MA-OpenDSS

This document shall serve to explain the use and implementation of cooperative control and communication in distribution network with OpenDSS (revised version). Here, the IEEE 123 test case is considered.

The revised version of OpenDSS with cooperative control and distributed communication can be downloaded from our website. The example of "IEEE123" system is also included in the same folder. To define the newly designed controllable DG and distributed communication, please follow these steps:

1. Redirect "IEEE123Master";
2. Define controllable DGs in the system;
3. Define communication structure and cooperative control gains;
4. Run the script.

IEEE 123 system example:

1. DGs:
   New Generic5.pv76 bus1=76 phases=3 kVA=2100 kV= 4.16 kW=1750 P_refkW=1635 V_refkVLN =2.4 Q_refkVAr=0 ctrl_mode=4 QV_flag=0 kcd=0.2 kcq=0.05 droop=0.02 kcq_DRP2=0.06 Volt_Trhd=0.02 cc_switch=t
2. Communication clusters:
   New "Fmonitor.FM1" element=Line.L115 terminal=1 P_trans_ref=1200 P_mode=1 Cluster_num=1 Nodes=19
3. Communication nodes:
   Fmonitor.FM4.ElemTableLine={1, 67, Line.L117, 2, 2.402, 1.0}
4. Communication:
   Fmonitor.FM4.CommVector={1,1,0,1,0,0,1,0, 0, 0, 0, 0, 0, 0, 0,1,1,1,1,0}

Please use the help in this version of OpenDSS and find the whole example in the same folder.