Voltage Drop

I am a CMS Master License holder in Delaware. I recently installed two Bosch Bova systems BOVA-36HDN1-181M with matching Bosch air handlers at 5kW and second stage heating. We are using Honeywell TH622 thermostats where everything is new. When we call for A/C everything works as it should but on a call for heat we are only getting 18V on the O/B terminal on the output of the ‘stat and 28V from R to C supplying the ‘stat. The R/V is energized for heat on these systems. We isolated the thermostat by wiring the red, O/B wire and contactor wires together and are getting 28V at the outdoor unit and it runs in the heating mode as it should. I contacted U/R to see if they have had any other calls concerning this issue with H/W Pro6 thermostats and they offered to give me replacements. I called H/W and was told that it is a wire failure. We replaced the low voltage wiring and got the same results at both units. I have some liberty with time to get this corrected as the customer doesn’t need heat now. Any suggestions?

Interesting problem. My first thought is to remove all wires from the thermostat except R and C which should power the stat. Because the ‘stat will need to be mounted on the base, you should add short wires on the R, C, O/B, G, Y1, Y2, W1, W2 terminals so they extend beyond the thermostat, which will allow you to take voltage readings under various conditions. I probably don’t need to remind a CMS about ensuring these wires are separated to avoid shorting a transformer or blowing a fuse, but I’ll do it anyway. When in standby mode (no call for heat, cool or fan), measure voltage at R and C. Force the ‘stat to first call for cooling, then heating, then fan only. Measure and record the voltage readings from C to each of the terminals extended past the bottom of the thermostat. You should not have any significant drop in voltage between C and each of the other terminals when calling for a specific mode of operation. If you do, the thermostat is likely the culprit. If you reconnect the wires to the thermostat and the voltage drop returns, this points to the wire or the other items in the low voltage path. I would then disconnect the wires at the air handler and recheck voltage. If the voltage drop remains, then the wire is your problem. If the wire has already been replaced, it’s likely you have a bad spool if both sets came from the same spool. If the voltage drop no longer exists, then reconnect the wires to the air handler and then disconnect the wires going from the air handler to the outdoor unit. Repeat the testing as above to prove the air handler, then the wires going to the outdoor unit, then the outdoor unit itself. By eliminating items in a logical sequence finding the source of the problem should be possible.

Question from Scot T. Sauer, CM. Answer from Jack Bartell, Director of Services and Training, Virginia