Flow Sensor Frequently Asked Questions

Q1: What kind of wire should I use for the flow sensor?
A1: Weathermatic recommends a direct bury, shielded, twisted pair communication cable (PE-39/89) for flow sensor wiring. The Weathermatic part number is: SLFLOW-WIRE-193-1000

Q2: What sizes are the flow sensor available in?
A2: 1.00 inch, 1.50 inch, and 2.00 inch is available in a solvent weld tee configuration; 3.00 inch and 4.00 inch is available in a PVC saddle mounted tee configuration. A brass tee-mounted flow sensor is also available in 1.50 inch. See www.weathermatic.com/products/flow-sensors/

Q3: Can the system read two different flow sensors with a single controller?
A3: Yes. Using the Weathermatic SmartLink SLF-CombiFlow product.
See www.weathermatic.com/products/flow-sensors-accessories

Q4: What about multiple flow sensors and multiple controllers?
A4: The Weathermatic SmartLink SLF-IsoFlow product is available for a maximum of 4 controller per single flow sensor or 2 controllers per single flow sensor configurations.
See www.weathermatic.com/products/flow-sensors-accessories

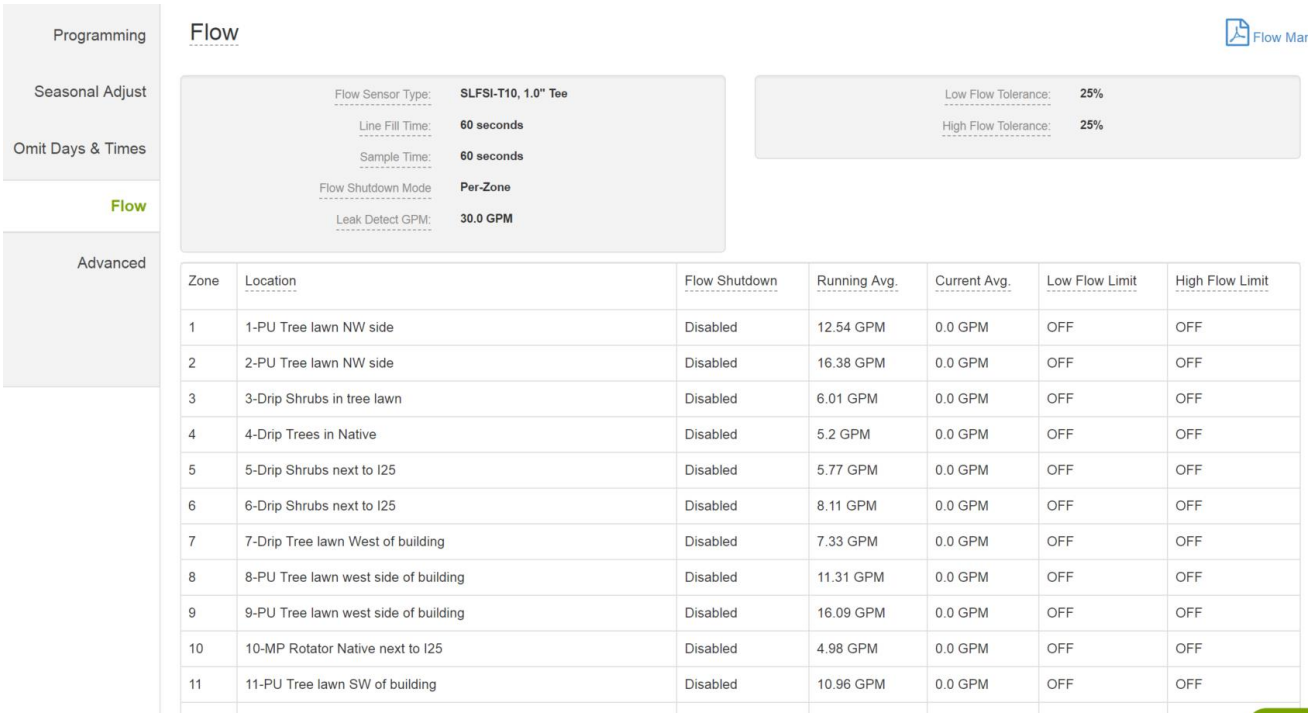
Q5: How do I connect a flow sensor to the system?
A5: The flow sensor connects to the flow wire of the SmartLink Flow aircard. Be sure observe the wire continuity…red to red and black to black.

Q6: Does the system "learn" flow?
A6: Yes. The system is always learning flow and will record average flow for the last 30 days and use this measurement for the normal flow condition. Once a reasonable average is establish, the user can then set up high and low limits for each station. It is these limits that SmartLink uses to trigger low or high flow alerts.

Q7: How do I set up a flow sensor in the SmartLink web application?
A7: Enter all the information as outlined below –
Flow Alert Mode
Enable or disable flow alert for all zones.
Flow Sensor Type*
Select flow sensor or pulses per gallon. Weathermatic sensors are pre-loaded.
Line Fill Time
Set for a delay in shutdown process to allow Main and Lateral lines to charge.
Sample Time
Set the interval of time in seconds that each flow sample is taken.

Flow Shutdown Mode
Choose if flow faults should shutdown the entire system or only the zones with abnormal flow.
Leak Detect GPM
The value in GPM which is allowable flow before an alert is triggered while NO zones are running. This is the flow that might legitimately be used by non-sprinkler flow (e.g. quick coupler use, garden hose, etc)
Low and High Flow Tolerance
Applied to each Zone's Running Average to establish Low and High Flow Limits.
Flow Shutdown Mode
Enable or disable flow Shutdown for each zone individually.
Low and High Flow Limits
Customize each Zone's Low and High Limit for the Running Average.

*NOTE: For Custom Flow Sensor Type – Calibration of Flow Sensor is Required



Zone	Location	Flow Shutdown	Running Avg.	Current Avg.	Low Flow Limit	High Flow Limit
1	1-PU Tree lawn NW side	Disabled	12.54 GPM	0.0 GPM	OFF	OFF
2	2-PU Tree lawn NW side	Disabled	16.38 GPM	0.0 GPM	OFF	OFF
3	3-Drip Shrubs in tree lawn	Disabled	6.01 GPM	0.0 GPM	OFF	OFF
4	4-Drip Trees in Native	Disabled	5.2 GPM	0.0 GPM	OFF	OFF
5	5-Drip Shrubs next to I25	Disabled	5.77 GPM	0.0 GPM	OFF	OFF
6	6-Drip Shrubs next to I25	Disabled	8.11 GPM	0.0 GPM	OFF	OFF
7	7-Drip Tree lawn West of building	Disabled	7.33 GPM	0.0 GPM	OFF	OFF
8	8-PU Tree lawn west side of building	Disabled	11.31 GPM	0.0 GPM	OFF	OFF
9	9-PU Tree lawn west side of building	Disabled	16.09 GPM	0.0 GPM	OFF	OFF
10	10-MP Rotator Native next to I25	Disabled	4.98 GPM	0.0 GPM	OFF	OFF
11	11-PU Tree lawn SW of building	Disabled	10.96 GPM	0.0 GPM	OFF	OFF

Q8: How does SmartLink react to various flow conditions?
A8: See description below -

Program Operation using Flow
Controller Programs will run normally in either Auto-Adjust or Standard Modes, as long as each Zone's Current Flow Rate is within the Min and Max Flow Limits.

Zone Low / High Flow Shutdown
Individual Zones will be shut down within a few minutes of activation, and the next consecutive Zone in the Program, will be activated immediately.

Multiple non-consecutive Zone's with Flow Issues
Zone Flow Faults that **do not** occur consecutively, are handled as individual Zone Flow Issues. For example: In 4 Zone Program, if Zone 1 and 3 are shut down for High Flow, both Zone's 2 and 4 will operate normally. In this example **Zone High Flow Faults** will be registered for Zones 1 and 3.

Multiple consecutive Zone's with Flow Issues
A **Master Valve / Pump Flow Fault** will be generated if two consecutive Zone's produce the same type of Flow Faults. For example: In a 4 Zone Program, if Zone 1 and 2 are shut down for High Flow, a Master Valve / Pump Fault is also generated, and the rest of the Program is shut down.

Q9: What do I do if I am getting a lot of false flow alarms?
A9: Increase High Flow Limits or decrease Low Flow Limits, and/or Line Fill Time depending on what is causing the false alarm. IMPORTANT: Try not to disable the Flow Shutdown feature for the zone as this will reset the high/low limits.

Q10: What type of flow signal does the system read?
A10: The flow sensor has an output of a minimum of a 5-millisecond low pulse at low frequencies and reverts to approximately a square wave above 100 Hz. The output Frequency Range is 0.3 Hz to 200 Hz.

Q11: Can I use non-Weathermatic flow sensors?
A11: It depends on the type of sensor. Any pulse generating flow sensor will work provided the output meets the requirements listed in the previous question. **Flow sensor calibration will be required…see Question 28 below.** Note some flow sensors require a flow transmitter device to change an electrical signal into a pulse. See manufacturer for more details. Hydrometer flow sensors can work provided they are calibrated and are used with the SL-WIRERIDE-HYD device. EXCEPTION: Hunter Flow Sync and Flow Switch are NOT compatible with SmartLink.

Q12: What flow/master valve options do I have for a Point-of-Connection which is located a long way or across pavement from my controller?
A12: Weathermatic offers SLF-WIRERIDE which provides a way to connect out-of-the-way flow sensors and master valves to the controller using line sharing technology.
See www.weathermatic.com/products/flow-sensors-accessories

Q13: Can I use an existing Master Valve wires for SLF-WIRERIDE communication back to the controller?
A13: Yes. The WireRide Field Module and Controller Module Zone Valve positions are left unconnected.

Q14: What is the maximum distance I can run flow sensor wire?
A14: 2,000 feet

Q15: What is the maximum distance between the flow sensor and the Iso-Flow or Combi-Flow device?
A15: 2,000 feet maximum between the aircard and the flow sensor INCLUDING any Iso-Flow or Combi-Flow devices.

Q16: What kind of wire should I use for the Combi-Flow or Iso-Flow devices?
A16: Same as the flow sensor. Weathermatic recommends a direct bury, shielded, twisted pair communication cable for flow sensor wiring (PE-39/89). The Weathermatic part number is: SLFLOW-WIRE-193-1000

Q17: Will flow sensors work without an aircard subscription?
A17: Yes however an aircard with flow is required for the flow sensor connection. Flow measurement can then be monitored on the controller panel in the controller display or summarized under the ADVANCED menu.

Q18: Are Weathermatic threaded tees available with the 1", 1.5", or 2" flow sensors?
A18: No. The Brass 1.50 inch flow sensor or a toe nipple can be used for a threaded connection.

Q19: Is a Weathermatic brass insert type flow sensor available?
A19: No. A brass insert type flow sensor is available from a few other manufacturers. Note: The brass insert type flow sensor must have a pulse output…see Question 10 above.

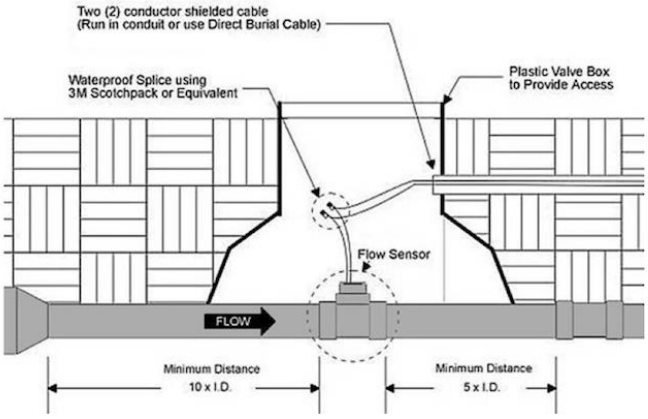
Q20: Can we use 14-gauge wire for the flow sensor?
A20: No. 14-gauge wire is not recommended.

Q21: How do I set up a non-Weathermatic flow sensor in the SmartLink website application?
A21: It all depends on the sensor. Set up the flow sensor by entering a value for Pulses Per Gallon (PPG) in the SmartLink App. Start with a PPG of 100 and run some water on a zone you know the flow rate for. Run for 5 minutes and receive. Compare known value to displayed value and adjust until known value and displayed value are similar. See Question 28 below for further details.

Q22: What is the resolution of Weathermatic flow sensors?
A22: See chart below –

SmartLink™ Flow Sensor Model Nominal Pipe Size		SLFSI-T10 1"	SLFSI-T15 1½"	SLFSI-T20 2"	SLFSI-S30 3"	SLFSI-S40 4"	SLFSI-B15 1½"
	Feet/Sec	GPM	GPM	GPM	GPM	GPM	GPM
Minimum Flow	0.25	0.86	1.8	2.8	6	10	
	1	3.5	7.24	11.3	25	40	5.5
	2	7	14.5	23	50	80	11
	3	10.4	22	34	75	120	16.5
	5	17	36	57	125	200	27.5
	7	24	51	79	175	280	38.5
	10	35	72	113	250	400	55
	12	42	87	136	300	480	66
Maximum Flow	15	52	108	170			83
Friction Loss at Max Flow		0.25 psi	0.18 psi	0.15 psi	0.15 psi	0.15 psi	0.18 psi

Q23: How do I correctly install a Weathermatic flow sensor?
A23: See detail below –



Q24: Can I use 18-gauge multi-strand wire for the host wire with SL-WireRide?
A24: Yes however, the only limit may be the distance. The wire will be carrying the load of both the host zone solenoid and the master valve solenoid, so figure the voltage drop accordingly. The power requirement of the flow sensor is not a factor.

Q25: Can I use the two-wire path of a two-wire decoder system for the host wire with WireRide?
A25: No. The WireRide device is designed to operate on the hot and common of a conventional wired system. For operation on a two-wire system the wire used must NOT have any decoders attached nor can it be connected to the two-wire output of the controller.

Q26: Can I use multiple Combi-Flow devices if I have more than 2 flow sensors?
A26: Yes. See wiring diagram for wiring Combi-Flow devices in series.

Q27: Can I use Combi-Flow device and Iso-Flow device and a WireRide together if I have multiple controllers and multiple flow sensors located remotely from the controllers?
A27: Yes. See wiring diagram or contact Technical Support as the installation can be complex.

Q28: How do I calibrate a flow sensor?
A28: IMPORTANT: See "Using a Weathermatic Digital Flow Meter (SLF-DISPLAYFLOW)" below if measuring flow using a SLF-DISPLAYFLOW.

To calibrate the flow sensor:

1. Turn on a test station for at least 5 minutes.
2. Verify flow of a zone using a digital flow meter (see below) or read the flow at the water meter NOTE: The flow sensor must be disconnected from the aircard when using a digital flow meter (SLF-DISPLAYFLOW).
3. Note the GPM
4. Rerun the same zone for the same run time as step 2-3 above.
5. Do a SmartLink Receive
6. Verify the SmartLink Current Average for the zone is within 25% of the flow read in step 3 above.
7. If the flow is within 25%, the aircard is reading flow accurately.
8. If the flow is greater than 25%, adjust the PPG for the flow sensor.
9. Raise PPG to decrease flow reading
10. Lower PPG to increase flow reading
11. Start by increasing or decreasing by 2-3 PPG per test (more if the difference is greater)
12. Rerun test in step 5 -7.
13. Complete these steps for multiple zones.
14. This is the same process for Weathermatic, Data Industrial or Hydrometer types of flow sensors.

Note: Unfortunately, most users make the mistake of calculating GPM per zone by doing a rough estimate of pressure at the nozzle, nozzle size, and number of sprinklers. This usually results in highly inaccurate flow estimates.

Using a Weathermatic Digital Flow Meter (SLF-DISPLAYFLOW)

1. Disconnect the aircard from the flow sensor
2. Turn on a test station for at least 5 minutes.
3. Verify flow of a zone using a digital flow meter (SLF-DISPLAYFLOW). The flow sensor must be disconnected from the aircard when using a digital flow meter.
4. Reconnect the aircard

Q29: Can I see real time flow at the controller?
A29: Yes. While a zone is running press the DOWN button to toggle through Ma, flow, and current zone run time left. The SmartLine controller must be G5 (Generation 5) and must be connected to a flow aircard.