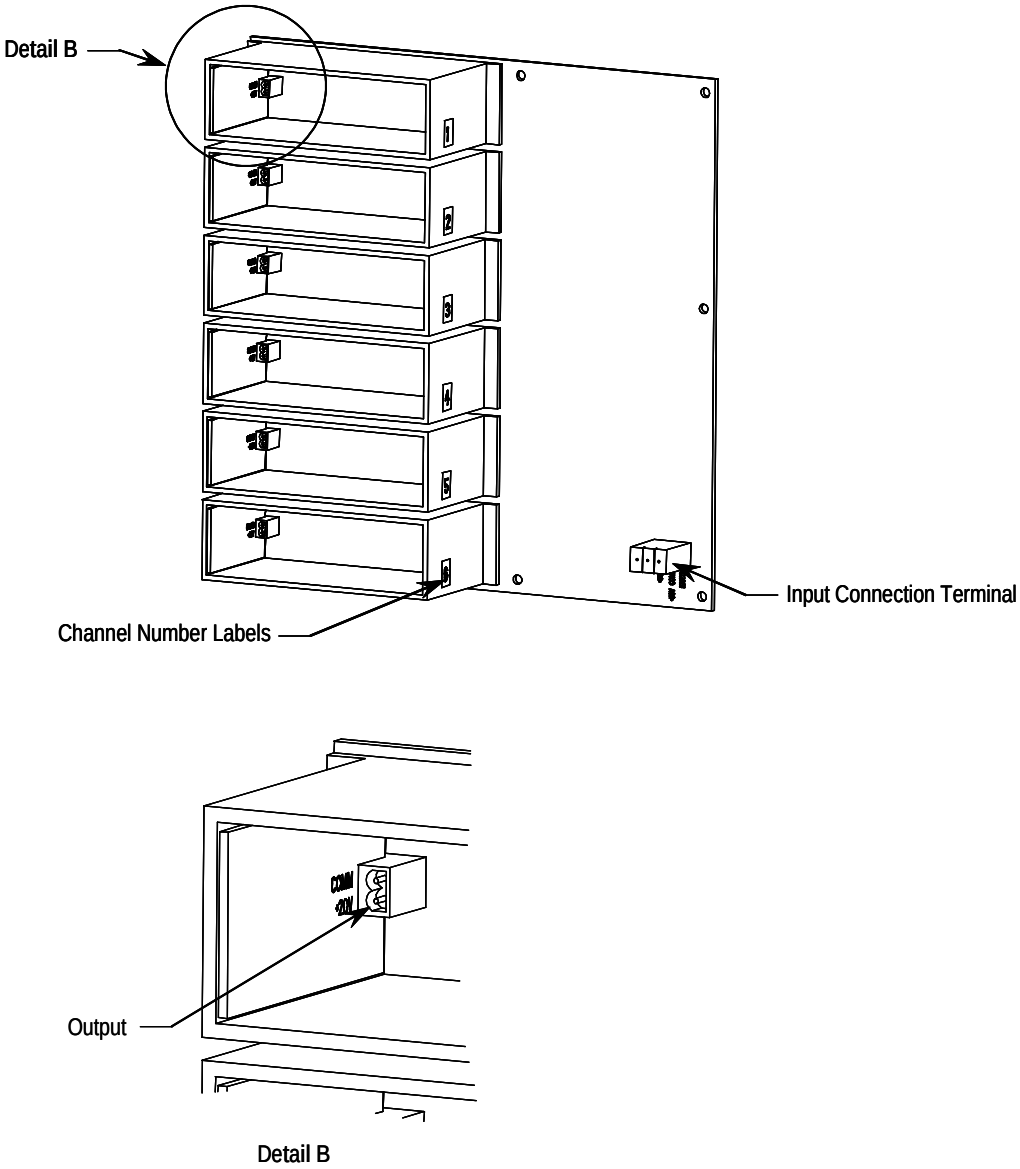


Figure 9.3 – IGDPS Board

IGDPS Board LEDs

A green LED is provided inside each of the six (6) output module boxes (channels) to indicate the presence of a healthy output voltage (20 V DC).

- LED ON: Output Healthy
- LED OFF: Output Voltage is below 18 V DC

If the IGDPS is healthy, then all six (6) LEDs will be illuminated. If this is not true, this may indicate either a bad connection to the board or a defective output module. If all six (6) LEDs are not illuminated, measure the input power to the IGDPS board(s). It should be 50 V DC, ± 8 V DC.

Record the following measurements to ensure all six (6) outputs are functioning. They should be within ±1% of 20 V.

Table 9.G – Test Point Measurement Values

Test Points	Expected Value	Measured Value		
		Board #1	Board #2	Board #3
Channel 1 - Pin 1 → Pin 2	+20 V DC			
Channel 2 - Pin 1 → Pin 2	+20 V DC			
Channel 3 - Pin 1 → Pin 2	+20 V DC			
Channel 4 - Pin 1 → Pin 2	+20 V DC			
Channel 5 - Pin 1 → Pin 2	+20 V DC			
Channel 6 - Pin 1 → Pin 2	+20 V DC			

There may be more than one IGDPS board. Record output voltages for all of them.

Circuit Board Replacement

The replacement of printed circuit boards is straightforward, however, there are a number of precautions which must be considered when handling the boards.

ATTENTION



Some circuit boards may contain CMOS components which can be destroyed by static charges generated by friction of materials made with synthetic fibres. Use of damaged circuit boards may also damage related components. A grounding wrist strap is recommended for handling sensitive circuit boards.

1. Remove all power from the equipment.

ATTENTION



To avoid shock hazard, ensure the main power has been disconnected before working on the controller, motor or control devices. Verify that all circuits are voltage free using a hot stick or appropriate voltage measuring device. Failure to do so may result in burns, injury or death.

2. Carefully detach all wires, cables and connectors, noting their location and orientation. For the interface board, remove the control module (see page 10-7).

ATTENTION



The fibre-optic cables can be damaged if struck or bent sharply. They have a locking feature which requires pinching the tab on the connector and gently pulling straight out. The component on the printed circuit board should be held to prevent damage.

3. For boards mounted with hardware, remove the hardware, taking care not to drop anything onto other circuits. For boards with nylon stand-off posts, squeeze the section above the board and carefully pull the board up and off the post.

4. Lift out the circuit board, and check that the replacement board is the correct part number and revision before installation (refer to Appendix C). Install the new board by replacing the hardware, or pressing down onto nylon stand offs. Connect all wires, cables and connectors. Ensure that all switch and/or jumper settings on the new board are identical to those on the old board, and correct for the application.

Spare Parts

Table B.1
Bulletin 1503D • 1000-1500 Volt, 180/360 Amp, 6-device ❸

Qty per controller	Description		Part Number
180 A			
6	Individual SCR, 5STP04D5200 (matching not required) ❶ ❷		80156-815-61-R
360 A			
6	Individual SCR, 5STP08G6500 (matching not required) ❶ ❷		80156-894-71-R
Common Components			
3	Gate Driver Board (2 devices)	❹	80165-898-52
		❺	80165-898-55
1	IGDPS Board ❺		80026-044-02
1	Voltage Feedback Circuit Board	800 – 1000 V	80165-938-51
		1001 – 1300 V	80165-938-52
		1301 – 1500 V	80165-938-53
1	MV SMC Interface Circuit Board Assembly – Series B	120 Volt	80187-131-51
		230 Volt	80187-131-53
3	Snubber Resistor 60 ohm, 10%, 500 W	Brick type	80025-871-04
		Wire wound type	80025-588-02
3	Snubber Capacitor (4.5 kV peak)	1000 V, 1.0 µF	80025-812-01
		1300-1500V, 0.68 µF	80025-812-02
3	Sharing Resistor, 32.5 k, 225 W, Two 2.5 k Tap		80025-753-01
9	Fiber-optic Cable	2.5 m	80025-549-03
		5.0 m	80025-549-01
1	Test Power Supply	120 V AC (North America)	80187-051-51
		Universal	80187-245-51

❶ If desired, a complete factory assembled SCR/heatsink assembly with snubber resistor and capacitor can be purchased rather than individual SCRs. See table below for part numbers :

Qty per controller	Description	Part Number
3	180 Amp, 1000 Volt Controller	80157-863-55
3	360 Amp, 1000 Volt Controller	80157-863-56
3	180 Amp, 1300V and 1500V Controller	80157-863-54
3	360 Amp, 1300V and 1500V Controller	80157-863-52

❷ Requires a thin film of electrical joint compound between base and mounting surface. Available with SCR replacement parts or separately as Part Number 80025-783-51.

❸ Reference only. 1503D – For OEM products, refer to OEM-supplied documentation for specific spare parts list.
1560/1562D are Allen-Bradley manufactured starters. Refer to Service Manual for specific spare parts list.

❹ Used when options 13XA (Soft Stop) or 13XB (Pump Control) are not provided.

❺ Used when options 13XA (Soft Stop) or 13XB (Pump Control) are provided.

Table B.2
Bulletin 1503D, 1560D, 1562D • 2300 Volt, 180/360 Amp, 6-device ❹

Qty per controller	Description		Part Number
180 A			
6	Individual SCR, DCR820 or 5STP03D6500 (matching not required) ❶❷		80156-893-71-R
360 A			
6	Individual SCR, DCR1020 or 5STP03D6500 (matching not required) ❶❷		80156-894-71-R
Common Components			
3	Gate Driver Board (2 devices) Series B	❺	80165-898-52
		❻	80165-898-55
1	IGDPS Board ❻		80026-044-02
1	Voltage Divider Resistor Board – 2300 V		80165-878-51
1	Voltage Feedback Circuit Board		80165-938-54
1	MV SMC Interface Circuit Board Assembly – Series B	120 V	80187-131-51
		230 V	80187-131-53
3	Snubber Resistor 60 ohm, 10%, 500 W	Brick type	80025-871-04
		Wire wound type	80025-588-02
3	Snubber Capacitor 0.68 µF, 4510 V peak		80025-812-02
3	Sharing Resistor, 32.5 k, 225 W, Two 2.5 k Tap		80025-753-01
9	Fiber-optic Cable	2.5 m	80025-549-03
		5.0 m	80025-549-01
2	Bridge Rectifier		24808-451-01
2	MOV	120 V	80145-581-02
		240 V	80145-581-07
1	Test Power Supply	120 V AC (North America)	80187-051-51
		Universal	80187-245-51
1	LV Control Panel	110/120 V AC ❸ ❼	80154-991-59
		220/230 V AC ❼	80187-226-52
3	Power Fuses ❸		Consult Engineering Data
2	CPT Primary Fuses ❸		Consult Engineering Data
1	LV Fuses		Consult Engineering Data
3	Heater Elements ❸		Consult Engineering Data
2	20 Amp Contact Cartridge ❸		700-CPM
3	1-pole Blade Assembly (400 Amp) ❸		80145-566-51
	Special Lubricant (for Blade Assembly, 400 Amp)		80158-357-51

❶ If desired, a complete factory assembled SCR/heatsink assembly can be purchased rather than individual SCRs. See table below for part numbers :

Qty per controller	Description	Part Number
3	180 Amp, 2400 Volt Controller	80187-302-51
3	360 Amp, 2400 Volt Controller	80187-302-52

❷ Requires a thin film of electrical joint compound between base and mounting surface. Available with SCR replacement parts or separately as Part Number 80025-783-51.

❸ 1562D only.

❹ Reference only. 1503D – For OEM products, refer to OEM-supplied documentation for specific spare parts list. 1560/1562D are Allen-Bradley manufactured starters. Refer to Service Manual for specific spare parts list.

❺ Used when options 13XA (Soft Stop) or 13XB (Pump Control) are not provided.

❻ Used when options 13XA (Soft Stop) or 13XB (Pump Control) are provided.

❼ Not provided if IntelliVAC control is used (refer to Publication 1503-UM051A-EN-P for spare part information on IntelliVAC).