

PM180 Fault Location Application note

The PAS Fault Locator available with the PM180 allows you to automatically determine the distance of the fault from the substation using voltage and current waveforms recorded by the device at the time of a fault and the parameters of the power line.

To define parameters of the power line:

1. Select Options in the Tools menu, click on the Preferences tab, select preferable distance units - "km" or "miles", and then click OK.
2. Select the device from the site list on the PAS toolbar.
3. Select Fault Locator Setup in the Meter Setup menu.

4. Type the name of the substation and the power line.
5. Specify Line Type topology
6. Specify power line length in km or miles
7. If more than one line segments, specify the number of segments
8. Specify the impedance of the segment line in Ohm/km or Ohm/mile by entering to power line impedance setup screen < → >.

Power Line Impedance					
No.	Segment Length, km	Pos. sequence Resistance, Ohm/km	Pos. Sequence Reactance, Ohm/km	Zero Sequence Resistance, Ohm/km	Zero Sequence Reactance, Ohm/km
1	50.00	0.0261	0.4000	0.4000	1.4000
2	0.00	0.0000	0.0000	0.0000	0.0000
3	0.00	0.0000	0.0000	0.0000	0.0000
4	0.00	0.0000	0.0000	0.0000	0.0000

9. For parallel lines topology specify the mutual impedance of the lines.
10. To improve the fault location accuracy setup the PT and CT characteristics

Instrument Transformer Correction

Current Transformer Correction

No.	Upper Test Point, %In	Ratio Correction Factor	Phase Angle Error, min
1	3.0	0.975	-40
2	9.0	0.965	-60
3	13.0	0.950	-90
4	16.0	0.940	-120
5	18.0	0.925	-150
6	20.0	0.915	-200

Instrument Transformer Correction

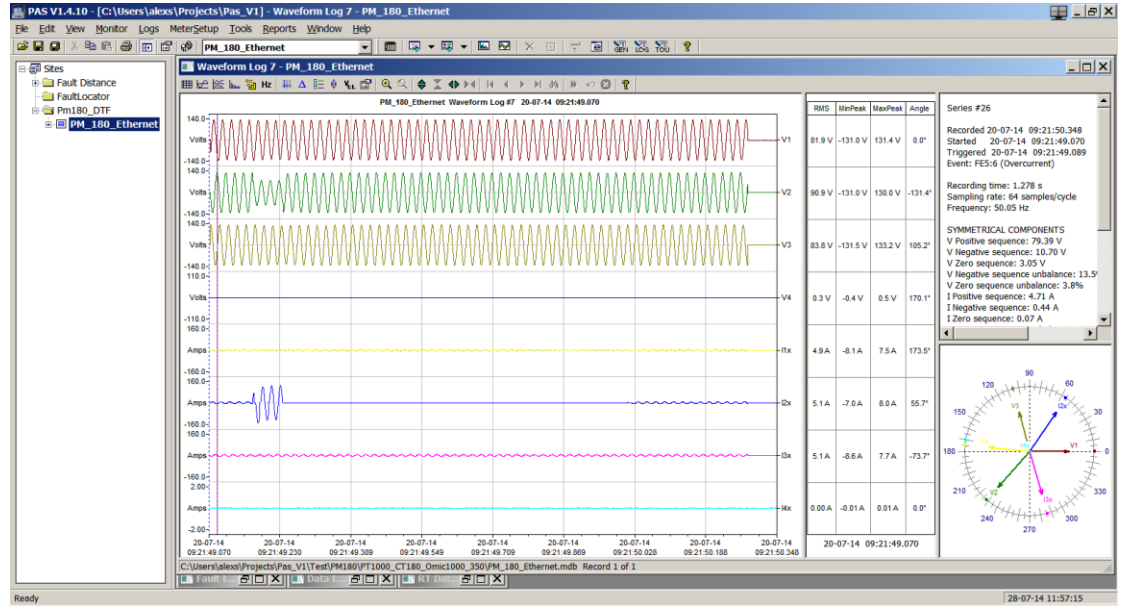
Voltage Transformer Correction

No.	Upper Test Point, %Un	Ratio Correction Factor	Phase Angle Error, min
1	0.10	0.985	-30
2	0.25	0.990	-60
3	0.50	0.995	-90
4	1.10	0.995	-120

11. If your line has a transformer on the branch, specify the zero-sequence impedance for the power line, for the line till the branch and for the transformer.
12. Click <Save as> to save the parameters to the site database.

To define the fault location:

1. Open a fault waveform recorded by the device at the time of the fault.



2. If you wish to manually define the time of the fault on the waveform, point to the left marker line with the mouse, click and hold the left mouse button and drag the marker line to the place close to the fault beginning.
3. Click on the window with the right mouse button, point to the Fault Location item and select Automatic or Manual. The type of the fault and the calculated distance to the fault are displayed as shown in the picture below.
4. Click on the Print button to print the results.

