

FUELMASTER System Planning Guide



Interface & Wiring Requirements

FUELMASTER® is adaptable to any fuel site configuration. In some cases, settings, modifications, and/or accessory equipment may be necessary to ensure compatibility with existing or proposed site equipment. Syn-Tech must be made aware of the following interfaces to ensure the delivered FUELMASTER® equipment is compatible.

INTERFACE REQUIREMENTS

1. *Dispenser Control.* The base FUELMASTER® system uses 50 amp relays designed to control dispensers with solenoid valves and/or suction pump motors up to 3/4 horsepower (HP). Loads in excess of 3/4 HP may require added mechanical relays.
2. *Pulse Transmission.* FMUs provide a 12 VDC feed to pulsers, and cannot receive a return pulse greater than 12 VDC. FMUs can interpret up to 9000 pulses per minute (a hose that delivers 15 gallons per minute will return 9000 pulses with a 600:1 pulser ($9000/15 = 600$). Pulsers that exceed this pulse rate require optical interface adapters (available from Syn-Tech.)
3. *Direct-Connect Systems.* The ring-down box used to provide a direct connection between the FMU and the PC acting as Central Controller has standard RJ11 telephone jacks. The distance between the PC and FMU can be up to two miles. Although regular telephone wire can be used for short distances, Syn-Tech recommends using a shielded Belden 8771 two conductor 18 AWG twisted wire.
4. *Parallel Port Connections.* Rather than using a switching box, Syn-Tech recommends buying a second parallel port. If more than one parallel port is available, the printer must be connected to LPT1 and the encoder to LPT2.

CONDUIT/WIRING REQUIREMENTS

Do not use solid core wire. All conduit must be metal, explosion-proof and utilized in accordance with the National Electrical Codes (NEC). Recommended conduit is 3/4 inch. Wire sizes/quantities permitting, a limited number of 1/2 inch conduit may be used. The FMU will support inputs of eight 3/4 inch conduit and four 1/2 inch conduit.

Like any electrically powered equipment, FMUs have minimum power requirements. If powered from the same circuit as equipment with high power loads (i.e., dispensers with, or powering, pump motors) input power to the FMU may drop below the minimum power requirement. FMUs should be powered from a separate power source with a separate circuit breaker rated no less than 15 amps. If the site construction does not permit a separate FMU power source, contact Syn-Tech Product Support for alternative wiring methods. Workarounds are available. Recommended FMU power wire is 12 AWG THHN.

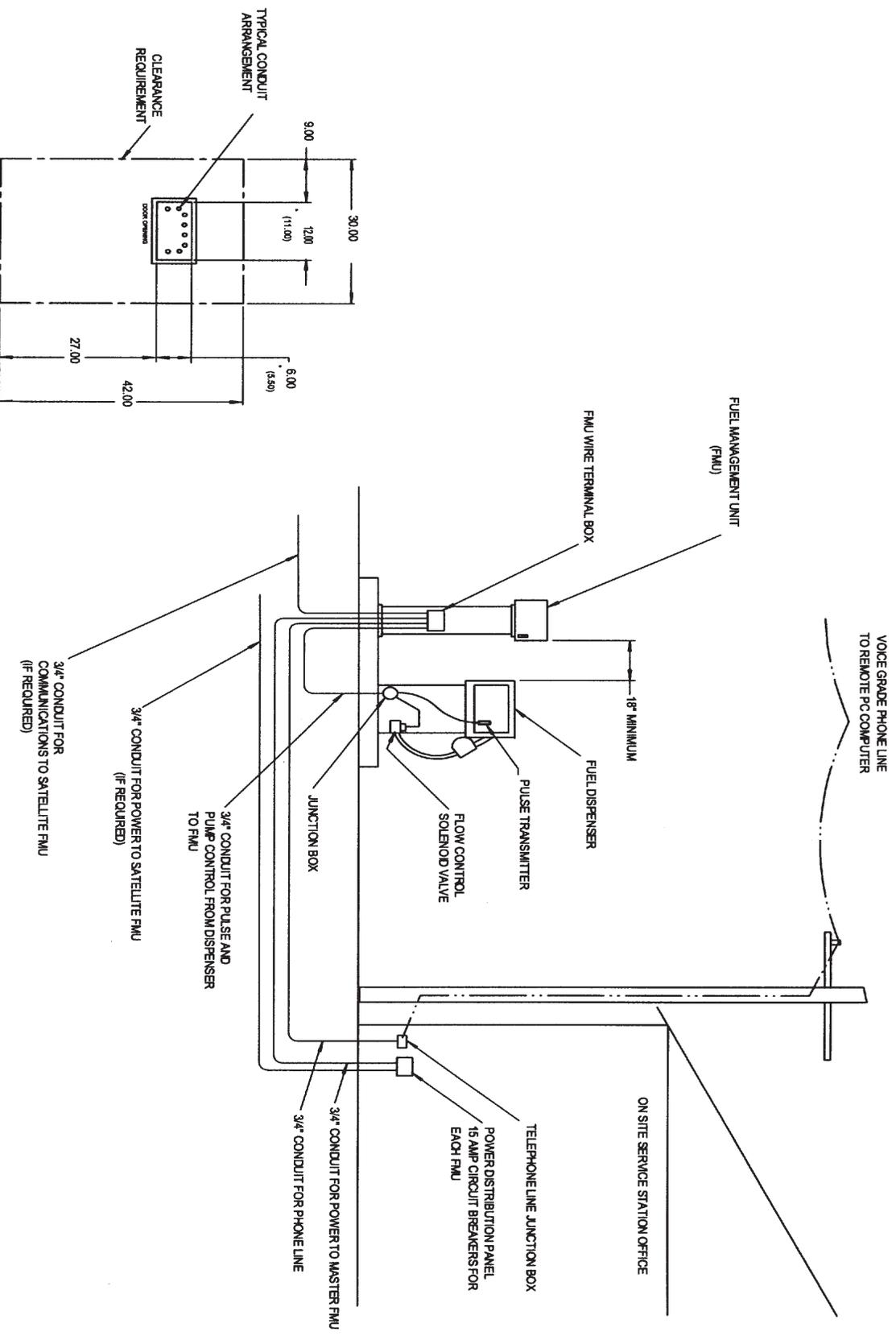
DC pulser wires and AC control wires may be routed through the same conduit providing the pulser wires are shielded and insulated for the maximum power carried through the conduit. Recommended pulser cable is 18 AWG shielded THHN (Belden 8771 2-conductor, Belden 8723 4-conductor, or equivalent). Recommended control wire is 14 AWG THHN.

Telephone (modem) lines to the FMU are NOT to be routed through the same conduit as any power wires. Shielded telephone cable, on-site printer lines, and Tank Monitor Unit RS-232/422 cables may be routed through the same conduit. Final terminations at the FMU or Central Controller modem must be with analog signal telephone lines (digital signal lines cannot ring into a modem; digital signal lines can be converted to analog.) Use of an easily accessible phone line to the FMU and Central Controller will much improve the availability and timeliness of Syn-Tech Customer Support assistance if required. Recommended phone and/or on-site printer cable is 18 AWG CMX (Belden 8771 2-conductor, Belden 8723 4-conductor, or equivalent).

Satellite FMUs may be located up to 2000 feet from the master FMU and will be controlled via RS-422 5-conductor 18 AWG twisted cable (Belden 9552 or equivalent). If RS-422 cable is used, a circuit board must be added to the Master and Satellite FMUs to accommodate the cable connection.

The Tank Monitor Unit (TMU) interfaces are through either RS-232 or RS-422 communications cable between a Master FMU and the TMU console. If a TMU interface is projected, an additional conduit may be necessary to carry the cable and additional circuitry must be added to the Master FMU. Follow the TMU manufacturer's recommendations for maximum effective cable length. Recommended RS-232 cable is 18 AWG shielded (Belden 9341 or equivalent). Recommended RS-422 cable is 18 AWG twisted (Belden 9552 or equivalent).

Typical FuelMaster® Installation



ALL CONDUIT MUST LOCATE WITHIN THE 5.50 x 11.00 AREAS SHOWN. CONCRETE PAD MUST BE LEVEL AND FLAT PRIOR TO FMU PEDESTAL INSTALLATION