

M-7679 R-PAC QUICK REFERENCE GUIDE

PROTECTION, AUTOMATION AND CONTROL SYSTEM FOR RECLOSER, SWITCH, SECTIONALIZER AND ADVANCED DISTRIBUTION AUTOMATION APPLICATIONS.

Programming Undervoltage and Overvoltage Protection Functions



Required Tools:

- PC running Windows 10® or higher
- S-7600 IPScom Communications Software

Download the latest **IPScom software** at:

<https://beckwithelectric.com/products/s-7600/>

Required Documentation:

- M-7679 Instruction Book
- M-7679 Application Guide
- Communications and Cybersecurity A.G.

Download the latest **M-7679 Instruction Book** at:

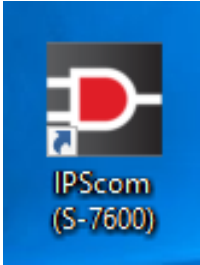
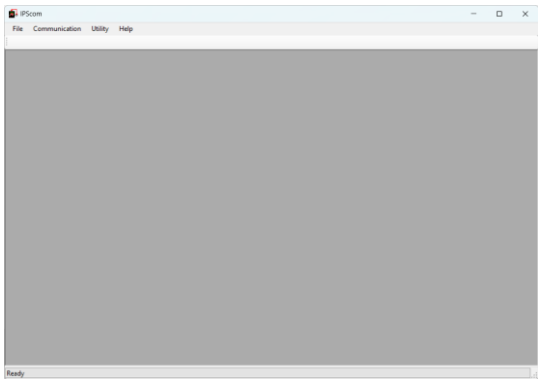
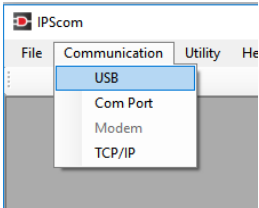
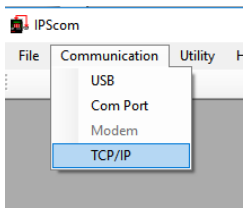
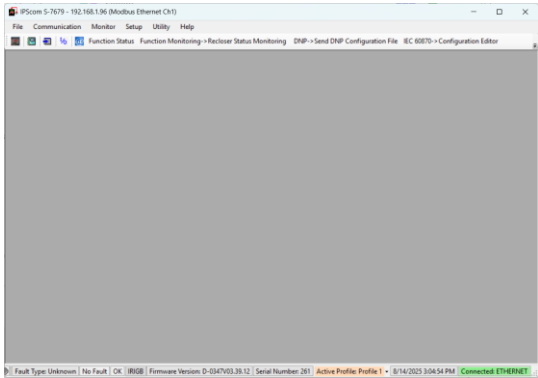
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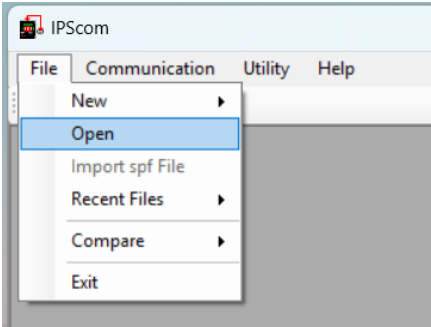
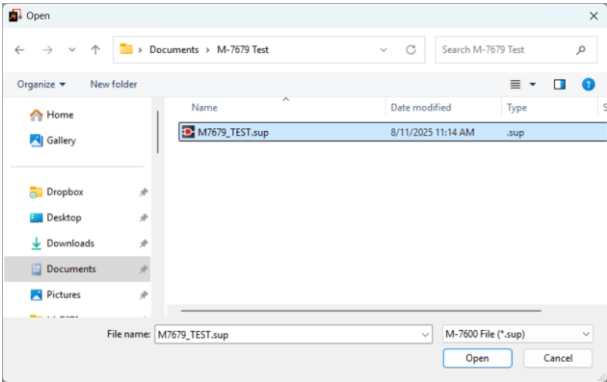
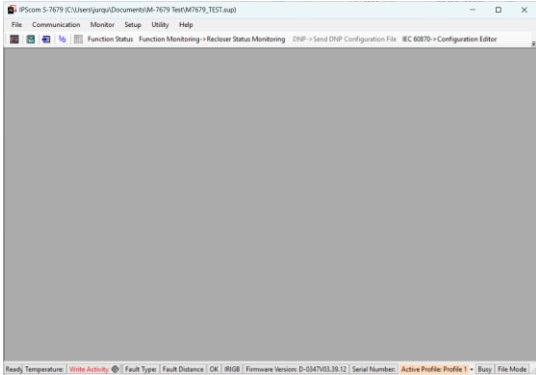
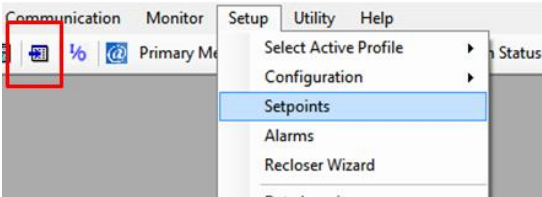


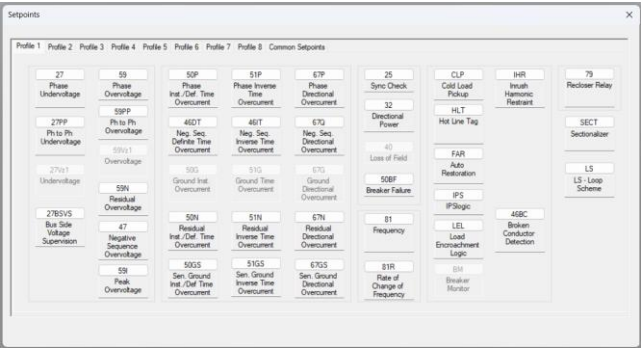
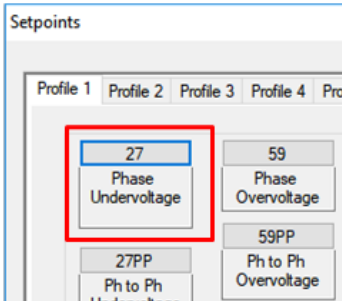
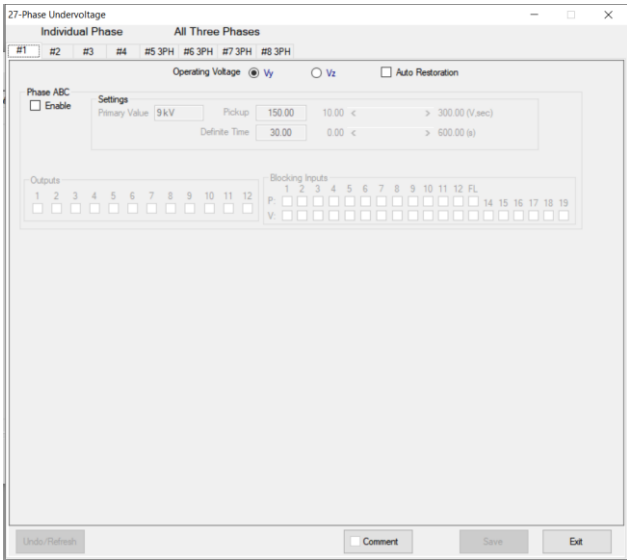
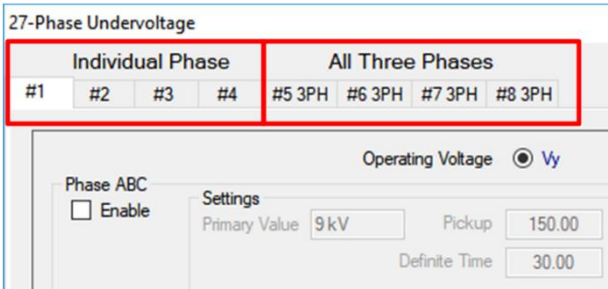
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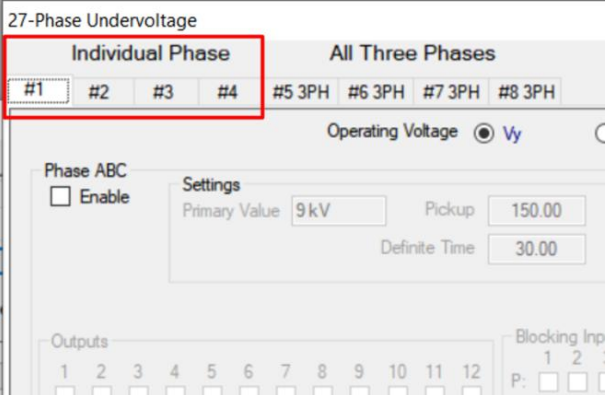
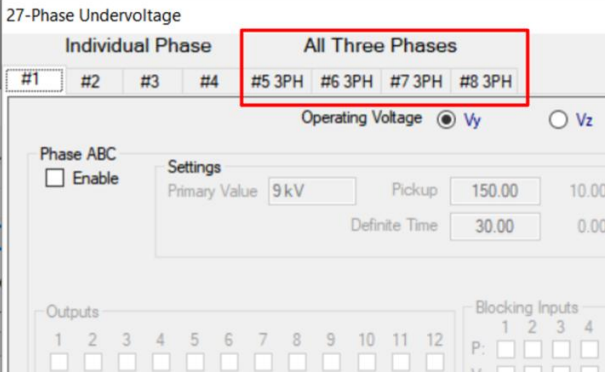
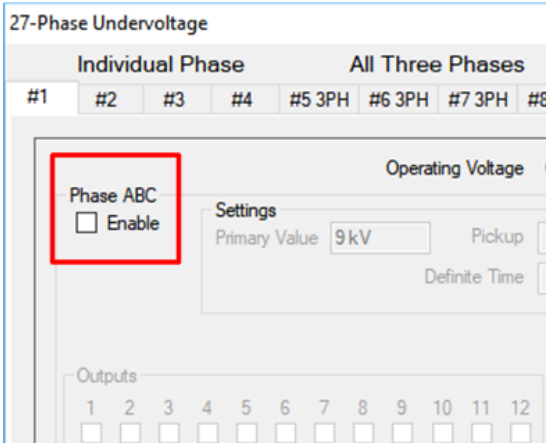
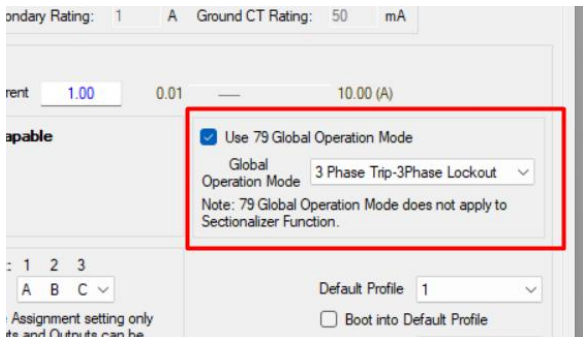
Programming Undervoltage (27) protection function

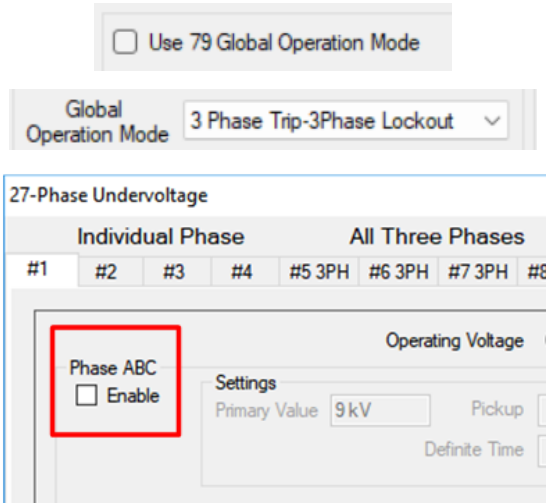
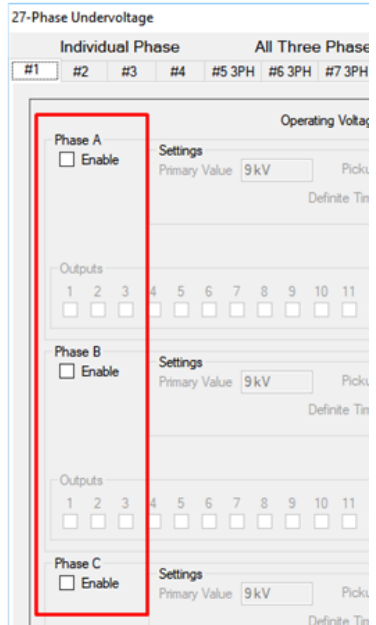
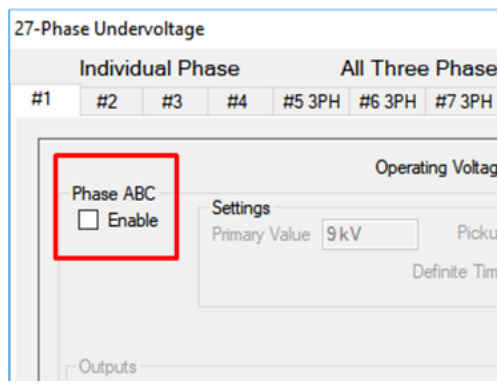
This Quick Reference Guide introduces the procedure to configure the Undervoltage (27) and Overvoltage (59) protection functions in M-7679 R-PAC. IPScom includes particular elements for three phase voltage detection for both under and over voltage functions. This feature is available in IPScom version 10.28.08, Firmware version 03.28.07 and newer.

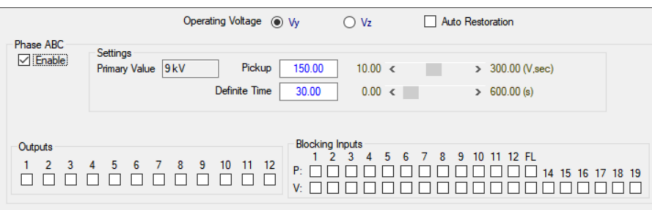
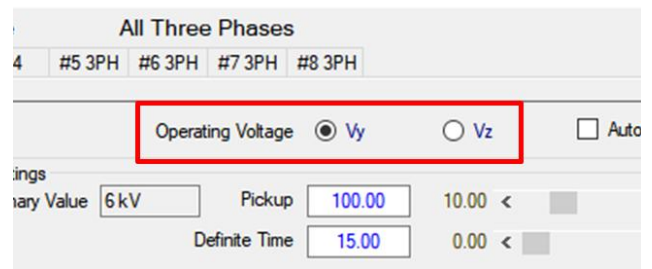
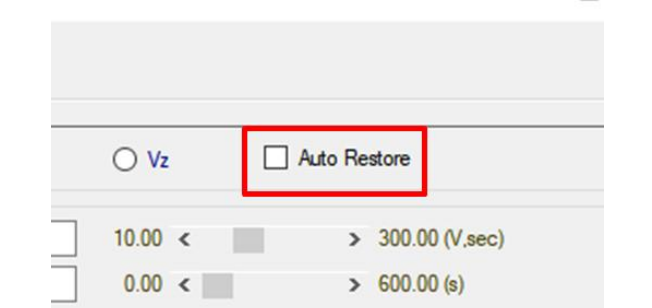
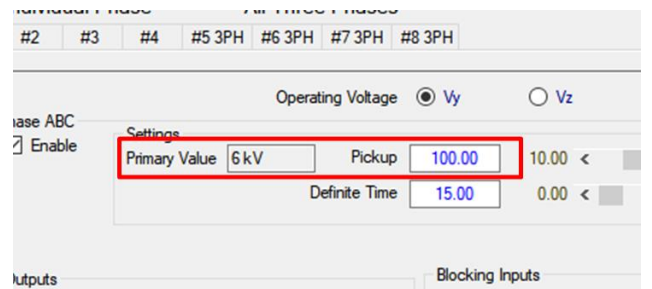
1	Start IPScom Software by double-clicking the corresponding shortcut.	
2	IPScom will display the IPScom Main dialog screen.	
3	If the process will be performed while connected to an M-7679 R-PAC unit, establish a connection to the unit using either USB or TCP/IP mode.	 
4	Once the connection is established, IPScom will display the Connected version of the IPScom main screen. Proceed to Step 8.	

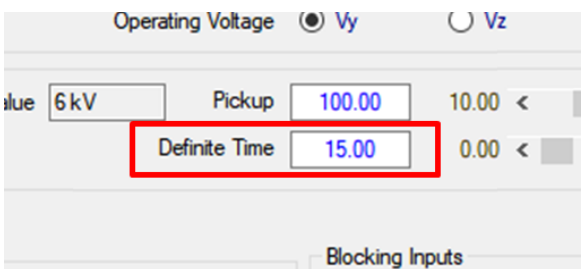
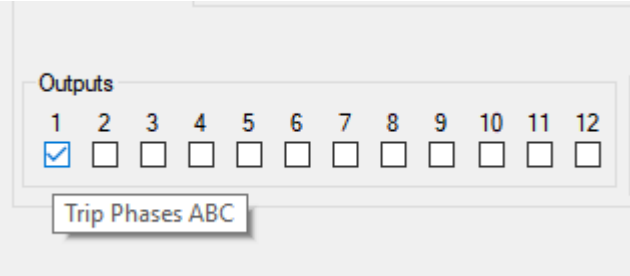
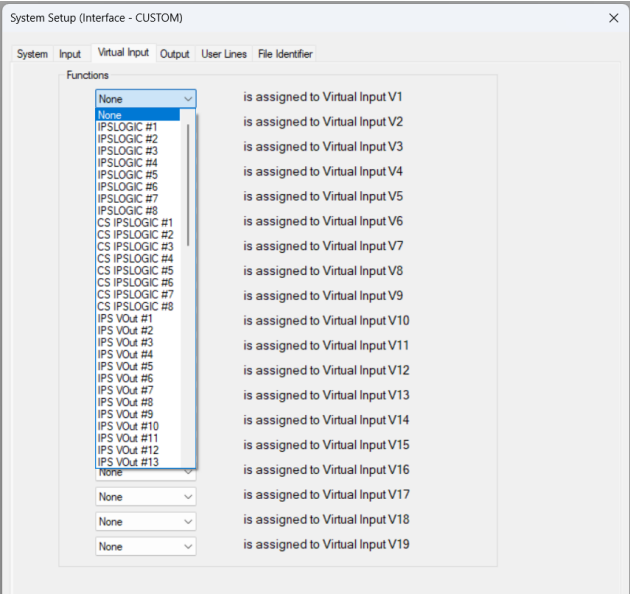
5	If the process will be performed without a connection to an M-7679 R-PAC unit, navigate to File > Open to access an existing configuration file.	
6	IPScorm will display the Open Dialog screen. Find the required .SUP file and select OPEN .	
7	IPScorm will display the Not-Connected version of the main screen.	
8	Go to Setup / Setpoints or select the Setpoints icon in the Tool bar.	

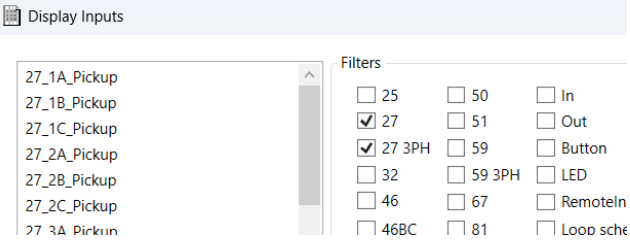
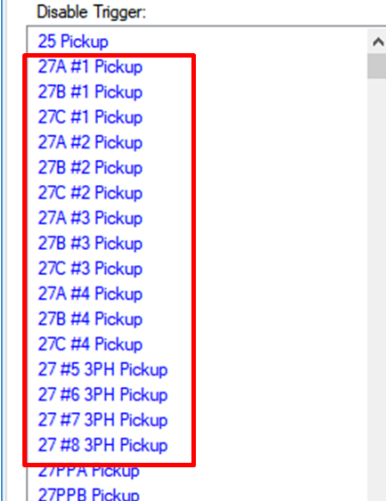
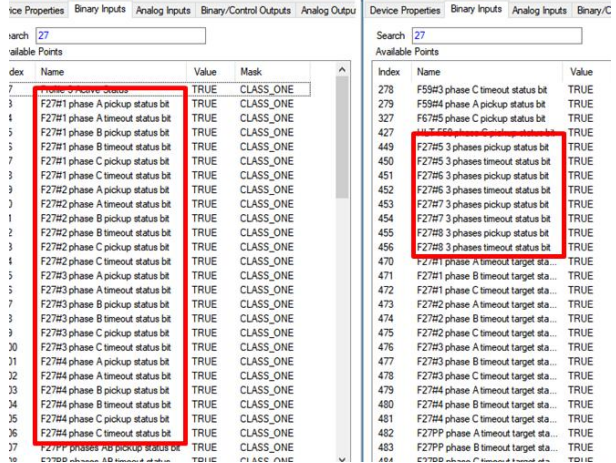
9	IPScorm will display the Setpoints screen from which all individual Function Setting dialog screens can be accessed. Selecting a Function Setting button will display the corresponding function dialog screen. Up to eight setpoints profiles may be used, select the adequate profile to be set.	
10	Select the 27-Phase Undervoltage function button.	
11	IPScorm will display the 27-Phase Undervoltage dialog screen, which allows the user to set the undervoltage protection settings.	
12	The 27-Phase Undervoltage function includes eight elements, organized into two groups: four Individual Phase elements and four Three-Phase elements .	

13	The Individual Phase elements will Pickup and Timeout if each individual phase voltage is below the programed threshold.	
14	The Three Phase elements will not Pickup until all three phases have crossed the user defined threshold and will not Timeout until all three phases have been pickup up for the user defined time delay.	
15	In all M-7679 R-PAC Three Phase Ganged operation types the 27-Phase Undervoltage function will show only one undervoltage setting for the three phases.	
16	For operation types that support Independent Phase Capable modes, the configuration of the 27-Phase Undervoltage function is determined by the 79 Global Operation Mode selection in the System Setup screen.	

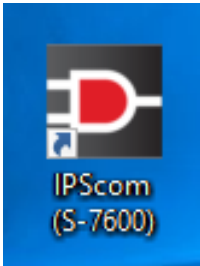
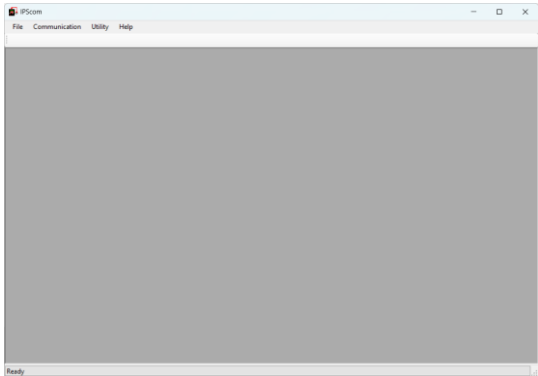
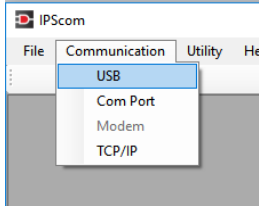
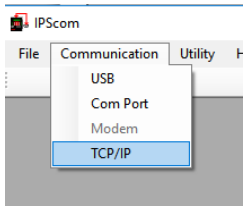
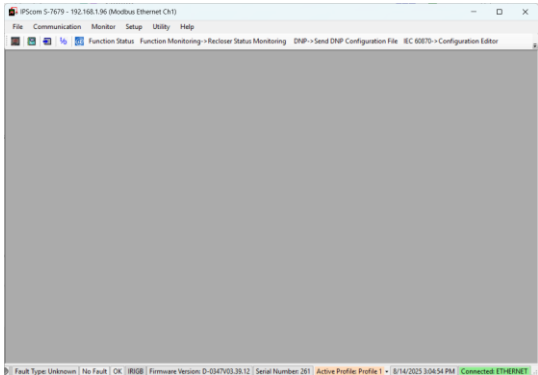
17	If the 79 Global Operation Mode is either not selected or is set to 3-Phase Trip–3-Phase Lockout, the 27-Phase Undervoltage function displays a single set of undervoltage settings applied to all three phases.	
18	The 27-Phase Undervoltage function displays independent settings for each phase when the following conditions are met: 1. “Use 79 Global Operation Mode” is enabled, and 2. The Global Operation Mode is configured as one of the following: • 1-Phase Trip – 3-Phase Lockout • 1-Phase Trip – 1-Phase Lockout • 3-Phase Trip – 1-Phase Lockout	
19	By default, the 27-Phase Undervoltage function is disabled. To enable it select the Enable checkbox.	

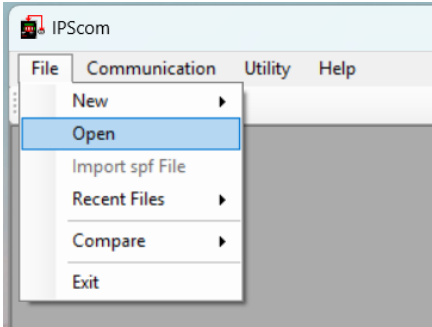
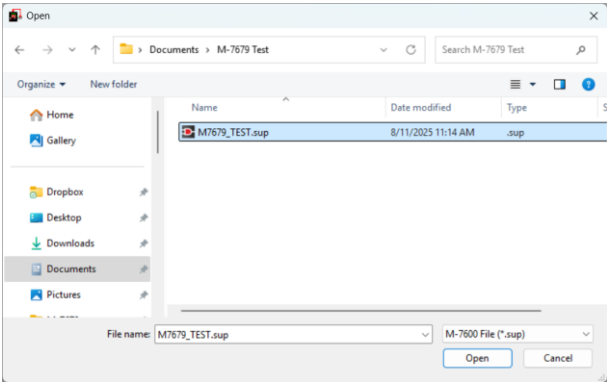
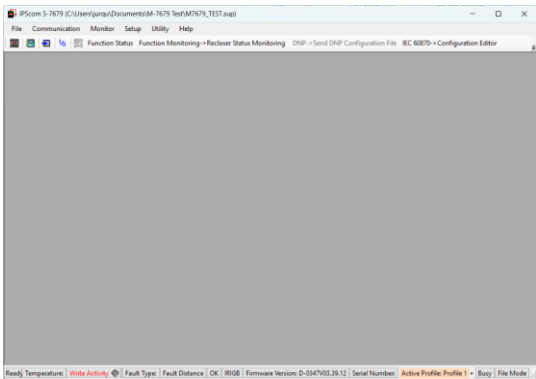
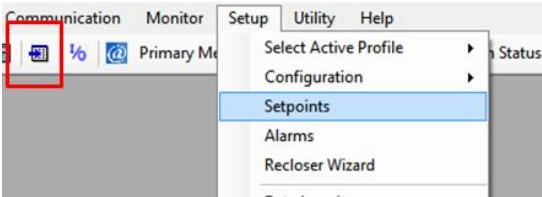
20	The 27-Phase Undervoltage settings are the same for Individual Phase or Three-Phase elements.	
21	Operating Voltage: for M-7679 R-PAC units configured for six voltages (H6, L6 and X6) the 27-Phase Undervoltage window includes the Operating Voltage option which allows the user to select whether the function monitors the Vy or Vz voltage source.	
22	Select the Auto Restore checkbox to allow the Auto Restoration function to automatically close the switching device after a loadshed caused by an undervoltage function. The Auto Restoration (automatic close) will only be issued after an undervoltage event if the Auto Restoration function is enabled, all the Auto Restoration conditions meet the restoration limits and the Auto Restore checkbox in the 27-Phase Undervoltage function has been checked.	
23	The Pickup value must be set in secondary volts, however, IPScom will automatically show the primary value according to the settings in the Voltage Input Configuration section in System Setup.	

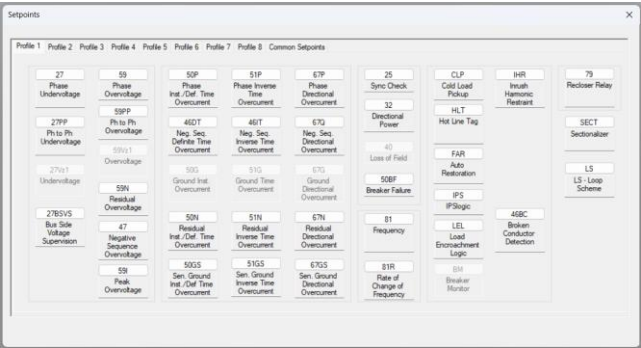
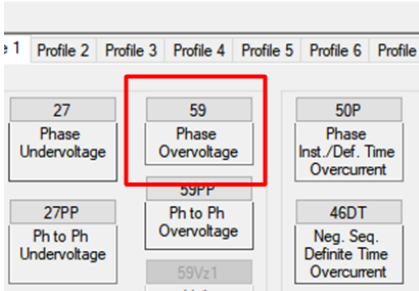
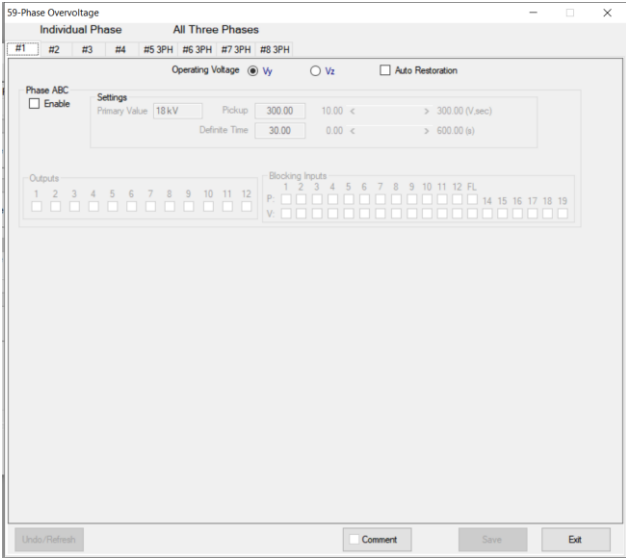
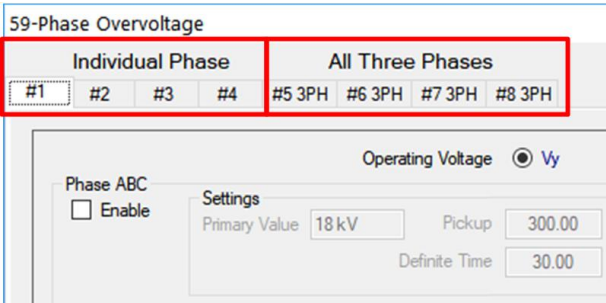
24	The Definite Time is the operation time of the 27 function. This time must be set in seconds.	
25	Select the Outputs that will be activated when the 27-Phase Undervoltage function operates (trip). By default, Output 1 is assigned as the trip output for three-phase ganged applications, while Outputs 1, 5, and 7 are assigned as trip outputs for Independent Phase Capable applications. These outputs must be selected within the 27-Phase Undervoltage function to ensure tripping under an undervoltage condition.	
26	Select the Inputs (physical or virtual) that will block the operation of the 27-Phase Undervoltage function. If the selected input is active the 27 function will be blocked.	
27	Any Profile Logic, Common Logic, or IPSlogic Virtual Output can be assigned to any of the 19 Virtual Inputs available in the Virtual Input tab of the System Setup window.	

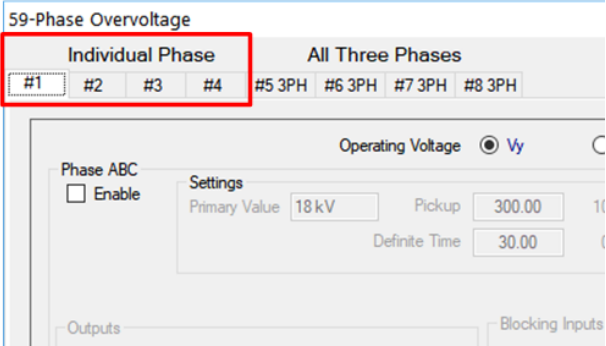
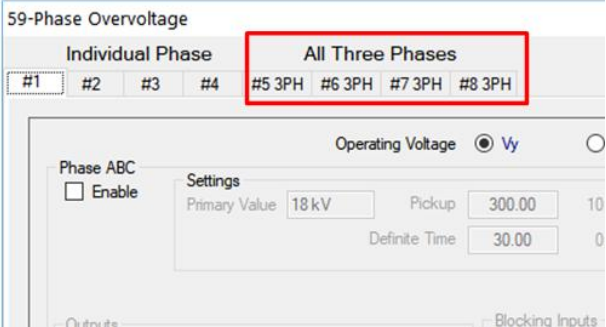
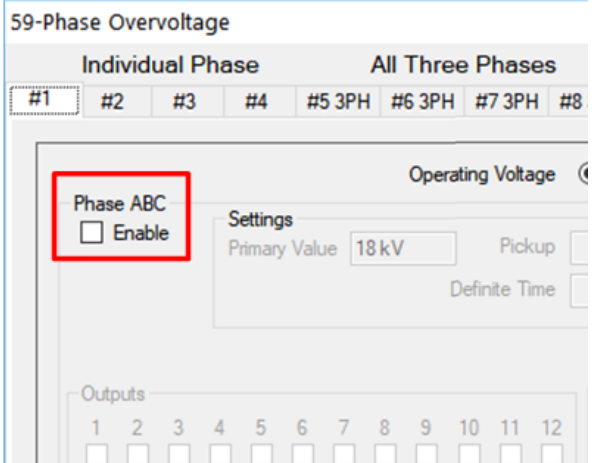
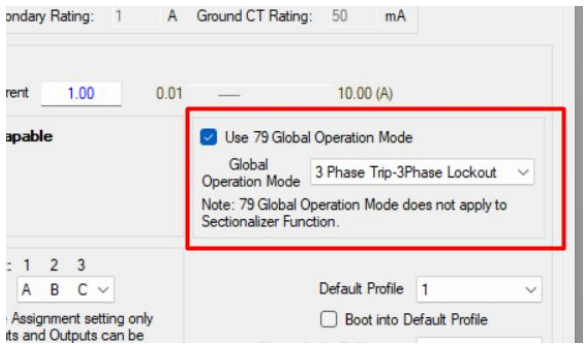
28	The 27 Individual-Phase and Three-Phase elements are available as Digital Inputs for IPSlogic (Common and Profileable) and can also be mapped as Front-Panel LED IPSlogic inputs. Checkboxes for enabling fast filtering are provided.	
29	The 27 Individual-Phase and Three-Phase elements are available as triggers for Oscillographic Records and Sequence of Events (SOE) records. They can also be assigned as trace signals for Oscillographic Records.	
30	The 27 Individual-Phase and Three-Phases elements are available as DNP Binary Inputs.	
End of Procedure.		

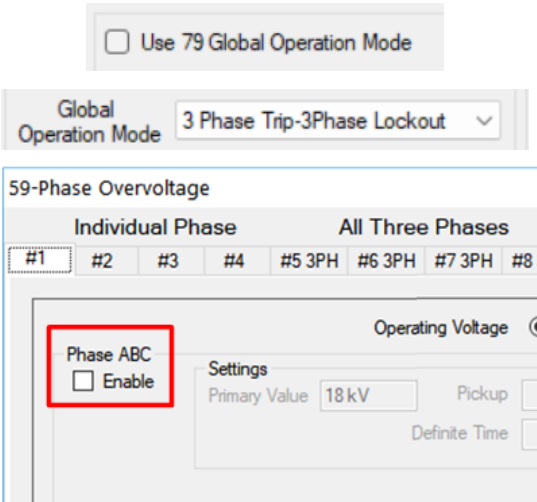
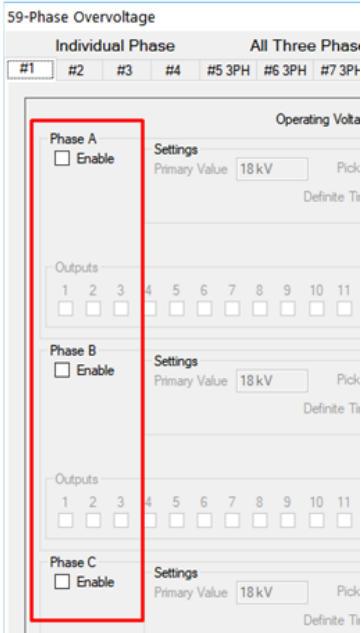
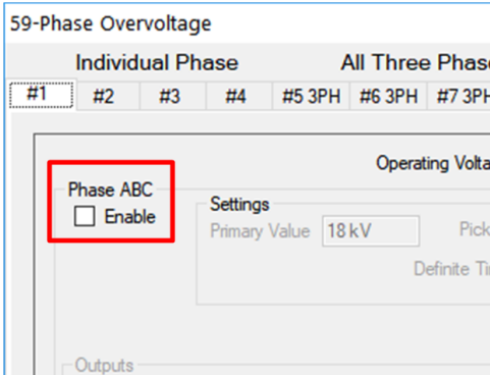
Programming Overvoltage (59) protection function

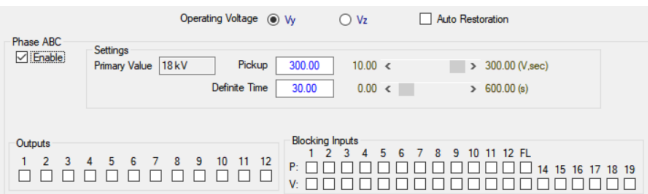
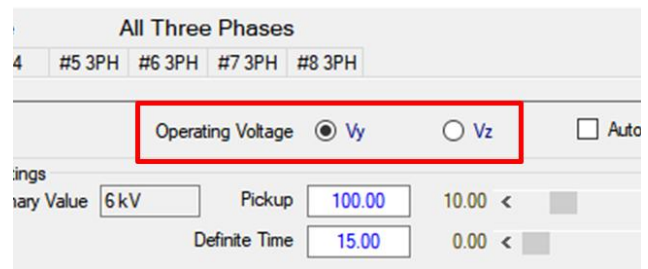
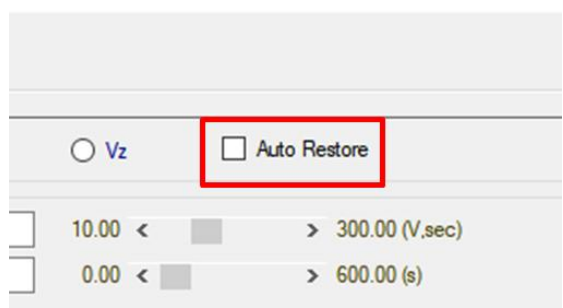
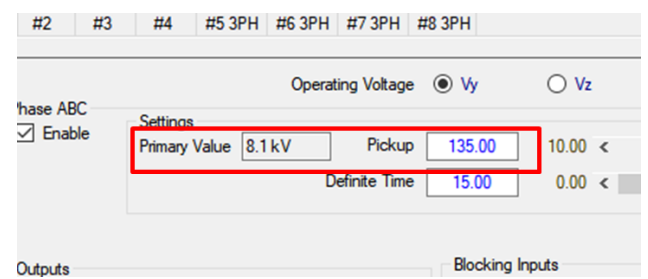
1	Start IPScom Software by double-clicking the corresponding shortcut.	
2	IPScom will display the IPScom Main dialog screen.	
3	If the process will be performed while connected to an M-7679 R-PAC unit, establish a connection to the unit using either USB or TCP/IP mode.	 
4	Once the connection is established, IPScom will display the Connected version of the IPScom main screen. Proceed to Step 8.	

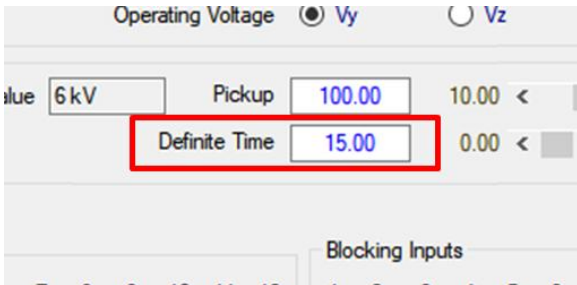
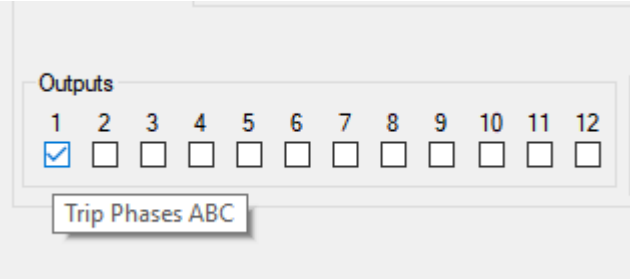
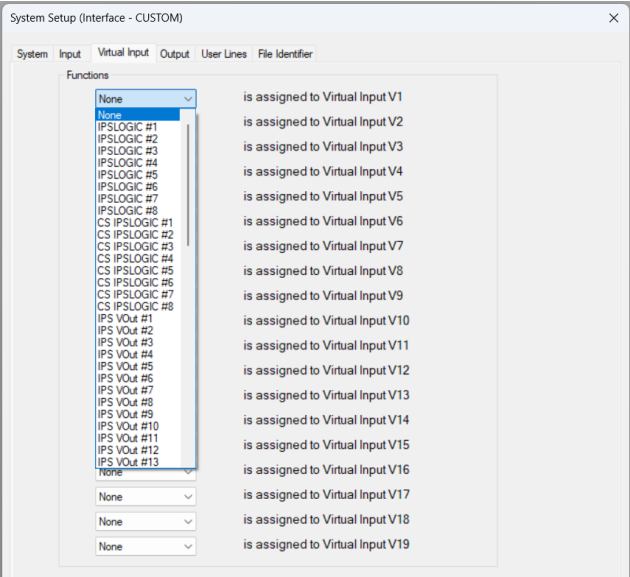
5	If the process will be performed without a connection to an M-7679 R-PAC unit, navigate to File > Open to access an existing configuration file.	
6	IPScom will display the Open Dialog screen. Find the required .SUP file and select OPEN.	
7	IPScom will display the Not-Connected version of the main screen.	
8	Go to Setup / Setpoints or select the Setpoints icon in the Tool bar.	

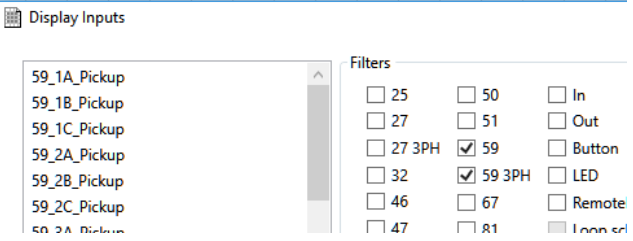
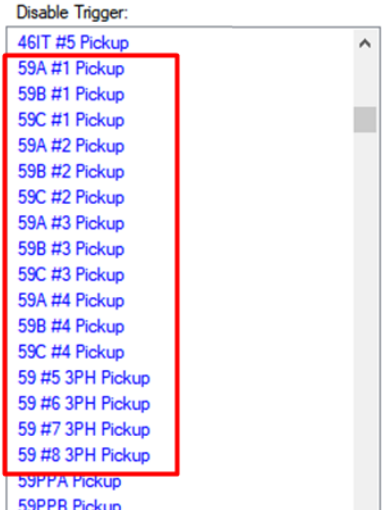
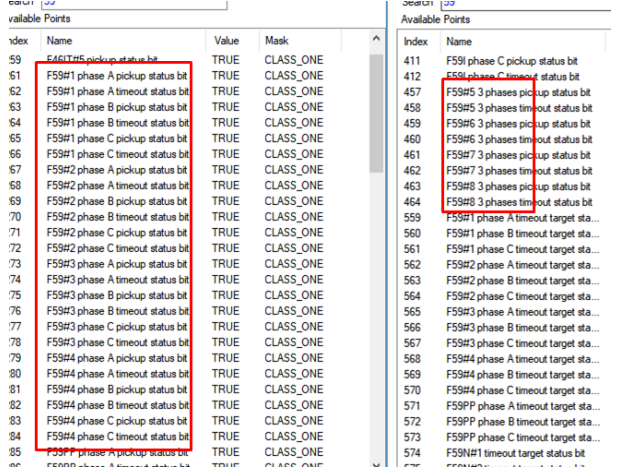
9	IPScorm will display the Setpoints screen from which all individual Function Setting dialog screens can be accessed. Selecting a Function Setting button will display the corresponding function dialog screen. Up to eight setpoints profiles may be used, select the adequate profile to be set.	
10	Select the 59-Phase Overvoltage function button.	
11	IPScorm will display the 59-Phase Overvoltage dialog screen, which allows the user to set the overvoltage protection settings.	
12	The 59-Phase Overvoltage function includes eight elements, organized into two groups: four Individual Phase elements and four Three-Phase elements .	

13	The Individual Phase elements will Pickup and Timeout if each individual phase voltage is above the programed threshold.	
14	The Three Phase elements will not Pickup until all three phases have crossed the user defined threshold and will not Timeout until all three phases have been pickup up for the user defined time delay.	
15	In all M-7679 R-PAC Three Phase Ganged operation types the 59-Phase Overvoltage function will show only one overvoltage setting for the three phases.	
16	For operation types that support Independent Phase Capable modes, the configuration of the 59-Phase Overvoltage function is determined by the 79 Global Operation Mode selection in the System Setup screen.	

17	If the 79 Global Operation Mode is either not selected or is set to 3-Phase Trip–3-Phase Lockout, the 59-Phase Overvoltage function displays a single set of overvoltage settings applied to all three phases.	
18	The 59-Phase Overvoltage function displays independent settings for each phase when the following conditions are met: 1. “Use 79 Global Operation Mode” is enabled, and 2. The Global Operation Mode is configured as one of the following: • 1-Phase Trip – 3-Phase Lockout • 1-Phase Trip – 1-Phase Lockout • 3-Phase Trip – 1-Phase Lockout	
19	By default, the 59-Phase Overvoltage function is disabled. To enable it select the Enable checkbox.	

20	The 59-Phase Overvoltage settings are the same for Individual Phase or Three-Phase elements.	
21	Operating Voltage: for M-7679 R-PAC units configured for six voltages (H6, L6 and X6) the 59-Phase Overvoltage window includes the Operating Voltage option which allows the user to select whether the function monitors the Vy or Vz voltage source.	
22	Select the Auto Restore checkbox to allow the Auto Restoration function to automatically close the switching device after a loadshed caused by an overvoltage function. The Auto Restoration (automatic close) will only be issued after an overvoltage event if the Auto Restoration function is enabled, all the Auto Restoration conditions meet the restoration limits and the Auto Restore checkbox in the 59-Phase Overvoltage function has been checked.	
23	The Pickup value must be set in secondary volts, however, IPScom will automatically show the primary value according to the settings in the Voltage Input Configuration section in System Setup.	

24	The Definite Time is the operation time of the 59 function. This time must be set in seconds.	
25	Select the Outputs that will be activated when the 59-Phase Overvoltage function operates (trip). By default, Output 1 is assigned as the trip output for three-phase ganged applications, while Outputs 1, 5, and 7 are assigned as trip outputs for Independent Phase Capable applications. These outputs must be selected within the 59-Phase Overvoltage function to ensure tripping under an overvoltage condition.	
26	Select the Inputs (physical or virtual) that will block the operation of the 59-Phase Overvoltage function. If the selected input is active the 59 function will be blocked.	
27	Any Profile Logic , Common Logic , or IPSlogic Virtual Output can be assigned to any of the 19 Virtual Inputs available in the Virtual Input tab of the System Setup window.	

28	The 59 Individual-Phase and Three-Phase elements are available as Digital Inputs for IPSlogic (Common and Profileable) and can also be mapped as Front-Panel LED IPSlogic inputs. Checkboxes for enabling fast filtering are provided.	
29	The 59 Individual-Phase and Three-Phase elements are available as triggers for Oscillographic Records and Sequence of Events (SOE) records. They can also be assigned as trace signals for Oscillographic Records.	
30	The 59 Individual-Phase and Three-Phases elements are available as DNP Binary Inputs.	
End of Procedure.		

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