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Chapter 2: FIREFLY Installation
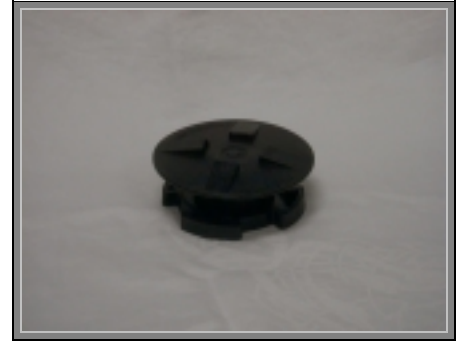
Installation Preparation

Installation Overview - Sensor End

1. Set Auto Advance to "Off".

2. Insure meter reading is manually entered for each account installed.

3. Install the optical sensor. *(See instructions "Installing the Optical Sensor" on page 2).*

4. Program the FIREFLY MIU using the radio transceiver (*See instructions "Programming the FIREFLY MIU" on page **Error! Bookmark not defined.**).*

5. Choose a method and mount the FIREFLY MIU.

6. Verify the FIREFLY MIU is transmitting properly by using the ROADRUNNER to receive a RF message.

Installation Considerations

1. Signal distance varies depending on the location of the MIU. FIREFLYs installed above-ground generally transmit the greatest distance.

2. The material of a pit or vault lid affects the transmission range. For example, a transmitter has a greater range sending from a pit with a plastic lid than a cast iron lid.

3. Lids with holes of a diameter of one inch make possible the mounting of the FIREFLY MIU through the lid. This can increase transmission range significantly.

4. Complete field installation of an MIU takes 5-10 minutes, depending on the meter location, and mounting application.

5. If the lid has a hole for the unit, use the cap and wing nut assembly ("lid lock" pictured below). Ensure that enough space exists between the box lid and the ground for the unit to sit. If not, remove some of the dirt from the bottom of the box. Do not over-tighten lid locks.

Water FIREFLY Installation

Installing the Optical Sensor-End FIREFLY
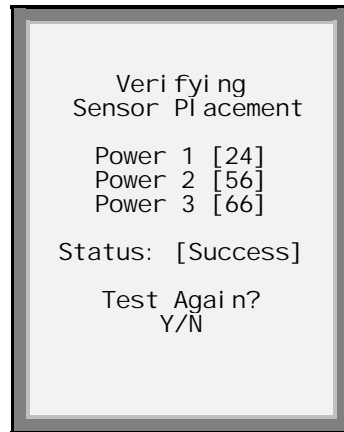
Meter Preparation

1. Remove meter box lid.

2. Survey the meter, checking lid, hole depth, and overall cleanliness.

3. Check for meter disqualification's and enter the corresponding skip code.

4. Check for potential meter problems and enter the corresponding trouble code.

5. Clean excess dirt from meter lid, exposing meter number.

6. Flip lid back and pre-clean meter face/lens using Fast Orange™ non-pumice cleaner and a cloth or cotton swab to remove residue.

7. Clean meter face/lens with an isopropyl alcohol and a **NEW** lint-free cotton swab.

Note: Use Isopropyl rubbing alcohol, 99% by volume, for best results. Lower concentrations do not clean as well and adversely affect the sensor-to-meter bond.

8. Re-wipe the surface of the meter lens with a clean, new cotton swab each time until the swab comes up clean, and the clean lens squeaks when wiped.

9. After cleaning, ensure that the lens is *completely dry*; allow time for the alcohol to evaporate

Background Check

1. Connect the ROADRUNNER to the FIREFLY via the PPU.

2. Press SHIFT   I   to display the FIREFLY main menu.

3. Press A to begin testing the FIREFLY optics.

```
        Verifying
     Sensor Placement

     Power 1 [24]
     Power 2 [56]
     Power 3 [66]

   Status: [Success]

      Test Again?
         Y/N
```

The values shown are in decimal. Two out of three need to be between 32 and 96.

Status will display as Success or Failed.

Sensor Flap

Within each case of FIREFLYs, 24 rubber Sensor Flaps are included for every installation. Utilizing these Sensor Flaps insures a stable environment during the calibration process.

Sensor Placement

1. Insert sensor cable through sensor flap.
2. Remove the adhesive backing from the high-bond tape on the Optic Sensor face.
3. Install sensor to the location of the best background according to the background check.
4. Orient the sensor so the water meter needle approaches the sensor from the cable side and perpendicular to the cable. There are indents on each side of the sensor base that are to be in line with the needle when it passes.
5. Attach the sensor to the water meter lens surface.
6. **Since the 3M tape provides a *pressure sensitive seal*, the installer needs to apply pressure to the MIU sensor immediately after attaching to the lens surface. The next step is to apply four, 5-second pushes to the MIU.**

Tip: Palm the sensor and lean onto it to apply appropriate pressure.

7. A full cure on the seal is achieved in 24 - 96 hours. Do not touch, pull, move, or handle the sensor in any way during this period.

8.   Apply approved adhesive around the sensor to seal it completely if the pit fills with water prior to the 24 - 96 hour cure time, or if the meter face is curved and not flat.

Note: If the sensor is initially misplaced, do not attempt to remove the sensor by twisting the sensor body. A fully cured sensor requires breaking the seal at the adhesive tape joint with a flat tool such as a screwdriver. Insert the screwdriver between the aluminum base and meter lens and twist.

9.   Mount the FIREFLY MIU to an appropriate wall, stake or through hole in meter box/vault lid.
     If using a stake, affix the stake in the ground adjacent to the meter register. The platform area of the pole needs to face inward.
     Position the transmitter on the pole platform.
     Attach the transmitter to the pole with the binding material.

     If utilizing a lidlock, make certain Not to overtighten the FIREFLY within the lock. Also be sure to never rest the weight of the lid on the FIREFLY.

10. Place sensor flap over sensor, insuring a snug fit.

11. Program the MIU and set to "Autocal".

12. Before closing the lid, make sure a visual meter reading is entered for the account.

Note: At this point, if sensor flap must be lifted to retrieve the visual meter reading, AutoCal must be reset through the FIREFLY menu #7.

Installing the Wire-end

1.   *Refer to Appendix C "Meter Qualification" on page **Error! Bookmark not defined.** to determine wire connection for the brand and model of meter.*

2.   Connect FIREFLY wire-end to meter contacts using Posi-lock connector or Gel caps.

3.   Use 3M mastic pads to cover the wire connections. Ensure that the mastic pad forms a complete seal around the wire connections.

4.   Mount the FIREFLY to an appropriate wall, stake, or through hole in the meter box / vault lid.

5.   If using a stake, affix the stake in the ground adjacent to the meter register. The platform area of the pole needs to face inward.

6.   Position the transmitter on the pole platform.

7.   Position the FIREFLY MIU with the threaded neck pointing up.

8.   Attach the transmitter to the pole with the binding material.

Note: Do not connect a multi-meter, probe or other interrogating device to the FIREFLY wires. Doing so may cause the unit to globally reset, erasing all programmed data!

Electric FIREFLY Installation

Installation Preparation

Following is a list of hardware needed to install one Electric FIREFLY on one meter:

Landis &Gyr	**ABB**
Two 32 x ½ inch long screws	Two 0.25 in. spacers
Two .25-inch spacers	Two fuse clips – part #3510
Two meter spacer posts	Original screws are used
Two fuse clips - part #3510	

| **Sangamo**	**GE**
Two 1/8" x ½" long screws	Two 4-48x3/8 long screws
Two 0.25 inch spacers	Two 0.25 spacers
Two fuse clips – part #3510	Two fuse clips – part #3510
	Two Lock Washers

Westinghouse
Two 6-40 x ½" long screws
Two 0.25 inch spacers
Two fuse clips – part #3510

Installing Disk Decals

1. Remove nameplate on meter.

2. Clean rotating disk target area with 99% isopropyl alcohol.

3. Place approved decal* on target area. Be sure the edge of the decal is not overhanging on the disk.

4. The user needs to smooth the decal on the plate by applying pressure with his/her thumb.
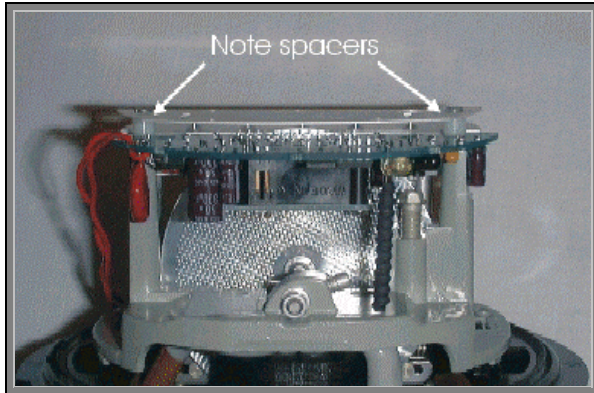
Note: Be sure not to touch the adhesive side of the decal as the oil from the skin can cause it not to adhere.

(A=58mm, B=24mm)

Contact Datamatic for specifications on approved decals.
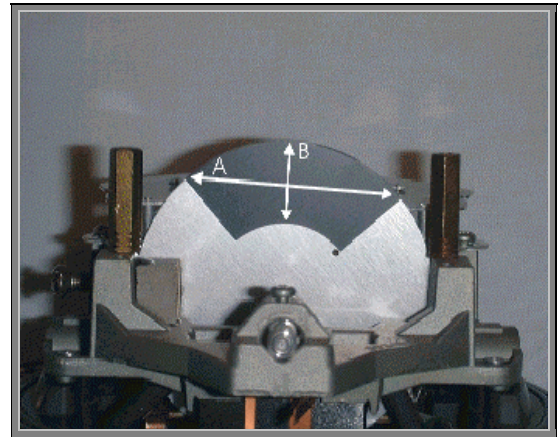
## Installing the Electric FIREFLY

1. Remove nameplate.

2. Position the unit on top of the nameplate posts.

3. Mount the unit flush on top of the nameplate posts with the spacer and nameplate above it.

4. Thread the mounting screw through the nameplate, the 0.25-inch spacer, (*see following illustration*), and FIREFLY into the nameplate post holes.

5. Adjust play in mounting holes so that FIREFLY is parallel with disk and the distance between sensor face and disk is between 0.070 and 0.110 inches.

6. Choose one of the following three options to connect the wires to the 240VAC terminals on the meter.

    - Option A. Use fuse clip to attach wires to the 240VAC terminals on the meter.
    - Option B. Use soldering to attach two wires to the 240VAC terminals on the meter.
    - Option C. Use female insulated crimp connector to connect the wires to the 240VAC terminals on the meter.

Note: If connectors are used in place of soldering, use UL-certified crimper.
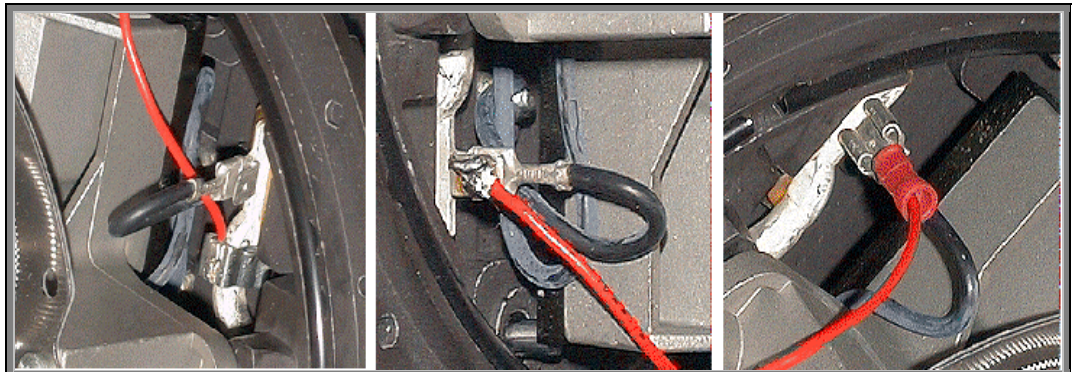
| Fuse clip option | Solder wires option | Insulated crimp connector option |

> Note: The FIREFLY requires 240VAC during programming for the settings to be written to its memory.

7. Power the meter with 240VAC or power the FIREFLY using between 5 and 12 volts applied to the external battery jack.

8. Zero out the register.

MODIFICATIONS

The Federal Communications Commission (FCC) places power limits upon devices that transmit as intentional radiators. This equipment has been tested and found to comply with the limits for an intentional radiator, pursuant Part 15 of the FCC Rules. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications. Changes or modifications not expressly approved by Datamatic could void the user's authority to operate the FIREFLY equipment.