**SPECIFICATIONS FOR APM-N ELECTRONIC PARKING METER**

1.0 General Specifications

Electronic parking meters shall be fully electronic with solid state components and free-fall coin chute. All materials shall be new and unused, manufactured and assembled in the USA, and of the highest quality in durability and workmanship. Electronic meters shall be capable of operating in a temperature range of -40° F to +185°F (-40°C to +85°C), and under extreme street conditions (grime, rain, sleet, snow, vibrations). Electronic mechanism shall fit pre-existing POM/Rockwell Models N or S style housings and/or vaults currently installed throughout the meter system. Electronic meters shall be powered 6V (4xAA) alkaline battery pack. There shall be no handles to turn, no thumb slides to push, etc. The mechanism shall be programmable to give time for up to 7 different coins and/or tokens including optional ParkCard stored value chip card.

An APM-N mechanism only shall upgrade a Model N meter to electronic; a mechanism with aluminum front assembly kit shall upgrade a Model S meter to electronic – specify paint color, to match existing back casting.

2.0 Indication

 2.1 Electronic parking meter shall feature a 4-digit (including negative sign) liquid crystal display on

the front of the meter capable of registering paid parking time and negative (expired) time. Minutes and seconds (or hours and minutes) shall be separated by a colon (:) that flashes in one-second beats. A simple means for determining malfunction shall be programmed in the EPROM to show on this LCD; available icons or messages include: LOW or Low, Err, JAM, OFF, STOP, DEF, or any other word or abbreviation that can be made with four 7-segment digits. An extra dot below the colon indicates the last coin was an invalid coin. Dots between every digit on the display indicates first warning parameter for low battery. Additionally, the words “Out of Order” shall appear at the top of the LCD display when the mechanism is in failure mode.

 2.3 The rotary enforcement indicator shall be visible from a distance of up to 80 feet, not affected by angle of

view, window glare, or low light conditions. When time registers on the electronic meter, the status indicator shows bright green. When time expires, the status indicator shows the word “Expired” on a bright red background, or option of solid red with no text. A yellow mode shall appear to indicate jam/error. Optional custom icons or messages may be printed on the wheel, limited only by the size of the display window. The rotary status indicator shall be driven by a low-power stepper motor. Except for the initial switch of mode, no power shall be required to keep the status indicator in its current mode. For increased enforcement visibility, magnified windows on either side of the front digital display allow frontal viewing of the rotary status signal (for street enforcement when the meters face the street).

 2.4 Flashing red and/or green LEDs shall be available as an option for nighttime enforcement, for the

front or the back of the mechanism, at no additional charge.

3.0 Coin Acceptance

 3.1 The electronic mechanism shall be able to recognize and give time for up to 7 different coins and/or tokens

(including an optional ParkCard stored value chip card). The mechanism shall be reprogrammable to change coin/token/ParkCard recognition. The coin discriminator shall incorporate no contact points which could be affected by grime and moisture. Washers or spurious coins shall not register time. The chute shall incorporate an anti-backup method to prevent retrieval of coins. Coins shall fall straight through the chute to minimize the possibility of coin jams.

 3.2 Coins passing through the mechanism shall be deposited into the coin box in the meter vault

when the mechanism is properly installed in the upper housing.

 3.3 Time and rate structures shall be pre-programmed to customer specifications before shipment from the

factory, and reprogrammable thereafter by customer or factory personnel through use of rate conversion software and accessories.

4.0 Rate Capabilities

Electronic meters may be programmed for a variety of rate structures, including:

Fixed rate: same rate all day, every day. This may include minimum time; non-cumulative operation; and one split based on amount of time purchased. Audit reports include one that shows breakdown by coin type.

Multi-rate: up to 5 rate changes a day including Meter Off, No Parking, or Free Parking modes, with a individual daily rates, 2 exception rates, 25 holiday rates, and 12 seasonal schedules.

5.0 Optional ParkCard Acceptance

The electronic mechanism may be equipped with an optional reader to accept a ParkCard. This card shall be an industry standard size, memory chip card preprogrammed with a maximum value, decrement value, and security codes to prevent unauthorized duplication of cards. ParkCards can be printed with instructions, maximum value, decrement value, or other graphics (such as advertising) to client specifications. Upon insertion of the ParkCard, the meter shall display, four times, the remaining value of the card, then it shall begin decrementing from that value and purchasing time on the meter. When the desired amount of time shows on the meter, the card is removed. Remaining value of the card may be checked by simply inserting the card and removing it before the value flashes for the fourth time and it begins to decrement. The card reader slot shall be conveniently located, flush in the face of the meter housing, and shall be narrow enough to prevent insertion of anything wider than the ParkCard (i.e. coins and other foreign objects).

 5.1 Meters with ParkCard readers may be programmed for optional Refund-A-Card feature, which refunds

unused parking meter time (value) back onto the card when the motorist returns to the meter. Refund-A-Cards each have unique programmed serial numbers, and the meter “remembers” the last card used and the amount of time purchased by the card. When the motorist returns to the meter, he may reinsert the Refund-A-Card and retrieve the unused time (only the time purchased with that card), wiping that time off the meter. This action also prevents the next motorist from parking for free on left-over time.

If the motorist returns to the vehicle and leaves without retrieving the unused time (value), the next motorist may purchase time on top of the remaining time. However, if the second motorist uses a Refund-A-Card instead of coins, he may return to retrieve his unused time, but only the amount of time he purchased with his own card.

6.0 Modular Components

The electronic meter shall consist of modular components that can be easily separated for quick repair or replacement. The coin chute and card reader shall be simply plugged into the time module unit. Most coin jams can be cleared without tools in a matter of seconds. The rotary status indicator and low-power stepper motor can be easily replaced without special tools in less than five minutes. The mechanism clock continues to operate for one minute to allow quick battery changes; all programming and audit data, however, is in non-volatile memory 24 hours a day and is not lost when power is removed from the meter.

7.0 Communications and Data Transfer

Each electronic mechanism shall be capable of sending and receiving data from a special handheld pda. The communicator transmits information by infrared; a special wand attachment shall be available to attach to the communicator that, when held near and facing the port in the window, quickly transmits the data via infrared at 9600 baud. Optional communications at 15,500 baud shall be through special chip card inserted in card reader on models so equipped. Communications possible: retrieval and/or reprogramming of time and rate structures; retrieving audit information; retrieval of battery charge (if batteries are used); assigning of serial numbers; and retrieval of mechanism serial number for maintenance tracking purposes; putting meter in test mode; putting full time on meter without affecting audit; resetting meter; updating meter’s real time clock. Program changes and upgrades may also be directly uploaded to the mechanism through the auxiliary port.

Note: strike optional features from the specification if they are not required as they do affect pricing.

8.0 Case Construction

 8.1 Upper housing shall be made of high-grade die-cast aluminum with a minimum tensile strength of

46,000 psi, treated for corrosion resistance and electrostatically painted with polyester powder paint in dark gray or black color, to withstand 1,000 hour salt spray test.

 8.2 Vault shall be constructed of zinc Zamac III with minimum tensile strength of 40,000 psi. Vault is

treated for corrosion resistance, then polyester powder painted and baked in dark gray or black color, to withstand 1,000 hour salt spray test. Computer-machined door is internally mounted and features cast-in track for rear-mounted single-series E-lock (optional locks available). Wide, sliding stainless steel lug prevents lock punching, yet is easily and quickly disassembled from inside by removing only one screw. Base of vault shall be tapered to post to prevent forced removal by upward blows of sledgehammer or similar object.

9.0 Collection System

 9.1 The coins shall fall out down a chute and into an open container when the vault door is opened.

The coin box shall hold approximately $65 in quarters.

 9.2 As an option, the coin collection system shall be comprised of a separate locked coin box for use in the

coin compartment section of parking meter. With this system, no one shall have access to parking meter revenue during the collection process. The system shall operate in the following manner: when the separate lock coin box is removed from the meter, it shall be inserted into a special collection head which shall be mounted on either a portable carry pack type collection container or on a two-wheel cart. When the box is inserted it shall engage a key embedded in the collection head. By a simple twist of the coin box, a side door will slide open, emptying the coins into the canister. Coins shall travel through a necked opening and a flexible boot that collapses if the collection container is inverted; additionally a trap door closes when the coin box is twisted back into the closed position for retrieval. The coin box may not be retrieved from the collection head until it is in the closed position, which also closes the open of the collection head and prevents retrieval of the coins

10.0 Mechanism Door

The mechanism door opens to horizontal position, providing convenient work shelf for on-street maintenance. The pressure type mechanism door lock provides infinite adjustment to take up gasket wear for years of proper sealing when door is closed. Door can be easily removed without the use of tools by disengaging two lock pins. Hinge pins are completely concealed to discourage vandalism.

11.0 Post Attachment

The meter housing attaches to standard 2-inch inner diameter, Schedule 40 galvanized steel pipe standard with a self-adjusting, three-piece expansion wedge assembly. Access is possible only when the vault coin door is unlocked and open. These patented “gripper” wedges feature sawtooth edges that literally “bite” into the post when forced removal is attempted. Gripper wedges permit the meter to be positioned at any angle on the post. Only fits inside 2" inner diameter pipe standard.