

TDI DECODER INTERFACE SYSTEM SPECIFICATIONS

The Decoder Interface System shall be the TDI as manufactured by Tucor, Inc. of Wexford, Pennsylvania and hereinafter specified. The TDI Interface System shall be comprised of the Tucor TDI Interface, RKLD050 Programmable Decoders, Tucor #16/2 Communication Cable, Tucor SP-100 Line Surge Protectors, Tucor HCP-100 Portable Decoder Programmer (Optional) and all other equipment required for a complete system.

TDI Interface

The Tucor TDI Interface shall be a standalone Interface capable of operating 1 - 48 24VAC solenoid valves along a two-wire path. The Interface shall be capable of simultaneously operating 10 valves and one master valve from the two-wire path. The Interface shall be capable of operating a single valve connected to the two-wire path up to 6,100 feet away using #16/2 Tucor communication cable. The TDI shall replace a UGT32M ASSY utilizing the controller's transformer requiring 24 VAC electrical input. Two-wire path output from the Interface shall be 34 VAC. The Interface shall have built-in lightning protection. The Interface shall have the capability to manually override the master valve circuit with a programmable range of 1-12 hours. The TDI shall have an LCD display supporting (16 x 2 characters). The display shall be capable of showing the operating status of the system. Active stations and master valve shall be displayed. The Interface shall have an option to monitor and display the electrical conditions of the two-wire path including current (in milliamps) and voltage. The Interface shall have built in diagnostics that will test for individual station operation, decoder pass/fail and electrical shorts in the two-wire path. Valve output power shall be adjustable through menu options that allow for four different power levels. The Interface shall include a special circuit for monitoring, on a continuous basis, the line voltage condition. In the event of an electrical short, the Interface will automatically switch to 50Hz mode at reduced current. The Interface shall also have terminals for connection of decoders for the purpose of programming, reprogramming and testing decoders. The optional HCP-100 hand programmer shall have the same decoder programming capabilities as the TDI Interface.

LINE DECODERS

RKLD50 decoders shall provide the interface between the 24 VAC valves and the two-wire communication from the TDI Interface. RKLD50 decoders shall be shipped in a "blank" state with no programming information. For programming, decoders shall be connected to the TDI Interface decoder terminals and programmed with the desired station address. Decoders shall be programmable as station numbers one through forty eight ("ST1" through "ST48"), master valve ("MV"). Decoders shall have the ability to be reprogrammed to other station addresses. The Interface shall have a decoder test function that will give a decoder pass/fail test result. Each decoder shall be epoxy sealed and completely waterproof. Each decoder shall have "built-in" surge protection as an integral part of the basic decoder. The decoder shall have two (2) blue colored wires for connection to the two-wire path communication path and two (2) white colored wires for connection to the valve solenoid wires. After programming, each decoder shall be labeled with the station address that was programmed into it. A programmed decoder shall be installed with the valve that corresponds to the programmed station number. In most cases, the decoder shall be installed in the same valve box as the valve it operates. For remote installation, the decoder to valve distance shall not exceed 150 feet using #18 wire. Each RKLD050 decoder shall be capable of operating one valve solenoid. The location of each decoder shall be marked on the as-built plans.

TWO-WIRE PATH

All wire used for communication between the TDI Interface and the RKLD050 decoders shall be double-jacketed, two (2) conductor cable specifically designed for use with Tucor control systems. The cable shall be suitable for direct burial, or for installation in ducts or conduits. The conductors shall be #14, #16 or #18 AWG tin-coated, soft drawn, annealed, solid copper conforming to ASTM 33 with 4/64" thick PVC (polyvinyl chloride) insulation, conforming to UL Standard #493 for thermoplastic insulated style UF (Underground Feeder), rated at 60 degrees C. The two insulated conductors shall be laid parallel and encased in a single outer jacket of 3/64" thick, high density, sunlight resistant polyethylene conforming to ICEA S-61-402 and NEMA WC5, having a minimum wall thickness of .045". The outer jacket shall be pressure extruded so as to completely fill the interstices between the two insulated wires, or may have tube jacketing or form an envelope over the two insulated UF conductors lying in parallel at the discretion of the manufacturer. The two conductors shall be color coded with one conductor black and the other red. Both conductors shall be the same size. All splices and connections in this wiring shall be made using the waterproof splice connectors. 3M DBY, DBR, DBY-6 or DBR-6 wire connector kits shall be used. Any other type of wire connector will *not* be accepted. Care shall be taken with each wire connection to assure a tight, waterproof connection. *It is essential that all connections be absolutely watertight with no leakage to ground nor shorting between conductors.*

SURGE PROTECTION

All surge protection, grounding and installation of equipment specified, shall be installed in strict compliance with the manufacturer's recommendations and in accordance with Local, State and Federal requirements.

Primary Power Surge Protection:

Furnish and install surge protection on the power circuit that will supply power to the Interface.

Field Surge Protection:

SP-100 surge protectors shall be installed at every 500-foot interval along the two-wire path, located at the nearest line decoder, and at the end of any wire run. Connect SP-100 ground wires to a single 8-foot ground rod. If the valve is metallic or the solenoid has a metallic center pin, one of the SP-100 ground wires shall be connected to it. All SP-100/ground rod assemblies shall be installed in valve boxes. Mark the location of all ground points on the as-built plans. All grounds shall be tested for earth-to-ground resistance. Readings of 50 Ohms or less are acceptable. Resistance readings of 50 Ohms or greater shall necessitate the installation of additional grounding materials to reduce the ground resistance to acceptable levels.