Programming Instructions
MVI Molded Vacuum Fault Interrupter Software

Contents: MVI-STP-USB programming Cable, CD-Rom, Instruction Sheets.

ESET-III REV B software is used to program Elastimold Molded Vacuum Interrupters. ESETIII REV B incorporates all the features our users are already familiar with: custom protection coordination curves (TCCs), phase and ground protection for three-phase units, and the ability to read current per phase real-time. In addition, ESET III REV B allows the user to select or create separate TCC for ground and it gives the user the ability to add password security to the programmed control. These features are available on the Version II and Version III MVI's.

	E-Set PC System Requirements
·	Pentium 500 MHz or better
·	MicrosoftÒ Windows XP SP3, Windows 7, Windows 8, Windows 10
·	512 MB of RAM
·	200 MB free hard drive space
·	CD-ROM Drive or flash drive

Step	**Installing E-Set Software for the MVI Molded Vacuum Fault Interrupter**	
1	The drivers must be installed prior to connecting the USB cable to the computer. When installing the drivers accept all of the install defaults. If a message opens and has an option "Continue Anyway" Click "Continue Anyway" Insert E-Set CD-ROM. Installation will start automatically. (The latest E-Set installation program is also available for download at Elastimoldswitchgear.com.) Follow the instructions on the screen	

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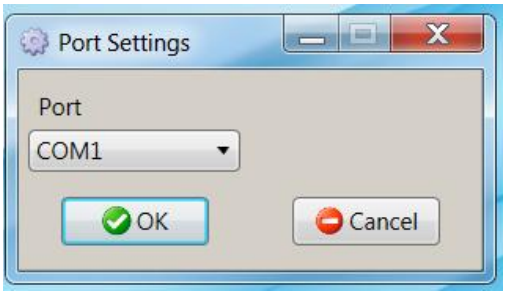
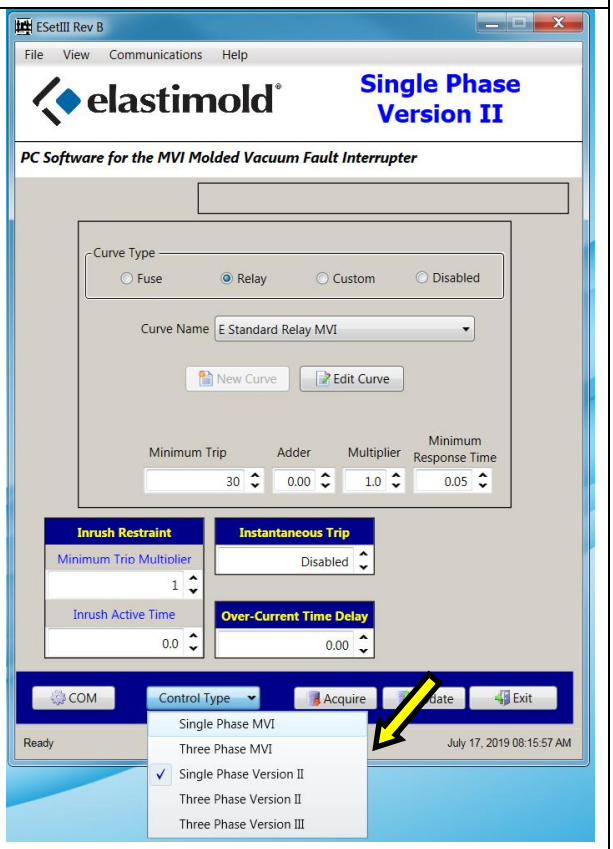
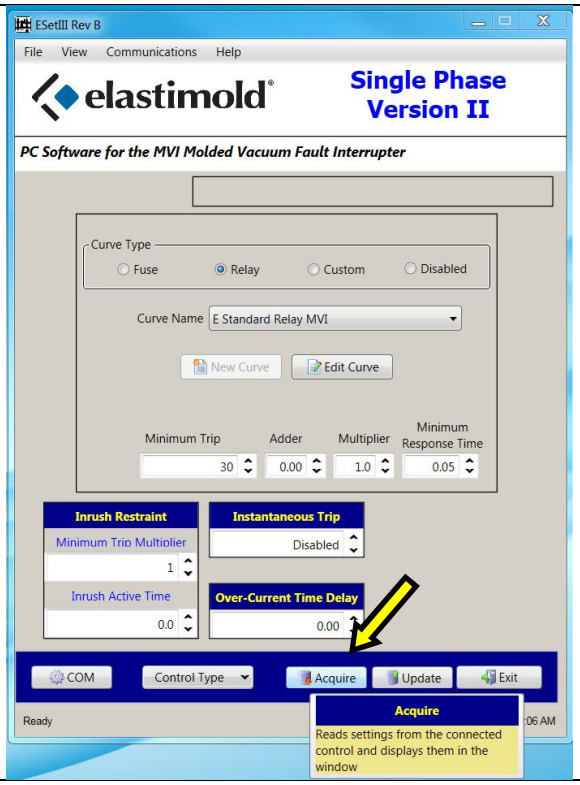
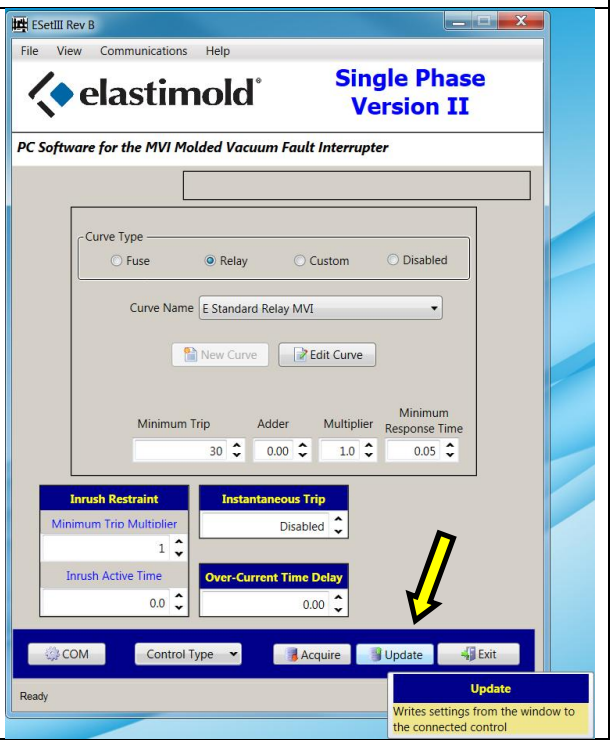
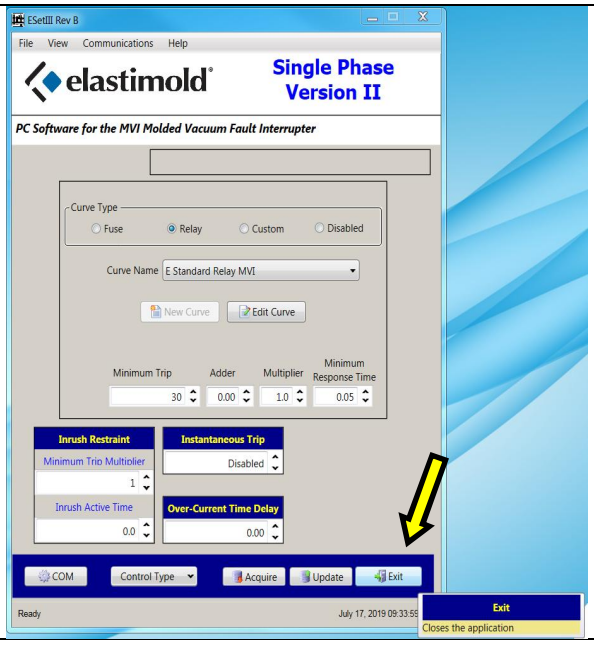
Step	**COM button**	
2	Connect the MVI-STP-USB cable into the MVI. Connect the other side of the cable to an available USB port on your computer (For MVI-STP-USB hook up refer to IS-1115) Click on the "COM" button to retrieve the Communication parameters.	

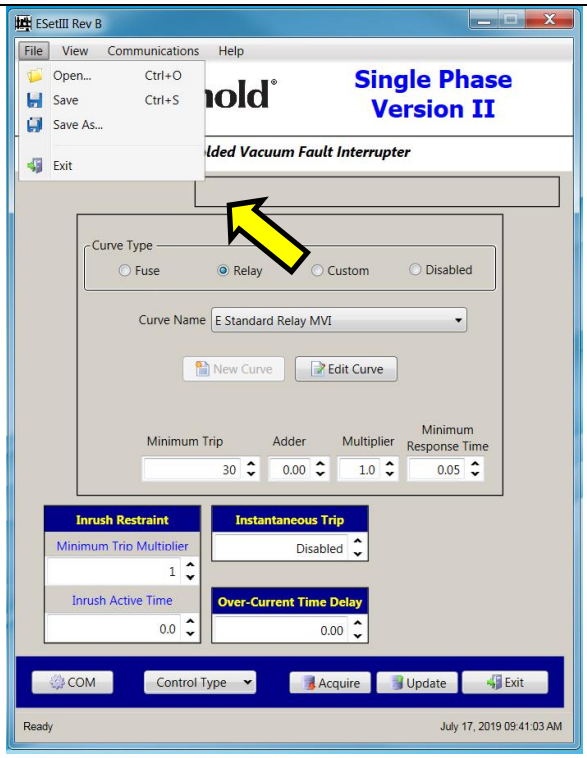
Step	**Port settings**	
3	If the computer has trouble communicating with the MVI, check that parameters in Port settings match the parameters of the COM port in Device Manager (Control Panel) of the Computer.	

Step	**Control type**	
4	Click on the Control Type button to choose the screen that applies to the control to which you are connected. Note: when using “Acquire” or “Update” ESETIII REV B will automatically match the screen to the type of control to which the computer is attached.	

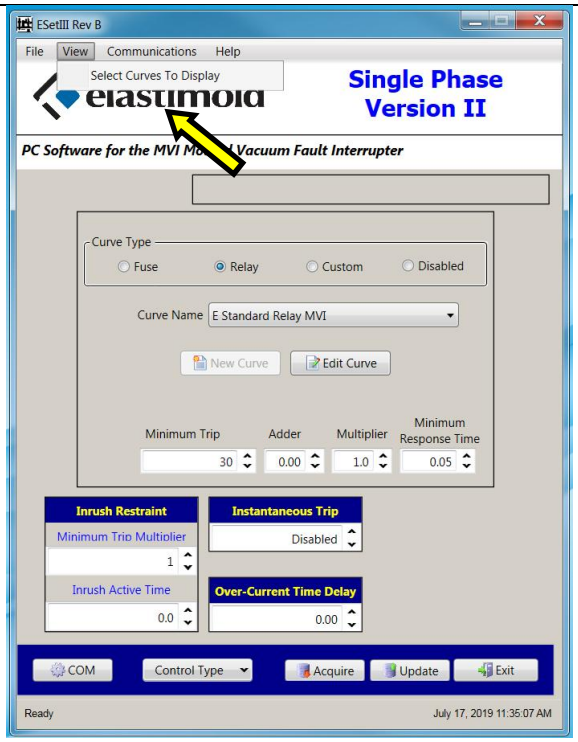
Step	**Acquire**	
5	Click on this button “Acquire" to retrieve the existing programmed settings of the control.	

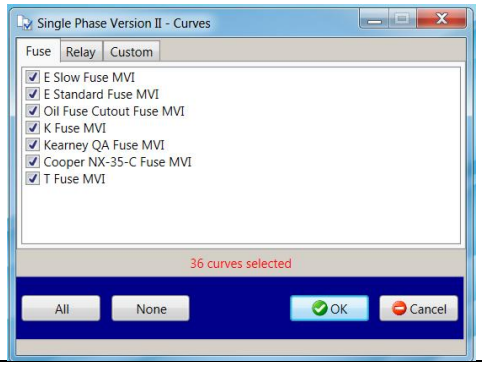
Step	**Update**	
6	Change the settings according to your requirements When all desired settings have been selected, click the “Update" button to send the new settings to the control. A window will advise on status of update and if the update was successful. To verify update, change setting values and do an “Acquire". The desired settings should be returned.	

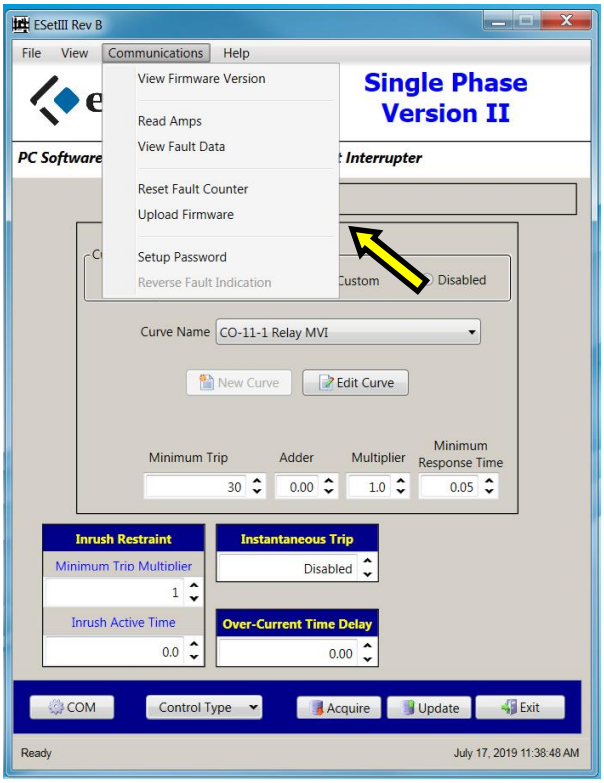
Step	**Exit**	
7	Click on the “Exit” button to “Close" ESETIII REV B.	

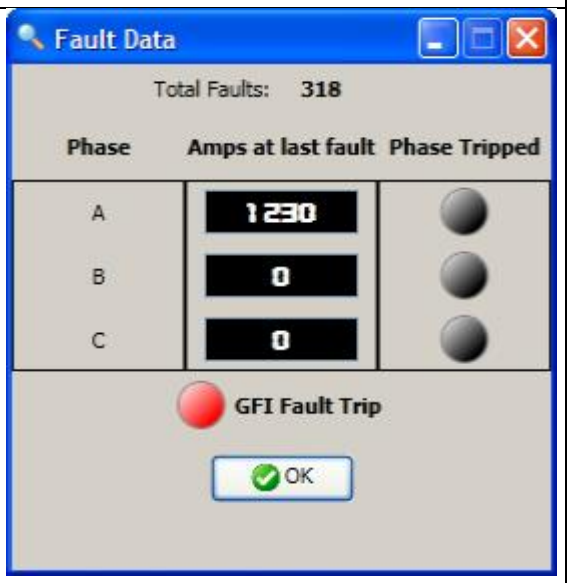
Step	**File**	
8	Click on “File" for the following options: A.) OPEN: Allows the user to open an existing file that contains the previously saved ESETIII REV B settings. B.) SAVE: Allows the user to save the ESETIII REV B settings as a file. C.) SAVE AS: Allows the user to save the ESETIII REV B settings as a file with a new name. D.) EXIT: Allows the user to close and exit ESETIII REV B.	

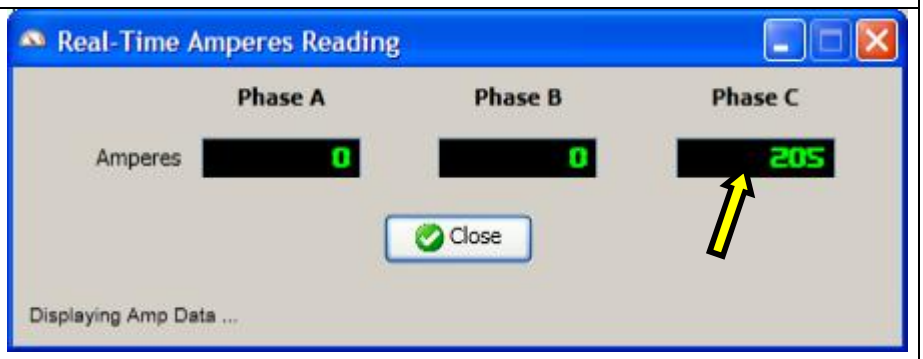
Step	View
9	Click on “View" for the following options: **Select Curves to Display:** Allows the user to select which curves are normally visible when programming the unit. There is a check box beside each curve. If there is a √ in the box, the curve will be visible and therefore available for election. If there is no √ in the box, the curve will not be visible and therefore unavailable for selection. The √ box toggles between √ and no √ with a mouse click. **ALL button:** Click to place a √ mark beside each curve, thus all curves will be visible (default is all) and available for selection. **NONE button:** Click to remove all √ marks beside each curve. Provides a clean state if only a few curves are to be visible and available for selection.

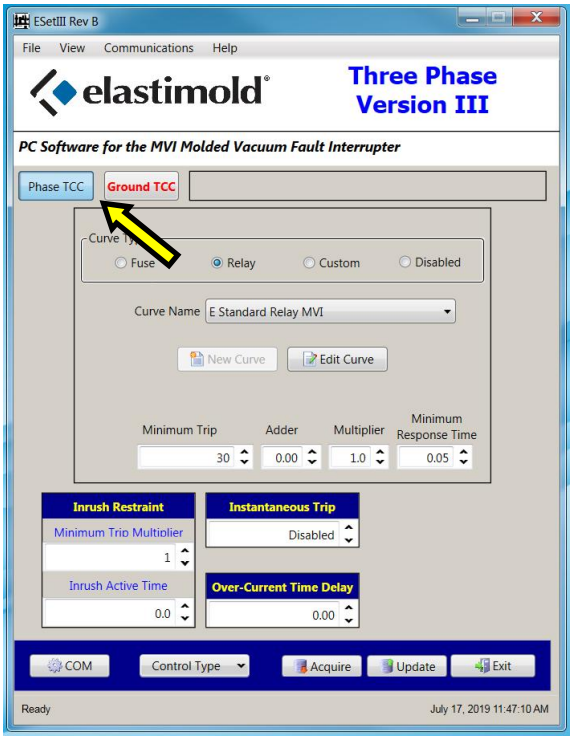


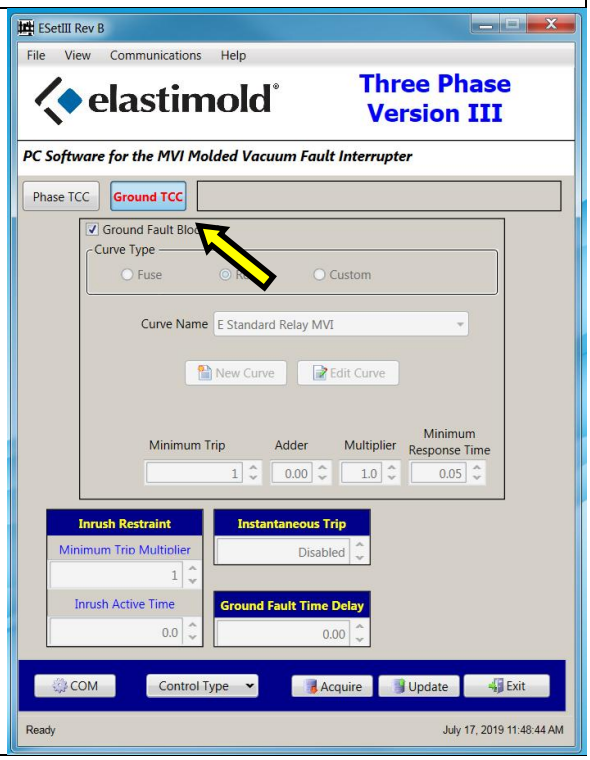


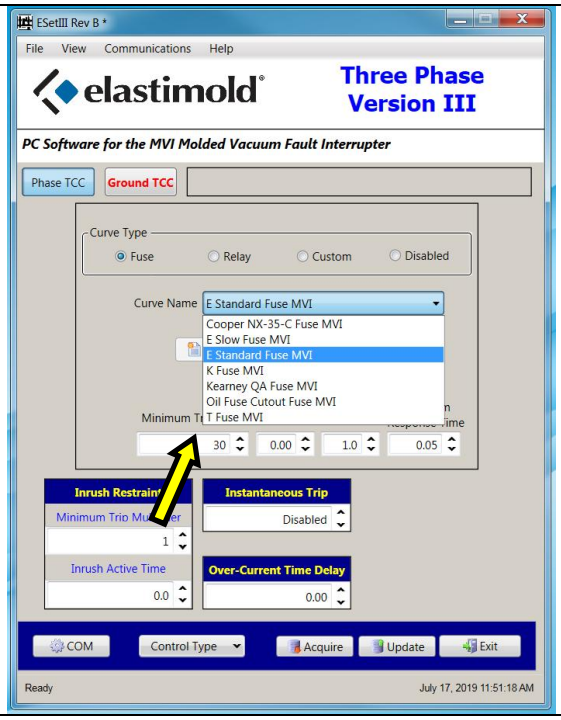
Step	Communications	
10	**View Firmware Version** Returns the Version of MVI Firmware. **Read Amps** Returns the real time current in amperes for each phase. **View Fault Data** Returns an indication of the last fault in amperes and the number of faults that the control has sensed since the counter was last reset. **Reset Fault Counter** Returns "Fault Data" counter register to zero. **Upload Firmware** Upload control firmware. **CAUTION**: DO NOT change Firmware unless advised by the factory. It may disable the control. **Set Password** Allows the user to set a password for a specific unit. The password needs to be 8 characters long. The password is only needed to update the control. **Reverse Fault Indication** Allows the user to reverse the fault designation for phase A and C. This is necessary when a 3 phase MVI is mounted to the back side of an MVS. To activate this feature, set the reverse fault indication to active and update the MVI. The reverse fault indication active will be displayed next to the ground TCC button on the main screen.	

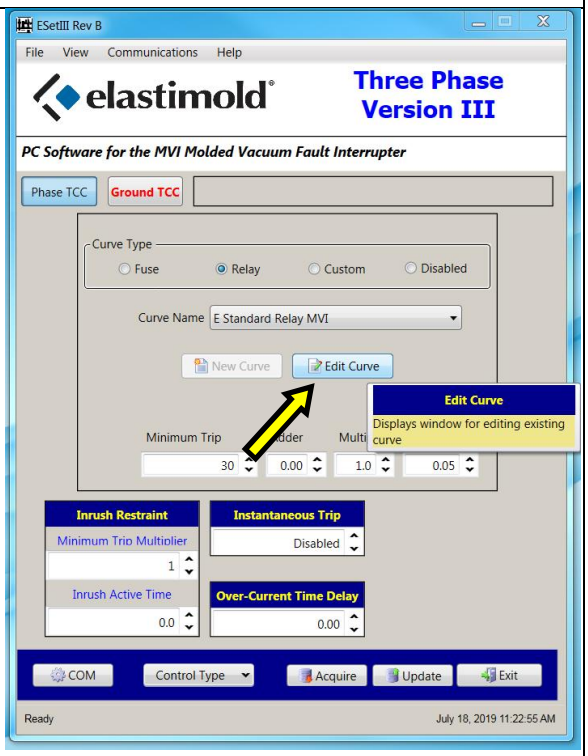
Step	View Fault Data	
11	The Fault Data can be retrieved by pressing “View fault data” button. It shows the data at the last trip: current on each phase during trip, indicates the total number of faults and on what phase was fault current or current between phases responsible for GFI trip.	

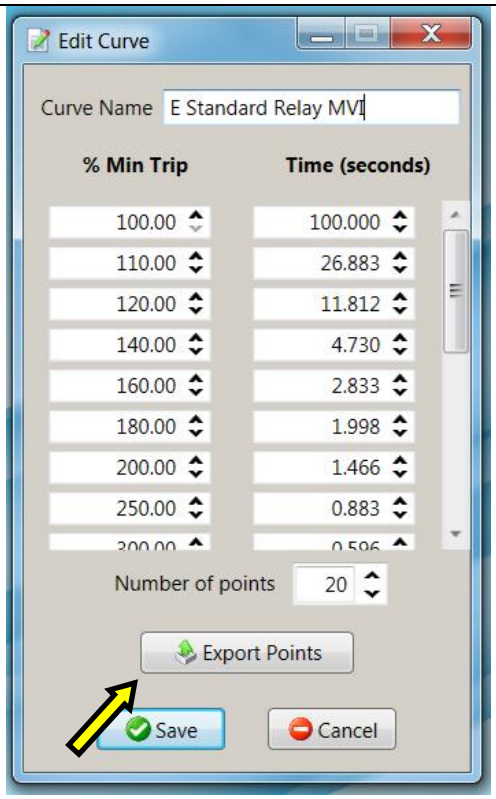
Step	Read Amps	
12	Click on the Read Amps to retrieve Real time Current readings on every phase of the MVI. This screen is very useful because it not only shows the real time current, but also allows to calibrate the current readings on each phase of the MVI during the MVI setup in a factory environment.	

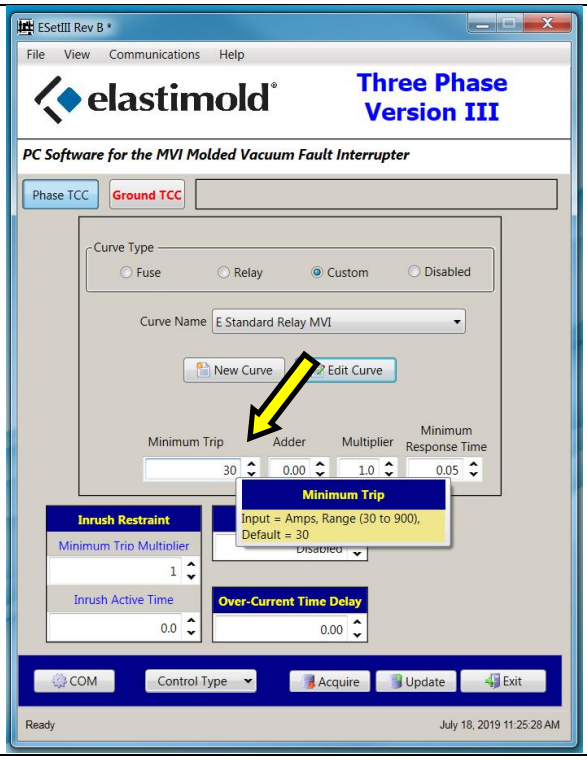
Step	**Phase TCC**	
13	Click on this button to display the screen that allows for the settings of phase overcurrent protection. (ESETIII REV B 3 Phase Version II and 3 Phase Version III MVI only)	

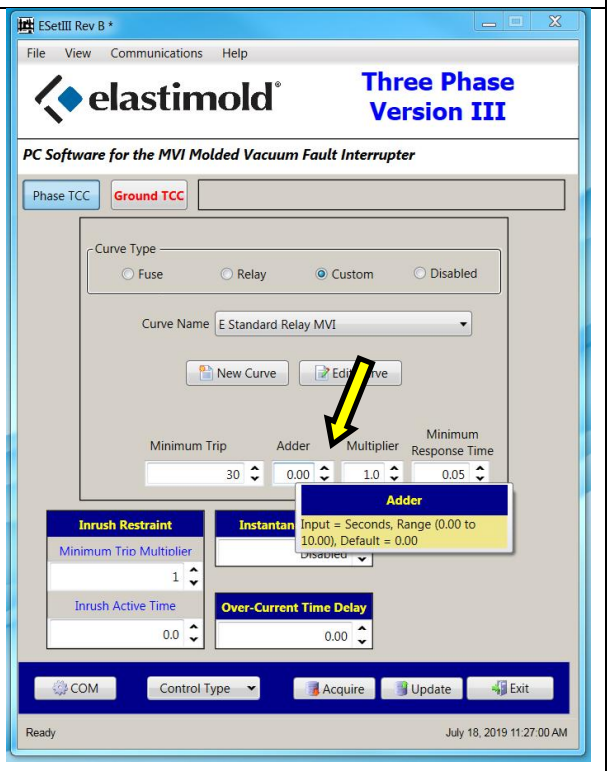
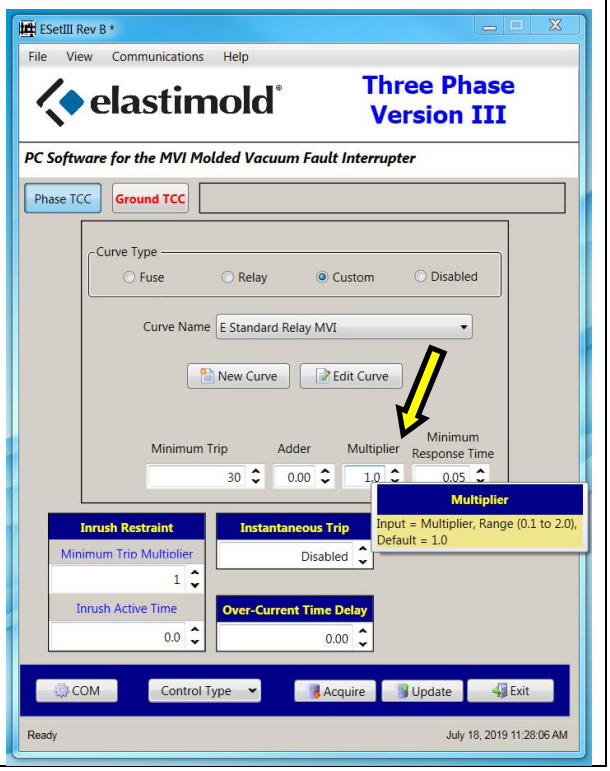
Step	Ground TCC	
14	Click on this button to display the screen that allows for the settings of ground fault protection. (ESETIII REV B 3 Phase Version II and 3 Phase Version III MVI only)	

Step	Curve Type	
15	Allows user to select the type of curve needed from the following: **Fuse** Allows the user to select from a list of fuse curves. **Relay** Allows the user to select from a list of relay curves. **Custom** Allows the user to select from a list of custom curves created by the user. **Disabled** Allows the user to disable the overcurrent protection. The unit will act as a switch and will not automatically trip when an overcurrent is present. When either a single phase or three phase MVI is used with the Disable setting, the operator must be aware of the possibility of closing in on a fault. Should such an event occur, then the MVI experiencing the fault close must be checked according to all of the tests defined in IS-0908, page 4, “Testing and Evaluation of Molded Vacuum Interrupters".	

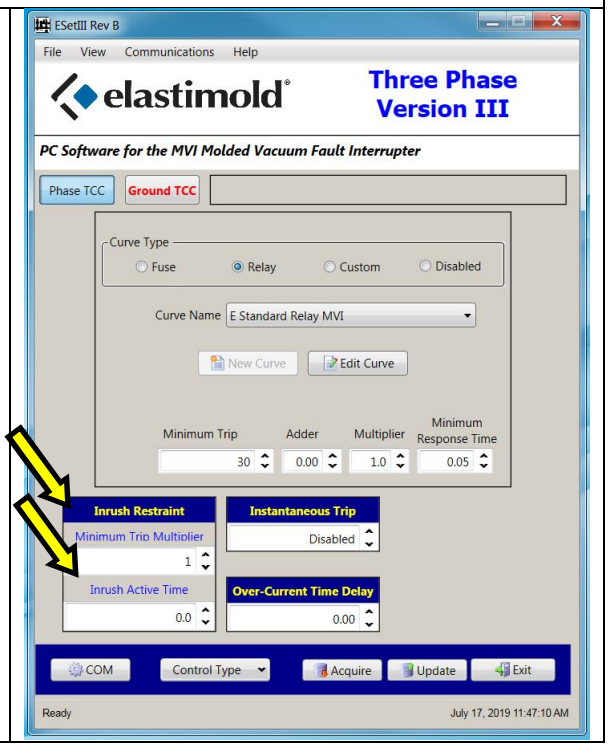
Step	Edit Curve	
16	**Edit Curve** Click on Edit Curve to go to the edit curve screen. The user may modify existing TCC curves to better fit the protection coordination scheme. If the user modifies the curve it becomes a Custom Curve.	

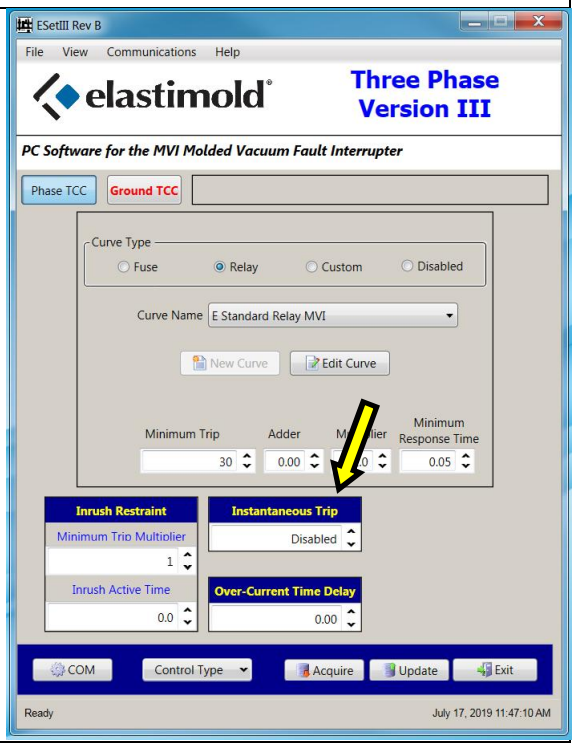
Step	Edit Curve Screen	
17	Allows the user to change points on an existing curve. It allows you to save these changes under a new Curve Name by typing it in the curve name box and clicking on the “Save” box. This will save the new curve under the Custom Curves. You can also click on Export Points which will export the points to excel or clip board.	

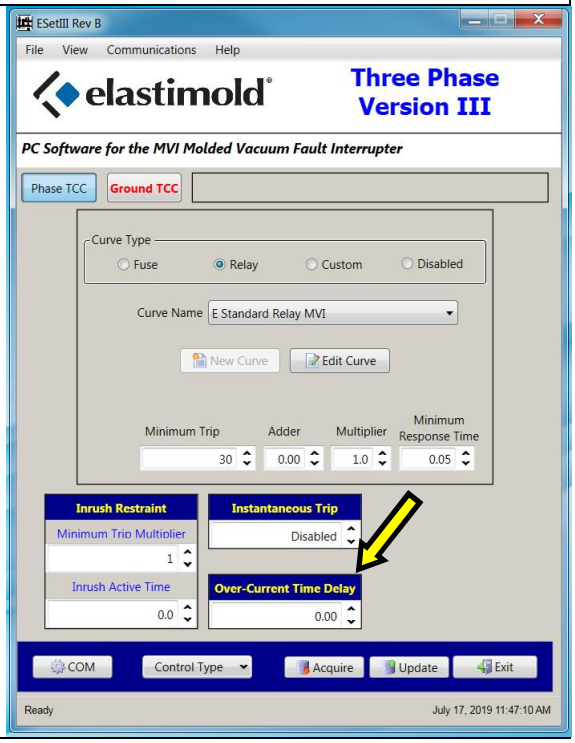
Step	**Minimum Trip**	
18	Enter the desired minimum trip level. The ranges of minimum trip values are as follows: On a phase Relay MVI from 30 to 900 amps (30 is a default) On a phase Fuse MVI from 10 to 200 amps (10 is a default) On a Ground fault protection From 1 to 0.8*(the value for minimum trip on a phase) Note: When a fuse curve is selected, the program simulates the behavior of that device, i.e. the actual pick-up current for the fuse is 2.2 times the minimum trip value.	

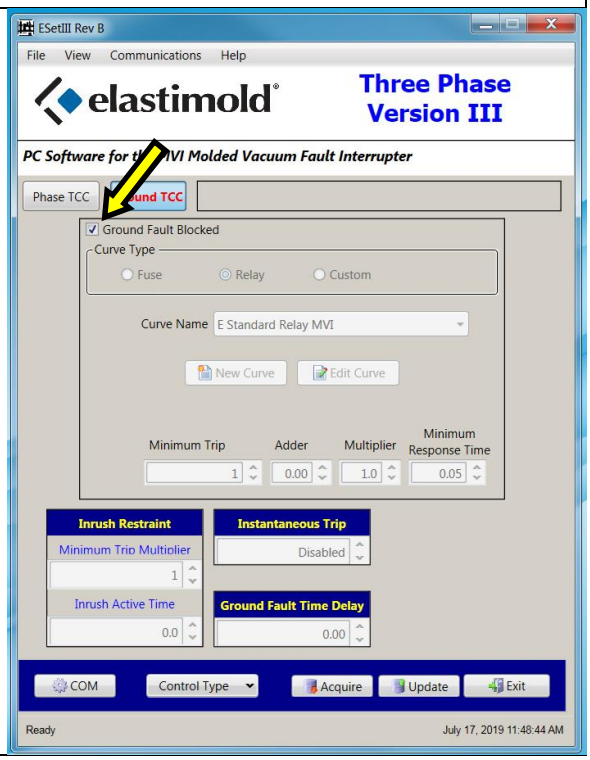
Step	**Adders and Multipliers**	
19	An Adder is an increment of time that is added to the time for each current for a particular curve. The range is 0.00 to10.00 seconds with a default of 0.00 seconds. An adder by itself, flattens the high current portion of the TCC Curve. A multiplier is a constant that is used to change the time for each current for a particular curve by multiplying the time by the constant. The range is 0.1 to 2.0 with a default of 1.00. A multiplier, by itself, shifts the TCC Curve up or down along the time axis while keeping the same curve shape. The resulting time after selecting Adder and Multiplier is calculated as: TNEW = (TINITIAL x Multiplier) + Adder.	 

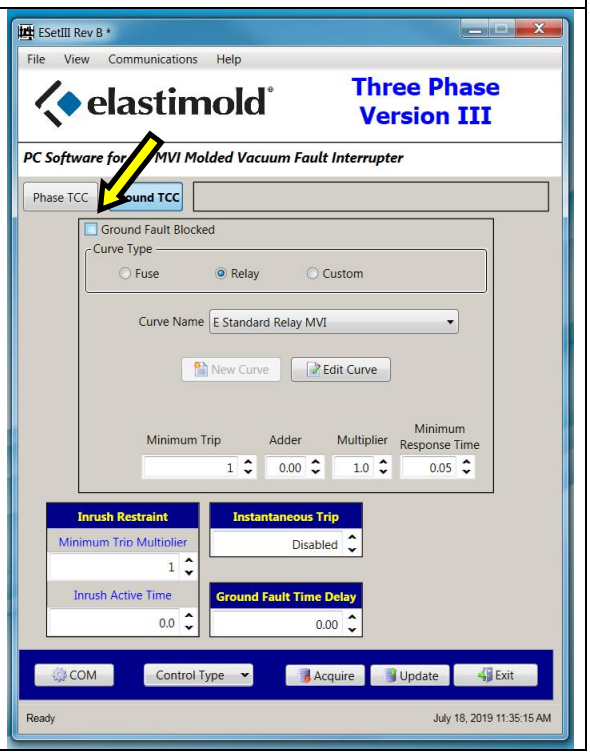
Step	Minimum Response Time	
20	The minimum response time forces the unit to respond in a time that is no less than the minimum response time. The range is 0.05 seconds to 1.00 seconds with a default of 0.05 seconds. **The Minimum Trip, Adder, Multiplier and Minimum Response Time settings on a Three Phase or Single Phase Control can be found on the Edit or New Curve Screen. For the Three Phase II Control these functions will be on the Phase or Ground TCC Screens.**	

Step	Inrush Restraint	
21	**Inrush Restraint:** Prevents the unit from tripping when there is an inrush current generated in the system. This feature increases the minimum trip level (Minimum Trip Multiplier) temporarily (Inrush active time), then returns the control to normal trip settings. Both the Minimum Trip Multiplier and Inrush Active Time must be set. **Minimum Trip Multiplier:** The multiplier is a constant that is used to multiply the minimum trip to establish the inrush pick-up level. The range is 1 to 5 with a default of 1. **Inrush Active Time:** The range is 0.0 seconds to 600.0 seconds with a default of 0.0. **Note:** Default settings are set for no inrush restraint	

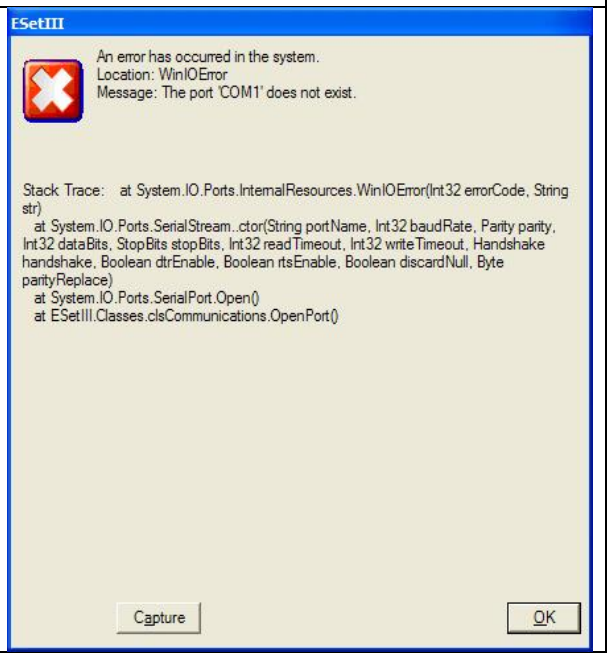
Step	**Instantaneous Trip**	
22	Causes the unit to trip instantaneously when the current is at or above this set point. This function overrides the time/current curve settings. The range is 20 to 10,000 amps with the default set at “Disabled" permitting the curves to control the trip.	

Step	**Over Current Time Delay**	
23	The time delay is the same as the “Adder". It is an increment of time that is added to the time for each current for a particular curve. Tnew = Tinitial + Tincrement. The range is 0.00 to 0.50 seconds with a default of 0.00 seconds.	

Step	Ground Fault Blocked	
24	If Ground Fault Blocked box is unchecked the Ground Fault Protection is active. This check box is available only when Ground TCC is selected. Note: If ESETIII REV B is used with an 80 control and the ground fault is blocked then the GFI protection is disabled and the GFI selector switch on the 80 control will not allow the user to enable the GFI function. In order to use the GFI selector on the 80 control, the ground fault protection block should NOT be checked.	

Step	Ground Fault Protection	
25	To set the Ground Fault Protection click on the box “Ground Fault Blocked”, which will remove the check mark and make the Input boxes on the Ground TCC screen active. Next, set the parameters for the Ground Fault Curve the same way the Phase TCC curves were set following Steps 13-24. With the ground fault protection active, the program will trip MVI according to the lowest trip time on a phase and ground curves. Ground curve is set to look for current imbalance between any of two phases.	

Troubleshooting

Check/Try	
1. Verify that the MVI-STP-USB Cable is connected to the PC and the other end of the Cable is Connected to an Elastimold MVI Control port. 2. If the LED on the controller or CT is blinking, they are connected properly. The problem is in the computer or in an ESET program. See step #3. * Note: There is no light on the MVI-STP-USB. 3. Verify that no other program is using the port (Mouse, Hotsync, etc.). If so, end-task the program. 4. Confirm that the port configuration is correct (click on the COM Icon). **CAUTION**: DO NOT change Firmware unless advised by a factory. If firmware changed, the parameters must be updated with a new firmware	

About the Inrush Restraint Option

The In-Rush Restraint (IRR) option provides an initial time period upon energizing the circuit of elevated current levels to accommodate cold load pick-up. Cold load pick-up includes the momentary high current flow when a "dead" line is made hot by closing this interrupter or some other upstream device.

The inrush restraint feature is very simple in concept and settings with the understanding of the underlying reasons for inrush restraint. Here are two examples:

(1) the MVI is on a "dead" line downstream of the open point, and you close the open point, load pickup can cause a momentary high current to flow, which could cause the MVI to trip/open;

(2) the MVI is supplying a large transformer and you energize it, a large magnetizing current can flow potentially causing the MVI to trip/open.

In-Rush Restraint can provide the necessary increase in the current setting for the time delay period in these instances without blocking higher fault current protection.

Example, if the *Trip Selection* (amps) is set for 30 amp and the *Minimum Trip Multiplier* is set at 3 and the *Inrush Active Time* is set for 3.5 seconds, the IRR current is 3 X 30 = 90 amp. If the power-up applied current is above 90 amps, the trip time follows the TCC curve. The 90 amp trip level will remain active for 3.5 seconds, after 3.5 seconds the minimum trip value goes back to 30 amp.

IRR Notes: On the fuse curve settings, the pick-up is approximately 2.2 times the selected trip setting when calculating the IRR current. The IRR is only active on a power-up condition or if the current in the line is approximately zero (less than 1 amp).