GE Drive Systems

Configurable Hardware For SHVI SCR High Voltage Interface Board

DS200SHVIG1AAA –G1BCB

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met during installation, operation, and maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purpose, the matter should be referred to GE Drive Systems, Salem, Virginia U.S.A.

WARNING

This equipment contains a potential hazard of electrical shock or burn. Only those who are adequately trained and thoroughly familiar with the equipment and the instructions should install, operate, or maintain this equipment.

INTRODUCTION

These instructions provide information that may be needed when replacing the DS200SHVI SCR High Voltage Interface Board (SHVI). This information includes descriptions of configurable hardware jumpers.

The SHVI board provides an interface for signals from the drive's SCR bridge to the drive's power supply and instrumentation card, and to the DS200PCCA Power Connect Card (PCCA). The SHVI performs the following functions:

- Converts -500 mV to 500 mV shunt signals to 0 to 500 kHz differential-frequency outputs which are sent to the drive's power supply card
- Incorporates hardware jumper-selectable 10:1 current transformers to provide additional current attenuation capability
- Provides for attenuation of both line and bridge voltages
- Incorporates three indicator lights to provide visual indication of a blown line filter fuse
- Includes driver circuits for both standard and fast contactors (although fast contactors require either the DS200CDAA Dual Contact Driver Daughter Card (CDAA) or one or more DS200CDBA Contact Driver Card(s).

BOARD IDENTIFICATION

A printed wiring board is identified by an alphanumeric part (catalog) number stamped on its edge. For example, the SCR High Voltage Interface Board is identified by part number:

DS200SHVIG#ruu

The *DS200SHVI* portion is the base number that identifies the printed wiring board, in this case, the SCR High Voltage Interface Board. The *G#* identifies a group, which is a variation of a particular board. The *r* and *u* digits are alphabetic characters that indicate the board revision level. The *r* digit reflects a functional change that is not downward compatible. It is essentially a new catalog number. The *u* digits represent revision levels that are downward compatible to the r revision level.

The SHVI board has only one group, G1.

NOTE

All digits are important when ordering or replacing any board.

PROCEDURE FOR REPLACING BOARDS

WARNING

Potentially lethal voltages are present on the SHVI board when powered. To prevent electric shock, turn off power to the board, then test to verify that no power exists in the board before touching it or any connected circuits.

CAUTION

To prevent equipment damage, do not remove boards or connections, or re-insert them, while power is applied to the drive.

Treat all boards as static-sensitive. Use a grounding strap when changing boards and always store boards in the boxes in which they were shipped.

To replace the SHVI board:

1. **Turn off power to the drive**, then wait a few minutes for the power supply's capacitors to discharge. Test any electrical circuits before touching them to make sure power is off.

2. Open the drive's cabinet door to access the printed wiring boards. The SHVI is mounted on the drive's SCR cell assembly.

3. To remove the SHVI board, carefully disconnect all cables, as follows:

   - For ribbon cables, place one hand on each side of the cable connector that mates with the board connector. Gently pull the cable connector with both hands.

   - For cables with pull tabs, carefully pull the tab.

4. The SHVI board is mounted on six nylon standoffs. Six nylon nuts are used to secure the SHVI board to the standoffs. Carefully remove the six nylon nuts and the SHVI board.

5. On the replacement (new) board, set all configurable items in the exact position as those on the board being replaced (old board).

   If a board revision has added or eliminated a configurable component, or re-adjustment is needed, refer to Table 1.

NOTE

Because of upgrades, boards of different revision levels may not contain identical hardware. However, GE Drive Systems ensures compatibility of its replacement boards.

6. Install the new board, ensuring that the board is mounted securely on its standoffs using the six nylon nuts.

7. The cables are labeled with the correct connector name, as marked on the board. Reconnect all cables as labeled. Make sure that cables are properly seated at both ends.

HARDWARE ADJUSTMENTS

The SHVI board includes Berg-type (manually moveable) jumpers, identified by a *JP* or *BYP* nomenclature. These jumpers are used for manufacturing test or customer options. Table 1 lists and defines the SHVI board's hardware and wire jumpers.

Most of the jumper selections have been factory set. The test data sheets supplied with each controller (in the drive door pocket) indicate these positions.

As described previously, ensure that the jumpers on the new board are placed the same as on the old board, unless the instructions indicate otherwise. Refer to Table 1, which lists the default setting first. Figure 1 shows jumper locations.

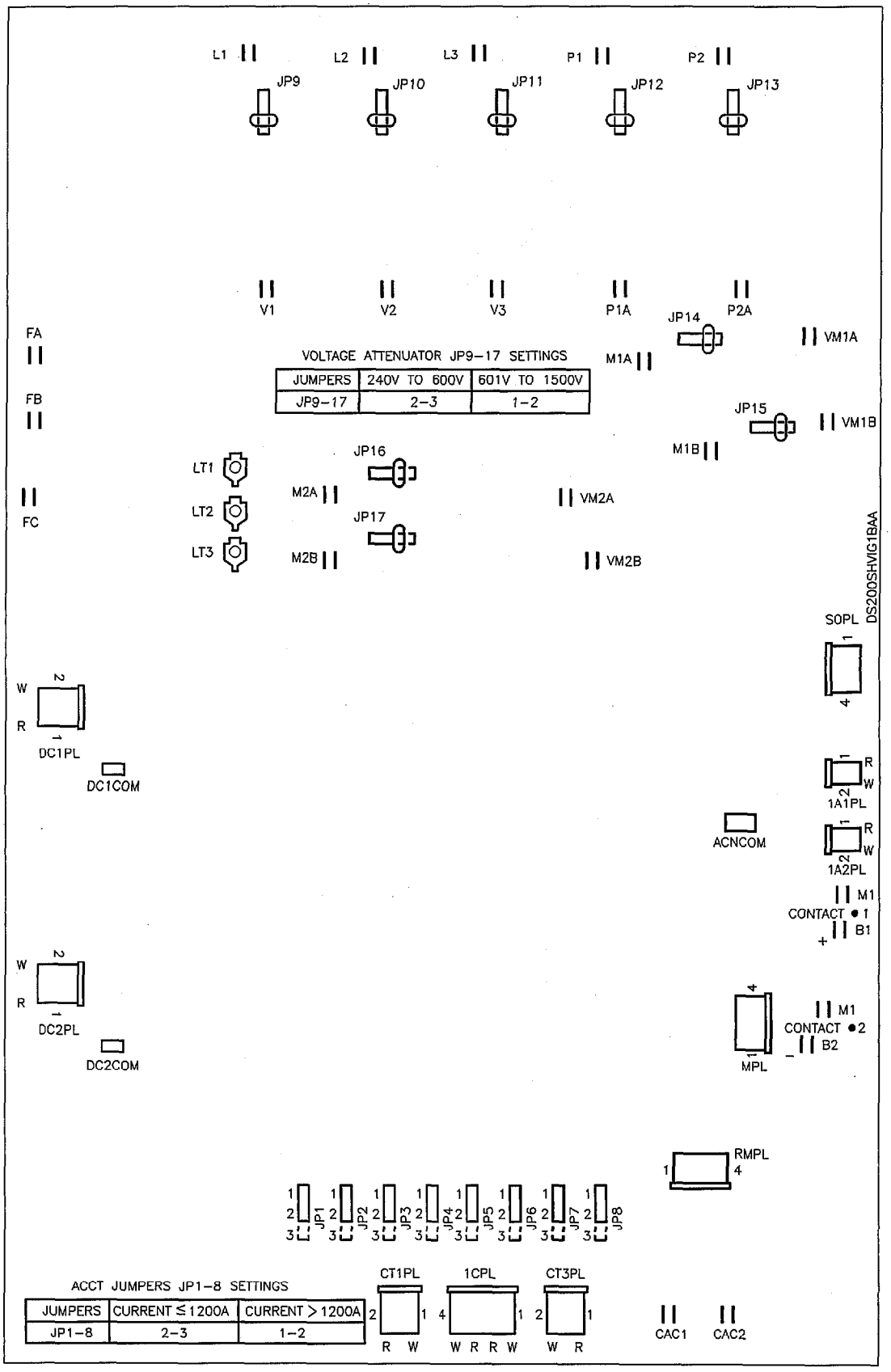

Figure 1. SHVI Board Layout

NOTE

The following table defines the jumpers used on the SHVI board. The *Name* column indicates the item's identification as marked on the board (JP=jumper, BYP=bypass). The *Description* column designates the board's group and revision for that item as defined.

Table 1. SHVI Board Adjustable Hardware

Name	Description
JP1	All groups. Board revision AAA-AAA. Phase A CT atten. Select 10:1 attenuation for phase A current transformer Jumpers JP1-JP12 should all be set to the same position, either selecting or bypassing the 10:1 attenuation for the ac line current transformers. The attenuation is required if the ACCT secondary current feeding the SDCI, DCI, or DCFB power supply cards is > 144 mA (rated DC current/ACCT ratio). Burden resistor circuits on these cards cannot handle > 144 mA inputs. Be sure to compensate for the 10:1 current attenuation when setting the burden scaling jumpers or switches on the SDCI, DCI, or DCFB card, whichever is used. Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP1	All groups. Board revision BAA-PRES. Phase A CT atten. Select 10:1 attenuation for phase A current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP2	All groups. Board revision AAA-AAA. Phase A CT atten. Select 10:1 attenuation for phase A current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP2	All groups. Board revision BAA-PRES. Phase A CT atten. Select 10:1 attenuation for phase A current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP3	All groups. Board revision AAA-AAA. Phase A CT atten. Select 10:1 attenuation for phase A current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP3	All groups. Board revision BAA-PRES. Phase A CT atten. Select 10:1 attenuation for phase A current transformer

Table 1. SHVI Board Adjustable Hardware - Continued

Name	Description
	Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP4	All groups. Board revision AAA-AAA. Phase A CT atten. Select 10:1 attenuation for phase A current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP4	All groups. Board revision BAA-PRES. Phase A CT atten. Select 10:1 attenuation for phase A current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP5	All groups. Board revision AAA-AAA. Phase B CT atten. Select 10:1 attenuation for phase B current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP5	All groups. Board revision BAA-PRES. Phase C CT atten. Select 10:1 attenuation for phase C current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP6	All groups. Board revision AAA-AAA. Phase B CT atten. Select 10:1 attenuation for phase B current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP6	All groups. Board revision BAA-PRES. Phase C CT atten. Select 10:1 attenuation for phase C current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP7	All groups. Board revision AAA-AAA. Phase B CT atten. Select 10:1 attenuation for phase B current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA

Table 1. SHVI Board Adjustable Hardware - Continued

Name	Description
JP7	All groups. Board revision BAA-PRES. Phase C CT atten. Select 10:1 attenuation for phase C current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP8	All groups. Board revision AAA-AAA. Phase B CT atten. Select 10:1 attenuation for phase B current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP8	All groups. Board revision BAA-PRES. Phase C CT atten. Select 10:1 attenuation for phase C current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP9	All groups. Board revision AAA-AAA. Phase C CT atten. Select 10:1 attenuation for phase C current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP9	All groups. Board revision BAA-PRES. Bypass line volt att Bypass line voltage attenuator string for phase L1 for 240-600 V JP9, JP10, and JP11 together are used to scale the ac line voltage feedbacks. Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V (string bypassed)
JP10	All groups. Board revision AAA-AAA. Phase C CT atten. Select 10:1 attenuation for phase C current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP10	All groups. Board revision BAA-PRES. Bypass line volt att Bypass line voltage attenuator string for phase L2 for 240-600 V Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V (string bypassed)
JP11	All groups. Board revision AAA-AAA. Phase C CT atten.

Table 1. SHVI Board Adjustable Hardware - Continued

Name	Description
	Select 10:1 attenuation for phase C current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP11	All groups. Board revision BAA-PRES. Bypass line volt att Bypass line voltage attenuator string for phase L3 for 240-600 V Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V (string bypassed)
JP12	All groups. Board revision AAA-AAA. Phase C CT atten. Select 10:1 attenuation for phase C current transformer Position 1.2 Bypass 10:1 attenuator, ACCT current < 144 mA 2.3 Insert 10:1 attenuator, ACCT current ≥ 144 mA
JP12	All groups. Board revision BAA-PRES. Bypass DC+ bus att Bypass voltage attenuator string for DC+ bus for 240-600 V (P1) JP12 and JP13 together are used to scale the DC bus voltage feedback. Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V (string bypassed)
JP13	All groups. Board revision BAA-PRES. Bypass DC- bus att Bypass voltage attenuator string for DC- bus for 240-600 V (P2) Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V
JP14	All groups. Board revision BAA-PRES. Bypass motor V atten Bypass voltage atten. string for motor voltage #1 for 240-600 V (M1A) JP14 and JP15 together are used to scale the motor voltage feedback. However, jumper settings for JP14 and JP15 are based on the nominal drive ac rms input. Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V
JP15	All groups. Board revision BAA-PRES. Bypass motor V atten Bypass voltage atten. string for motor voltage #1 for 240-600 V (M1B) Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V
JP16	All groups. Board revision BAA-PRES. Bypass motor V atten Bypass voltage atten. string for motor voltage #2 for 240-600 V (M2A) JP16 and JP17 together are used to scale the user defined voltage for customer

Table 1. SHVI Board Adjustable Hardware - Continued

Name	Description
	specific applications. However, jumper settings for JP16 and JP17 are based on the nominal drive ac rms input voltage. Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V
JP17	All groups. Board revision BAA-PRES. Bypass motor V atten Bypass voltage atten. string for motor voltage #2 for 240-600 V (M2B) Position 1.2 Main ac = 601 - 1500 V 2.3 Main ac = 240 - 600 V
BYP1A/B	All groups. Board revision AAA-AAA. Bypass line volt att Bypass line voltage attenuator string for phase L1 for 240-600 V BYP1A/B, BYP2A/B, and BYP3A/B together are used to scale the ac line voltage feedbacks. Position 0 Greater than 600 V (BYP1A and BYP1B open) 1.2 240-600 V (Stab BYP1A to BYP1B)
BYP2A/B	All groups. Board revision AAA-AAA. Bypass line volt att Bypass line voltage attenuator string for phase L2 for 240-600 V Position 0 Greater than 600 V (BYP2A and BYP2B open) 1.2 240-600 V (Stab BYP2A to BYP2B)
BYP3A/B	All groups. Board revision AAA-AAA. Bypass line volt att Bypass line voltage attenuator string for phase L3 for 240-600 V Position 0 Greater than 600 V (BYP3A and BYP3B open) 1.2 240-600 V (Stab BYP3A to BYP3B)
BYP4A/B	All groups. Board revision AAA-AAA. Bypass DC+ bus att Bypass voltage attenuator string for DC+ bus for 240-600 V BYP4A/B and BYP5A/B together are used to scale the DC bus voltage feedback. Position 0 Greater than 600 V (BYP4A and BYP4B open) 1.2 240-600 V (Stab BYP4A to BYP4B)
BYP5A/B	All groups. Board revision AAA-AAA. Bypass DC- bus att Bypass voltage attenuator string for DC- bus for 240-600 V Position 0 Greater than 600 V (BYP5A and BYP5B open) 1.2 240-600 V (Stab BYP5A to BYP5B)
BYP6A/B	All groups. Board revision AAA-AAA. Bypass motor V atten Bypass voltage attenuator string for motor voltage for 240-600 V

Table 1. SHVI Board Adjustable Hardware - Continued

Name	Description
	BYP6A/B and BYP7A/B together are used to scale the motor voltage feedback. Position 0 Greater than 600 V (BYP6A and BYP6B open) 1.2 240-600 V (Stab BYP6A to BYP6B)
BYP7A/B	All groups. Board revision AAA-AAA. Bypass motor V atten Bypass voltage attenuator string for motor voltage for 240-600 V Position 0 Greater than 600 V (BYP7A and BYP7B open) 1.2 240-600 V (Stab BYP7A to BYP7B)
BYP8A/B	All groups. Board revision AAA-AAA. Bypass user atten Bypass attenuator string for user specific voltage for 240-600 V BYP8A/B and BYP9A/B together are used to scale the user defined voltage for customer specific applications. Position 0 Greater than 600 V (BYP8A and BYP8B open) 1.2 240-600 V (Stab BYP8A to BYP8B)
BYP9A/B	All groups. Board revision AAA-AAA. Bypass user atten Bypass attenuator string for user specific voltage for 240-600 V Position 0 Greater than 600 V (BYP9A and BYP9B open) 1.2 240-600 V (Stab BYP9A to BYP9B)

Notes:

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