**INTRODUCTION**

CAUTION

The equipment covered by this publication must be selected for a specific application and it must be operated by qualified persons who are thoroughly trained and who understand any hazards that may be involved. This publication is written only for such qualified persons and is not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

This document is intended to be used as a guide for programming the protection functions of a ZIV type BCD relay with the provided ZIVercom® communications software. Standard requirements to operate this program are:

- An IBM PC AT or compatible computer using an Intel 80386 processor or higher. A minimum of 8 MB or RAM is required (16 MB recommended). Either an accessible CD-ROM or 3.5” 1.44 MB floppy disk drive, and at least 20 MB of available hard disk space are required for software installation and storage. The computer must utilize Windows 3.x or higher for its operating system. Serial port COM 1 or COM 2 must be available.

- A DB-9 (9 pin) serial communications cable with a null modem adapter (pins 2 and 3 crossed).

ZIVercom® is a powerful, user friendly software package intended to aid the user with setting changes, data collection and oscillography (optional). Settings can be made off line and downloaded locally or remotely, or can be made while being physically connected to the relay.

To ease the process, the user should be familiar with the keypad and menu structure of the LCD interface screen. Please refer to Chapter 7 of the 8BCD Manual or Chapter 8 of the 7BCD manual.
USING ZIVercom® COMMUNICATION SOFTWARE

Installing ZIVercom® on the Computer

Hard Drive

**NOTICE**

If you have been provided with 3.5" floppy disks, we recommend that you back these up at this time. Refer to your Microsoft Windows manual if you are unfamiliar with this procedure. Store the original disks in a safe place and use the backup copy henceforth.

Insert Disk 1 into the appropriate drive of the computer. Your version of windows will determine how to access and execute the file named `setup.exe`.

If you are using the CD-ROM version of the software, the `setup.exe` file is located in the following directory `d:\setup\Disk 1\setup.exe`. If `d:` is not your CD-ROM drive, please substitute with the appropriate drive letter.

Running ZIVercom®

**NOTICE**

There are two ways to load settings from the ZIVercom® software to the BCD terminal units. Settings files can be created off-line and downloaded remotely or locally. Settings can also be edited while the relay is connected to a PC. The instruction set described next applies to adjusting relay settings while being connected to a PC. Instructions for off-line settings adjustments are located in the Appendix on page 23.

**Step 1**

With the PC off, connect the DB-9 communication cable with null modem adapter between the serial port of the computer and the local communication port of the relay located on the front panel. (Note: it may be possible to connect the communication cable with the PC powered up, please consult your PC manufacturer). Be sure the proper auxiliary voltage has been connected to the terminal units power supply (see external connection diagram(s) at the end of the appropriate instruction manual).

**Step 2**

Turn on computer and initiate the ZIVercom® software program by double-clicking on the ZIVercom® icon. The ZIVercom® application screen will appear, as depicted below.

Note that this screen indicates the software version and serial number.
Step 3

Click OK. The identification screen will appear, as depicted below.

Enter the appropriate “User” name and “Password”. The default is “ZIVERCOM” and “ziv” respectively.

Step 4

Click OK. The main menu screen will appear, as depicted below.

Step 5

Highlight and select Configuration on the menu bar. A pull-down menu screen will appear, as depicted below, listing configuration options.

Step 6

Highlight and select Communications. The COMMUNICATIONS dialog box will appear, as depicted below, listing communications and modem data options.

Enter the following settings for the local communication port:

- Port: COM 1 or COM 2, as appropriate.
- Speed: 4800 bps.
- Parity: Even.
- Stop bit: 1 Bit.

Also enter the appropriate modem data to allow remote communication with the BCD terminal unit.

Step 7

Clicking Exit on this, or any other, dialog box will close the dialog box and revert back to the previous screen, typically the main menu screen (as depicted below) or the default information screen.
Step 8

Highlight and select **Connection** on the menu bar. A pull-down menu will appear, as depicted below, listing various connection options.

Step 9

Highlight and select **Local**. A dialog box will appear, as shown below, for specifying substation and equipment number information.

This dialog box is utilized when the **BCD** is connected in a system with multiple relays for addressing purposes. For connecting to a single relay locally, clicking **OK** without any additional input is acceptable.

Step 10

The software will perform a “handshake” function with the **BCD** terminal to determine the correct model number and gather settings actively being used in the relay. The default information screen will appear to alert you that the software is communicating correctly with the terminal unit.

Real-time information is polled from the unit and is displayed on the default information screen. (Note: in this representation, the analog inputs are not connected to currents or voltage, therefore all metering data will read zero.) Verify that the “**Status**” indicator in the lower left-hand corner displays **LOCAL**.

Clicking the **Cyclical** button will continuously update screen information. Press any key to exit this function. Clicking the **Status** button will perform a one-time status update of screen information.

Creating a Default Settings Record

**NOTICE**

Before creating a new settings file, it is recommended that a default settings record be created, reflecting the settings of the device as shipped. The user can adopt the same techniques used to create a default settings file in the following steps to create specific settings files in the future.
Step 11
Highlight and select **Settings** from the main menu bar. A pull-down menu will appear, as depicted below, listing setting options.

Step 12
Highlight and select **General**. The **GENERAL SETTINGS** dialog box will appear, as depicted below, listing general settings options.

Step 13
Click **Add**. The **LISTS** dialog box will appear, as depicted below, providing a list of all available settings records. In this instance, there are none.

Enter a code number and description to label the setting file. In this instance, select “0001” and “Default Settings,” respectively.

Step 14
Click **OK**. The **GENERAL SETTINGS** dialog box will appear again, as depicted below.
Step 15

Click the up or down arrow key until the **List** field reads “Default Settings,” as depicted below. Note that the data source box at the lower right-hand corner changes from **RELAY** to **DBASE**.

![Image of ZIVercom Communication Software](image1.png)

Step 16

Click **Exit**. The default information screen will appear again, as depicted below.

![Image of ZIVercom Communication Software](image2.png)

Step 17

Highlight and select **Settings**. A pull-down menu will again appear, as depicted below, listing settings options.

![Image of ZIVercom Communication Software](image3.png)

Step 18

Highlight and select **Protection, Current**. The **CURRENT SETTINGS PROTECTION** dialog box will appear, as depicted below, listing current protection settings.

![Image of ZIVercom Communication Software](image4.png)
Step 19

Click **Add**. The **LISTS** dialog box will again appear, as depicted below, indicating all available setting records. In this case, the only settings record is “0001 Default Settings.”

Step 20

Double-click on “0001 Default Settings” to select this settings record, as depicted below.

Step 21

Click **OK**. The **CURRENT SETTINGS PROTECTION** dialog box will again appear, as depicted below.

Step 22

Click the up or down arrow key until the **List** field reads “Default Settings”, as depicted below. Note that the data source box at the lower right-hand corner changes from **RELAY** to **DBASE**.
Step 23
Click **Exit**. The default information screen will again appear, as depicted below.

Step 24
Repeat steps 17 through 23 for **Protection, Voltage** settings, as depicted below.

Step 25
Repeat steps 17 through 23 for **Automatic Control** settings, as depicted below.

Step 26
Repeat steps 17 through 23 for **Logic** settings, as depicted below.
Step 27
Repeat steps 17 through 23 for **Supervision 52 (Breaker)** settings, as depicted below.

Step 28
Repeat steps 17 through 23 for **History (Historical Records)** settings, as depicted below.

Step 29
Repeat steps 17 through 23 for **Inputs** settings, as depicted below.

Step 30
Repeat steps 17 through 23 for **Outputs and Leds** settings, as depicted below. (Note: the user needs to click the **LEDS** button to access the LED settings options.)
Step 31

Highlight and select **Settings**. A pull-down menu will again appear, as depicted below, listing setting options.

![Settings Menu](image)

**NOTICE**

*Model variations of the BCD may dictate different Settings menu items. In any case, repeat steps 17 through 23 until all settings have been backed up as default settings.*

Step 32

To confirm that all settings have been saved in the settings record, highlight and select **List of Settings**. The **LIST OF SETTINGS** dialog box will appear, as shown below, indicating all available settings records. In this case, only the settings record is “0001 Default Settings.”

![List of Settings](image)

Step 33

Double-click on “0001 Default Settings” to select it.

![Select Settings Record](image)

There should be a check mark on all available **Settings in List** field boxes, indicating that these settings are included in the settings record.

To create a back-up copy of the settings record, insert a diskette into the appropriate floppy drive on the PC and click **Create Disk**.
Step 34
Click **Exit**. The default information screen will again appear, as depicted below.

Displaying or Printing a Settings Record

**ZIVercom**® provides two settings record viewing options. To display a settings record on screen, proceed to Step 35. To print a settings record, proceed to Step 39.

Step 35
Highlight and select **Settings**. A pull-down menu will again appear, as depicted below, listing setting options.

Step 36
Highlight and select **Settings Reporting, Group 1, Screen**. A report screen will appear, as depicted below, which includes general settings, current protection settings, voltage protection settings, automatic control settings, logic setting, breaker monitor settings and historical data settings.

Click **Zoom In** and use the scroll bars to maneuver through the report screen.

Step 37
Click **OK** and the “Inputs, Outputs, and Leds?” dialog box appears, as depicted below.

Step 38
If report screens for these setting are **not** desired, click **No**. Proceed to Step 44.
Step 38

If report screens for these settings are desired, click Yes. Screens displaying input settings, output settings and LED settings will appear, as depicted below.

Click Zoom In and use the scroll bars to maneuver through the multi-page report screens. Proceed to step 44.

Step 39

Highlight and select Settings. A pull-down menu will again appear, as depicted below, listing setting options.

Step 40

Highlight and select Settings Reporting, Group 1, Printer. The Print dialog box will appear, as depicted below, listing print parameters.

Step 41

Click Setup. A dialog box will appear, as depicted below, listing print setup parameters.

Step 42

Ensure that the paper size selected is “Letter 8½ x 11” in and click OK. A report will be generated that will include general settings, current protection settings, voltage protection settings automatic control settings, logic setting, breaker monitor settings, and historical data settings.
Step 43

The “Inputs, Outputs, and Leds?” dialog box will appear, as depicted below.

If a report for these settings is not desired, click No. Proceed to Step 44.

If a report on these settings is desired, click Yes. Repeat Steps 41 and 42. A report will be generated that includes input settings, outputs settings, and LED settings.

Step 44

Click Exit. The default information screen will again appear, as depicted below.

---

Creating a New Settings Record

Before creating any new settings records, it is recommended that a default settings file be created, reflecting the settings of the device as shipped from the manufacturer. Refer to the procedure outlined in Steps 11 through 35.

The procedure for creating a new settings record is similar to that outlined in Steps 11 through 35. A different Code number and Description will need to be entered for each new settings file.

The protection terminal may need reprogramming and/or wiring connection revision to conform to the new settings record.

In steps 45 through 55, a new record will be created with the following settings:
General Settings

- CT Ratio (Phase): 1
- V_unbalance VT Ratio: 1
- Scale Factor: 0
- CT + Resistor Conn: NO
- CT Ratio (Ground): 1
- VT Ratio: 1

Current Protection Settings

<table>
<thead>
<tr>
<th>Phase Overcurrent Unit (50)</th>
<th>Phase Instantaneous Unit (51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable: YES</td>
<td>Enable: YES</td>
</tr>
<tr>
<td>Torque Ctrl. Enable: NO</td>
<td>Torque Ctrl. Enable: NO</td>
</tr>
<tr>
<td>Pickup: 2 A</td>
<td>Pickup: 4 A</td>
</tr>
<tr>
<td>Curve: INVERSE</td>
<td>Time Delay: 0 s</td>
</tr>
<tr>
<td>Time Dial: 0.5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ground Overcurrent Unit (50N)</th>
<th>Ground Instantaneous Unit (51N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable: YES</td>
<td>Enable: YES</td>
</tr>
<tr>
<td>Torque Ctrl. Enable: NO</td>
<td>Torque Ctrl. Enable: NO</td>
</tr>
<tr>
<td>Pickup: 0.2 A</td>
<td>Pickup: 1.5 A</td>
</tr>
<tr>
<td>Curve: INVERSE</td>
<td>Time Delay: 0 s</td>
</tr>
<tr>
<td>Time Dial: 0.5</td>
<td></td>
</tr>
</tbody>
</table>

- Breaker Failure Unit
  - Enable: YES
  - Phase Overcurrent Pickup: 0.7 A
  - Ground Overcurrent Pickup: 0.7 A
  - Time Delay: 0.5 s

Voltage Protection Settings

<table>
<thead>
<tr>
<th>Overvoltage Unit (59)</th>
<th>Undervoltage Unit (27)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Element Enable: YES</td>
<td>Enable: YES</td>
</tr>
<tr>
<td>Curve: NORMAL</td>
<td>Pickup: 21 V</td>
</tr>
<tr>
<td>Time Dial: 0.05</td>
<td>Time Delay: 10 s</td>
</tr>
<tr>
<td>Pickup: 125 V</td>
<td></td>
</tr>
<tr>
<td>Instantaneous Enable: YES</td>
<td>Time Delay: 5 s</td>
</tr>
<tr>
<td>Pickup: 140 V</td>
<td></td>
</tr>
</tbody>
</table>

- Voltage Unbalance Unit (64)
  - Enable Element #1: YES
    - Pickup: 3.00 A
    - Definite Time Delay: 10 s
  - Enable Element #2: YES
    - Pickup: 6.00 A
    - Definite Time Delay: 5 s
  - Enable Element #3: YES
    - Pickup: 15.00 A
    - Definite Time Delay: 0.1 s

- Blocking Unit
  - Enable: YES
  - Pickup: 0.5 A

Automatic Control Settings

<table>
<thead>
<tr>
<th>Automatic Control</th>
<th>By Clock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable: YES</td>
<td>V add: 100</td>
</tr>
<tr>
<td>Mode: By Clock</td>
<td>V add Time Delay: 7</td>
</tr>
<tr>
<td>Operation Time Inh.: 5.00</td>
<td>V off (%): 90</td>
</tr>
<tr>
<td>V off Time Delay: 1.00</td>
<td>V off Time Delay: 5 s</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weekdays Schedule</th>
<th>Weekends Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable: YES</td>
<td>Enable: YES</td>
</tr>
<tr>
<td>Connect: 06 h 30 m</td>
<td>Saturday: YES</td>
</tr>
<tr>
<td>Disconnect: 18 h 30 m</td>
<td>Connect: 08 h 30 m</td>
</tr>
</tbody>
</table>

Logic Settings

<table>
<thead>
<tr>
<th>Operations</th>
<th>Loss of Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip Sealing: Disabled</td>
<td>Enable: YES</td>
</tr>
<tr>
<td>Open Failure Time: 1.00 s</td>
<td>Min. Current: 1.00</td>
</tr>
<tr>
<td>Close Failure Timer: 1.00 s</td>
<td>Time Delay: 2.000</td>
</tr>
</tbody>
</table>

- Trip Masks: Disabled for every unit
Breaker Supervision Settings

<table>
<thead>
<tr>
<th>Circuit Supervision</th>
<th>Number of operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close Circuit Monitoring: Disabled</td>
<td>Excessive No. Of Trips: 20</td>
</tr>
<tr>
<td>Trip Circuit Monitoring: Disabled</td>
<td>Alarm $\Sigma \text{kA}^2$: 10,000</td>
</tr>
<tr>
<td></td>
<td>Actual Value $\Sigma \text{kA}^2$: 0.00</td>
</tr>
</tbody>
</table>

Historical Records Settings

- Calculation Time Interval: 1 m
- Data Record Interval: 15 m
- Beginning Time: 0h 00m
- End Time: 24h 00m
- Day Mask: Enable Mon to Fri, Disable Sat and Sun

Inputs Settings

<table>
<thead>
<tr>
<th>DI No.</th>
<th>Assigned Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19 Change to Automatic Mode</td>
</tr>
<tr>
<td>2</td>
<td>18 Change to Manual Mode</td>
</tr>
<tr>
<td>3</td>
<td>22 Transformer Breaker</td>
</tr>
<tr>
<td>4</td>
<td>17 Open Breaker Status (52b contact)</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>21 External Closing Command</td>
</tr>
</tbody>
</table>

Output Settings

<table>
<thead>
<tr>
<th>DO No.</th>
<th>Assigned Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Breaker Failure Output</td>
</tr>
<tr>
<td>2</td>
<td>Level 1 Voltage Unbalance Trip Output</td>
</tr>
<tr>
<td>3</td>
<td>Level 2 Voltage Unbalance Trip Output</td>
</tr>
<tr>
<td>4</td>
<td>Level 3 Voltage Unbalance Trip Output</td>
</tr>
<tr>
<td>5</td>
<td>Automatic Mode</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

Leds Settings

<table>
<thead>
<tr>
<th>Led No.</th>
<th>Assigned Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Internal Protection Trip Output</td>
</tr>
<tr>
<td>2</td>
<td>Capacitor Bank Connected</td>
</tr>
<tr>
<td>3</td>
<td>Circuit Switcher Blocked</td>
</tr>
<tr>
<td>4</td>
<td>Automatic Mode</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>
Step 45
Enter the appropriate listed **General Settings** from page 14, as depicted below.

Step 47
Click **OK** to return to the **GENERAL SETTINGS** dialog box. Click the up or down arrow key until the **List** field reads “Sample Settings,” as depicted below.

Step 46
Click **Add** in the **GENERAL SETTINGS** dialog box. Enter an appropriate code number and description for the record, in this case “0002” and “Sample Settings,” respectively, as depicted below.

Step 48
Enter the appropriate listed **Current Protection Settings** from page 14, as depicted below.
Step 49
Click **Add** in the **CURRENT SETTINGS PROTECTION** dialog box.

Step 50
Select the **Sample Settings** record by double-clicking the appropriate text field.

Step 51
Click **OK** to return to the **CURRENT SETTINGS PROTECTION** dialog box. Click the up or down arrow key until the **List** field reads “Sample Settings,” as depicted below.

Step 52
Enter the appropriate listed **Voltage Protection Settings** from page 14, as depicted below.
Step 53
Enter the appropriate listed **Automatic Control Settings** from page 14, as depicted below.

Step 54
Enter the appropriate listed **Logic Settings** from page 14, as depicted below.

Step 55
Enter the appropriate listed **BREAKER SETTINGS** from page 14, as depicted below.

Step 56
Enter the appropriate listed **Historical Records Settings** from page 14, as depicted below.
Step 57
Enter the appropriate listed Inputs Settings from page 14, as depicted below.

Logical inputs are selected by clicking on the text windows. For example, for Logical Input 2, click 18 Change to Manual mode. Then click on the highlighted text below the text window to view all available logical inputs as depicted below.

Select the logical input(s) to be associated with a particular physical input by clicking Connect.

A particular logical input can be assigned to only one physical input. To reassign a logical input to a different physical input, first select that logical input, then click Disconnect.

Step 58
Enter the appropriate listed Outputs Settings from page 14, as depicted below.

A pull-down menu labeled Physical Outputs, is used to select which output the user is assigning signals to.

Logical outputs are selected by clicking on the ▼ symbol adjacent to the respective text fields. Performing this action reveals the CONNECTIONS dialog box. Use the scroll bars to view the various output connection signals. Select the logical output signal to be associated with a particular physical output and click Connect.
Step 59

Clicking on the LEDs button in the lower left-hand corner of the OUTPUT SETTINGS dialog box reveals the LEDs SETTINGS dialog box.

A pull-down menu labeled Led, is used to select which LED the user is assigning signals to.

Select signals to activate LEDs by clicking on the ▶ symbol adjacent to the respective text fields. In this example, enter the LED settings to reflect the screen depicted below.

Step 60

Verify, in the List of Settings, a check mark on all available Settings in List field boxes, indicating that these settings are included in the “Sample Settings” record.

To create a back-up copy of the settings record, insert a diskette into the appropriate floppy drive on the PC and click Create Disk.

Download a Settings Record

Step 61

To send this “Sample Settings” record to the relay, click Send. A confirmation dialog box will appear, as depicted below. Click Yes.
Step 62
Shortly thereafter, a second confirmation dialog box will appear. To configure the inputs and outputs of the BCD terminal unit, the user must follow steps 63 through 66 below before clicking Yes. This is to ensure that input and output settings are not altered accidentally.

Step 63
Press the ESC on the keypad of the BCD terminal.

Step 64
Select 0. CONFIGURATION from the main menu of the BCD terminal.

Step 65
Enter the required password (the default is 2140).

Step 66
Select 2. CONFIGURE INPUTS from the configuration menu of the BCD. The following message will appear on the display of the relay.

TO MODIFY
ACCESS THROUGH
LOCAL PORT

Click Yes on the aforementioned dialog box.

After a brief time delay, another confirmation dialog box will appear, as depicted below, alerting the user to enter a code to change the output settings. Proceed with Step 67 before clicking Yes.

Step 67
Select 3. CONFIGURE OUTPUTS from the configuration menu of the BCD terminal. The following message will appear on the display of the terminal.

TO MODIFY
ACCESS THROUGH
LOCAL PORT

Click Yes on the aforementioned dialog box.
Quitting ZIVercom®

**Step 68**
Click **Exit**. The default information screen will appear.

**Step 69**
Click **Exit**. The **LOCAL CONNECTION** dialog box will appear for specifying substation and equipment number.

**Step 70**
Click **Cancel**. The main menu will appear, as depicted below.

**Step 71**
Click **Quit**. The identification screen will appear, as depicted below.

**Step 72**
Click **Quit**. The program will terminate.
APPENDIX

Creating a Settings Record Offline

The following steps apply only in instances where the protection terminal is not connected to a PC.

Step A

Load the ZIVercom® program by double-clicking on the appropriate icon. The ZIVercom® application screen will appear as shown below.

Note: This screen indicates the software version and serial number.

Step B

Click OK. The identification screen will appear, as depicted below.

Enter the appropriate “User” name and “Password.” The default settings are “ZIVERCOM” and “ziv” respectively.

Step C

Click OK. The main menu screen will appear, as depicted below.
Step D

Highlight and select **Connection** on the menu bar. A pull-down menu will appear, as depicted below, listing connection options.

Step E

Highlight and select **Emulation, 7BCD, G, Oscillo, 60 Hz.** A menu screen will appear, as depicted below.

Step F

Follow the procedure for creating a settings record outlined in Steps 11 through 33. In Step 13, enter an appropriate code number and description for the record, such as “0003” and “Emulation Settings” respectively. Make certain that **List** field reads “Emulation Settings” on the appropriate dialog box in steps 15 and 22.

Settings records cannot be displayed or printed in the emulation mode.
Functional Testing

Routine testing of the protection terminal is not necessary since the microprocessor is continuously performing self-diagnostic tests. Functional testing may be desirable, however, to confirm that the device has been correctly connected to the circuit interruption control system, and that the desired protection and control settings have been programmed. Refer to the Chapter titled Receiving Tests in the instruction manual for detailed acceptance test procedures.

The following equipment is required to perform functional testing.

- An appropriate control voltage source
- A 0 – 20 A ac current source
- A 0 – 5 minute timer

If the protection terminal is not connected to an interruption device, the user should set up a test circuit that simulates operation of the interrupter to confirm protection and automatic control functions. It is possible to test pickup and time delay settings of the protection elements without simulating interrupter operation.

To avoid undesirable protection terminal operations, perform the following:

**Step G**

Highlight and select Protection, Voltage settings, as depicted below.

If the analog voltage inputs are not connected to the terminal, ensure that the Blocking Unit function and the Undervoltage 27 function are not enabled. Enabling these functions will block the Automatic Control function. Please refer to Chapter 6 in the instruction manual for more details.

**Step H**

Measure and record the time between trip initiation and change of state of the 52/b contact.

**Step I**

Measure and record the time between close initiation and change of state of the 52/b contact.

**Step J**

Highlight and select Supervision 52 (Breaker) settings, as depicted below.

Verify that the Close Circuit Monitoring and the Trip Circuit Monitoring settings are appropriate for the installation. Change settings as necessary.
Step K

Highlight and select **Logic** Settings, as depicted below.

![Logic Settings](image)

Verify that the **Opening Failure Timer** setting is greater than the time between trip initiation and change of state of the 52/b contact, as measured in Step H. Also verify that the **Closing Failure Timer** setting is greater than the time between close initiation and change of state of the 52/b contact, as measured in Step I.

An alarm signal will be generated if the **Opening Failure Timer** setting is less than the time measured in Step H. The **Automatic Control** function will be disabled if the **Closing Failure Timer** setting is less than the time measured in Step I. Change the timer settings as necessary.