

# FUELMASTER System Planning Guide



The **FUELMASTER® System Planning Guide** is provided to project requirements for a FUELMASTER® Fuel Management System. This guide is not to be used as a reference for installation of FUELMASTER®. An installation manual will be provided for reference during installation.

To assure optimum performance, all **FUELMASTER®** Fuel Management Systems must be either installed or initialized (certified) by Syn-Tech Systems' factory trained personnel. Final certification must be accomplished jointly by the Customer and Syn-Tech factory trained personnel. Contact your **FUELMASTER®** salesman or call Syn-Tech Customer Support (1-800-888-9136) for assistance with any questions adequately addressed in this guide.

**SYSTEM DESCRIPTION.** FUELMASTER® Fuel Management Systems consist of equipment designed to automate control and accountability of fuel or any metered liquid or gas product.

The base system contains all equipment necessary to accomplish control and accountability and consists of a fuel island controller called a Fuel Management Unit, Windows software for your PC (Central Controller), some type of access device, e.g. credit cards, read/write keys (PROKEES®) or cards, or small computers that are installed on your vehicles (Automotive Information Modules or AIMs), and installation and operations manuals.

The Central Controller normally dials up the FMU via voice grade, analog telephone lines to download transactions and upload access lists.

**EQUIPMENT DESCRIPTION.** The Fuel Management Unit (FMU) controls access to fuel dispensers and collects information on each transaction. FMUs may be fixed or mobile. Fixed FMUs are permanently mounted on or near the fuel island. Each fixed FMU comes standard with two hose controllers, but may have hose controllers added up to a total of eight.

A master FMU contains a modem for communications with the Central Controller and controls all connected Satellite FMUs. Master FMUs and Satellite FMUs are identical in appearance and manner of operation; however, the Satellite depends on the Master for information and also its transactions are downloaded through the Master FMU's modem. A Master can control up to a maximum of eight Satellites.

Different access devices may be used to activate a dispenser. FMUs are built according to a customer's needs and can accept up to three different access devices. Read/write keys (PROKEES®) and cards (Smart Cards) are the most frequently used devices and are encoded using FUELMASTER® software and an encoder that connects to the PC's parallel port. Credit cards and on-board computers that transmit data by radio frequency may also be used.

**MOBILE FMUs** are mounted on fuel dispensing tanker trucks and operate with the same displays and keypad selections as the fixed FMUs.

Mobile FMUs are powered by the vehicle's 12 VDC battery. The mobile unit can dial out from a phone line and download data into a fixed FMU, or it can be

dialled up by the central controller and downloaded. Mobile FMUs can control up to four hoses, although the standard unit has one hose controller.

**PROKEES®** (also referred to as Key) are FUELMASTER's® unique access device provided to initiate a transaction at the FMU (Fixed or Mobile). All PROKEES® are constructed alike with an eight pin read/write memory chip housed in a durable composite holder. PROKEES® attain their identity as a Vehicle Key, User Key, Supervisor Key, Manual Issue Key, or Lube Truck Key as they are encoded with the software and encoder. PROKEES® are available in black, white, orange, red, blue, and green. SmartCards are encoded and function exactly as PROKEES®, and a FUELMASTER® system can accept either PROKEES® or SmartCards.

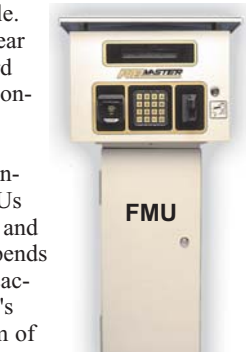


**PROKEES**

- *Vehicle Keys* are encoded with a vehicle identification number and are assigned to a vehicle. These keys can keep the vehicle's last odometer reading and the range in which the next reading should be. The type of fuel and quantity limit for the vehicle ensures that only the correct product(s) can be dispensed into the vehicle.
- *User Keys* are encoded with a user identification number and are assigned to a user.
- *Supervisor Keys* are authorized special access to reconfigure the FMU, run built-in tests of the FMU, issue fuel to operators without a PROKEE®, and enter inventory.
- *Manual Issue Keys* are used to issue fuel to individuals or vehicles that do not have a PROKEE® or other access device.
- *Tanker Truck Keys* are used to fill the storage tank of a mobile fueling truck at a dispenser connected to an FMU.

**FUEL MANAGEMENT SOFTWARE.** FUELMASTER® Windows Software is loaded on a PC and used to download transactions from, and upload information to, FMUs; provide reports using Crystal Reports; export data to fleet maintenance programs; and encode and update PROKEES®.

The operating program is available in three basic configurations: Verifiable Miscellaneous Number (VMN), Verifiable Vehicle Identifier (VVI), or Commercial (COM) version. The VMN version utilizes Vehicle Keys and accepts the keypad entry of only those ID numbers loaded into the FMU. The VVI version utilizes User Keys and accepts only those vehicle numbers loaded into the FMU. The COM version utilizes Vehicle and/or User Keys and, through keypad entry, records



the input of a vehicle or user identification number. Because it does not contain a look-up table for these numbers, it accepts the entry of any number.

The **CENTRAL CONTROLLER** (*main computer holding FUELMASTER® database*) communicates with the FMU to download transaction data, upload authorizations, or to change FMU configuration. The Central Controller may be any IBM or IBM compatible personal computer (PC) having at minimum 133MHz Pentium Processor or equivalent, 16Mb of RAM, 30Mb free hard drive space, 2x CD-ROM, 2400 baud analog modem, and 800 x 600 screen resolution. The preferred PC is a Pentium III. The modem (internal or external) must be 100% Hayes-compatible. A PC and modem are not included with the base FUELMASTER® system, but may be ordered through Syn-Tech Systems as part of a total package.

The **PROKEE® ENCODER** uses data entered in the FUELMASTER® software to encode, update, or re-encode PROKEES®. The encoder is also used to read data from a PROKEE® and update the odometer, preventive maintenance mileage, etc. The encoder connects to the PC's parallel port.



**SYSTEM OPTIONS.** The following system options are available with a FUELMASTER® purchase or as a future upgrade:

- **DIRECT-CONNECT.** If the fuel island FMU is located near the Central Controller, you may want to directly connect the two to avoid using two telephone lines. A small black box (ring down box) is positioned between the FMU and the PC to allow the modems in each to talk to one another.
- **ON-SITE PRINTER.** An on-site, real-time serial printer may be connected to the Master FMU to print a record of each transaction as it occurs. The on-site printer can also provide limited report and configuration information.
- **RECEIPT PRINTER.** The Receipt Printer on the FMU prints a receipt of the transaction including system owner name, date, time, user ID, Vehicle ID, hose, product, price, and quantity. Additional customer information may be programmed for printing.
- **TANK MONITOR INTERFACE.** A serial connection between the FMU and tank monitor permits the FUELMASTER® software to query the tank monitor and bring inventory reconciliation and leak detection information back to your PC. The list of tank monitor interfaces changes as new ones are added; however, the following are some of the tank monitors with which FUELMASTER® interfaces:

Autostik	Autostick II/ Jr.
EMCO TLM-II	Red Jacket 5000/5001
Veeder-Root TLS250	Ronana X76
Veeder-Root TLS250i	Pneumercator LMS-700
Veeder-Root TLS300	Pneumercator LMS-750
Veeder-Root TLS300i	Incon TS-1000/TS-2000
Veeder-Root TLS350	Gilbarco TM2/TM3
Image	Soil Sentry TLM-830
- **EQUIPMENT INTERFACE UNIT (EIU).** The EIU is a low cost Satellite FMU that is installed primarily as a gate opener. The EIU activates an electronic gate with either keypad entry or PROKEE® access, depending on the system type.
- **RF ID/TAG.** An Automotive Information Module (AIM) is installed on a vehicle and programmed with information about the vehicle, as well as collecting odometer or chronometer information. Information on the vehicle is transmitted by radio frequency from the AIM to the FMU 3000. Information is collected during fueling without driver involvement.

- **CREDIT CARD ACCESS.** A Master FMU may be equipped to read most popular fleet, aviation, and standard credit cards. Contact Syn-Tech for a list of networks and credit cards. A credit card system must have a dedicated voice grade, analog phone line.
- **QUICK STOP BUTTON.** Fixed FMUs may be equipped with a resettable quick stop button to quickly remove (and restore) power from (to) the FMU. If wired into a controlling contact starter, the quick stop button may be used to remove power from the entire service island.
- **SYSTEM SOFTWARE OPTIONS.** FUELMASTER® has numerous options that can be activated by either by the system operator or a FUELMASTER® technician. A few of the many available options are:

- *Odometer Entry.* Prompts user to enter odometer/chronometer for vehicle efficiency reporting and/or Preventive Maintenance tracking.
- *Preventive Maintenance.* Reminds user that Preventive Maintenance (PM) is due for vehicle being fueled. The PM range is selectable by system owner.
- *P.I.N. (Personal Identification Number).* Prompts user to enter a PIN when initiating a transaction. Just as with an ATM card, the four-digit PIN only works with its assigned PROKEE®. The PIN is not to be confused with the verifiable miscellaneous number which is normally used to identify the driver, can be up to nine-digits long, and can be used with any PROKEE®.
- *Tanker Truck Operation.* Enables the use of a tanker truck key for mobile fueling or lube operations. The tanker truck becomes a fuel site with accountability for the fuel it dispenses. An FMU2525 can be mounted on the tanker truck to electronically record each transaction.
- *Semi-manual Operation.* Using a supervisor key, you may activate selected dispenser hoses to permit fueling without a PROKEE®, while still recording the time, date, and amount of each transaction for inventory and billing purposes. This option is primarily used during emergencies, when large numbers of equipment, some of which may not belong to the site operator, require rapid fueling.
- *Transaction Printer.* The on-site transaction printer provides a real-time hard copy of each transaction as it occurs. Using a supervisor key at the FMU, you can direct the transaction printer to provide some limited, site-specific reports.
- *Transaction Termination for Incorrect Odometer /Chronometer Entry.* Set FMU to reject odometer/chronometer entry that is not within range specified on the PROKEE®.
- *Oil Check.* Prompts user to check oil and manually input (through Keypad entry) amount of oil added during the fueling transaction.
- *Miscellaneous Fields in Vehicle Records.* Each vehicle record in FUELMASTER® software has five miscellaneous fields that the system operator may elect to use. Each field may be used to differentiate one specific item from one vehicle to another, e.g. on-road vs. off-road purposes, three axle vs. two axle, etc.