Example of a simple shunt controller:

Block Diagramm:
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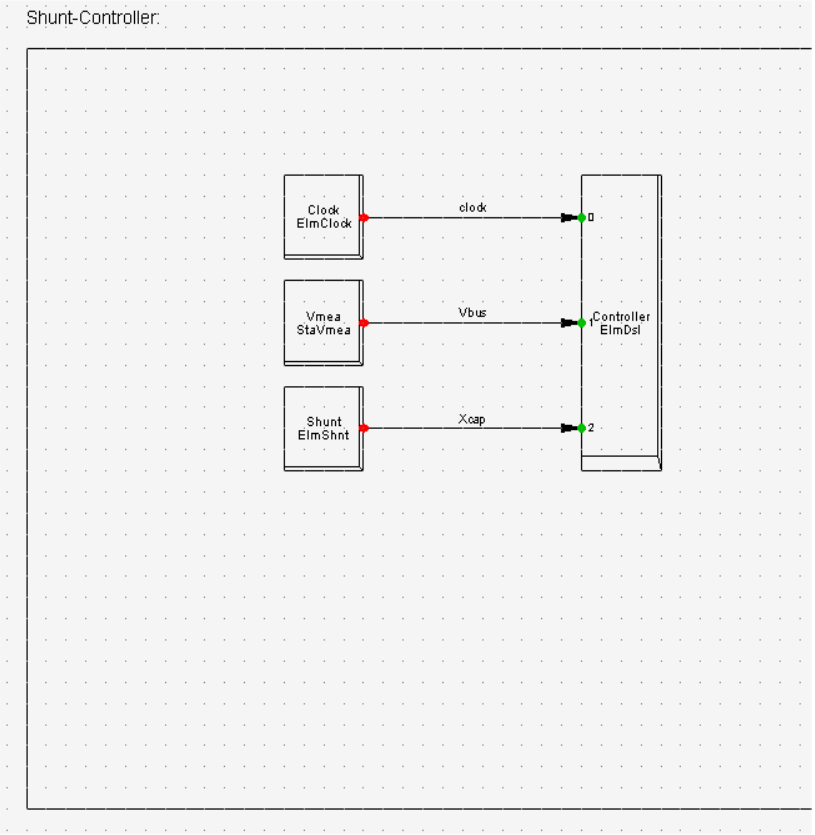
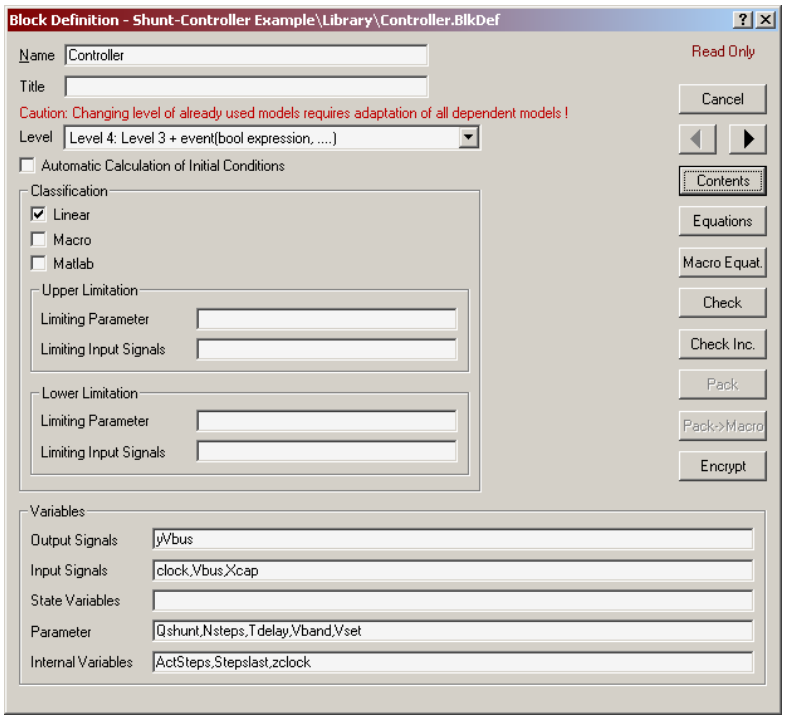
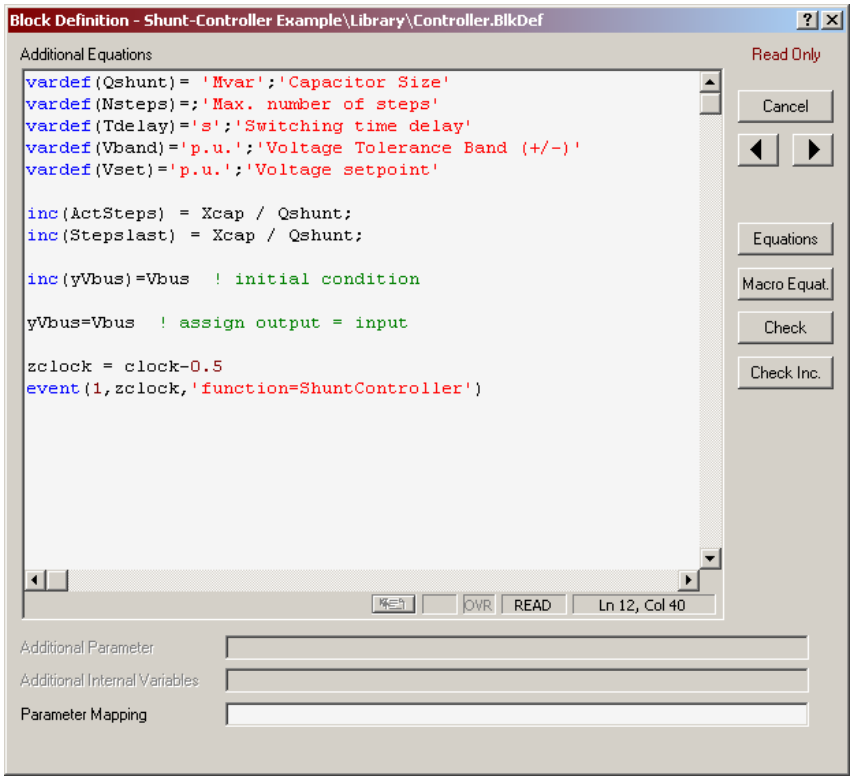


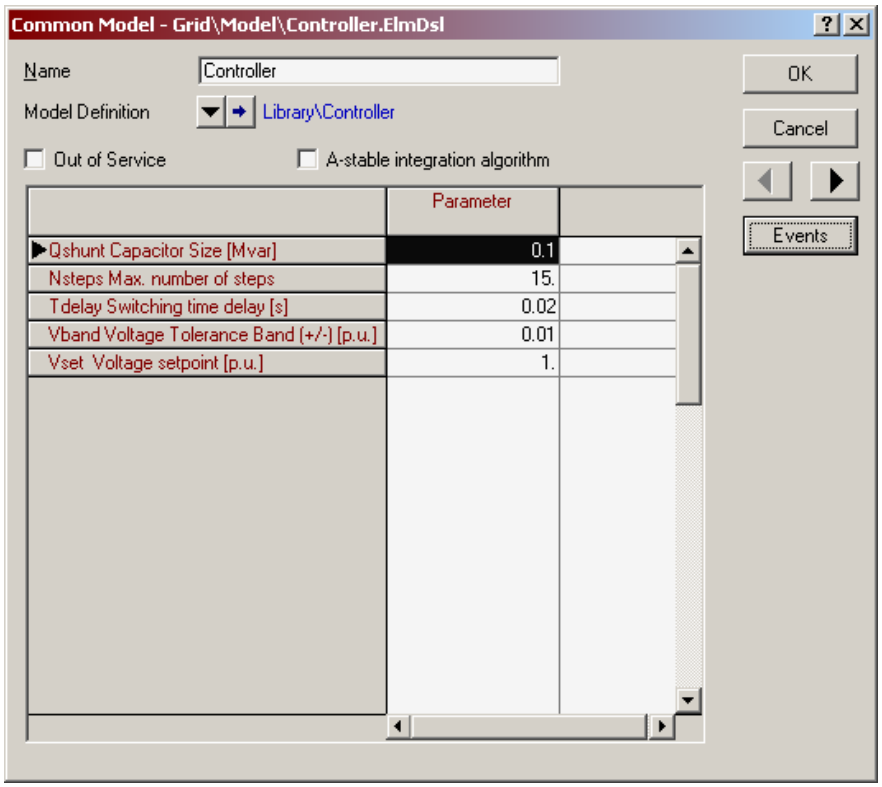
Parameter, input and output signals definitions:



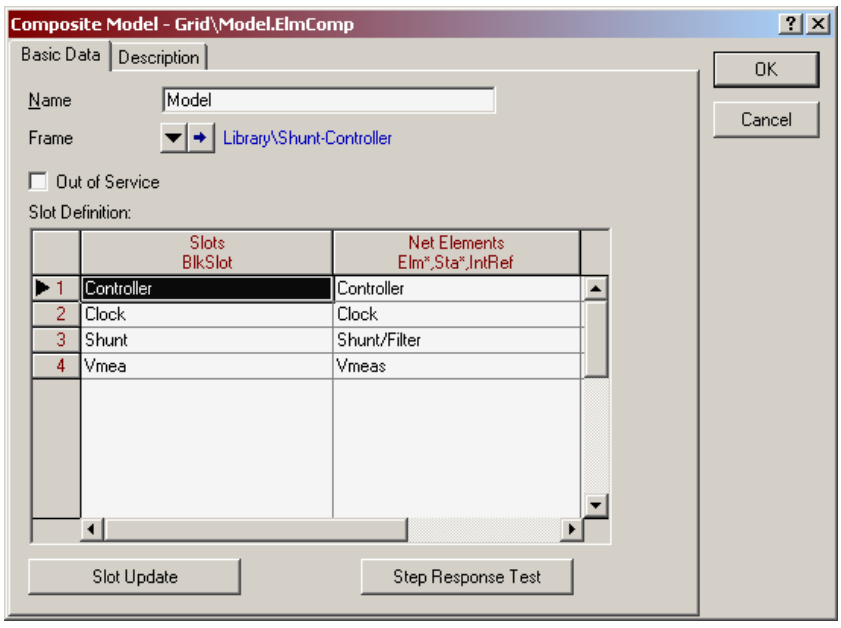
DSL code, all signals are time continuous signals.



Parameter input:



Composite model:



User defined c function in digexdyn.dll:
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```
void __cdecl ShuntController(double tEvent,double** dParams,const double** dOuts,const double**
dIntSigs,char** eventstr,char* msg,int nParams,int nOuts,int nIntSigs)
{
  double *actSteps,*Stepslast;
  double Tdelay,Vbus,Qshunt,Vband,Vset;
  int Nsteps;

  actSteps = dParams[0];
  Nsteps = ROUND(*(dParams[1]));
  Qshunt = *(dParams[2]);
  Stepslast = dParams[3];
  Tdelay = *(dParams[4]);
  Vband = *(dParams[5]);
  Vset = *(dParams[6]);

  Vbus = *(dOuts[0]); // voltage at bus

  if (Vbus < (Vset-Vband)) { // step up -> increase tap nstep
    if ( (*actSteps)+1 < Nsteps) {
      (*actSteps) = (*actSteps) + 1;
    }
    else {
      sprintf(msg,"Could not increase capacitor. Max. steps reached.");
    }
  }
  else if (Vbus > (Vset+Vband)) { // step down -> decrease tap step
    if ( (*actSteps)-1 >= 0) {
      (*actSteps) = (*actSteps) - 1;
    }
    else {
      sprintf(msg,"Could not decrease capacitor. Min. steps reached.");
    }
  }

  if (fabs((*actSteps) - (*Stepslast)) > 0.1) { // no. of steps changed => set event
    int newSteps=*actSteps;

    // put output message
    sprintf(msg,"Capacitor changed to Steps=%d",newSteps);

    // generatw tap event for capacitance
    sprintf(eventstr[0],"create=EvtTap target=Shunt name=QshuntStep dtime=%f i_tap=2 ntap=%d",
                        Tdelay,newSteps);
  }

  *Stepslast = *actSteps;  // store new step as old step
}
```