* 1. Indirect Fired Gas Heat Module (Single Burner)
     1. General Specifications
        1. Provide Heatco Inc. indirect gas-fired HD Duct Furnace models listed by Intertek Testing Services (ITS / ETL), a Nationally Recognized Testing Laboratory (NRTL), to the current edition of ANSI Z83.8 / CSA 2.6 Standard for Gas-Fired Duct Furnaces for installation on the positive pressure side of the circulating air blower only and provide a minimum combustion efficiency of 81%.
        2. Duct Furnaces shall be listed for either outdoor installation (or) for indoor installation in accordance with Category I and Category III venting systems without need for additional power venting.
     2. Construction
        1. Gas-fired duct furnace(s) provided shall have a tubular heat exchanger constructed of (Type 409 Stainless Steel (.044 Min. Wall thickness) produced to ASTM A268
        2. Heat exchanger tubes shall be mechanically secured to vestibule panels and design shall be suitable to withstand 3.0” w.c. total external static pressure.
        3. The Duct Furnace shall include:
           1. A 20-gauge galvanized steel cabinet
           2. 1 inch thick, minimum 1 ½ lb./ft.3 density thermal insulation for exterior cabinets
           3. Patented inshot gas burners, with integral carryovers, capable of operation at 5:1 turndown with modulating controls
           4. An induced-draft combustion air blower to provide for positive venting of flue gases
           5. Provision for attachment of a vent system to exhaust flue gases to outdoors.
           6. Combustion air pressure switch to prove air supply for combustion
           7. Direct spark ignition of the gas burners with remote flame sensor to prove carryover across all burners
           8. Listed Combination Gas Valve incorporating redundant (two) electric safety shut-off valves, manual shut-off, and gas regulator which regulates gas pressure to burner supply manifold.
           9. A 1/8” NPT tapped test gauge connection in the gas manifold for measuring gas pressure
           10. A union fitting downstream of gas control to facilitate installation and service
           11. An automatic reset type high limit switch to limit maximum outlet air temp to less than 250 oF
           12. Manual reset flame rollout switch(es).
           13. A Class II step down transformer to provide 24 VAC control voltage at selected supply voltage
     3. Control Module
        1. Individual Duct Furnaces shall incorporate a Direct Spark Ignition control module that is design certified by a recognized national testing agency. The control shall provide
           1. 100% safety shut-off
           2. A 15 second minimum pre-purge period prior to trial for ignition
           3. High energy direct spark ignition of main burners
           4. Electronic flame supervision incorporating a 0.8 second flame failure response time
           5. Up to 2 additional ignition retrials preceded by an interpurge period
           6. A minimum 30 second post-purge
           7. Automatic reset after one hour to initiate additional ignition trials if lockout occurs during heat call
           8. An LED indicator light to provide a flash code to identify the operating condition of the control
     4. Control (Provided by Others)
        1. Heat Enable
           1. One set NO service voltage contacts or 24 VAC control contacts
        2. On/Off
           1. 24 VAC thermostat or one (1) set controller 24 VAC contacts
        3. Two Stage
           1. 2 stage VAC thermostat or two (2) sets 24 VAC contacts
        4. Modulation
           1. 0 -10 VDC Analog input
     5. Electrical
        1. All models are 115VAC/1ph/60hz and less than 6A
        2. Certain models available with optional 208 or 230VAC/1ph/60z
     6. Gas Service
        1. For Natural Gas, gas supply pressure to the gas valve inlet shall be:
           1. Racks with a max single furnace input of 400 MBH and below: 5.0" to 13.5" w.c.
           2. Racks with a max single furnace input over 400 MBH: 6.0" to 13.5" w.c.
        2. For Propane Gas, gas supply pressure to the gas valve inlet shall be 11.0" to 13.5" w.c.
     7. Start-Up
        1. Duct Furnace shall be accompanied by wiring diagrams for the control system supplied and printed instructions for proper installation, start-up, operation, and maintenance.
        2. Initial on-site start-up must be completed by qualified installation and service agency. A Start-up data sheet is provided for recording operating data and the final heater adjustments. The indicated portion of the Start-up data sheet must be returned to Heatco to validate factory warranty.