ATTACHMENT A
SOLE SOURCE FACILITY JUSTIFICATION TRANSMITTAL

Public Contract Code section 3400 provides, in pertinent part, that:

"(a) The Legislature finds and declares that it is the intent of this section to encourage contractors and manufacturers to develop and implement new and ingenious materials, products, and services that function as well, in all essential respects, as materials, products, and services that are required by a contract, but at a lower cost to taxpayers.

(b) No agency of the state, nor any political subdivision, municipal corporation, or district, nor any public officer or person charged with the letting of contracts for the construction, alteration, or repair of public works, shall draft or cause to be drafted specifications for bids, in connection with the construction, alteration, or repair of public works, (1) in a manner that limits the bidding, directly or indirectly, to any one specific concern, or (2) calling for a designated material, product, thing, or service by specific brand or trade name unless the specification is followed by the words "or equal" so that bidders may furnish any equal material, product, thing, or service. In applying this section, the specifying agency shall, if aware of an equal product manufactured in this state, name that product in the specification. Specifications shall provide a period of time prior to or after, or prior to and after, the award of the contract for submission of data substantiating a request for a substitution of "an equal" item. If no time period is specified, data may be submitted any time within 35 days after the award of the contract.

(c) Subdivision (b) is not applicable if the awarding authority, or its designee, makes a finding that is described in the invitation for bids or request for proposals that a particular material, product, thing, or service is designated by specific brand or trade name for any of the following purposes:

(2) In order to match other products in use on a particular public improvement either completed or in the course of completion."

Weathermatic Flow Sensors

This is a sole source procurement because:

- ☐ This is a sole provider of items compatible with existing equipment or systems.
- ☑ This is a sole provider of items compatible with existing equipment or systems.
- ☐ This is a sole provider of factory-authorized warranty service.
- ☐ This is a sole provider of goods or services that perform a unique function in order to meet the specialized needs of the District. Please provide specific detail below.

  The District's Irrigation Center Control system is currently Weathermatic Smartlink. Communication between Smartlink and another brand would not be compatible.

- ☑ There are overriding circumstances which negate the benefit of compliance with applicable code and District policy regarding competitive bidding processes. Below are specific details below as to what those circumstances are, and why this sole source procurement would be in the best interest of the District.

The District's irrigation control system is Weatehrmatic Smartlink which allows the landscape team to manage and control all campus irrigation systems. The risk factors and challenges stated below present overriding circumstances which would negate the benefit that any competitive bid could offer:

- Risk of other brand weather sensors not being compatible and damaging landscape.
- Potential for system incompatibility and/or failure to integrate with the Weathermatic Smartlink software.
- Cost of removal, disassembly and replacement of existing irrigation systems throughout all campuses.
- Cost of additional training of staff on new software and equipment.

Weathermatic is the sole manufacturer of the District's irrigation central control system, its affiliated franchises are the exclusive providers of the equipment, services and maintenance required to support the irrigation system.

What steps were taken to verify that these goods or services are not available elsewhere?

See Supplier and Contractor Information Page Below For Contact Details.
Each vendor was asked whether or not their firm could provide service, maintenance and monitoring to the Weathermatic Flow Sensors without removing, replacing or otherwise modifying the current equipment?

This is a restricted brand or trade name, and no substitutions are allowed because:

☑ The requested product is an integral repair part or accessory compatible with existing landscaping and irrigation systems.

Equipment/System: Weathermatic Flow Sensors
Manufacturer/Model Number: SLFSI-T20, SLFSI-S30, SLFSI-S40

☑ The District has standardized on the requested product, and use of another brand/model would require considerable time and funding to evaluate or implement. Please provide details below:

The District has standardize on the Weathermatic Smartlink irrigation control system. Only Weathermatic Flow Communications are compatible with the Smartlink technology.

Supplier or Contractor Information:

Weathermatic
3301 W Kinglsey Rd
Garland, TX 75041
(972)278-6131

RECOMMENDATION

Sufficient evidence has been provided upon which the Board can find that the exception found in Public Contract Code section 3400 (c) (2) applies to the identified product(s). Approve a finding to authorize use of the above stated exception for Flow Sensors in the MiraCosta Design Standards Manual for all the projects in the MM program. Require that said finding be included in all pertinent bid/proposal documents for those projects where such product(s) will be used.

SIGNATURE:

Tom Macias, Facilities Director — **Date** 9/14/18

Geoff Bachanas, PMO Director — **Date** 9/17/18

steinberg hart

ATTACHMENT B
SOLE SOURCE ARCHITECT/ENGINEERING JUSTIFICATION SUMMARY REPORT TRANSMITTAL

September 1, 2018

Re: Weathermatic Flow Sensors

Within the Design & Construction Standards MiraCosta CCD has identified or designed various proprietary systems or products that meet specific District performance requirements, allow for seamless integration into existing systems, provide ease of maintenance, and afford a lower total cost of ownership. In these instances, the District is requesting that these systems and products shall be provided without substitution. The following Specification Section 32 84 00 is one that meets these special requirements.

Our experience working with other Colleges and Universities shows that single sources for some materials, products, equipment, and systems is a common approach to achieving best value.

We have reviewed the facility justification transmittal for the above-referenced item and believe that the District's sole-sourcing of this specification section meets the requirements for District's benefit as described above.

Sincerely,

Joe Sion
Associate Principal/Senior Manager

523 W 6th Street #245
Los Angeles CA 90014

SmartLink®
Wireless Landscape Network

FLOW MANAGEMENT FOR THE REST OF US

INTRODUCING SMARTLINK FLOW

Flow Management is nothing new, but always felt out of reach for most. It was too expensive, and the controllers were overkill for the majority of projects. SmartLink™ Flow has arrived, and with it, bringing affordable web-based flow management to your desktop, tablet, and even the palm of your hand.

- Web-based control from your computer, tablet, or smartphone
- Detect leaks, broken heads, lateral and main line breaks
- Significant amounts of water saved, and measurable
- Determine actual water use with daily reports
- User defined low/high flow limits, by zone
- Automatic shutdown of both master and/or zone valve when flow limits are exceeded
- Email alerts provide you the ability to react fast
- Cellular-based communication

CHECK THE PULSE

SmartLink™ Flow removes the guess work. Water-saving becomes specific, it becomes provable - not just a percentage. We've made monitoring, measuring and managing water usage an intuitive tool.

What does this button do when you click it? It prevents. It prevents wasted fuel, time, money, worry, hassle, and most importantly, water.

ALL ABOUT RETROFIT

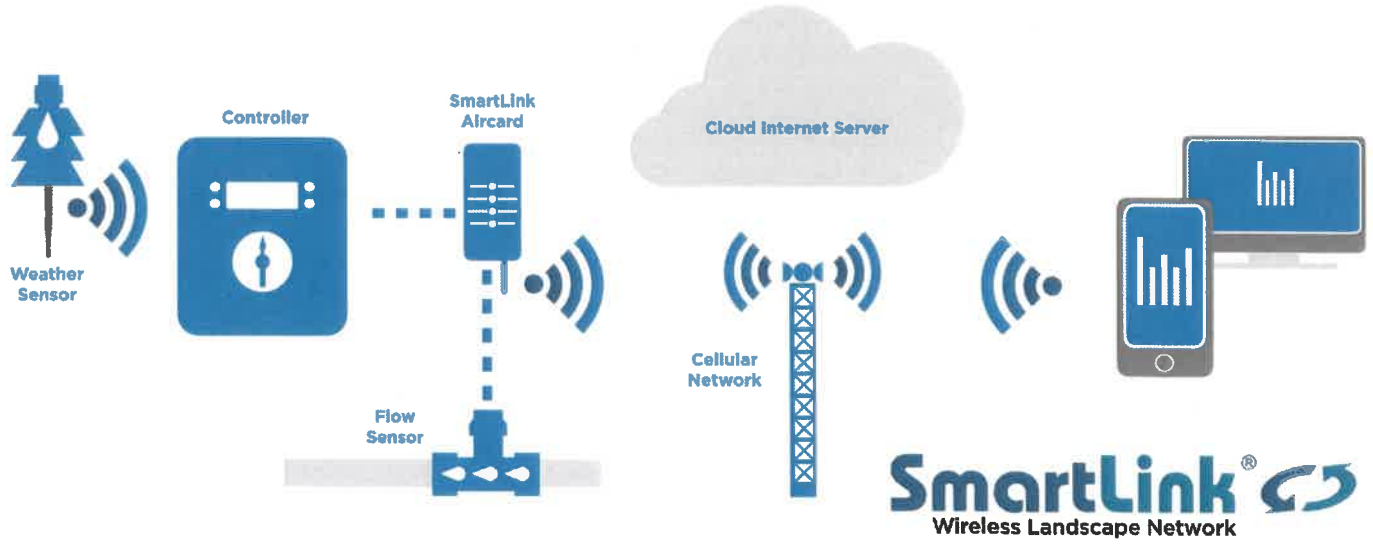
Now that Flow Management is affordable, a window of opportunity has opened. Existing irrigation systems benefit the most.

Weathermatic®
Water Conserving Innovation

weathermatic.com

Sole Source Item #9 - Weathermatic Flow Sensors

HOW IT WORKS



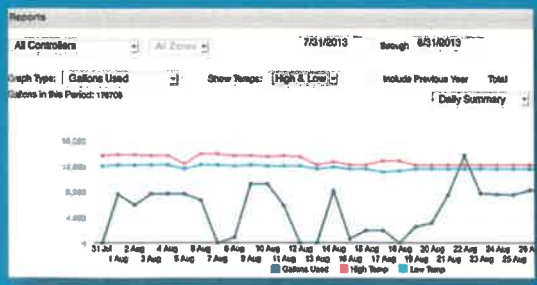
QUICK TOUR

Create an unlimited number of Sites, containing an unlimited number of Controllers. Get a status snapshot of when you first log in.

The Site's SmartLine Controllers are programed using an intuitive interface that makes sense. All the Controller's programming features, and more, are organized in five separate tabs.

The powerful "Smart" programming features are Zone specific, and allow for significant water-savings to occur.

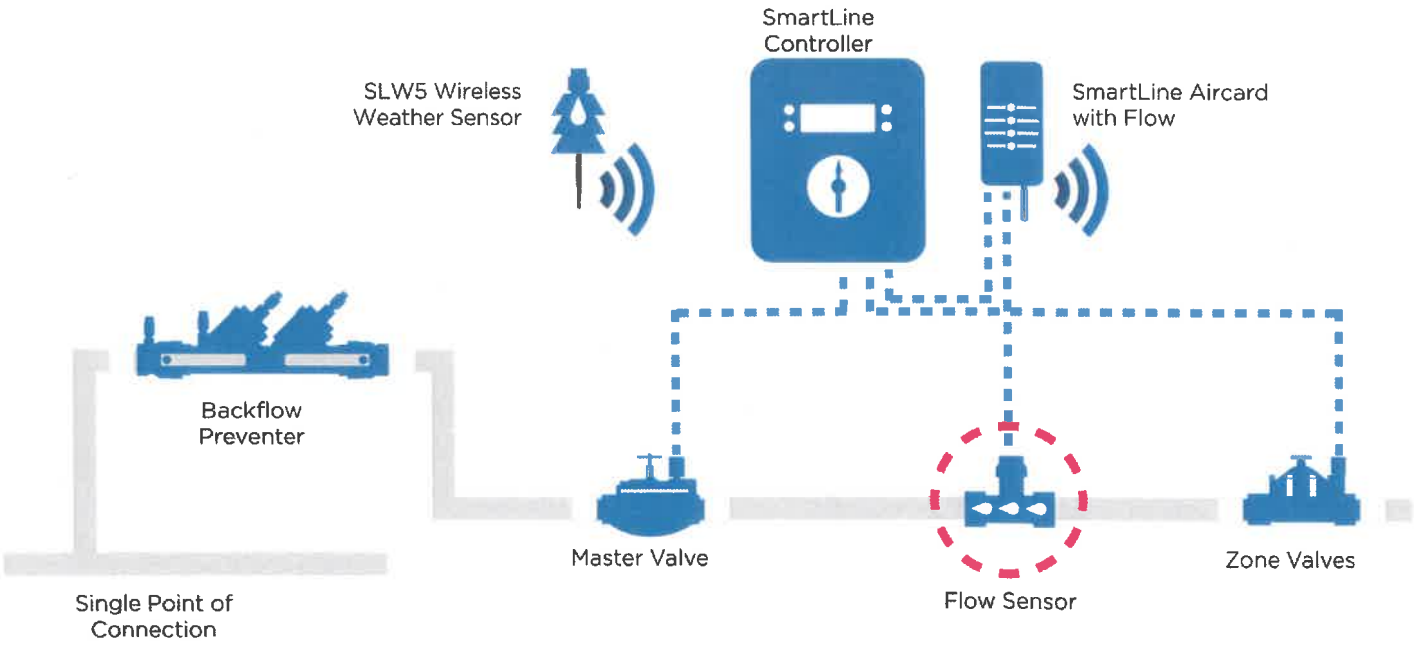
User defined low/high flow limits are based on the Running and Current Averages learned by SmartLink™.



Reports are understood at first glance, and provide daily, weekly, yearly, or definable date ranges of gallons used. This can be the total amount used by a Site, Controller, or even a Zone. Overlay the high and low temperature, for even more valuable information.

SmartLink™ Flow alerts you via email of low and high flow thresholds being crossed.

FLOW SENSOR PLACEMENT



SMARTLINK FLOW SENSORS

The SLFSI-T (tee) and SLFSI-S (saddle) advanced flow sensors are designed specifically for the irrigation industry. They are engineered to integrate with the SmartLink™ Flow Aircard, delivering reliable performance.

SLFSI-T TEE TYPE

SLFSI - T10	1"
SLFSI - T15	1½"
SLFSI - T20	2"

Features:

- Threaded retaining nut makes it easier to service in a valve box
- Molded mounting tee provides consistent measurements and improved performance
- Four bladed lightweight impeller is sensitive enough to measure lower flow rates
- Smart electronics capable of better signal filtering
- Affordable enough to install on nearly all new and old systems

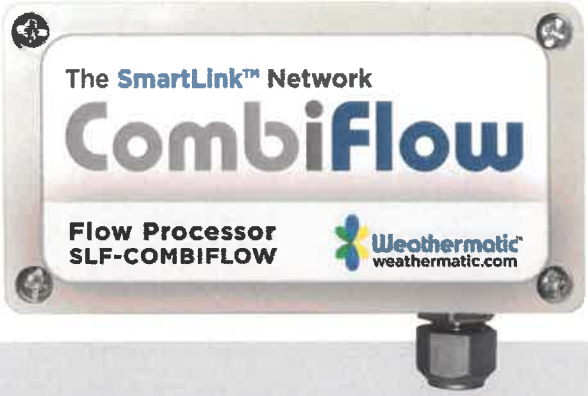
SLFSI-S SADDLE MOUNT

SLFSI - S30	3"
SLFSI - S40	4"

The Saddle Mount design is built to easily be retrofitted onto larger main lines

Sole Source Item #9 - Weathermatic Flow Sensors

SFL-COMBIFLOW



The SLF-Combiflow is a unique signal controlled device that conditions and scales the signals from two digital flow sensors and combines them into one scalable digital output. The SmartLink™ Flow Aircard then perceives the signal is coming from a single flow sensor.

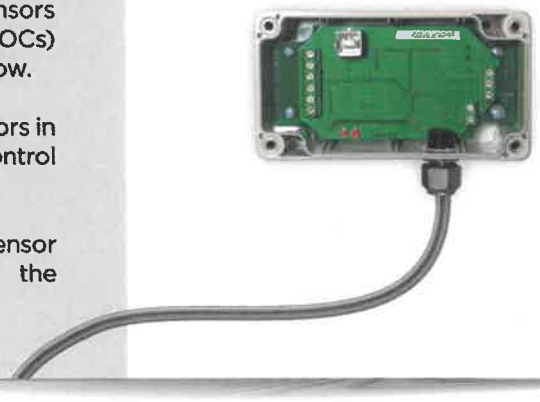
It is compatible with the SLFSI Series Flow Sensors and most other sensors producing a square or sine wave output proportional to the rate of flow.

APPLICATIONS:

Connect two SLFSI Series Flow Sensors on different Points of Connection (POCs) to a single SmartLink Aircard with Flow.

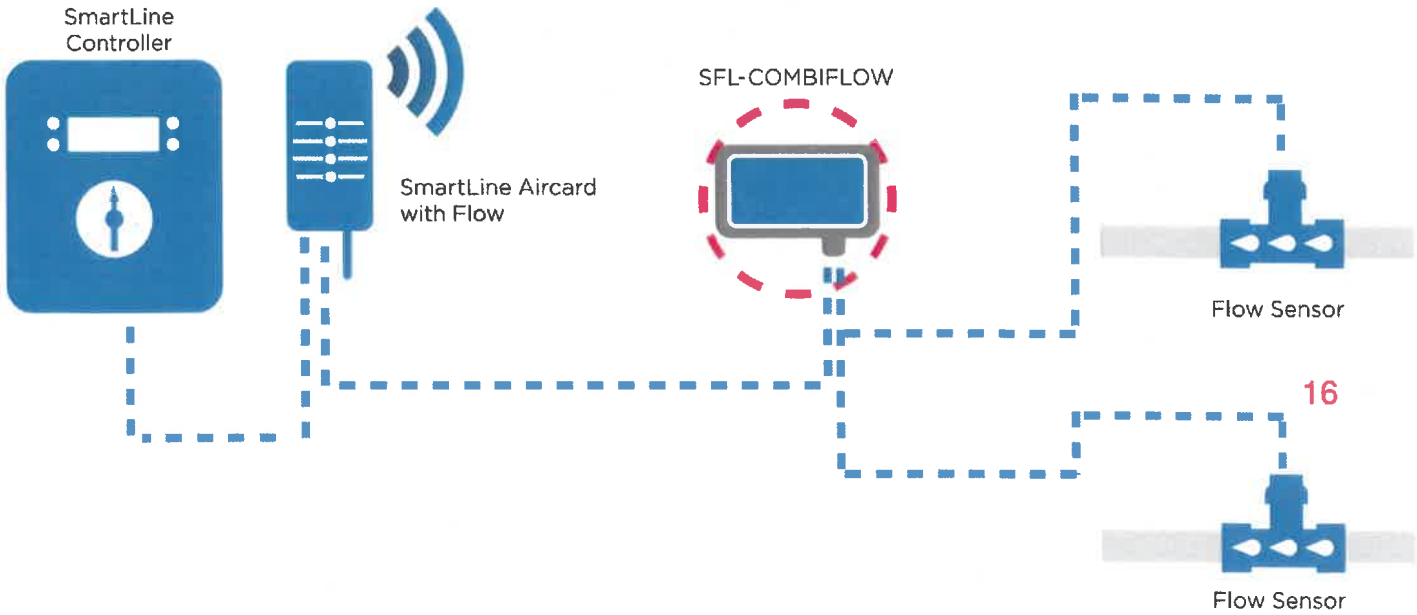
Connect two SLFSI Series Flow Sensors in a looped piping system to a single control input.

Connect the outputs of a two flow sensor "compound meter" assembly to the SmartLink™ Flow Aircard.



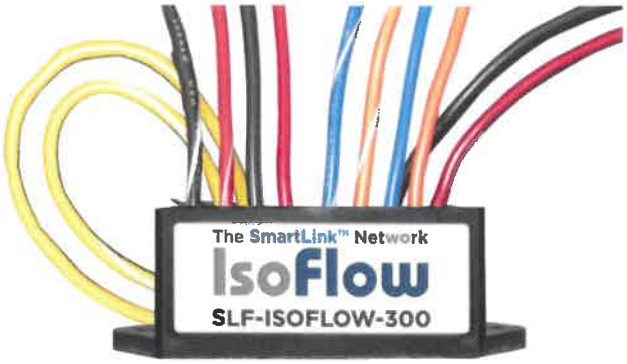
The output signal may be scaled to resemble the output of one of the connected flow sensors, another larger flow sensor or a custom value.

EXAMPLE

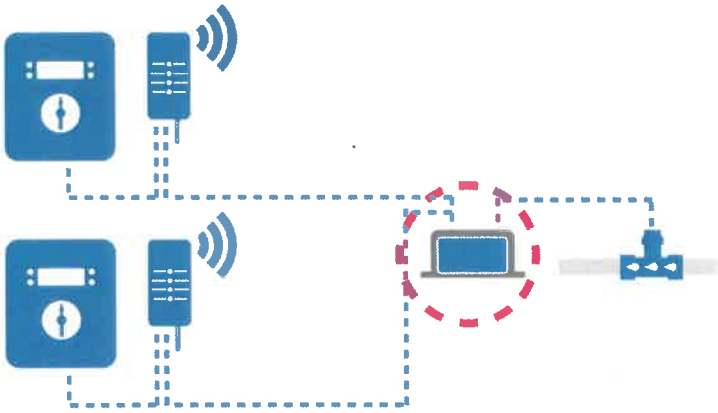


SFL-ISOFLOW-1

The SLF-ISOFLOW-300 is a signal control device that receives the signal from 1 SLFSI flow sensor and provides 2 electrically isolated outputs. These outputs can then separately be connected to 2 SmartLink™ Aircards with Flow.



EXAMPLE



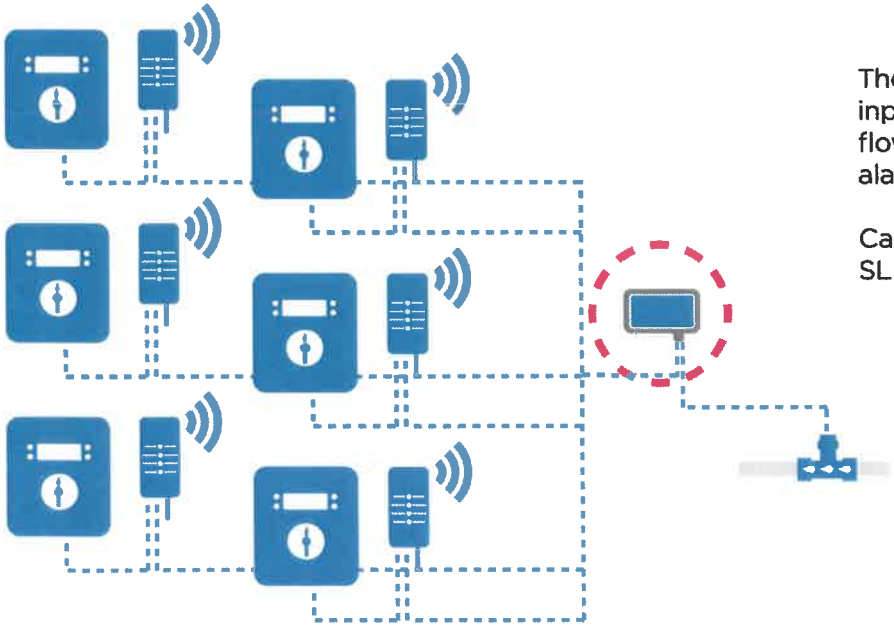
The SmartLink™ ISOFLOW-300 also provides the ability to selectively switch outputs from 1 Aircard to the other or both.

Can also be used in conjunction with the SmartLink™ COMBIFLOW

SFL-ISOFLOW-6

The SLF-ISOFLOW-306 is a signal control device that receives the signal from 1 SLFSI flow sensor and provides up to 6 electrically isolated outputs. These outputs can then separately be connected to up to 6 SmartLink™ Flow Aircards.

EXAMPLE



The SmartLink™ ISOFLOW-306 control inputs allow the active controller to block the flow signal to inactive controllers eliminating alarms for unscheduled flow events.

Can also be used in conjunction with the SLF-COMBIFLOW

SFL-WIRERIDE

The SLF-WIRERIDE enables installation of a new Master Valve and Flow Sensor on a irrigation system, without the need of running new wire back to the irrigation controller. With WireRide, the new Master Valve and Flow Sensor essentially "hitch a ride" back to the controller using a nearby preexisting zone wire.

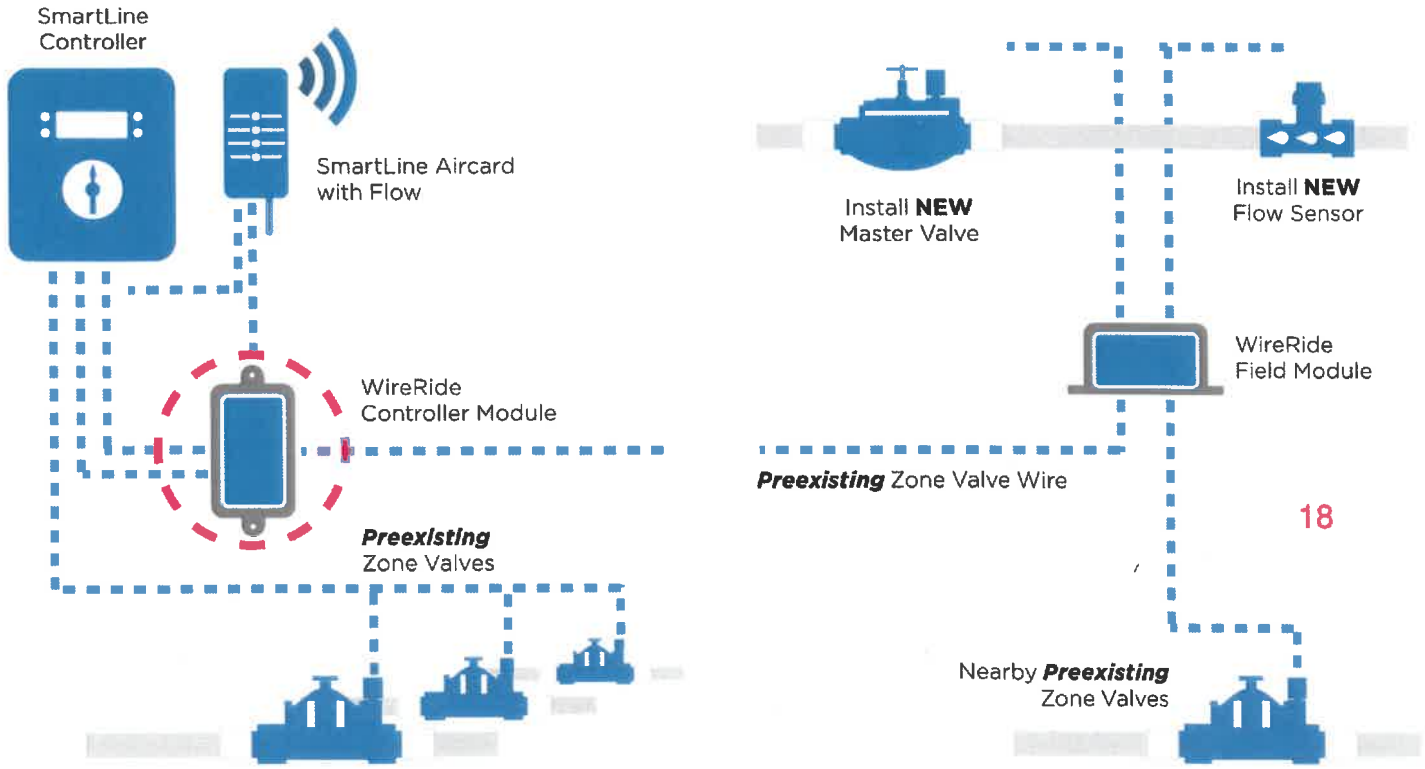
A simple walk-through of the example below:

- Install a new Master Valve and Flow Sensor
- Locate a nearby preexisting Zone Valve
- Connect the two valves and sensor to the WireRide Field Module
- Connect the wires used by existing Zone Valve to the WireRide
- The existing Zone Valve wire is now being shared by all three

The WireRide Controller Module mounts near the irrigation system's controller. It routes the Master Valve, Flow Sensor, and the nearby Zone Valve to their corresponding location in the SmartLine controller and SmartLink Flow Aircard.

WireRide opens the door to powerful cloud-based flow management for the countless irrigation systems around the globe.

EXAMPLE



HOW TO SPECIFY

SmartLink® Wireless Landscape Network

SmartLink® Flow Aircard	
Model	Description
SL-AIRCARD-FLOW	SmartLink Flow Aircard

SmartLink® Network Service Plans	
Model	Description
1F, 2F, 3F, 5F or 10F (years)	Software Services, Cloud Storage & Unlimited Updates

SmartLink® Network Warranty	
Model	Description
W	Covers Aircard, Controller and Weather Station from Lightning, Theft and Physcial Damage for One Year.

SmartLink™ Network Specification Examples	
Model	Description
SL-AIRCARD-FLOW2F	SmartLink Aircard with Flow and a Two Year Service Plan
SL-AIRCARD-FLOW5FW	SmartLink Aircard with Flow, a Five Year Service Plan, and Warranty

FLOW SENSORS AND ACCESSORIES

Flow Sensor Specification	
Model	Description
SLFSI-T10	1" Tee Type Insert Flow Sensor - Used with the SmartLink Flow Aircard
SLFSI-T15	1 ½" Tee Type Insert Flow Sensor - Used with the SmartLink Flow Aircard
SLFSI-T20	2" Tee Type Insert Flow Sensor - Used with the SmartLink Flow Aircard
SLFSI-S30	3" Saddle Type Insert Flow Sensor - Used with the SmartLink Flow Aircard
SLFSI-S40	4" Saddle Type Insert Flow Sensor - Used with the SmartLink Flow Aircard

Flow Sensor Accessories	
Model	Description
SLF-COMBIFLOW	Combines 2 Flow Sensor's Data into one
SLF-ISOFOW-1	Enables 2 Aircards w/ Flow to share 1 Flow Sensor
SLF-ISOFLOW-6	Enables 3 to 6 Aircards w/ Flow to share 1 Flow Sensor
SLF-SIMFLOW	Simulates the Output Signal of Impeller Type Flow Sensors
SLF-WIRERIDE	Add SLFSI Flow Sensor and a Master Valve to Preexisting System

SmartLink™ Flow Sensor Model Nominal Pipe Size		SLFSI-T10 1"	SLFSI-T15 1 ½"	SLFSI-T20 2"	SLFSI-S30 3"	SLFSI-S40 4"
	Feet/Sec	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
	2	7	14.5	23	50	80
	3	10.4	22	34	75	120
	5	17	36	57	125	200
	7	24	51	79	175	280
	10	35	72	113	250	400
	12	42	87	136	300	480
Maximum Flow	15	52	108	170		
Friction Loss at Max Flow		0.25 psi	0.18 psi	0.15 psi	0.15 psi	0.15 psi

Sole Source Item #9 - Weathermatic Flow Sensors

HOW TO SPECIFY

SmartLine
The Smart Irrigation Controller

SmartLine® Specification		
Model	Description (Indoor/Outdoor)	Increase Station Count
SL800	4 - Station Base Model (Indoor)	SLM2 - 2 Station / up to 8 Zones
SL1600	4 - Station Base Model	SLM4 - 4 Station / up to 16 Zones
SL1620	20 - Fixed Stations	N/A
SL1624	24 - Fixed Stations	N/A
SL4800	12 - Station Base Model	SLM2 - 12 Station / up to 48 Zones
SL9600TW	96 - Zone/2-Wire System	SmartLine controller and 96 Zone decoder module

SmartLine® Weather Sensor Specification	
Model	Description
SLW1	Wired Weather Sensor for ET Based Watering * 35ft of cable provided
SLW5	Wireless Weather Sensor for ET Based Watering * 900mhz - 1500' LOS Range

ENCLOSURES & PEDESTALS

SmartLine® Enclosures Specification	
Model	Description
SLPED-ENC-SS-4800	Stainless Steel Enclosure with Pedestal for PL4800/SL4800/SL9600TW
SLPED-ENC-M-4800	Powder-coated Metal Enclosure with Pedestal for Stainless Steel Enclosure with Pedestal for PL4800/SL4800/SL9600TW
SLPED-ENC-SS-1600	Stainless Steel Enclosure with Pedestal for PL1600/SL1600
SLPED-ENC-M-1600	Powder-coated Metal Enclosure with Pedestal for PL1600/SL1600
SLWM-SS-4800	Stainless Steel Wall Mount Cabinet for PL4800/SL4800/SL9600TW
SLWM-M-4800	Powder-coated Metal Wall Mount Cabinet for PL4800/SL4800/SL9600TW
SLWM-SS-1600	Stainless Steel Wall Mount Cabinet for PL1600/SL1600
SLWM-M-1600	Powder-coated Metal Wall Mount Cabinet for PL1600/SL1600
SLPED-1600	Stainless Steel Pedestal for SL1600
SLPED-4800	Stainless Steel Pedestal for SL4800

Plastic Enclosure / SmartLine® Specification		
Model	Description	Modules
SL4800PE-PED	High Grade Polyethylene Enclosure with the SmartLine SL4800 12-Zone Controller (Base Model) Installed	SLM12 - 12 Zone Maximum of 48 zones

SMARTWIRE

SmartWire® 2-Wire Specification	
Model	Description
SLM16DM	16 - Zone Decoder Programming Module
SLM24DM	24 - Zone Decoder Programming Module
SLM48DM	48 - Zone Decoder Programming Module
SLDEC1	1 -Valve Decoder
SLDEC2	2 -Valve Decoder
SLDEC4	4 -Valve Decoder
SLGDT	Lightning Arrestor
SLWIRE142-1000	2 - Conductor/14 - Gauge Wire (1000')
SLWIRE142-2500	2 - Conductor/14 - Gauge Wire (2500')
SLWIRE122-1000	2 - Conductor/12 - Gauge Wire (1000')
SLWIRE122-2500	2 - Conductor/12 - Gauge Wire (2500')

Weathermatic®
Water Conserving Innovation

Weathermatic Headquarters
3301 W. Kingsley Rd.
Garland, TX 75041
1-888-484-3776
www.smartlinknetwork.com

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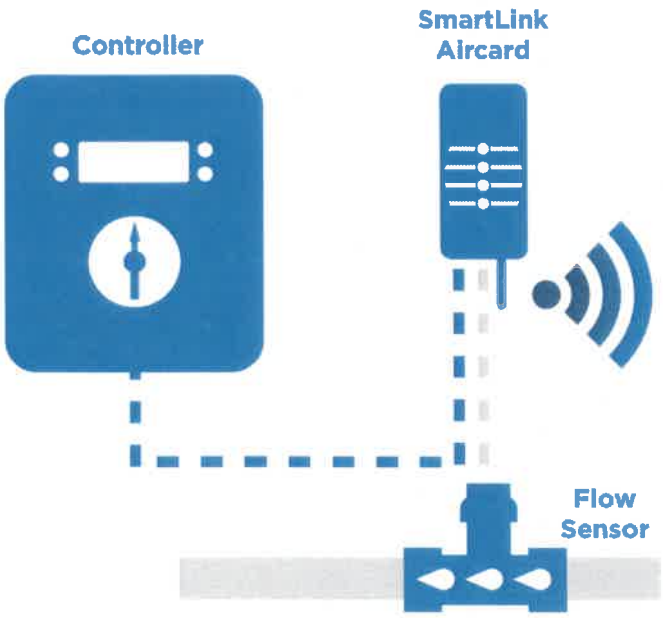
Sole Source Item #9 - Weathermatic Flow Sensors

SmartLink®
Wireless Landscape Network

SLFSI-T TEE TYPE FLOW SENSOR

Features:

- Threaded retaining nut makes it easier to service in a valve box
- The molded mounting tee provides consistent measurements and overall improved performance
- Four bladed lightweight impeller is sensitive enough to measure lower flow rates
- Smart electronics capable of better signal filtering
- Affordable enough to install on nearly all new and old systems



Weathermatic™ introduces the SLFSI-T, a new tee type advanced flow sensor designed specifically for the irrigation industry. The SLFSI-T wires directly to the SmartLink™ Aircard with Flow, enabling web-based flow management from your SmartPhone, Tablet, or Computer.

Running Avg.	Current Avg.	Low Flow Limit	High Flow Limit
15.9 GPM	15.1 GPM	14 GPM	17 GPM
19.9 GPM	19.0 GPM	17 GPM	22 GPM
53.1 GPM	53.1 GPM	46 GPM	57 GPM

Within the SmartLink settings, the user defines low/high flow limits based on the Running and Current Averages learned and calculated. If the threshold is crossed, the zone valve in question will be shut-off and and email alert sent notifying the user of the event.

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Weathermatic
Water Conserving Innovation

Sole Source Item #9 - Weathermatic Flow Sensors

SMARTLINK SLFSI-T

Wetted Materials

- Impeller – HDPE (High Density Polyethylene)
- Shaft – Tungsten Carbide
- O-ring — BUNA N
- Tee, Sensor Housing, Retaining Nut — Type 1 PVC

Pressure Rating

- Sensor designed to Schedule 40 specifications
- Samples tested to working pressure of 240 PSI

Temperature Range

- 32°F to 140°F (0° to 60°C)

Output Signal

- Frequency Range: 0.3 Hz to 200 Hz
- Output Pulse: 5 msec +/-25%

Transducer Excitation

- Quiescent current: 600 uA@8 VDC to 35 VDC max.
- Quiescent voltage: (VHigh)= Supply Voltage - (600uA X Supply Impedance)
- On State (VLow)= Max. 1.2 VDC@50mA current limit, (10Ω +0.7VDC)

Flow Range

- 0.25 to 15 FPS

Electrical Cable

- 2 single conductor solid copper U.L. listed #18 AWG leads with direct burial insulation
- Lead length: 48 inches
- Wiring may be extended up to 2,000 feet with direct burial, twisted pair shielded cable

The sensor features a square wave digital signal proportional to flow. The output signal duplicates existing impeller flow sensor signals making the SLFSI-T series sensor compatible with all manufacturers' control products. The pulse signal will travel up to 2,000 feet without amplification.

SLFSI-T Flow Sensor Specifications	
Model	Description
SLFSI-T10	1" Tee Type Insert Flow Sensor - Used with the SmartLink Flow Aircard
SLFSI-T15	1 ½" Tee Type Insert Flow Sensor - Used with the SmartLink Flow Aircard
SLFSI-T20	2" Tee Type Insert Flow Sensor - Used with the SmartLink Flow Aircard

SLFSI-T Flow Sensor Dimensions			
Size	A Length	B Length	C Length
1"	5.625" (143 mm)	1.710" (43 mm)	3.487" (88 mm)
1 ½"	6.188" (157 mm)	2.310" (58 mm)	5.097" (130 mm)
2"	7.00" (178 mm)	2.875" (73 mm)	4.573" (116 mm)

Weathermatic™
Water Conserving Innovation

Technical Specifications
SLFSI-TXX FLOW SENSOR

FEATURES

- Molded Mounting Tee for improved control of dimensions for more consistent measurement and improved performance at low flow.
- Threaded Retaining Nut instead of retaining pin makes it easier to service in a valve box, more moisture resistance for electronics resulting in longer life.
- Unique 4 bladed lightweight impeller measures lower flow rates. Detects flow as low as 20% of published minimum rate of other impeller sensors
- Smart electronics detection system contains a micro-processor for better signal filtering and conditioning. Detection circuit also contains superior over-voltage and overcurrent protection.

Professional Materials

- Impeller – HDPE (High Density Polyethylene
- Shaft – Tungsten Carbide
- O-ring — Buna-N
- Saddle, Sensor Housing, Retaining Nut — Type 1 PVC

Pressure Rating

- 150 PSI @ 90 degrees F

Temperature Range

- 32 degrees F to 140 degrees F (0 degrees to 60 degrees C)

Output Signal

- Frequency Range: 0.3 Hz to 200 Hz
- Output Pulse: 5 ms +/-25%

Transducer Performance

- Quiescent current: 600 uA@8 VDC to 35 VDC max.
- Quiescent voltage: (VHigh) = Supply Voltage - (600uA X Supply Impedance)
- On State: (VLow) = Max. 1.2 VDC@50mA current limit, (10Ω +0.7VDC)

Flow Range

- 0.25 to 15 FPS
- 1 inch tee: 0.86 to 52 GPM
- 1 1/2 inch tee: 1.8 to 108 GPM
- 2 inch tee: 2.8 to 170 GPM

Electrical Cable

- 2 single conductor solid copper U.L. listed #18 AWG leads with direct burial insulation
- Lead length: 48 inches
- Wiring may be extended up to 2,000 feet with direct burial, twisted pair shielded cable

Available Sizes	
Model	**Size**
SLFSI-T10	1 inch
SLFSI-T15	1-1/2 inch
SLFSI-T20	2 inch

Weathermatic™
Water Conserving Innovation
3301 W. Kingsley Road
Garland, Texas 75041-2207
888-484-3776 Fax: 972-271-5710
www.weathermatic.com

Weathermatic™
Water Conserving Innovation

Technical Specifications
SLFSI-TXX FLOW SENSOR

FLOW SENSOR(S) shall be model SLFSL-T or SLFSL-S manufactured by Creative Sensor Technology, Incorporated of Rochester, Massachusetts for Weathermatic Sprinkler Division of Telsco Industries. The Model number shall include the Series designation followed by a three character group beginning with T (Tee Mounted) or S (Saddle Mounted) and followed by a two digit code referencing line size followed by a three digit electronic version designator. Therefore, the model number for a one inch size flow sensor with standard electronics would be written as: FSI-T10. Flow sensors must be compatible for use with SmartLine irrigation controls.

CONSTRUCTION: The flow sensor shall consist of a custom molded tee or saddle configured shaped body with socket ends conforming to PVC pipe dimensions, a flow sensor housing containing the electronic circuitry and carrying the spinning impeller and a retaining nut.

The meter body shall be an in line type available in 1", 1 1/2", 2", 3" and 4" pipe sizes, molded from Rigid Polyvinyl Chloride material – color white (Tee Mounted) or color grey (Saddle Mounted) - conforming to ASTM D-1784, Cell Class 12454. The 4 blade impeller (paddle wheel) shall be the only moving part.

The impeller shall be molded of HDPE (High Density Polyethylene) incorporating an integral bearing. The shaft material shall be tungsten carbide. These two items are considered wear items and shall be replaceable in the field without special tools.

The electronics housing, molded from the same material as the body shall be held in place with a single ACME threaded PVC retaining nut held captive by the wire leads. The housing will be sealed with one BUNA N O-Ring and shall be easily removed from the meter body. The electronics housing and tee body shall feature direction of flow arrows to assist in assembly.

The sensor electronics will be epoxy-sealed and fitted with 2 single conductors solid copper U.L. listed #18 AWG leads with direct burial insulation 48 inch in length extending from the top of the sensor. The positive (+) lead shall have red insulation and the negative (-) lead shall have black insulation. 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 velocities. The flow sensor shall be designed to schedule 40 specifications and have a tested working pressure of 240 psi @ 73°F (23°C).

Maximum working temperature is 140°F (60°C). The sensor flow range shall be 0.25 to 15 FPS.

The Product Serial Number shall be printed on shrink tubing and attached to the wire leads as they exit the top of the electronics housing.

The Product Model Number shall be printed on shrink tubing and attached to the wire leads above the Product Serial Number.

ELECTRICAL SPECIFICATIONS: The flow senor shall have an output Frequency Range of 0.3 Hz to 200 Hz.

The flow sensor shall output a minimum of a 5-millisecond low pulse at low frequencies and reverts to approximately a square wave above 100 Hz.

Quiescent current 600 uA@8 VDC to 35 VDC max.

On State (VLow) = Max. 1.2 VDC@50mA max.

WARRANTY: Flow sensors shall have a manufacturer's limited warranty of five (5) years.

Weathermatic™
Water Conserving Innovation
3301 W. Kingsley Road
Garland, Texas 75041-2207
888-484-3776 Fax: 972-271-5710
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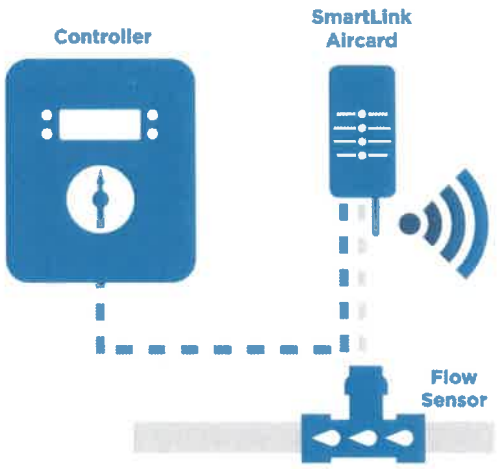
SmartLink®
Wireless Landscape Network

SLFSI-S SADDLE TYPE FLOW SENSOR

Weathermatic™ introduces the SLFSI-S, a new series of saddle type flow sensors for 3 and 4 inch PVC pipe.

The SLFSI-S wires directly to the SmartLink™ Aircard with Flow, enabling web-based flow management from your SmartPhone, Tablet, or Computer.



The saddle type sensors utilize the same flow sensor insert used in the tee type SLFSI-T Series sensors.

The insert, held in place with a retaining nut, contains the detection circuitry and carries the unique four-bladed ultra light impeller on a transverse axle.

The insert mounts in a housing that controls the depth and alignment of the impeller, unlike insert type sensors that may be mis-aligned or set to the wrong depth. The housing is permanently attached to the PVC saddle; therefore, no additional mounting hardware is required.

SLFSI-S Key Features	
Flow Range	**1/4 to 12 FPS equivalent to:** 6 to 300 GPM 3" PVC 10 to 480 GPM in 4" PVC
Working Pressure Rating	150 psi @ 90° F

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Weathermatic
Water Conserving Innovation

Sole Source Item #9 - Weathermatic Flow Sensors

SMARTLINK SLFSI-S

Wetted Materials

Impeller – HDPE (High Density Polyethylene)

Shaft – Tungsten Carbide

O-ring — BUNA N

Saddle, Sensor Housing, Retaining Nut — Type 1 PVC

Pressure Rating

150 PSI @ 90°F

Temperature Range

32°F to 140°F (0° to 60°C)

Output Signal

Frequency Range: 0.3 Hz to 200 Hz

Output Pulse: 5 msec +/-25%

Transducer Excitation

Quiescent current: 600 uA@8 VDC to 35 VDC max.

Quiescent voltage: (VHigh)= Supply Voltage - (600uA X Supply Impedance)

On State (VLow)= Max. 1.2 VDC@50mA current limit, (10Ω +0.7VDC)

Flow Range

0.25 to 12 FPS

3 inch saddle: 6 to 300 GPM

4 inch saddle: 10 to 480 GPM

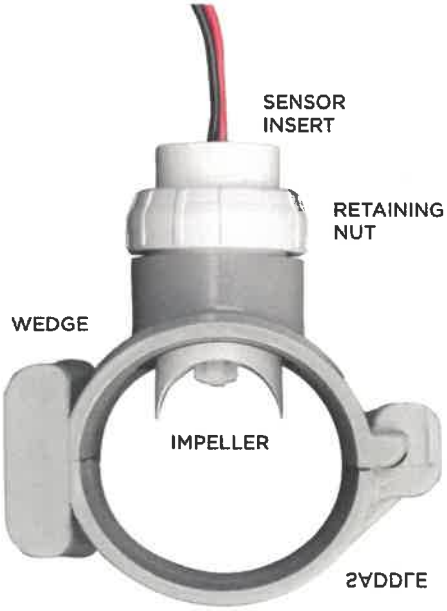
Electrical Cable

2 single conductor solid copper U.L. listed #18 AWG leads with direct burial insulation

Lead length: 48 inches

Wiring may be extended up to 2,000 feet with direct burial, twisted pair shielded cable

The sensor features a square wave digital signal proportional to flow. The output signal duplicates existing impeller flow sensor signals making the SLFSI-T series sensor compatible with all manufacturers' control products. The pulse signal will travel up to 2,000 feet without amplification.



SLFSI-S Flow Sensor Specifications	
Model	Description
SLFSI-S30	**3" (76mm) Saddle Type Insert Flow Sensor - Used with the SmartLink Flow Aircard**
SLFSI-S40	**4" (102mm) Saddle Type Insert Flow Sensor - Used with the SmartLink Flow Aircard**

SLFSI-T Flow Sensor Dimensions			
Size	Overall Length	Overall Length	Overall Height
3"	5" (127 mm)	5.5" (140 mm)	6.5" (165 mm)
4"	5" (127 mm)	6.5" (165 mm)	7.5" (190 mm)

Weathermatic™
Water Conserving Innovation

Technical Specifications
SLFSI-SXX FLOW SENSOR

FEATURES

- Molded Mounting Tee for improved control of dimensions for more consistent measurement and improved performance at low flow.
- Threaded Retaining Nut instead of retaining pin makes it easier to service in a valve box, more moisture resistance for electronics resulting in longer life.
- Unique 4 bladed lightweight impeller measures lower flow rates. Detects flow as low as 20% of published minimum rate of other impeller sensors
- Smart electronics detection system contains a micro-processor for better signal filtering and conditioning. Detection circuit also contains superior over-voltage and overcurrent protection.

Professional Materials

- Impeller – HDPE (High Density Polyethylene
- Shaft – Tungsten Carbide
- O-ring — Buna-N
- Saddle, Sensor Housing, Retaining Nut — Type 1 PVC

Pressure Rating

- 150 PSI @ 90 degrees F

Temperature Range

- 32 degrees F to 140 degrees F (0 degrees to 60 degrees C)

Output Signal

- Frequency Range: 0.3 Hz to 200 Hz
- Output Pulse: 5 ms +/-25%

Transducer Performance

- Quiescent current: 600 uA@8 VDC to 35 VDC max.
- Quiescent voltage: (VHigh) = Supply Voltage - (600uA X Supply Impedance)
- On State: (VLow) = Max. 1.2 VDC@50mA current limit, (10Ω +0.7VDC)

Flow Range

- 0.25 to 12 FPS
- 3 inch saddle: 6 to 300 GPM
- 4 inch saddle: 10 to 480 GPM

Electrical Cable

- 2 single conductor solid copper U.L. listed #18 AWG leads with direct burial insulation
- Lead length: 48 inches
- Wiring may be extended up to 2,000 feet with direct burial, twisted pair shielded cable

Models Available	
Model Number	**Description**
SLFSI-S30	3 inch saddle mount 2 wire std output sensor- includes saddle
SLFSI-S40	4 inch saddle mount 2 wire std output sensor- includes saddle

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Technical Specifications
SLFSI-SXX FLOW SENSOR

FLOW SENSOR(S) shall be model SLFSL-T or SLFSL-S manufactured by Creative Sensor Technology, Incorporated of Rochester, Massachusetts for Weathermatic Sprinkler Division of Telsco Industries. The Model number shall include the Series designation followed by a three character group beginning with T (Tee Mounted) or S (Saddle Mounted) and followed by a two digit code referencing line size followed by a three digit electronic version designator. Therefore, the model number for a one inch size flow sensor with standard electronics would be written as: FSI-T10. Flow sensors must be compatible for use with SmartLine irrigation controls.

CONSTRUCTION: The flow sensor shall consist of a custom molded tee or saddle configured shaped body with socket ends conforming to PVC pipe dimensions, a flow sensor housing containing the electronic circuitry and carrying the spinning impeller and a retaining nut.

The meter body shall be an in line type available in 1", 1 1/2", 2", 3" and 4" pipe sizes, molded from Rigid Polyvinyl Chloride material – color white (Tee Mounted) or color grey (Saddle Mounted) - conforming to ASTM D-1784, Cell Class 12454. The 4 blade impeller (paddle wheel) shall be the only moving part.

The impeller shall be molded of HDPE (High Density Polyethylene) incorporating an integral bearing. The shaft material shall be tungsten carbide. These two items are considered wear items and shall be replaceable in the field without special tools.

The electronics housing, molded from the same material as the body shall be held in place with a single ACME threaded PVC retaining nut held captive by the wire leads. The housing will be sealed with one BUNA N O-Ring and shall be easily removed from the meter body. The electronics housing and tee body shall feature direction of flow arrows to assist in assembly.

The sensor electronics will be epoxy-sealed and fitted with 2 single conductors solid copper U.L. listed #18 AWG leads with direct burial insulation 48 inch in length extending from the top of the sensor. The positive (+) lead shall have red insulation and the negative (-) lead shall have black insulation. 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 velocities. The flow sensor shall be designed to schedule 40 specifications and have a tested working pressure of 240 psi @ 73°F (23°C).

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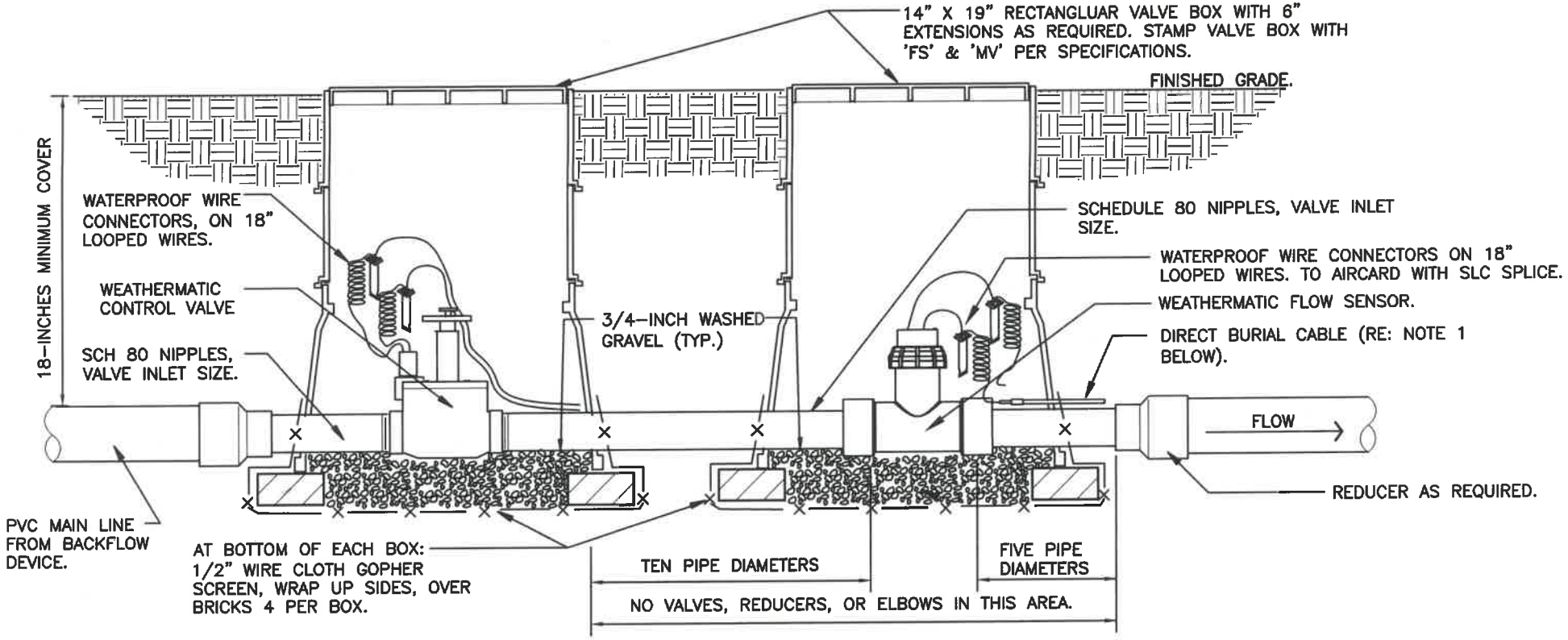

NOTE:
1. DIRECT BURIAL 1 PAIR, TWISTED SHIELDED CABLE–MINIMUM CONDUCTOR SIZE 20 AWG. DO NOT EXCEED 2,000 FEET IN LAYING DISTANCE FROM FLOW SENSOR TO IRRIGATION CONTROLLER
2. SIZE FLOW SENSOR BASED ON REQUIRED GPM NEEDED ON PROJECT.
3. MINIMUM DISTANCES BETWEEN ANY FITTING OR VALVE AND FLOW SENSOR ARE NOTED ABOVE.

MASTER VALVE AND FLOW SENSOR

NOT TO SCALE

Weathermatic