**PTC Model Details**

(1)

(2)

(3)

**SOEC/Electrolyzer Model Details**

**Table 1.** Electrolyzer Summary

|  |  |
| --- | --- |
| **Description** | **Value** |
| Cell Length (m) | 0.225 |
| Cell Width (m) | 0.1 |
| Number of cells | 534,857 |
| Cathode flow channel height, , (m) | 1 |
| Anode flow channel height, , (m) | 1 |
| Interconnect height, , (m) | 5 |
| Height of Porous cathode, anode, and electrolyte, , (m) | 5.7 |
| Porous cathode thickness (m) | 5 |
| Porous anode thickness (m) | 2 |
| Electrolyte thickness (m) | 5 |
| Density of porous anode, cathode and electrolyte, , (kg/m3) | 5900 |
| Density of interconnect material, , (kg/m3) | 8000 |
| Porous cathode, anode, and electrolyte thermal conductivity, , (W/m-K) |  |
| Interconnect thermal conductivity, , (W/m-K) |  |
| Specific heat of |  |
|  |  |
|  |  |
|  |  |
| Porous cathode, anode, and electrolyte emissivity , (unitless) |  |
| Interconnect emissivity, , (unitless) |  |
| Porous cathode conductivity |  |
| Porous anode conductivity |  |
|  |  |