ZENNER VL-9S Remote Reader
for Water Meters with Pulse Output
Installation and Programming

Suggested Tools:
Electric Drill
3/16" Carbide Masonry Drill
Screw Driver
Wire Stripper
Cable Stripper
Wire Cutters
Terminal Crimping Tool
9/64 Allen Wrench

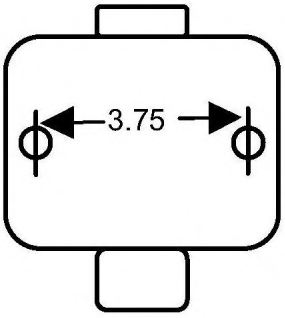
Materials Required:
Masonry Fasteners
Caulking Compound

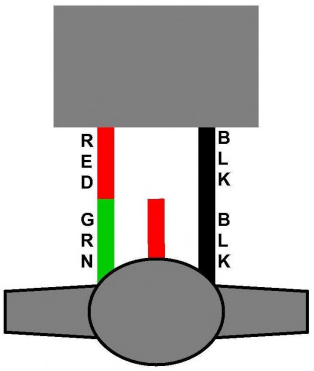
Misc. parts provided:
3 Wire Terminals

Installation

The VL-9S electronics and battery are environmentally sealed and suitable for outdoor installation, the wire terminals are not sealed for moisture. The unit should not be installed in locations below grade or in a submersible environment.

1. Using the VL-9S base as a template, locate and mark mounting holes on outside wall of building. For best results the VL-9S should be located at eye level in an easily accessible location.
2. Remove VL-9S cover using the 9/64 Allen Wrench..
3. Secure VL-9S base to wall using the mounting dimensions in the drawing shown to drill the locating holes.
4. Run the 3 conductor cable from the meter to the VL-9S. Maximum distance between the meter and remote reader is 2000 ft. Cable per UL 2464 24 gauge 7/32, with foil shield and drain. Note: Never place the cable in a conduit with conductors carrying A/C.
5. Attach cable to meter and to VL-9S, be sure to follow the connecting schematic. Be sure connections are secure and protected. For the VL-9S, only the green and black wires coming from the ETR-DS are used for the connections.
6. Tap VL-9S on the gold seal to verify that it turns on. If the VL-9S was received attached to a ZENNER Meter, it should already be programmed and display a count that matches the register odometer. If the VL-9S was not programmed, it will display PROGRMNG REQUIRED. Please see the VL-9S programming instruction sheets on the following pages.
7. Comply with all the necessary ordinances and codes.
8. Caution when drilling holes in walls, there may be electricals inside. Wear safety glasses. Secure and clean all debris from the install.





ZENNER Meter with ETR-DS Pulse Output

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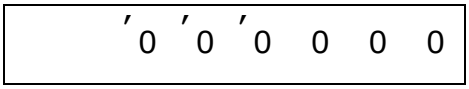
ZENNER VL-9S Remote Reader
For Water Meters with Pulse Output
Programming Instructions

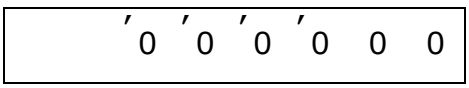
1. To enter PROGRAMMING MODE, tap the display to turn it on, then when it is displaying either a meter reading *or* the message "PROGRMNG REQUIRED", tap the following password into the display:

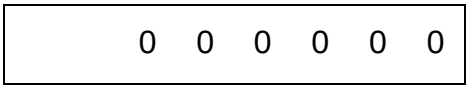
   4 taps
   5 taps
   2 taps
   3 taps

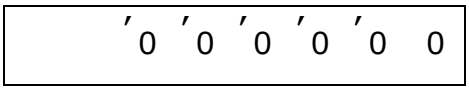
   Wait after each tap until one of the small comma symbols (dots) near the top left corner of each display digit lights up acknowledging your tap, then tap again. Keep tapping until the number of dots above the digits corresponds to the number of taps in the current password digit. For example, if 3 password taps have been received, then 3 digits will have a small dot lit above them. For example, the following shows 3 dots above the digits, so 3 of 4 password taps have been acknowledged so far:

2. After all the taps have been acknowledged for the first password digit, wait a few seconds for the dots to disappear, than start tapping in the next digit. Repeat until all 4 of the password digits stated above have been tapped in. The following shows correct entry of all 4 password digits. Displayed digits are all zero for this illustration. Either the words "PROGRMNG" or "REQUIRED" may displayed instead of numbers (if the VL-9S has never been programmed yet):

   4  acknowledged taps:

   Wait for dots to  disappear:

   5  acknowledged taps:

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Wait for dots to	0 0 0 0 0 0	disappear:
2	′0 ′0 0 0 0 0	acknowledged taps:
Wait for dots to	0 0 0 0 0 0	disappear:
3	′0 ′0 ′0 0 0 0	acknowledged taps:
Wait for dots to	0 0 0 0 0 0	disappear:

3. After all of the password digits have been tapped in successfully, the display will show the message "PROGRAM MODE". If a mistake is made, wait until the display shows the version number or blanks out before trying again starting with step 2 above.

4. The display will blink and prompt for the number of digits of the register. The number of register digits to be entered is the number of moving odometer digits (excluding any "painted on" digits). For example, the register shown has 6 moving odometer digits (017401) and one painted-on zero at right (which is not counted). Therefore the number of digits = 6, and the reading is "017401".

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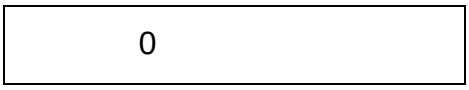
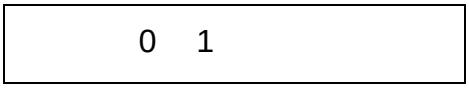
To change the number of digits displayed tap on the display while "DIGITS" is flashing. The number shown before the word "DIGITS" will increase with each tap until the number 8, then the next tap it cycles back to 4 and again increases once with each tap. Once the desired number of digits is showing, do nothing for at least 4 seconds until the display stops blinking to accept that value for "number of digits". For example, if 6 digits are desired, tap until the display shows "6 DIGITS" and then stop tapping (if it already says "6 DIGITS" then don't tap, just wait until prompt stops blinking).

5. At the start of meter reading programming a digit will appear near the left side. This is the first (left-most) digit of the meter to be programmed in. Tap to increment this digit until it equals the left-most odometer digit of the register (if the left-most meter digit is already correct no taps need to be entered for it). To correct a mistake keep tapping until the digit rolls over from 9 back to 0 and then counts upward again to the desired digit. The following shows the first digit set to "0" matching the picture above on a 6-digit meter.

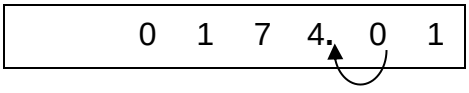


6. After 4 seconds of no tapping, the next digit to the right will illuminate. Tap until this digit matches the corresponding meter digit (second from left), shown below matching the second digit of the register pictured above. Then wait at least 4 seconds to move to the next digit.



7. Continue tapping in digits to match each of the register's odometer digits.

8. Next, a decimal point will show up. If the decimal point is already in the desired position, then do not tap. Otherwise tap the display to move the decimal point 1 digit to the left for each tap (wait until the decimal point moves before tapping again). After moving all the way to the left, the decimal point cycles back to the far right at next tap.



Tap until the decimal point is to the right of the least significant billing digit. If a mistake is made, keep tapping to until the decimal point cycles back to the desired position. For example, for the meter displayed above, if the utility wishes to bill in only the 4 most significant digits, the decimal point should be positioned to the right of the 4th digit from the left as shown below:

0 1 7 4. 0 1

The billing digits above read "0174" since they are to the left of the decimal point.

9. Wait until the display blanks (at least 4 seconds of no tapping).

After each display session the VL-9S software version displays briefly before the display turns off. To turn the display on again tap the faceplate either during the version display or after it turns off. Tapping the display while the reading is active begins the password entry procedure again (don't do that unless reprogramming is desired).

READING THE VL-9S

1. Tap the circular disk on the front of the display.
2. Write down the digits shown which are to the left of the decimal point. This is the meter reading for billing purposes.

VL-9S Specifications (For Mechanical/Reed Switch-Type Registers):

- Operating temperature: -30 to +80 ºC for display active, down to -40 ºC for display inactive
- Internal battery life: 10 years minimum
- Battery replacement capability: optional if external wires are provided
- Maximum cable length: 2000 feet using Belden 8451 or (General Cable C0742A)
- Minimum time between switch closures: 1 sec
- Minimum duration of valid switch closure: 0.3 sec
- Number of displayed digits: User programmable: 4, 5, 6, 7, or 8 (to match register)
- TAMPER function: not implemented