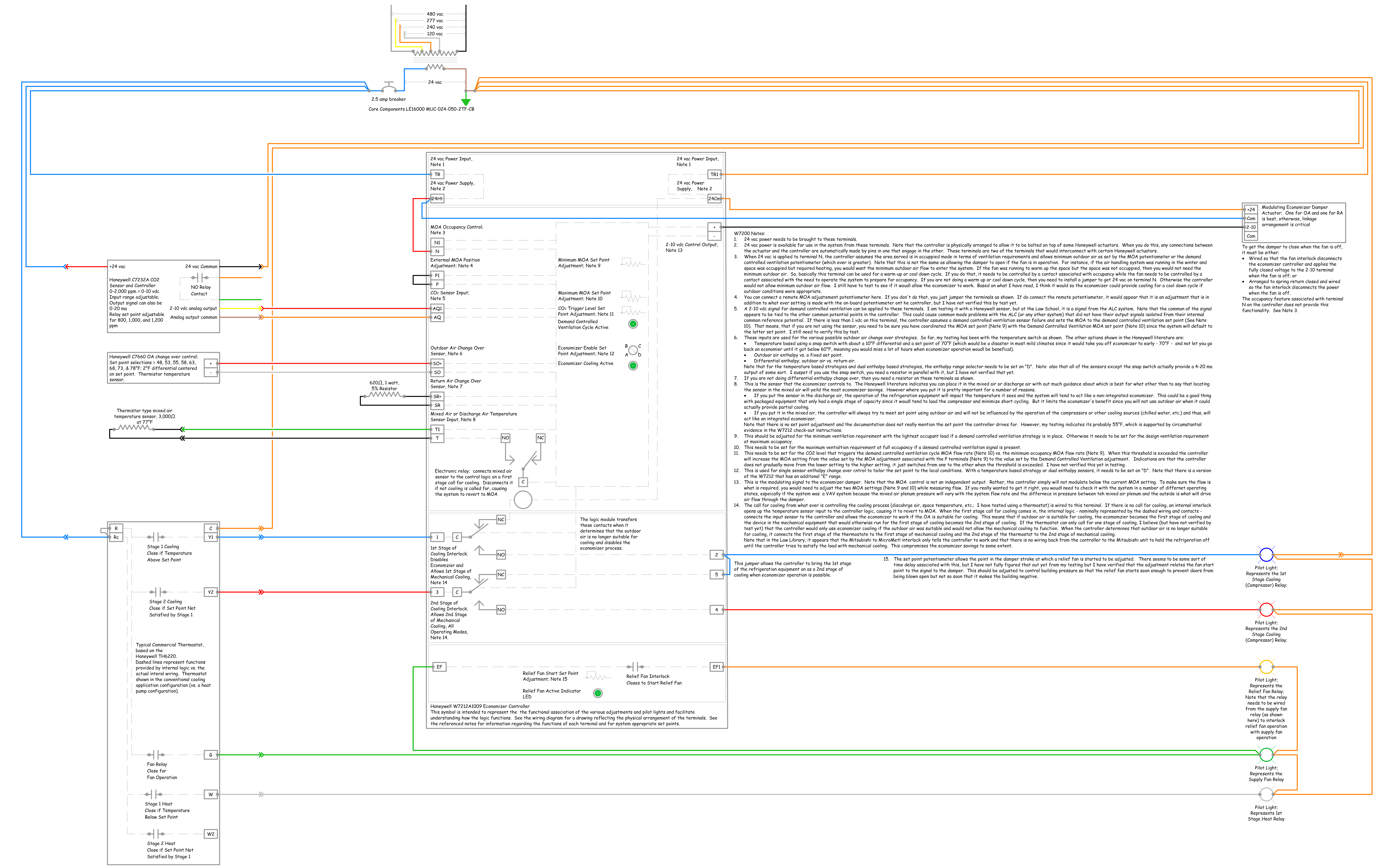

W7200 Notes:

1. 24 vac power needs to be brought to these terminals.
2. 24 vac power is available for use in the system from these terminals. Note that the controller is physically arranged to allow it to be bolted on top of some Honeywell actuators. When you do this, any connections between the actuator and the controller are automatically made by pins in one that engage in the other. These terminals are two of the terminals that would interconnect with certain Honeywell actuators.
3. When 24 vac is applied to terminal N, the controller assumes the area served is in occuppied mode in terms of ventilation requirements and allows minimum outdoor air as set by the MOA potentiometer or the demand controlled ventilation potentiometer (which ever is greater). Note that this is not the same as allowing the damper to open if the fan is in operation. For instance, if the air handling system was running in the winter and space was occuppied but required heating, you would want the minimum outdoor air flow to enter the system. If the fan was running to warm up the space but the space was not occuppied, then you would not need the minimum outdoor air. So, basically this terminal can be used for a warm-up or cool down cycle. If you do that, it needs to be controlled by a contact associated with occupancy while the fan needs to be controlled by a contact associated with the need to operate the system to prepare for occupancy. If you are not doing a warm up or cool down cycle, then you need to install a jumper to get 24 vac on terminal N. Otherwise the controller would not allow minimum outdoor air flow. I still have to test to see if it woudl allow the economizer to work. Based on what I have read, I think it would so the economizer could provide cooling for a cool down cycle if outdoor conditions were appropriate.
4. You can connect a remote MOA adjustement potentiometer here. If you don't do that, you just jumper the terminals as shown. If do connect the remote potentiometer, it would appear that it is an adjustment that is in addition to what ever setting is made with the on-board potentiometer ont he controller, but I have not verified this by test yet.
5. A 2-10 vdc signal for demand controlled ventilation can be applied to these terminals. I am testing it with a Honeywell sensor, but at the Law School, it is a signal from the ALC system. Note that the common of the signal appears to be tied to the other common potential points in the controller. This could cause common mode problems with the ALC (or any other system) that did not have their output signals isolated from their intermal common reference potential. If there is less than 1 vdc on this terminal, the controller assumes a demand controlled ventilation sensor failure and sets the MOA to the demand controlled ventilation set point (See Note 10). That means, that if you are not using the sensor, you need to be sure you have coordinated the MOA set point (Note 9) with the Demand Controlled Ventilation MOA set point (Note 10) since the system will default to the latter set point. I still need to verify this by test.
6. These inputs are used for the various possible outdoor air change over strategies. So far, my testing has been with the temperature switch as shown. The other options shown in the Honeywell literature are:
   - Temperature based using a snap switch with about a 10°F differential and a set point of 70°F (which would be a disaster in most mild climates since it would take you off economizer to early - 70°F - and not let you go back on economier until it got below 60°F, meaning you would miss a lot of hours when economizer operation woudl be benefical).
   - Outdoor air enthalpy vs. a fixed set point.
   - Differential enthalpy; outdoor air vs. return air.

   Note that for the temperature based strategies and dual enthalpy based strategies, the enthalpy range selector needs to be set on "D". Note also that all of the sensors except the snap switch actually provide a 4-20 ma output of some sort. I suspet if you use the snap switch, you need a resistor in parallel with it, but I have not verified that yet.
7. If you are not doing differential enthalpy change over, then you need a resistor on these terminals as shown.
8. This is the sensor that the economizer controls to. The Honeywell literature indicates you can place it in the mixed air or discharge air with out much guidance about which is best for what other than to say that locating the sensor in the mixed air will yeild the most economizer savings. However where you put it is pretty important for a number of reasons.
   - If you put the sensor in the discharge air, the operation of the refrigeration equipment will impact the temperature it sees and the system will tend to act like a non-integrated economizer. This could be a good thing with packaged equipment that only had a single stage of capacity since it woudl tend to load the compressor and minimize short cycling. But it limits the economzer's benefit since you will not use outdoor air when it could actually provide partial cooling.
   - If you put it in the mixed air, the controller will always try to meet set point using outdoor air and will not be influenced by the operation of the compressors or other cooling sources (chilled water, etc.) and thus, will act like an integrated economizer.

   Note that there is no set point adjustment and the documentation does not really mention the set point the controller drives for. However, my testing indicates its probably 55°F, which is supported by circumstantial evidence in the W7212 check-out instructions.
9. This should be adjusted for the minimum ventilation requirement with the lightest occupant load if a demand controlled ventilation strategy is in place. Otherwise it needs to be set for the design ventilation requirement at maximum occupancy.
10. This needs to be set for the maximum ventialtion requirement at full occupancy if a demand controlled ventilation signal is present.
11. This needs to be set for the CO2 level that triggers the demand controlled ventilation cycle MOA flow rate (Note 10) vs. the minimum occupancy MOA flow rate (Note 9). When this threshold is exceeded the controller will increase the MOA setting from the value set by the MOA adjustment associated with the P terminals (Note 9) to the value set by the Demand Controlled Ventilation adjustment. Indications are that the controller does not gradually move from the lower setting to the higher setting, it just switches from one to the other when the threshold is exceeded. I have not verified this yet in testing.
12. This is used for single sensor enthalpy change over cntrol to tailor the set point to the local conditions. With a temperature based strategy or dual enthalpy sensors, it needs to be set on "D". Note that there is a version of the W7212 that has an additonal "E" range.
13. This is the modulating signal to the economizer damper. Note that the MOA control is not an independent output. Rather, the controller simply will not modulate below the current MOA setting. To make sure the flow is what is required, you would need to adjust the two MOA settings (Note 9 and 10) while measuring flow. If you really wanted to get it right, you woudl need to check it with the system in a number of differnet operating states, espeically if the system was a VAV system because the mixed air plenum pressure will vary with the system flow rate and the differnece in pressure between teh mixed air plenum and the outside is what will drive air flow through the damper.
14. The call for cooling from what ever is controlling the cooling process (discahrge air, space temperature, etc.; I have tested using a thermostat) is wired to this terminal. If there is no call for cooling, an internal interlock opens up the temperature sensor input to the controller logic, causing it to revert to MOA. When the first stage call for cooling comes in, the internal logic - nominally represented by the dashed wiring and contacts - connects the input sensor to the controller and allows the economizer to work if the OA is suitable for cooling. This means that if outdoor air is suitable for cooling, the ecomomzier becomes the first stage of cooling and the device in the mechanical equipment that would otherwise run for the first stage of cooling becomes the 2nd stage of cooling. If the thermostat can only call for one stage of cooling, I believe (but have not verified by test yet) that the controller would only use economizer cooling if the outdoor air was suitable and would not allow the mechanical cooling to function. When the controller determines that outdoor air is no longer suitable for cooling, it connects the first stage of the thermostate to the first stage of mechanical cooling and the 2nd stage of the thermostat to the 2nd stage of mechanical cooling.

    Note that in the Law Library, it appears that the Mitsubishi to MicroMetl interlock only tells the controller to work and that there is no wiring back from the controller to the Mitsubishi unit to hold the refrigeration off until the controller tries to satisfy the load with mechanical cooling. This compromises the economizer savings to some extent.
15. The set point potentiometer allows the point in the damper stroke at which a relief fan is started to be adjusted. There seems to be some sort of time delay associated with this, but I have not fully figured that out yet from my testing but I have verified that the adjustment relates the fan start point to the signal to the damper. This should be adjusted to control building pressure so that the relief fan starts soon enough to prevent doors from being blown open but not so soon that it makes the building negative.