

CMGT 235 – Electrical and Mechanical Systems

Homework #25 – Size OCP and Conductor for a Continuous Load

Due: 11/18/2021

Points: 20

Name: Solution

1. What size feeder **overcurrent protection device** and **conductor** (THHN) are required for a 184A continuous load on a panelboard (75°C terminals)?

Note:

Size the overcurrent device in accordance with NEC 215.3 and 240.6(A)

Select the conductor to comply with NEC 215.2

Solution.

Step 1 - Size the overcurrent device in accordance with 215.3. The feeder overcurrent device must be sized not less than 125% of 184A, $184A \times 125\% = 230A$. According to 240.6(A) we must select a minimum 250A overcurrent device.

Step 2 - Select the conductor to comply with 215.2, which requires the feeder conductor to be sized no less than 125% of the continuous load, $184A \times 125\% = 230A$. We must select the conductor according to the 75°C temperature rating of the panelboards terminals [110.14(C)] - 4/0 THHN has a rating of 230A at 75°C will meet this requirement.

Step 3 - Verify the conductors selected in Step 2 is properly protected against overcurrent in accordance with 240.4. The 4/0 AWG conductor from Step 2 is rated 230A at 75°C, it is permitted to be protected by a 250A protection device in accordance with the "the next size up rule" of 240.4(B).