

```

----- MODULE Sensor -----
EXTENDS Node, Sequences, Natural
VARIABLE Sensors
SensorType  $\triangleq$  {"seismic", "Radon", "WaterLevel", "Gas"}

NodeIDs  $\triangleq$  1 .. 4
Nodes  $\triangleq$  [n  $\in$  NodeIDs  $\mapsto$  Node(n)]
Sensor(sid, stype)  $\triangleq$  LET snode  $\triangleq$  Node(sid)IN
[
  snode  $\mapsto$  snode,
  Stype  $\mapsto$  stype,
  SMode  $\mapsto$  snode.NMode
]
SensorTypeInvariant  $\triangleq$ 
   $\forall s \in Sensors : s.snode.NodeType = Sensor$ 

SensorConnectedInvariat  $\triangleq$ 
   $\forall s \in Sensors :$ 
     $s.snode.NCon = "Connected" \Rightarrow$ 
     $\exists n \in DOMAIN\ Nodes :$ 
       $Nodes[n].NodeType = Gateway \wedge Nodes[n].NCon = "Connected"$ 

```