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| *Task* | *Action* | *BCET*  *(ms)* | *WCET*  *(ms)* | *Periode Of Action*  *(ms)* | *Periode Of Task*  *(ms)* |
| *SW\_Update* | ***SW\_Power\_Update***  ***SW\_Up\_Update***  ***SW\_Down\_Update*** | ***~0*** | ***0.331*** | ***20*** | ***20*** |
| *TMP\_SENSOR\_Update* | ***Read\_Sensor\_TMP*** | ***~0*** | ***0.798*** | ***100*** | ***20*** |
| *TMP\_Update* | ***TMP\_REQ\_Update***  ***TMP\_SENSED\_Update*** | ***~0*** | ***0.626*** | ***20***  ***1000*** | ***20*** |
| *SSD\_Update* | ***SSD\_Update\_Mode***  ***SSD\_Refresh*** | ***~0*** | ***0.807*** | ***20***  ***5*** | ***5*** |
| *HEATER\_Update* | ***HEATER\_Update\_Mode*** | ***~0*** | ***0.260*** | ***1000*** | ***1000*** |
| *COOLER\_Update* | ***COOLER\_Update\_Mode*** | ***~0*** | ***0.260*** | ***1000*** | ***1000*** |
| *LED\_Update* | ***LED\_Update\_Mode*** | ***~0*** | ***0.096*** | ***1000*** | ***1000*** |
| *EEPROM\_Update* | ***EEPROM\_Store\_Data*** | ***~0*** | ***1*** | ***20*** | ***20*** |
| *TICK(ms)* | | | | | ***5*** |
| *Major Cycle(ms)* | | | | | ***1000*** |

Time modeling

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| ***Minor Cycle = TICK = GCD(20, 20, 20, 5, 1000, 1000, 1000, 20) = 5 ms***  ***Major Cycle = LCM((20, 20, 20, 5, 1000, 1000, 1000, 20) = 1000 ms***  ***Major Cycle = 1000 / 5 = 200 Minor Cycle***  ***CPU Load = ∑WCET / Major Cycle = 4.178/1000 = 0.004178 = 0.4178%*** |

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| **0 5 20 100 1000 Time(ms)** |

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|  | **SW@20ms** |
|  | **TMP\_SENSOR@100ms** |
|  | **TMP@20ms** |
|  | **SSD@5ms** |
|  | **HEATER@1000ms** |
|  | **COOLER@1000ms** |
|  | **LED@1000ms** |
|  | **EEPROM@20ms** |

Block diagram

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| **LED\_ELEMENT** |

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| **HEATER\_ELEMENT** |

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| **SSD\_UNITS** |
| **SSD\_TENS** |

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| |  | | --- | | **SW** |  |  | | --- | | **OS(TICK = 5ms)** |  |  | | --- | | **HEATER**  ***Mode*** |  |  | | --- | | **LED** |  |  | | --- | | **SSD** |  |  | | --- | | **COOLER** |  |  | | --- | | **TMP**  ***Req*** |   ***SW\_states***  ***Req***    ***Req, Avg***  ***Req, Avg***  ***Sensedtmp***   |  | | --- | | **TMP\_SENSOR** |  |  | | --- | | **EEPROM** |   ***SW\_states***  ***Mode*** |

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| **SW\_POWER** |
| **SW\_UP** |
| **SW\_DOWN** |

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| **TMP\_SENSOR\_ELEMENT** |

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| **EEPROM\_ELEMENT** |

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| **COOLER\_ELEMENT** |

Modules diagram

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| ***SW*** |
| ***-SW\_State[SW\_MAX\_NUMBER] : SW\_STATE\_t***  ***-SW\_Period\_Ended : Bool\_t*** |
| ***+SW\_Init(void) : void***  ***+SW\_Update(void) : void***  ***+SW\_Period\_Is\_Ended(void) : Bool\_t***  ***+SW\_Read(SW\_ID : const SW\_t) : SW\_State\_t***  ***-SW\_Update\_State(SW\_ID : const SW\_t) : void***  ***-SW\_Update\_Period(void) : void*** |

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| ***TMP\_SENSOR*** |
| ***-TMP\_SENSOR\_Reading\_Val : u8\_t***  ***-TMP\_SENSOR\_Period\_Ended : Bool\_t*** |
| ***+TMP\_SENSOR\_Init(void) : void***  ***+TMP\_SENSOR\_Update(void) : void***  ***+TMP\_SENSOR\_Read(void) : u8\_t*** |

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| ***TMP*** |
| ***+TMP\_Required : u8\_t***  ***+Avg\_Tmp : u16\_t***  ***-TMP\_Mode : TMP\_MODE\_t***  ***-Update\_Avg\_Tmp :Bool\_t*** |
| ***+TMP\_Update(void) : void***  ***+TMP\_Avg\_Update(AVG\_UPDATE\_ENABLE : const Bool\_t) : void***  ***-TMP\_Required\_Update(void) : void***  ***-TMP\_Sensed\_Update(void) : void*** |

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| ***SSD*** |
| ***-SSD\_Symbol : u8\_t***  ***-SSD\_Blinking\_Period : u8\_t***  ***-SSD\_Blinking\_On\_Period : u8\_t***  ***-SSD\_Blinking\_Off\_Period : u8\_t***  ***-SSD\_Mode : SSD\_MODE\_t*** |
| ***+SSD\_Init(void) : void***  ***+SSD\_Update(void) : void***  ***+SSD\_Set\_Symbol(SYMBOL : const u8\_t) : void***  ***-SSD\_On(SSD\_ID : const SSD\_t) : void***  ***-SSD\_Off(SSD\_ID : const SSD\_t) : void***  ***-SSD\_Update\_Symbol(SSD\_SYMBOL : const u8\_t) : void***  ***-SSD\_Refesh(void) : void***  ***-SSD\_Update\_Mode(void) : void*** |

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| ***HEATER*** |
| ***-Tmp\_Req : s8\_t***  ***-Tmp\_Avg : u8\_t***  ***-Update : Bool\_t***  ***-HEATER\_Mode : HEATER\_MODE\_t*** |
| ***+HEATER\_Init(void) : void***  ***+HEATER\_Update(void) : void***  ***+HEATER\_Set(REQ\_TMP : const u8\_t,***  ***AVG\_TMP: const u8\_t,***  ***UPDATE\_ENABLE : const Bool\_t) : void***  ***-Heater\_On(void) : void***  ***-Heater\_Off(void) : void***  ***-HEATER\_Update\_Mode(void) : void*** |

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| ***COOLER*** |
| ***-Tmp\_Req : s8\_t***  ***-Tmp\_Avg : u8\_t***  ***-Update : Bool\_t***  ***- COOLER \_Mode : COOLER \_MODE\_t*** |
| ***+ COOLER \_Init(void) : void***  ***+ COOLER \_Update(void) : void***  ***+ COOLER \_Set(REQ\_TMP : const u8\_t,***  ***AVG\_TMP: const u8\_t,***  ***UPDATE\_ENABLE : const Bool\_t) : void***  ***- COOLER \_On(void) : void***  ***- COOLER \_Off(void) : void***  ***- COOLER \_Update\_Mode(void) : void*** |

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| ***LED*** |
| ***-LED\_State : LED\_STATE\_t***  ***-LED\_Mode : LED\_MODE\_t***  ***-Update : Bool\_t*** |
| ***+LED\_Init(void) : void***  ***+LED\_Update(void) : void***  ***+ LED\_Set\_Mode(MODE : const LED\_MODE\_t,***  ***LED\_UPDATE\_ENABLE : const Bool\_t) : void***  ***-LED\_On(void) : void***  ***-LED\_Off(void) : void***  ***-LED\_Blink(void) : void*** |

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| ***EEPROM*** |
| ***-Update : Bool\_t***  ***-EEPROM\_Data : u8\_t*** |
| ***+EEPROM\_Init(void) : void***  ***+EEPROM\_Update(void) : void***  ***+EEPROM\_Store(DATA : const u8\_t,***  ***UPDATE\_ENABLE : const Bool\_t) : void***  ***+EEPROM\_Read\_Byte(EEPROM\_ID : const EEPROM\_ID\_t,***  ***EEPROM\_ADDRESS : const u8\_t) : u8\_t***  ***-EEPROM\_Write\_Byte(EEPROM\_ID : const EEPROM\_ID\_t,***  ***EEPROM\_ADDRESS : const u8\_t,***  ***DATA : const u8\_t) : void*** |