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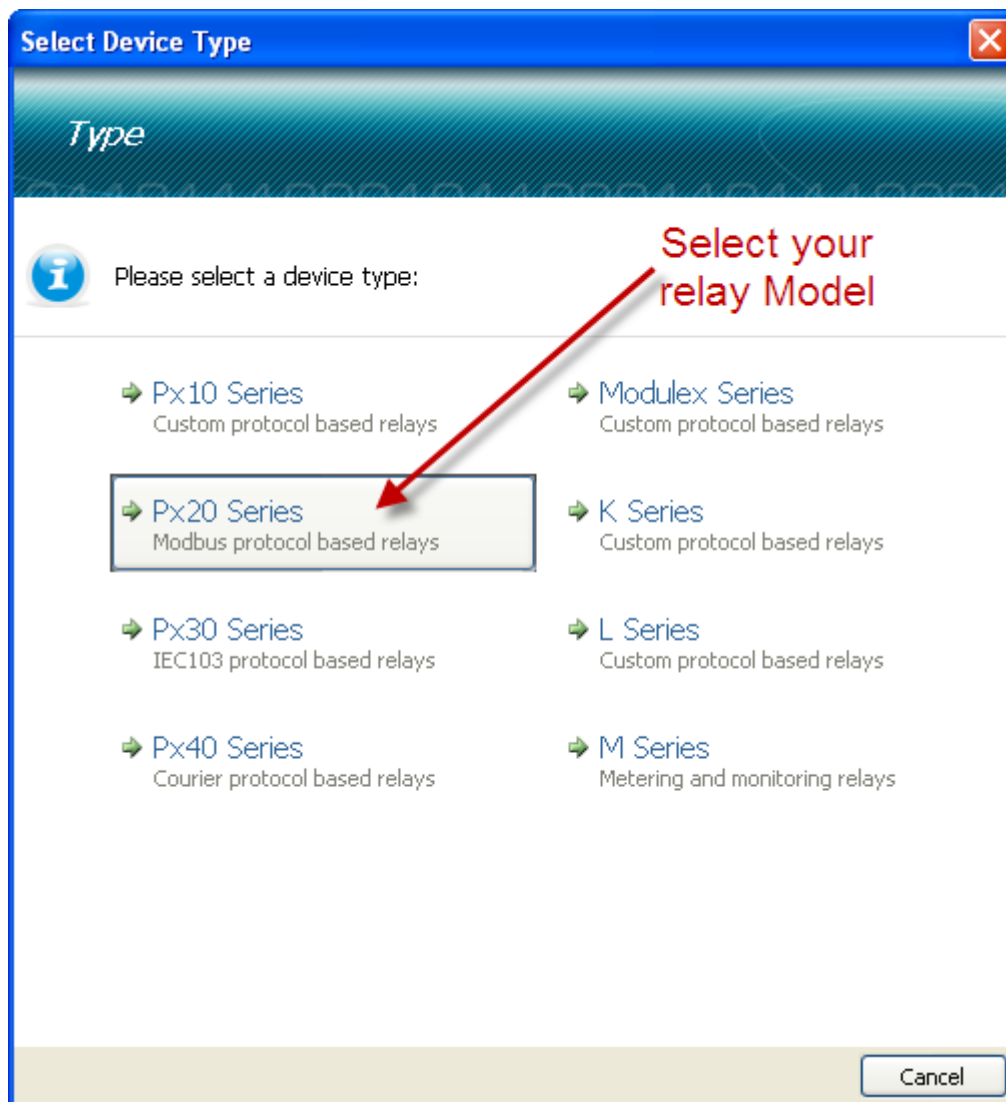
# **Testing Procedure for Over Current Micom P123**

## To Communicate with the relay (Download Settings):

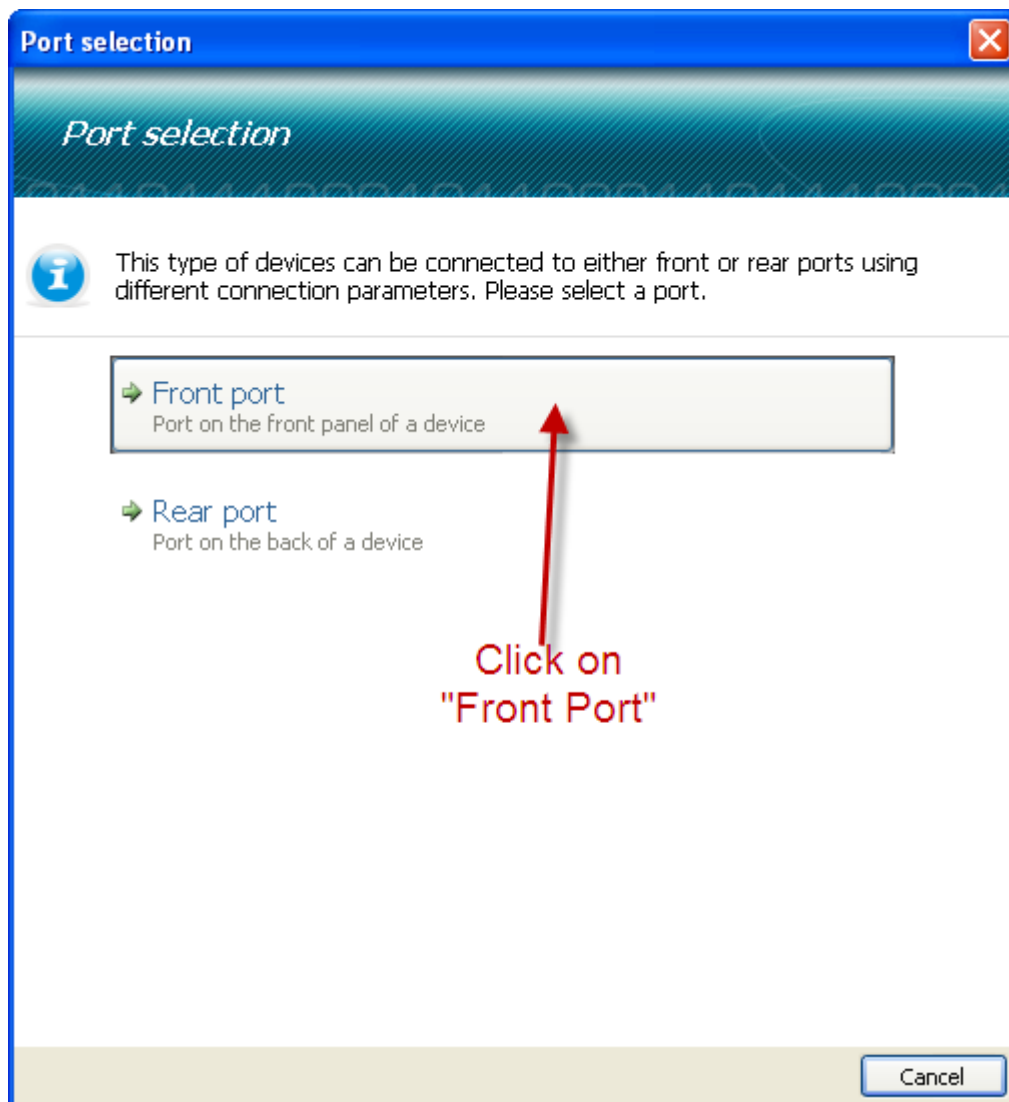
1. Open the micom software i.e. MICOM S1 Studio. Click on "Quick Connect".



2. Select your device i.e. P123.



3. Select the port i.e. "Front Port"



4. Relay will automatically download the setting file. Now you will have to retrieve the settings. Right Click on the “settings” and select “extract Settings”.

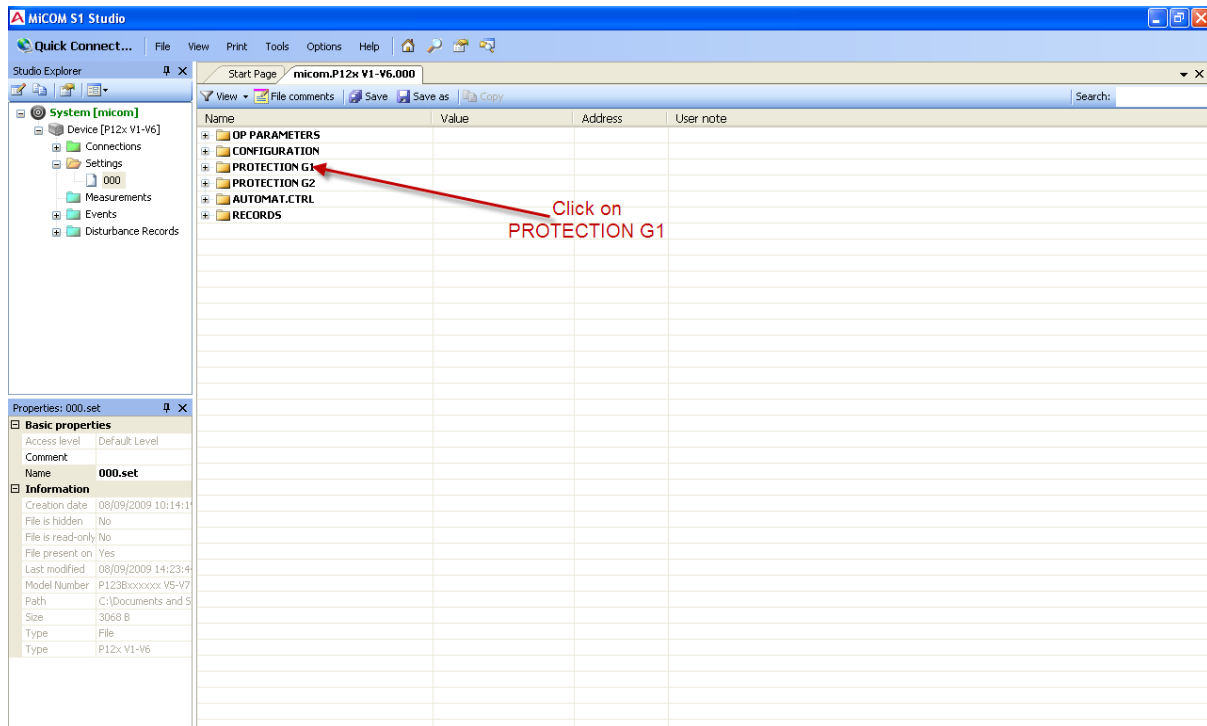


5. It will download the setting file and name it as “000”.



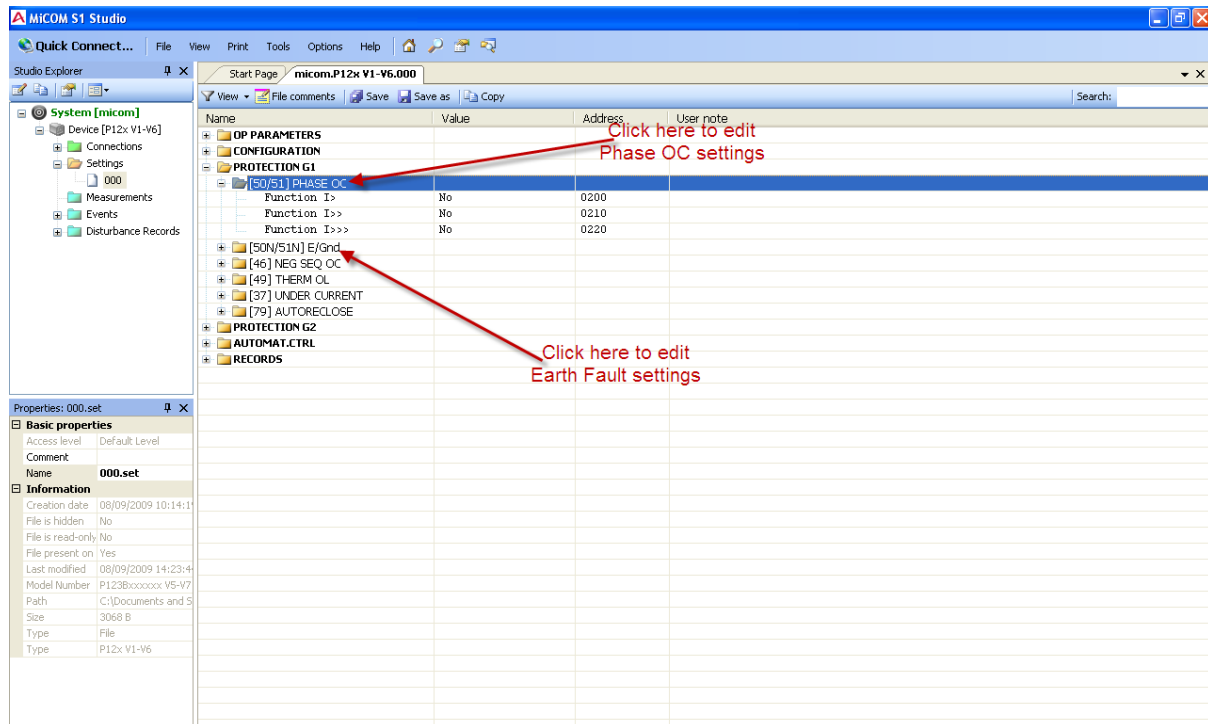


6. Now double click the “000” file and all the settings will get open in right side window. Now you can change the settings of any parameter or function by clicking on “+” arrow or double clicking the name. Now you will expand “PROTECTION G1” as it is our active group.

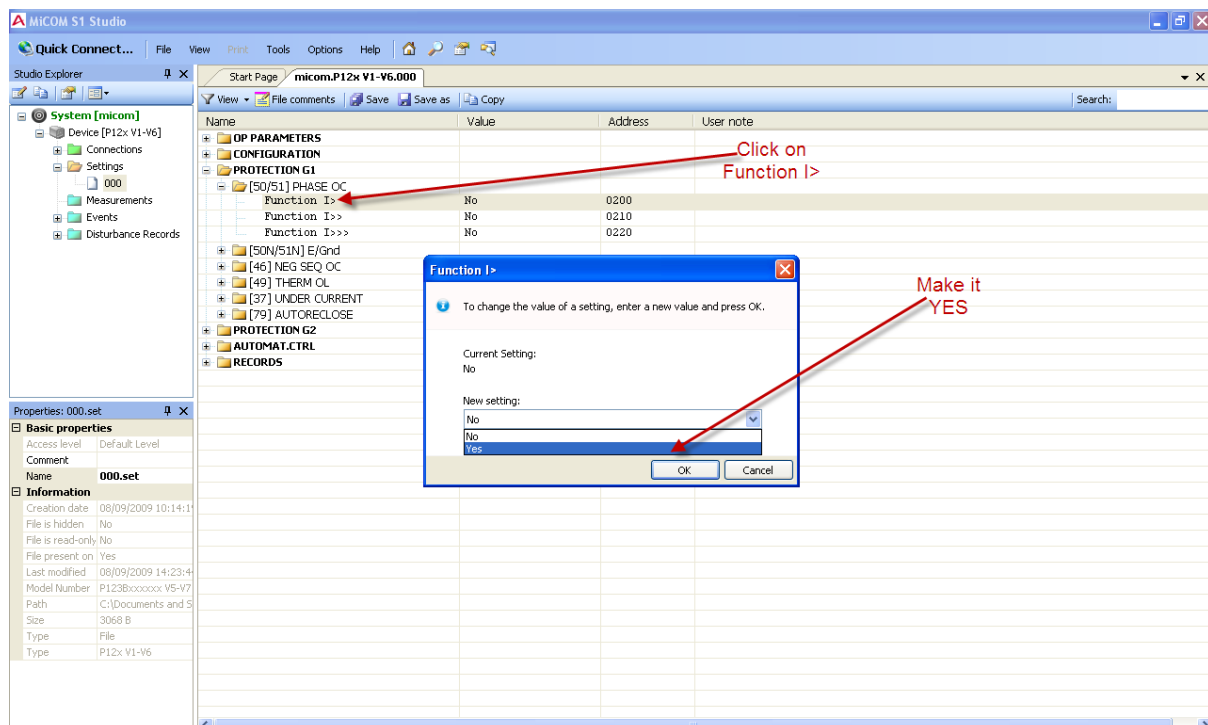


## Testing 1<sup>st</sup> Stage Over Current threshold:

7. You will expand the Setting G1 and then expand “[50/ 51] Phase OC”.



8. Double click on “function I>” and make it yes.





9. As soon as you will make “Function I>” ON. Its different setting parameters will start appearing. Select these parameters as per your test format.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
Function I>	Yes	0200	Set PU Current
I>	0.5In	0201	Select Delay type i.e. IDMT/ DMT
Delay Type	LTII	0202	
Idmt	LTII (IEC)	0203	
Tms	1	0204	Select IDMT curve type.
t Reset	0s	0205	
Function I>>	No	0210	
Function I>>>	No	0220	
[50N/51N] E/Gnd			
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

10. To change any parameter double click on it and a widow will appear, now put your settings in this window and click OK. E.g. to put your settings for P.U current double click on I> and a window will prompt and you will put your settings in it.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
Function I>	Yes	0200	
I>	0.500 In		
Delay Type			
Idmt			
Tms			
t Reset			
Function I>>			
Function I>>>			
[50N/51N] E/Gnd			
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

**I>**

To change the value of a setting, enter a new value and press OK.

Current Value: 0.500 In

Minimum: 0.100 In

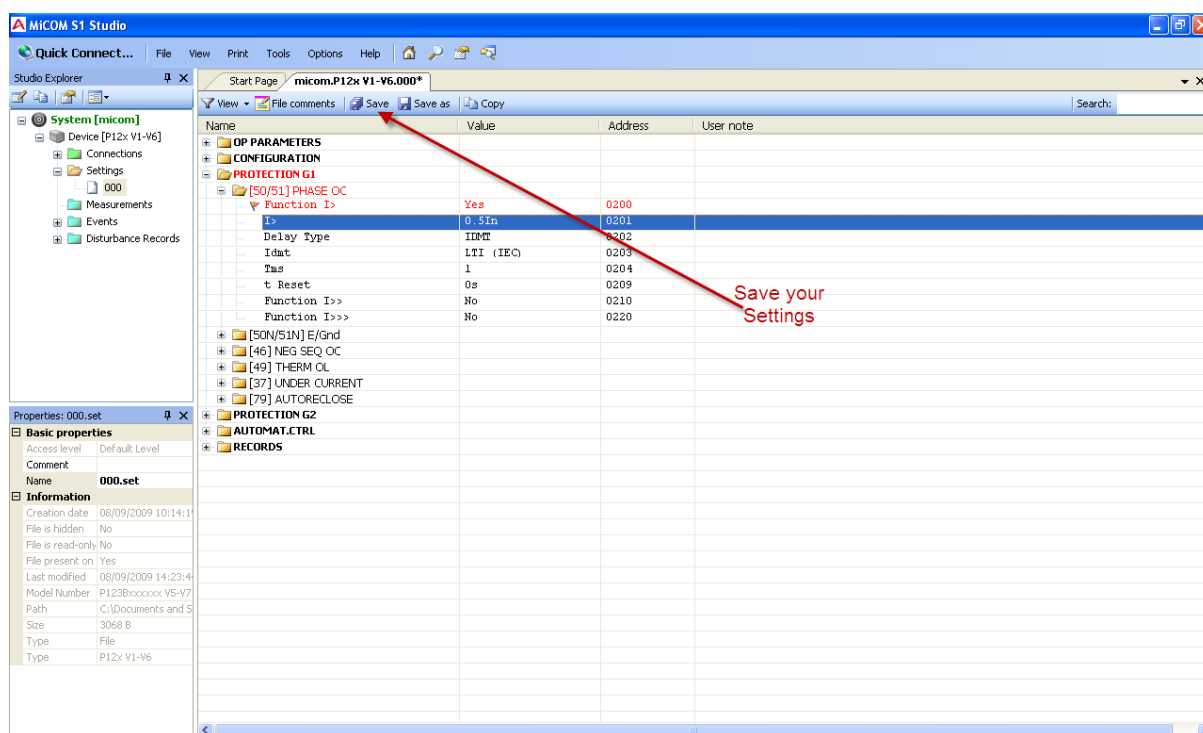
Maximum: 25.00 In

Step Size: 0.010 In

New Value:

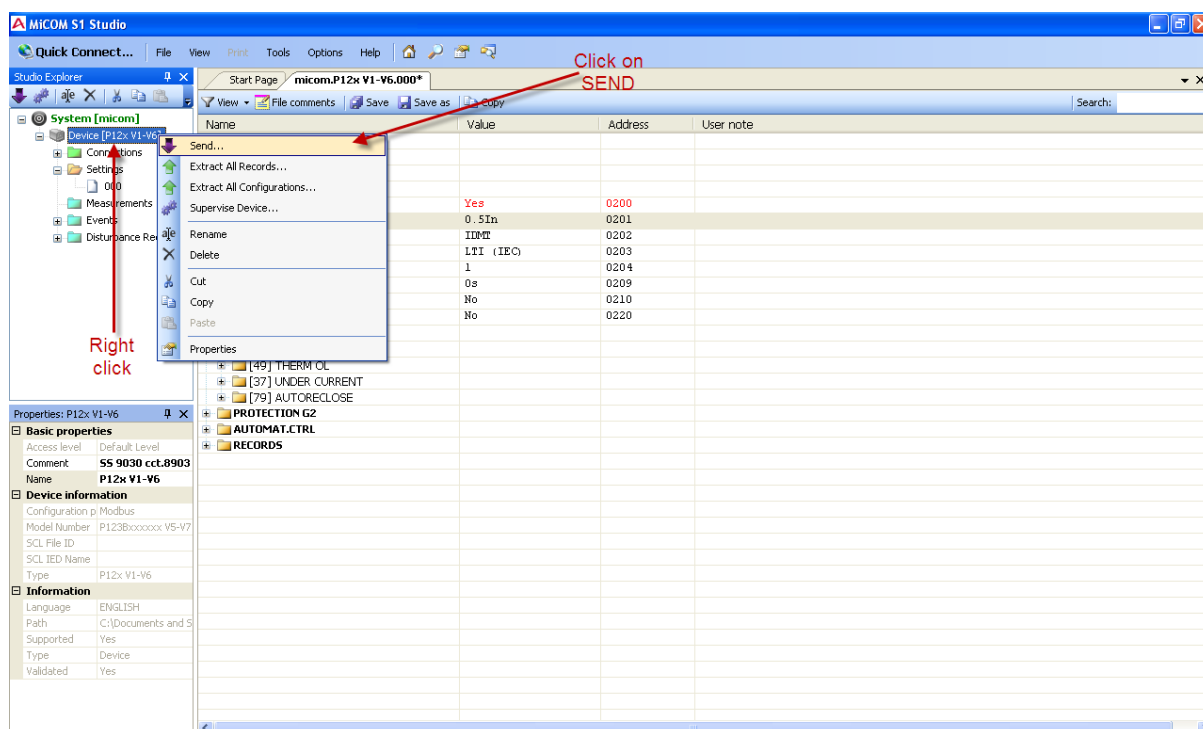
OK Cancel

11. Now you will save your changed settings by clicking on “SAVE”.



## To communicate with the Relay (Send Settings to Relay):

12. Now to send your saved settings to the relay right click on DEVICE in left panel. And click on SEND.



13. A window will prompt to inform that connection is established b/w relay and computer. Now next window will prompt automatically and you will select your setting file i.e. in our case "000" and click on SEND. Now an error window will prompt that your setting file i.e. "000" is still open, do you want to continue? Click on YES. And your settings will be sent to the relay.

## Injection through Freja

14. Now to test the "first stage OC threshold" pick up value, go to first page of the freja instrument in general mode. And increase your corresponding current value. Put your trip contact in buzzer and increase the current until buzzer rings, this is your PU value. Now to check the Drop off value, decrease the freja current until buzzer stops ringing. Make sure that the angle of the current should be zero. Also your connections should be such that current passes through only one coil.
15. If you want to test R phase then connect positive of the freja to R coil one end and your neutral of the freja should be connected to R coil other end, so that current passes through only R coil.
16. Similarly you can test your Blue and Yellow by similar process.
17. To test the timing of the relay go to second page of freja and inject 2 times the setting current and trip contact should be in the binary input of the freja. Start the freja and note the timing.

## Testing 2<sup>nd</sup> Stage Over Current Threshold

18. Now to test 2<sup>nd</sup> stage OC threshold, go to the main page of Studio S1 software. And open PROTECTION G1.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
[50N/51N] E/Gnd			
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

Open  
Setting  
Group 1

19. Go to PHASE OC.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
Function I>	No	0200	
Function I>>	No	0210	
Function I>>>	No	0220	
[50N/51N] E/Gnd			
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

Open  
PHASE OC

## 20. Double click on Function I>>.

The screenshot shows a configuration tree on the left with the following structure:

- OP PARAMETERS
  - CONFIGURATION
    - PROTECTION G1
      - [50/51] PHASE OC
        - Function I>> (highlighted with a red arrow and the text "Open Function I>>")
          - Function I>>> (Value: No, Address: 0200)
            - Function I>>>> (Value: No, Address: 0210)
              - Function I>>>>> (Value: No, Address: 0220)

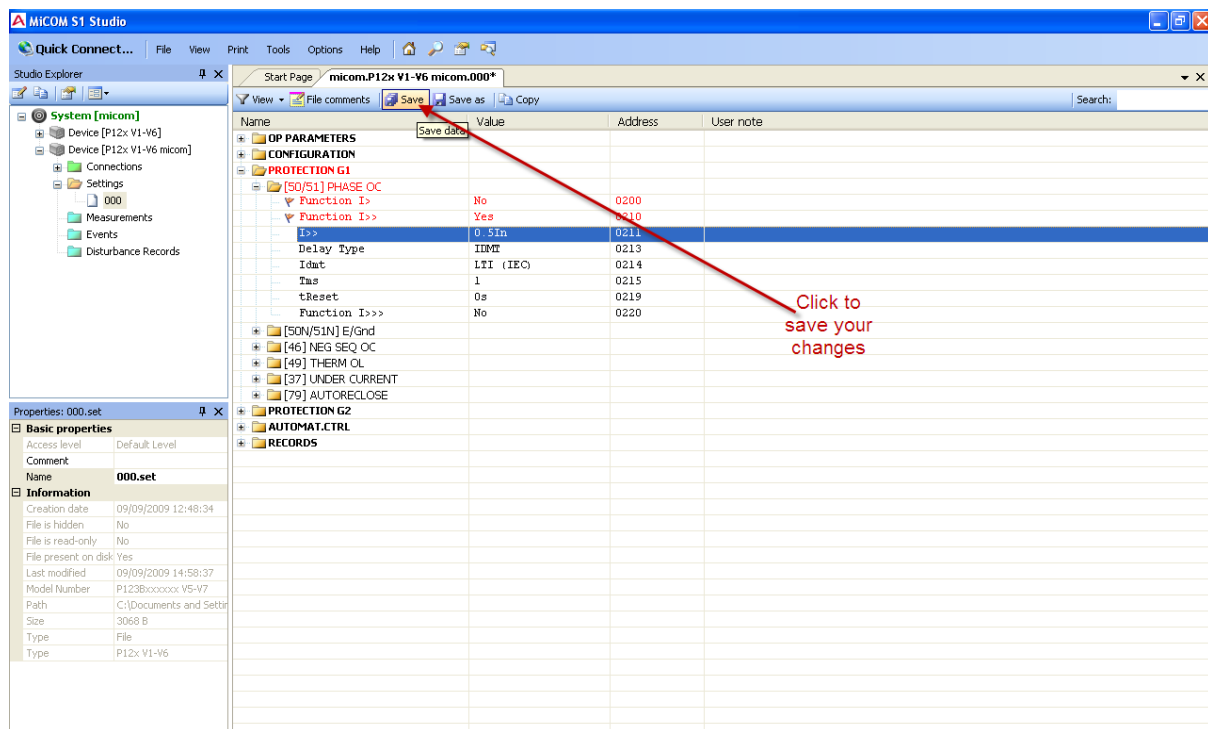
A dialog box titled "Function I>>" is open, showing the current setting as "No". The "New setting:" dropdown menu is open, and the "Yes" option is selected (highlighted with a red arrow and the text "Make it YES"). The dialog box also has "OK" and "Cancel" buttons.

## 21. Now change all the settings as per your format. To change any setting, double click on it, and a dialogue box will get open and then you can change its settings. E.g. to change the setting for I>> i.e. pick up value, double click on it and the box will appear and enter your settings there and click on OK.

The screenshot shows the same configuration tree as in the previous image, but with more settings expanded under "Function I>>". The "I>>>>>" setting is highlighted with a red arrow and the text "Double click on I>> to change".

A dialog box titled "I>>" is open, showing the current value as "0.500 In". The "New Value:" field is highlighted with a red arrow and the text "Enter your Value". The dialog box also has "OK" and "Cancel" buttons.

22. Now you save your changed settings by clicking on SAVE.



23. Now you can send your settings to the relay as described previously.
24. Note that only one over current threshold function should be ON and rest of two should be OFF. Like in this case I>> should be ON only.
25. Now you will inject current in Red phase current coil of the relay via your freja first page and trip contact should be in buzzer.
26. Now you increase your current slowly and see when your relay picks up i.e. buzzer starts ringing.
27. Note that "Delay Type" should be selected to "DMT" and timer "t>" should be set to zero for pick up.
28. Now for timing you can make your desired settings and send to the relay as described previously.
29. Now inject current from your freja 2<sup>nd</sup> page to red phase of the coil and set current to be two times of the relay set time. Trip contact should be in freja binary input.
30. Now start your freja and note the timing.

## Testing 3<sup>rd</sup> stage OC Threshold

31. Now to test 3<sup>rd</sup> stage OC threshold, go to the main page of Studio S1 software. And open PROTECTION G1.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
[50N/51N] E/Gnd			
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

Open  
Setting  
Group 1

32. Go to PHASE OC.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
Function I>	No	0200	
Function I>>	No	0210	
Function I>>>	No	0220	
[50N/51N] E/Gnd			
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

Open  
PHASE OC



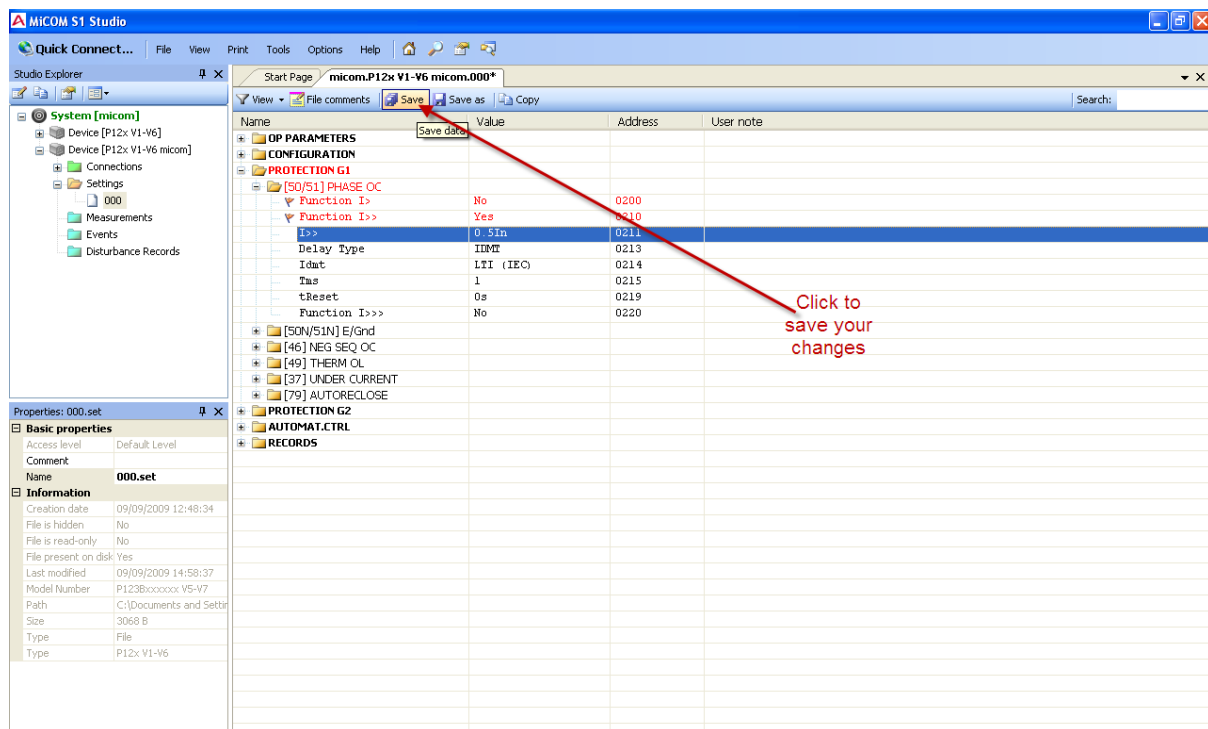
33. Double click on Function I>>> and make it YES.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
Function I>	No	0200	
Function I>>	No	0210	
Function I>>>	No	0220	
[50N/51N] E/Gnd			
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

34. Now change all the settings as per your format. To change any setting, double click on it, and a dialogue box will get open and then you can change its settings. E.g. to change the setting for I>>> i.e. pick up value, double click on it and the box will appear and enter your settings there and click on OK.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
Function I>	No	0200	
Function I>>	No	0210	
Function I>>>	Yes	0220	
I>>>	1In	0221	
tI>>>	0.25s	0222	
[50N/51N] E/Gnd			
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

35. Now you save your changed settings by clicking on SAVE.



36. Now you can send your settings to the relay as described previously.
37. Note that only one over current threshold function should be ON and rest of two should be OFF. Like in this case I>>> should be ON only.
38. Now you will inject current in Red phase current coil of the relay via your freja first page and trip contact should be in buzzer.
39. Now you increase your current slowly and see when your relay picks up i.e. buzzer starts ringing.
40. Note that "tI>>>" should be set to zero for pick up.
41. Now for timing you can make your desired settings as per your format and send to the relay as described previously.
42. Now inject current from your freja 2<sup>nd</sup> page to red phase of the coil and set current to be two times of the relay set time. Trip contact should be in freja binary input.
43. Now start your freja and note the timing.

## Testing 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> stage Earth OC thresholds

44. To test Earth OC thresholds, you will go to E/ Gnd on the main page of Studio S1 software under Protection G1.

Name	Value	Address	User note
OP PARAMETERS			
CONFIGURATION			
PROTECTION G1			
[50/51] PHASE OC			
[50N/51N] E/Gnd			
Function Ie>	No	0230	
Function Ie>>	No	0240	
Function Ie>>>	No	0250	
[46] NEG SEQ OC			
[49] THERM OL			
[37] UNDER CURRENT			
[79] AUTORECLOSE			
PROTECTION G2			
AUTOMAT.CTRL			
RECORDS			

45. Open Ie>, Ie>> or Ie>>> by double clicking on it to make it YES. (Make sure that only one Earth OC function is ON at a time).
46. Now change its settings as described in OC threshold functions testing previously.
47. Pick up value testing and timing test will be the same as previously described in OC threshold functions just the difference will be that here you will inject only in “N” current coil of the relay i.e. your residual/ grounding current coil.

## **To check Measurement of the relay**

48. Inject current in each coil one by one and go to the HMI of the relay and note how much current is being displayed on the relay.

## **To check Binary I/P's of the relay**

49. Apply +ve and –ve to I/P contacts of the relay one by one and go to the HMI of the relay and press DOWN button to enter in the menu. Press right button to scroll right in the menu. Pressing right arrow 1 time you will reach CONFIGURATION menu. Press down arrow to enter in this menu. Press right arrow for 5 times and you will reach submenu "Inputs". Press down arrow and you will be seeing "Inputs".
50. Whichever I/P you would have applied positive and negative DC voltage will become "1" from "0".
51. Note that I/P number and contact reference is given in the test sheet.

## **To Check Binary O/P's of the relay**

1. Go to the HMI of the relay and press DOWN button to enter in the menu. Press right button to scroll right in the menu. Pressing right arrow 1 time you will reach CONFIGURATION menu. Press down arrow to enter in this menu. Press right arrow for 6 times and you will reach submenu "Maintenance". Press down arrow and you will be seeing "Maintenance Mode" press ENTER button and by pressing down arrow make it YES. Now again press ENTER and press down arrow and you can see "RELAYS 8765WD4321". Press Enter key in this menu and make o/p relay 1 to "1" from "0". Now you can check the continuity of the O/P contact by buzzer.
2. Similarly make all the O/P Relays "1" and see its continuity. Moreover note that all the o/p relays no. and corresponding O/P contact reference is mentioned in the test format.