




# ELF Flow Sensor SP3 Series

## Installation Guide for Hunter Hydrowise™ controllers



Creative Sensor Technology's ELF (Enhanced Low Flow) sensor is a patented impeller type flow measuring device. The term sensor is used rather than meter because it provides an accurate output signal to the irrigation controller rather than displaying rate of flow or total flow itself.

The flow sensor matches well with the Hunter Hydrowise™ series of controllers. The output is a scaled pulse. The ELF has a measurement range from 0.2 to 20 GPM for the 1 inch T10 model and 0.2 to 10 GPM for the 3/4 inch T75 model.

 The SP3 models can be identified by three wire leads, colored red white and blue and an LED in the black sealant where the wire leads enter the sensor insert.

### Mechanical Installation– Location and Orientation:

The flow sensor insert, held in place with a retaining nut, contains the detection circuitry and carries the unique four-bladed impeller on a transverse axle. The housing and mounting tee are custom molded to form an integrated measurement chamber resulting in highly accurate, repeatable flow measurements through a wide range of flow. The axle and impeller along with the sealing o-ring are replaceable in the field.



### Models available:


ELF-T75-SP3  
3/4" PVC with socket ends  
OUTPUT  
10 PULSES PER GALLON  
10 pulses = 3.785 Liters



ELF-T10-SP3  
1" Noryl with NPT threads  
OUTPUT  
1 PULSE PER GALLON  
1 pulse per 3.785 liters



The unique design of the flow sensor mounting tee, serves as a flow conditioner, measuring chamber and mount for the flow sensor housing. This sensor design does not require straight lengths of pipe upstream and downstream of the sensor. Therefore, changes in pipe size or direction may be immediately before or after the sensor. In fact, master valves may be threaded directly onto the downstream side of the T10 mounting tee.

 Always install the short side of the mounting tee in the downstream direction.

- Allow 3 1/2" clearance to remove flow sensor insert from tee for service. The tee is usually installed with the insert up in the vertical or 12:00 O'clock position. However, if necessary, it may be installed with sensor housing at an angle from vertical to provide clearance. Flow sensors may be installed inside a building, outside above grade or underground. If installed above grade, consider security issues to prevent damage or disassembly.

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- Flow sensors are most typically installed below grade in a horizontal section of pipe, often with a master valve. Do not direct bury, provide a meter pit or valve box of adequate size and drainage to service the sensor/ master valve. Provide a service loop in the wire connections to allowing the sensor insert to be brought above grade.
- Flow sensors may also be installed on vertical sections of pipe providing that the piping is full and does not contain trapped air. A vertical pipe with rising flow is preferred over falling flow. The sensor housing may be oriented in any direction radially around the pipe.
- The white PVC flow sensor tee features socket ends intended for solvent welding into PVC piping systems. Use Best Industry Practices to install the sensor in the correct position.  
Use appropriate tools to cut the pipe. Remove all chips, filings or cuttings from the pipe.  
Solvent weld the tee to the pipe using manufacturer's recommendations.
- The black Noryl flow sensor tee features male pipe threads. Make threaded connections using a teflon paste joint sealant.
- After the pipe connections are completed, re-attach the sensor housing to the tee. Make sure the housing and tee are clean and free from dirt or debris. Align the arrow on the top of the housing with the downstream direction. Slide the retaining nut over the wire leads and **hand tighten** by turning clockwise until the insert flange touches the top of the mounting tee. If the o-ring is dry, lubricate with silicone grease.



Do not use sealant or Teflon tape on the retaining nut threads!

## Wiring:

- Wire leads may be extended up to 1,000 feet using #20 gauge twisted three wire cable. Shielded cable is recommended for distances over 100 feet or where cable may run next to other conductors carrying higher power loads that might cause signal interference.



- All wire connections should be done using waterproof connectors, such as 3M 316IR or 3M DBY.



- Make all wire connections with the power to the controller OFF.

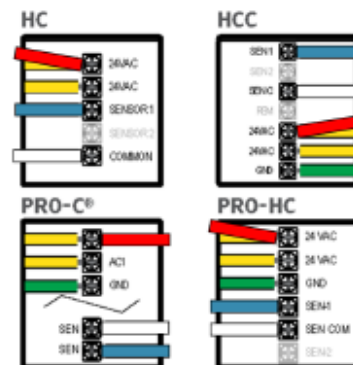
ELF SP3 models require 24 VAC to power the circuit so they have three wire connections to the controller. Each Hydrawise™ model has a different terminal configuration. Follow the diagram for your controller model.

The RED lead is connected to the "load" power terminal of the controller, usually the top 24V terminal.

Connect the BLUE lead to SEN 1 or SEN 2

Connect the WHITE lead to SENSOR COM

- Test the flow sensor connections by turning controller power ON. The LED on the sensor should blink three times on start up to indicate its circuit is active. If it does not blink, disconnect power and connect the red lead to the other 24V power terminal and retry.



## SET-UP

Complete the flow sensor set-up by logging into your Hydrawise Account on line.

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