Manual No: **577013-750** ● Revision: **AB**

Sensor Products

Application Guide

VEEDER-ROOT

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Example Illustrations

Illustrations used in this guide for example sensor installations may contain components that are customer supplied and not included with the sensor. Please check with your Veeder-Root Distributor for recommended installation accessories.

Third Party Evaluations

Third party evaluations of the Veeder-Root sensors contained in this application guide can be found under the Veeder-Root vendor name on the National Work Group on Leak Detection Evaluations (NWGLDE) website:

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Sensor Application Matrix 1

Appendix A - Sensor Type Programming Table A-1

Appendix B - How To Order An Oil/Water Separator Sensor (OWSS) B-1

Appendix C - Direct Burial Cable C-1

Sensor Application Matrix

			Where Used							Category						Fuel Compatibility														
																	ASTM D975			ASTM D7547				ASTM D7467	ASTM D6751	ASTM D975			
Sensor Description	**Form #**	**Page #**	Dispenser Pan	Spill Containment	STP Sump	Convault Tank	Annular Space	Monitoring Well	Oil/Water Separator tank	Discriminating	Non-Discriminating	Position Sensitive	Level Sensing	Static Testing	Hydrostatic	100% Gasoline	Diesel	Kerosene	Jet Fuel	Aviation Gas	E-15	E-85	E-100	Bio-Diesel 20	Bio-Diesel 100	Renewable (Green) Diesel	Diesel Exhaust Fuel (DEF)	Waste Oil	Motor Oil
DPS Standard Dispenser Pan	794380-322	2	X	X						X						X	X	X	X	X	X	**X[1]**		X		X		X	X
CSS Standard Containment Sump	794380-352	3		X	X					X						X	X	X	X	X	X	**X[1]**		X		X		X	X
DPO Optical Dispenser Pan	794380-320	4	X	X						X						X	X	X	X	X	X	**X[1]**		X		X		X	X
CSO Optical Containment Sump	794380-350	5		X	X					X						X	X	X	X	X	X	**X[1]**		X		X		X	X
MSS Mag Sump Sensor	857080-XXX	6	X	X	X					X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
SSDP Solid-State Dispenser Pan	794380-321	7	X	X							X					X	X	X	X	X	X			X	X	X		X	X
SSCS Solid-State Containment Sump	794380-351	8		X	X						X					X	X	X	X	X	X			X	X	X		X	X
Piping Sump	794380-208	9	X	X	X						X					X	X	X	X	X	X			X		X		X	X
Non-Discriminating Standalone Dispenser Pan	847990-001	10	X	X	X						X					X	X	X	X	X	X			X		X		X	X
Position-Sensitive	794380-323	11	X	X	X						X	X				X	X	X	X	X	X	X	X	X		X		X	X
Interstitial for Fiberglass Tanks, Discriminating	794380-343	12					X			X						X	X	X	X	X	X			X	X	X	X	X	X
Interstitial for Fiberglass Tanks	794390-409	13					X				X					X	X	X	X	X	X			X		X			
Interstitial for Fiberglass Tanks, High Alcohol	794380-345	14					X				X					X	X	X	X	X	X	X	X	X	X	X	X	X	X
Interstitial for Steel Tanks	794390-4X0	15			X		X				X					X	X	X	X	X	X			X		X		X	X
Interstitial for Steel Tanks, Position Sensitive[2]	794380-333	16		X			X				X	X				X	X	X	X	X	X	X	X	X	X	X		X	X
Interstitial for Steel Tanks, High Alcohol	794380-430	17					X				X					X	X	X	X	X	X	X	X	X	X	X		X	X
Interstitial for Steel Tanks, High Alcohol, small footprint	794380-344	18		X			X				X					X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hydrostatic Reservoir (Dual Point)	794380-303	19					X								X	X	X	X	X	X	X	**X[1]**	**X[1]**	X		X		X	X
Single-Point Hydrostatic Sensor	794380-301	20					X								X	X	X	X	X	X	X	**X[1]**	**X[1]**	X		X			
Single-Point Mini-Hydrostatic Reservoir (High Alcohol)	794380-304	21					X								X	X	X	X	X	X	X	X	X	X	X	X		X	X
Vapor	794390-700	22						X								X			X	X	X								
Groundwater	794380-62X	23						X								X	X	X	X	X	X			X		X		X	X
Oil / Water Separator	794690-XXX	24							X							X	X	X	X	X	X			X				X	X

[1]Single use only if sensor was exposed to E85 or E100 (Test per Sensor Operability Guide [P/N 577013-814] in E-10 or less)

[2]Small Containment Areas (i.e. Spill Buckets)

Sensor Description	**Discriminating Dispenser Pan Sensor**	This type of discriminating sensor is installed in a dispenser pan and will detect the presence of, and differentiate between, hydrocarbons and other liquids.	Sensor Matrix Back

Form Number: 794380-322

Where Used (Typical)

- ☑ Dispenser Pan
- ☑ Spill Containment
- ☐ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☑ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85[1]
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

[1]Single Use Only (Test per Sensor Operability Guide in E-10 or less)

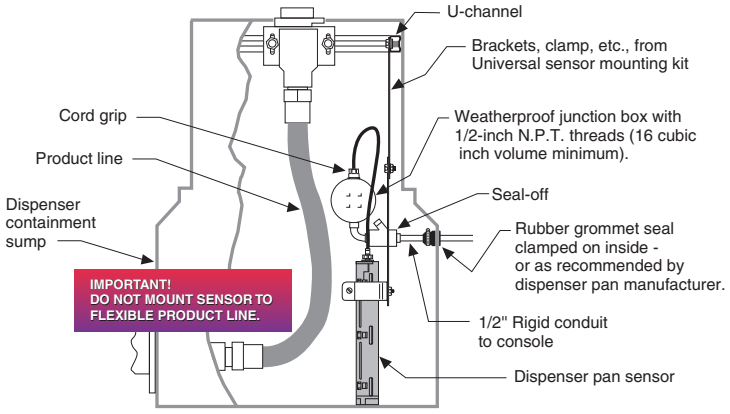
Console Compatibility (International Only[2])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[2]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input/Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[2]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification	
Normal	Sensor in Normal State- No liquid detected
Low Liquid	Liquid detected at a minimum of 1.37" (3.48cm)
High Liquid	Liquid detected at a minimum of 7.66" (19.45cm)
Fuel Alarm	Permeable material saturated with Fuel
Sensor Out	Sensor not communicating to ATG / Console

Installation Kit: 330020-012 — Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Product Permeable, Reed Switch /Float
Product Activation Height	Gas - 0.125" (3.175mm); Water - low 1.37" (3.48cm), High 7.66" (19.45cm)
Operating Temp	+32 to +140°F (0 to +60°C)
Dimensions	11.6" (29.4cm) high, 2.2" (5.6cm) dia.
Miscellaneous / Notes	Standard Cable Length: 12 Feet
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Discriminating Dispenser Pan Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Dispenser pan sensor should:
1. Rest in the cup or the lowest point of the dispenser containment sump.
2. Be positioned so as to be removable by pulling the sensor straight up out of the pan.
3. Be mounted in a true vertical position.

Sensor Description	**Discriminating Containment Sump Sensor**	This type of discriminating sensor is installed in a containment sump area. It detects the presence of, and differentiates between, hydrocarbons and other liquids.	Sensor Matrix Back
Form Number	**794380-352**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☑ Spill Containment
- ☑ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☑ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85[1]
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

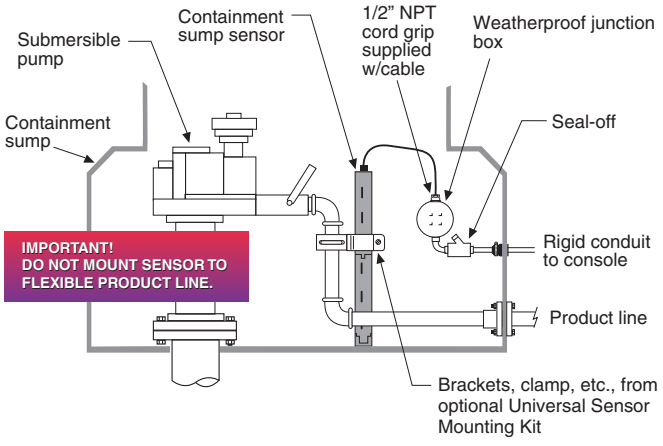
[1]Single Use Only (Test per Sensor Operability Guide in E-10 or less)

Console Compatibility (International Only[2])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[2]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[2]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification	Normal	Sensor in Normal State- No liquid detected
	Low Liquid	Liquid detected at a minimum of 1.35" (3.4cm)
	High Liquid	Liquid detected at a minimum of 12.28" (31.19cm)
	Fuel Alarm	Permeable material saturated with Fuel
	Sensor Out	Sensor not communicating to ATG / Console
Installation Kit	330020-012	Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Product Permeable, Reed Switch /Float
Product Activation Height	Gas - 0.125" (3.175mm); Water - low 1.35" (3.4cm), High 12.28" (31.19cm)
Operating Temp	+32 to +140°F (0 to +60°C)
Dimensions	22.1" (56.1cm) high, 2.2" (5.6cm) dia.
Miscellaneous / Notes	Standard Cable Length: 12 Feet
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Discriminating Containment Sump Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Solid-State - (Optical) Discriminating Dispenser Pan Sensor**	This type of discriminating sensor is installed in a dispenser containment sump area. It detects the presence of, and differentiates between, hydrocarbons and other liquids.	Sensor Matrix Back

Form Number: 794380-320

Where Used (Typical)

- ☑ Dispenser Pan
- ☑ Spill Containment
- ☐ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☑ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85[1]
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

[1]Single Use Only (Test per Sensor Operability Guide in E-10 or less)

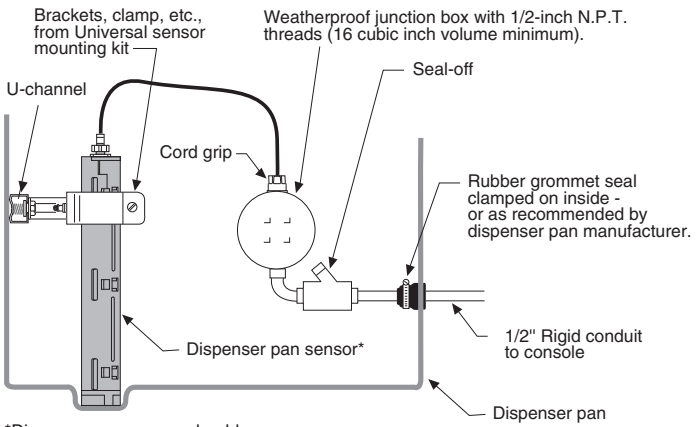
Console Compatibility (*International Only[2])	Recommended Min. Console Software	Sensor Interface Modules: Module Form #	Module Description	# Of Modules Per Console	# Of Sensor Inputs Per Module	Availability
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	8	Sold Separately
TLS-450	4A or Higher	332812-001				
[2]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	6	Included
TLS4i (8601 Series)		330020-750				
[2]TLS4B (8601 Series)		330020-751			4	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329950-001	Type B Interface Module	Up to 8	6	Sold Separately
TLS-300i	NA					
TLS-300C						

Alarm Notification	
Normal	Sensor in Normal State- No liquid detected
Low Liquid	Liquid detected at a minimum of 1.37" (3.4cm)
High Liquid	Liquid detected at a minimum of 7.66" (19.45cm)
Fuel Alarm	Permeable material saturated with fuel
Sensor Out	Sensor not communicating to ATG / Console

Installation Kit: 330020-012 — Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Electrical conductivity / optical
Product Activation Height	Gas - 0.125" (3.175mm); Water - low 1.37" (3.4cm), High 7.66" (19.45cm)
Operating Temp	-40 to +122°F (-40 to +50°C)
Dimensions	11.6" (29.4cm) high, 2.2" (5.6cm) dia.
Miscellaneous / Notes	Standard Cable Length: 12 Feet
Third Party Evaluation Links	*TLS-350/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Solid-State Discriminating Dispenser Pan Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



*Dispenser pan sensor should:
1. Rest in the cup or the lowest point of the dispenser pan.
2. Be positioned so as to be removable by pulling the sensor straight up out of the pan.
3. Be mounted in a true vertical position.

Sensor Description	**Solid-State - (Optical) Discriminating Containment Sump Sensor**	This type of discriminating sensor is installed in a containment sump and will detect the presence of, and differentiate between, hydrocarbons and other liquids.	Sensor Matrix Back
Form Number	**794380-350**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☑ Spill Containment
- ☑ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☑ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85[1]
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

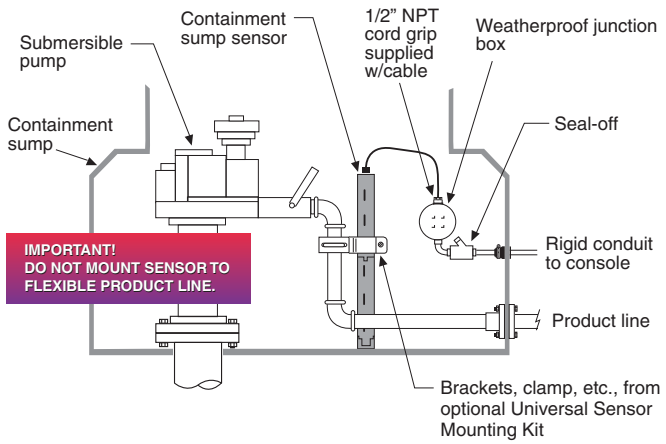
[1]Single Use Only (Test per Sensor Operability Guide in E-10 or less)

Console Compatibility (*International Only[2])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	8	Sold Separately
TLS-450	4A or Higher	332812-001				
[2]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	6	Included
TLS4i (8601 Series)		330020-750				
[2]TLS4B (8601 Series)		330020-751			4	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329950-001	Type B Interface Module	Up to 8	6	Sold Separately
TLS-300i	NA					
TLS-300C						

Alarm Notification		
	Normal	Sensor in Normal State- No liquid detected
	Low Liquid	Liquid detected at a minimum of 1.37" (3.48cm)
	High Liquid	Liquid detected at a minimum of 10.3" (26.2cm)
	Fuel Alarm	Permeable material saturated with Fuel
	Sensor Out	Sensor not communicating to ATG / Console
Installation Kit	330020-012	Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Electrical conductivity / optical
Product Activation Height	Gas - 0.125" (3.175mm); Water - Low - 1.37" (3.4cm), High - 10.3" (26.2cm)
Operating Temp	-40 to +122°F (-40 to +50°C)
Dimensions	22.1" (56.1cm) high, 2.2" (5.6cm) dia.
Miscellaneous / Notes	Standard Cable Length: 12 Feet
Third Party Evaluation Links	*TLS-350/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Solid-State Discriminating Containment Sump Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Magnetostrictive Discriminating Level Indicating Containment Sump Sensor**	This type of sensor is installed in a dispenser pan or containment sump and will detect the presence of, and differentiate between, fuel and other liquids.	Sensor Matrix Back
Form Number	**857080-111 (12"), -112 (24") / 857080-211 (12"), -212 (24"). The -211 and -212 sensors are capable of performing a Sump Integrity Test**		

Where Used (Typical)

- ☑ Dispenser Pan
- ☑ Spill Containment
- ☑ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☑ Discriminating
- ☐ Non–Discriminating
- ☑ Position Sensitive
- ☑ Level Sensing
- ☑ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

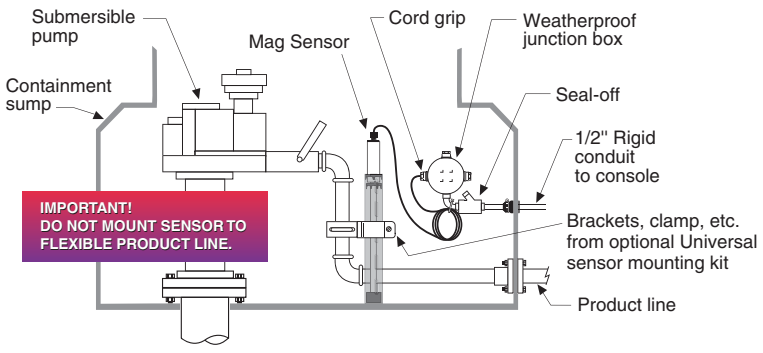
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85
- ☑ E–100
- ☑ Bio–Diesel 20
- ☑ Bio–Diesel 100
- ☑ Green Diesel
- ☑ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input/Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher (-211 and -212 sensors require 126/326 or higher}	329356-004	Smart Sensor Interface Module	Up to 8	8	Sold Separately
TLS-300i	NA					
TLS-300C						

Alarm Notification	Normal	Sensor in Normal State- No liquid detected
	Water Alarm	Water detected at a minimum of 1.614" (2.83cm)
	Fuel Alarm	Fuel detected 1.368" (3.47cm)
	Sensor Comm Alarm	Sensor not communicating to ATG / Console
Installation Kit	330020-012	Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Magnetostrictive probe with dual floats
Product Activation Height	Water 1.614" (4.1cm), Fuel 1.368" (3.47cm)
Operating Temp	-40°C to +60°C
Dimensions	2.4" (6.1cm) Diameter; 21.4" (54.4cm) Long (-111 and -211 models), 33.4" (84.8cm) Long (-112 and -212 models)
Miscellaneous / Notes	Standard Cable Length: 10 Feet
Third Party Evaluation Links	*TLS-350/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Mag Sump Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Solid-State - Non-Discriminating Dispenser Pan Sensor**	This solid-state, non-discriminating sensor is installed typically in a dispenser pan location to detect the presence of a liquid. Its optical liquid level technology requires no moving parts, allowing it to operate in sub-zero temperatures.	Sensor Matrix Back
Form Number	**794380-321**		

Where Used (Typical)

- ☑ Dispenser Pan
- ☑ Spill Containment
- ☐ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

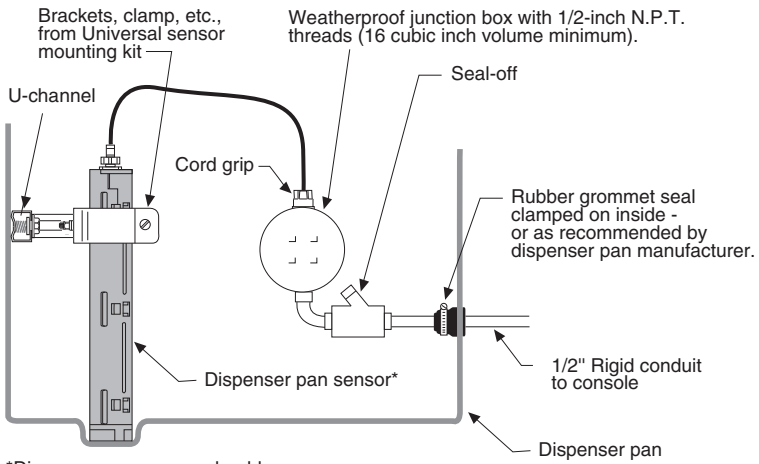
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☐ E–85
- ☐ E–100
- ☑ Bio–Diesel 20
- ☑ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329956-001	Type A Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J	N/A					
TLS-300i						
TLS-300C						

Alarm Notification	Normal	Sensor in Normal State- No liquid detected
	Fuel Alarm	Liquid detected - Approx. 1.0" (2.54cm)
	Sensor Out	Sensor not communicating to ATG / Console
Installation Kit	330020-012	Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Optical- Looking at phase changes in the light beams by causing them to interact or interfere with one another
Product Activation Height	Fuel or Water - Approx. 1" (2.54cm)
Operating Temp	-40 to +122°F (-40 to +50°C)
Dimensions	11.6" (29.4cm) high, 2.2" (5.6cm) dia.
Miscellaneous / Notes	Standard Cable Length: 12 Feet (3.66m)
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Solid-State - Non-Discriminating Dispenser Pan Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



*Dispenser pan sensor should:
1. Rest in the cup or the lowest point of the dispenser pan.
2. Be positioned so as to be removable by pulling the sensor straight up out of the pan.
3. Be mounted in a true vertical position.

Sensor Description	**Solid-State - Non-Discriminating Containment Sump Sensor**	This solid-state, non-discriminating sensor is installed typically in a containment sump area to detect the presence of a liquid. Its optical liquid level technology requires no moving parts, allowing it to operate in sub-zero temperatures.	Sensor Matrix Back

Form Number	**794380-351**

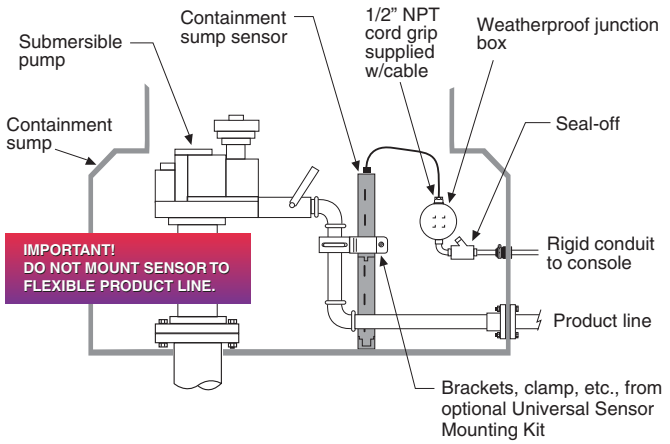
Where Used (Typical)			**Category**
☐ Dispenser Pan ☑ Spill Containment ☑ STP Sump ☐ Convault Tank	☐ Annular Space ☐ Monitoring Well ☐ Oil/Water Separator Tank		☐ Discriminating ☑ Non–Discriminating ☐ Position Sensitive ☐ Level Sensing ☐ Static Testing ☐ Hydrostatic
Fuel Compatibility			
☑ Gas ☑ Diesel ☑ Kerosene ☑ Jet Fuel ☑ Aviation Gas	☑ E–15 ☐ E–85 ☐ E–100 ☑ Bio–Diesel 20 ☑ Bio–Diesel 100	☑ Green Diesel ☐ DEF ☑ Waste Oil ☑ Motor Oil	

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329956-001	Type A Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J	N/A					
TLS-300i						
TLS-300C						

Alarm Notification	Normal	Sensor in Normal State- No liquid detected
	Fuel Alarm	Liquid detected - Approx. 1.0" (2.54cm)
	High Liquid	Sensor not communicating to ATG / Console
Installation Kit	330020-012	Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Optical- Looking at phase changes in the light beams by causing them to interact or interfere with one another
Product Activation Height	Fuel or Water - Approx. 1" (2.54cm)
Operating Temp	-40 to +122°F (-40 to +50°C)
Dimensions	22.1" (56.1cm) high, 2.2" (5.6cm) dia.
Miscellaneous / Notes	Standard Cable Length: 12 Feet (3.66m)
Third Party Evaluation Links	*TLS-350/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Solid-State Non-Discriminating Containment Sump Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Piping Sump Sensor**	The piping Sump Sensor is install in a tank piping sump (STP Containment Sump) and will detect the presence of a liquid.	Sensor Matrix Back
Form Number	**794380-208**		

Where Used (Typical)

- ☑ Dispenser Pan
- ☑ Spill Containment
- ☑ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

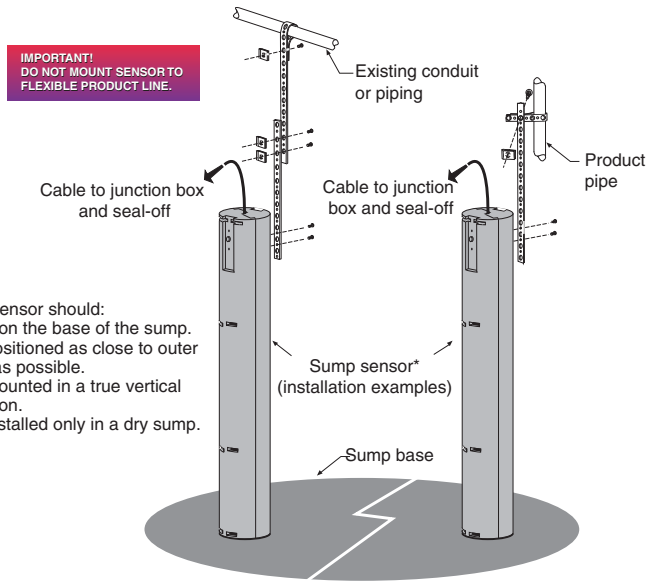
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☐ E–85
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification	Normal	Sensor in Normal State- No liquid detected
	Fuel Alarm	Liquid detected at a minimum of 1.84" (4.67cm)
	Sensor Out	Sensor not communicating to ATG / Console
Installation Kit	330020-076	Sensor Mounting Kit is included (see example installation below).

Specifications	
Operating Principle	Float/magnetic reed switch
Product Activation Height	Liquid 1.84" (4.67cm)
Operating Temp	+32 to +140°F (0 to +60°C)
Dimensions	12" (30.5cm) high, 1.9" (4.8cm) dia.
Miscellaneous / Notes	Standard Cable Length: 12Feet (3.66m). Installation kit 330020-076 included (see example installation).
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Piping Sump Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Non-Discriminating Standalone Dispenser Pan Sensor**	The Non-Discriminating Standalone Dispenser Pan Sensor is designed to detect liquid in a dispenser pan containment. When fluid is detected in the dispenser pan, this sensor shuts down (removes) AC power to the dispenser without the need for additional relays, circuitry, wiring, or an ATG System. The separate sensor control interface ensures intrinsically-safe integrity in a Class 1 Div. 1 Group D; Class 1 Zone 0 IIA hazardous area.	Sensor Matrix Back
Form Number	**847990-001**		

Where Used (Typical)

- ☑ Dispenser Pan
- ☑ Spill Containment
- ☑ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Fuel Compatibility

FUEL

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☐ E–85
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

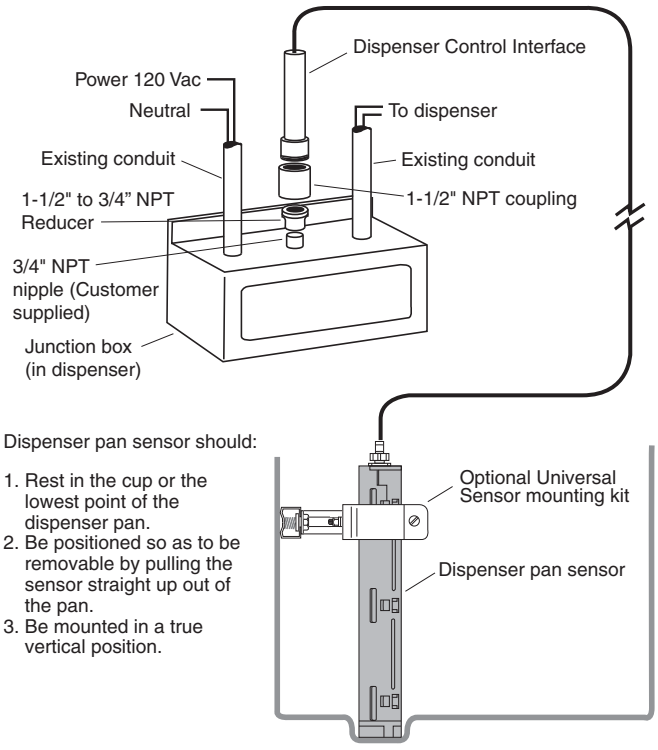
Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Console Compatibility	**Not Required**	
Alarm Notification	Normal	Dispenser operational
	Liquid detected	Remove power to the dispenser
	Sensor out	Remove power to the dispenser
Installation Kit	330020-012	Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Reed switch/float
Product Activation Height	Gasoline: 1.71" (4.34cm), water: 1.62" (4.11cm)
Operating Temp	+32 to +140°F (0 to +60°C) (freezing liquids)
Dimensions	11.6" (29.4cm) high, 2.2" (5.6cm) dia.
Miscellaneous / Notes	• Latching alarm circuitry ensures dispenser can't be restarted until hazardous condition has been corrected. • Connects directly to dispenser wiring. • Controls most manufacturer's dispensers. • Cable length: 5 feet (1.5m). • Control interface dimensions: 9.4" (23.9cm) high, 2.2" (5.6cm) dia.
Third Party Evaluation Links	*http://nwglde.org/evals/veeder_root_p.html*
Product Link	*Non-Discriminating Stand-Alone Dispenser Pan Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Dispenser pan sensor should:

1. Rest in the cup or the lowest point of the dispenser pan.
2. Be positioned so as to be removable by pulling the sensor straight up out of the pan.
3. Be mounted in a true vertical position.

Sensor Description	**Position Sensitive Sensor**	This Sensor is installed in a containment sump or dispenser pan and will detect the presence of, and differentiate between, hydrocarbons and other liquids.	Sensor Matrix Back

Form Number: **794380-323**

Where Used (Typical)

- ☑ Dispenser Pan
- ☑ Spill Containment
- ☑ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☑ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

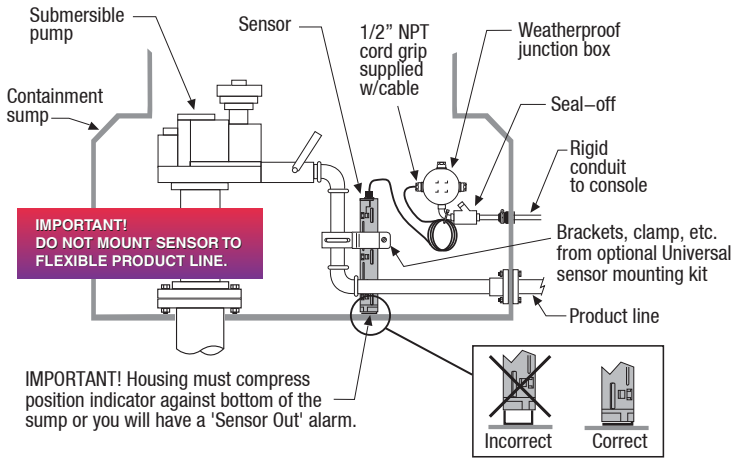
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85
- ☑ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification	Normal	Sensor in Normal State - No liquid detected
	Sensor Out alarm	Sensor not resting on bottom of containment or sensor not communicating to ATG/Console
	Fuel alarm	Liquid detected in containment area at approx. 1.5” (3.81cm)
Installation Kit	330020-012	Universal Sensor Mounting Kit (Sold separately)

Specifications	
Operating Principle	Product permeable, reed switch /float
Product Activation Height	Liquid - Approx. 1.5" (3.81cm)
Operating Temp	+32 to +140°F (0 to +60°C)
Dimensions	12" (30.5cm) high, 2.2” (5.6cm) dia.
Miscellaneous / Notes	Standard Cable Length: 12 Feet (3.66m).
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601Series) Consoles*
Product Link	*Position Sensitive Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Solid-State (Optical) Discriminating Interstitial Sensor for Double-Wall Fiberglass Tanks**	The Discriminating Interstitial Sensor for double-wall fiberglass tanks uses solid-state liquid level sensing technology to detect liquid in the interstitial space of the tank.	Sensor Matrix Back
Form Number	**794380-343**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☑ Convault Tank
- ☑ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☑ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

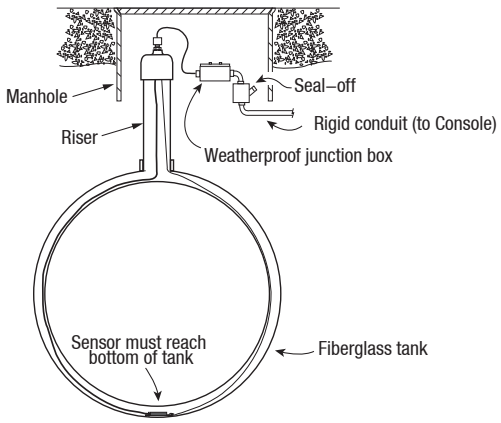
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☐ E–85
- ☐ E–100
- ☑ Bio–Diesel 20
- ☑ Bio–Diesel 100
- ☑ Green Diesel
- ☑ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329956-001	Type A Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J	N/A					
TLS-300i						
TLS-300C						

Alarm Notification	
Normal	Sensor in Normal State - No liquid detected
Liquid alarm	Water detected
Fuel alarm	Fuel or Fuel/Water detected
Sensor out	Sensor not communicating to ATG / Console

Specifications	
Operating Principle	Optical sensor and conductivity
Product Activation Height	Fuel or Water - <0.1" (0.25cm)
Operating Temp	-40 to +122°F (-40 to +50°C)
Dimensions	4.3" (11cm) length, 1.5" (3.8cm) width, 0.5" (1.3cm) thick
Miscellaneous / Notes	Standard Cable 25 feet (7.6m) Fits 4 to 10 foot [1.2 to 3m] I.D.fiberglass tanks
Third Party Evaluation Links	*TLS-350/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Solid-State Discriminating Interstitial Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Interstitial Sensor for Double-Wall Fiberglass Tanks**	The Non-Discriminating Interstitial Sensor for double-wall fiberglass tanks detects the presence of liquid in the interstitial space of the tank.	Sensor Matrix Back

Form Number	**794390-409**

Where Used (Typical)		
☐ Dispenser Pan	☑ Annular Space	
☐ Spill Containment	☐ Monitoring Well	
☐ STP Sump	☐ Oil/Water Separator Tank	
☑ Convault Tank		

Fuel Compatibility		
☑ Gas	☑ E–15	☑ Green Diesel
☑ Diesel	☐ E–85	☐ DEF
☑ Kerosene	☐ E–100	☑ Waste Oil
☑ Jet Fuel	☑ Bio–Diesel 20	☑ Motor Oil
☑ Aviation Gas	☐ Bio–Diesel 100	

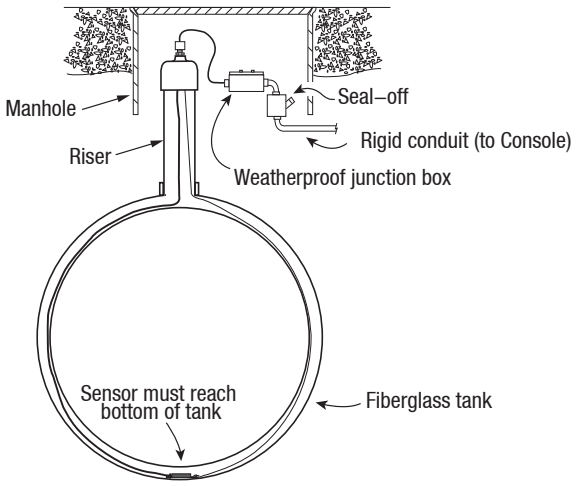
Category
☐ Discriminating
☑ Non–Discriminating
☐ Position Sensitive
☐ Level Sensing
☐ Static Testing
☐ Hydrostatic

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification		
	Normal	Sensor in Normal State - No liquid detected
	Liquid alarm	Liquid detected
	Sensor out	Sensor not communicating to ATG / Console

Specifications	
Operating Principle	Reed switch / float
Product Activation Height	0.28” (0.71cm)
Operating Temp	-4 to +140°F (-20 to +60°C)
Dimensions	2.2” (5.6cm) length, 1.3” (3.3cm) width, 0.6” (1.5cm) thick
Miscellaneous / Notes	Standard Cable 25 feet (7.6m) Fits 4 to 10 foot [1.2 to 3m] I.D.fiberglass tanks
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Non-Discriminating Interstitial Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Solid-State Alternative Ethanol Fluid Interstitial Sensor for Double-Wall Fiberglass Tanks**	The interstitial sensor for double-wall fiberglass tanks with high alcohol product uses solid-state liquid level sensing technology to detect liquid in the interstitial space of the tank.	Sensor Matrix Back
Form Number	**794380-345**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☑ Convault Tank
- ☑ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

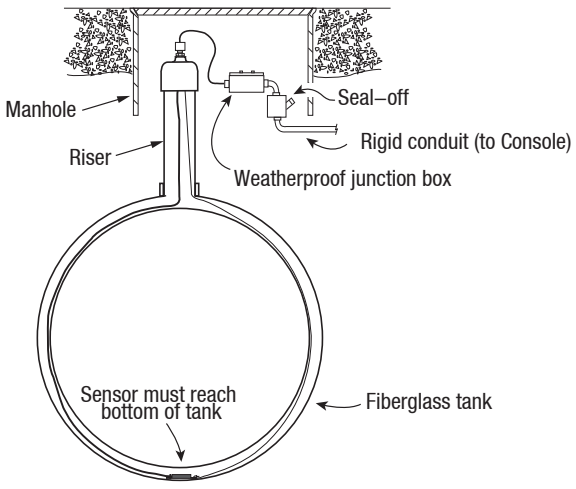
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85
- ☑ E–100
- ☑ Bio–Diesel 20
- ☑ Bio–Diesel 100
- ☑ Green Diesel
- ☑ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329956-001	Type A Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J	N/A					
TLS-300i						
TLS-300C						

Alarm Notification		
	Normal	Sensor in Normal State - No liquid detected
	Fuel alarm	Liquid detected
	Sensor out	Sensor not communicating to ATG / Console

Specifications	
Operating Principle	Optical - looking at phase changes in the light beams by causing them to interact or interfere with one another
Product Activation Height	Fuel or Water<0.2" (0.5cm); E85 <0.4" (1cm)
Operating Temp	-40 to +122°F (-40 to +50°C)
Dimensions	4.3" (11cm) length, 1.5" (3.8cm) width, 0.5" (1.3cm) thick
Miscellaneous / Notes	Standard Cable 25 feet (7.6m) Fits 4 to 10 foot [1.2 to 3m] I.D.fiberglass tanks
Third Party Evaluation Links	*TLS-350/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Solid-State Alternative Ethanol Fluid Interstitial Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Interstitial Sensor for Steel Tanks**	The Interstitial Sensor for steel tanks is non-discriminating and detects the presence of liquid between the double walls of the tank.	Sensor Matrix Back
Form Number	**794390-420 (16' cable); 794390-460 (30' cable)**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☑ Convault Tank
- ☑ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

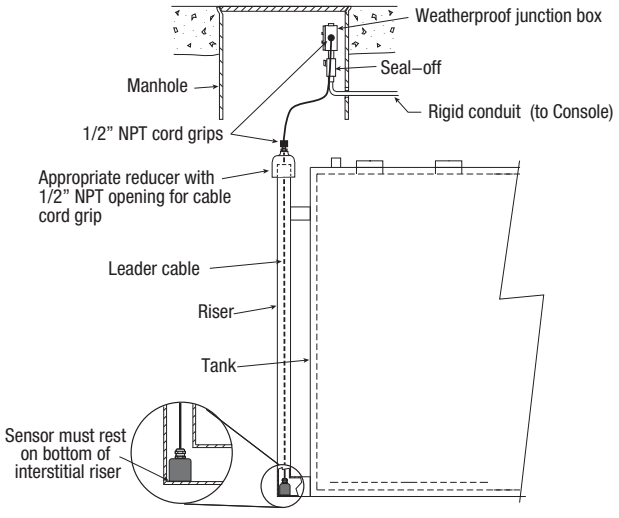
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☐ E–85
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification	Normal	Sensor in Normal State - No liquid detected
	Fuel alarm	Liquid detected
	Sensor out	Sensor not communicating to ATG / Console
Installation Kit	312020-928	2" (50mm) Interstitial sensor riser cap kit (sold separately)

Specifications	
Operating Principle	Reed switch / float
Product Activation Height	1.4" (3.56cm)
Operating Temp	-4 to +140°F (-20 to +60°C)
Dimensions	2.5" (6.4cm) high, 1.5" (3.8cm) diameter
Miscellaneous / Notes	794380-420 (cable 16 feet [4.9m]); 794380-460 (cable 30 feet [9.1m]); 312020-928 (2" [50mm] Riser cap and adapter kit)
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Interstitial Sensor for Steel Tanks*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Position Sensitive Interstitial Sensor for Steel Tanks**	The sensor detects the presence of liquid in small containment areas (i.e., spill buckets) of double wall steel tanks. In addition, it provides an alarm when the sensor is not positioned correctly on the bottom of the interstitial space.	Sensor Matrix Back
Form Number	**794380-333**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☑ Annular Space
- ☑ Spill Containment
- ☐ Monitoring Well
- ☐ STP Sump
- ☐ Oil/Water Separator Tank
- ☐ Convault Tank

Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☑ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

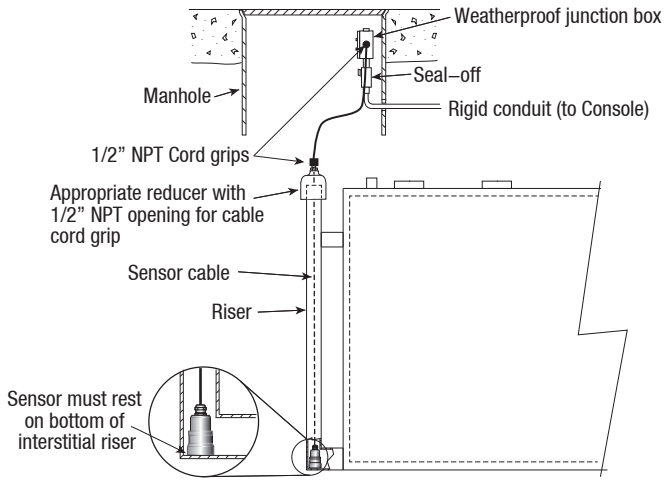
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85
- ☑ E–100
- ☑ Bio–Diesel 20
- ☑ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification	Normal	Sensor in Normal State - No liquid detected
	Fuel alarm	Not sitting correctly on bottom of interstitial space or liquid detected
	Sensor out	Sensor not communicating to ATG / Console
Installation Kit	312020-928	2” (50mm) Interstitial sensor riser cap kit (sold separately)

Specifications	
Operating Principle	Reed Switch /Float
Product Activation Height	1.4” (3.6cm)
Operating Temp	-4 to +140°F (-20 to +60°C)
Dimensions	3.5" (8.9cm) High, 1.75" (4.4cm) Diameter
Miscellaneous / Notes	Standard Cable Length: 20 Feet (6.09m); 312020-928 (2” [50mm] Riser cap and adapter kit)
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Position Sensitive Interstitial Sensor for Steel Tanks*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Interstitial High Alcohol Sensor for Steel Tanks**	The Interstitial Sensor for steel tanks with high alcohol product detects the presence of liquid between the double walls of the tank.	Sensor Matrix Back
Form Number	**794380-430**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☑ Convault Tank
- ☑ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

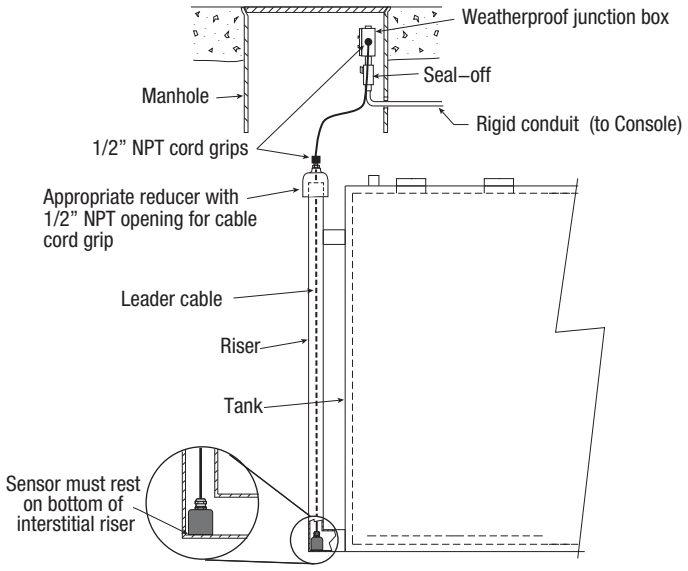
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85
- ☑ E–100
- ☑ Bio–Diesel 20
- ☑ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	Recommended Min. Console Software	Sensor Interface Modules				
		Module Form #	Module Description	# Of Modules Per Console	# Of Sensor Inputs Per Module	Availability
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification	Normal	Sensor in Normal State - No liquid detected
	Fuel alarm	Water or Fuel detected
	Sensor out	Sensor not communicating to ATG / Console
Installation Kit	312020-928	2” (50mm) Interstitial sensor riser cap kit (sold separately)

Specifications	
Operating Principle	Reed switch / float
Product Activation Height	1.1” (2.8cm)
Operating Temp	-4 to +140°F (-20 to +60°C)
Dimensions	2.5” (6.4cm) high, 1.5” (3.8cm) diameter
Miscellaneous / Notes	Standard cable 15 feet [4.5m] cable); 312020-928 (2” [50mm] Riser cap and adapter kit)
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Interstitial High Alcohol Sensor for Steel Tanks*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**MicroSensor**	The non-discriminating small, easy to install solid-state MicroSensor is designed detect liquid in the interstitial space of a steel tank or a fill riser containment.	Sensor Matrix Back
Form Number	**794380-344**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☑ Convault Tank
- ☑ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☑ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic

Fuel Compatibility

FUEL

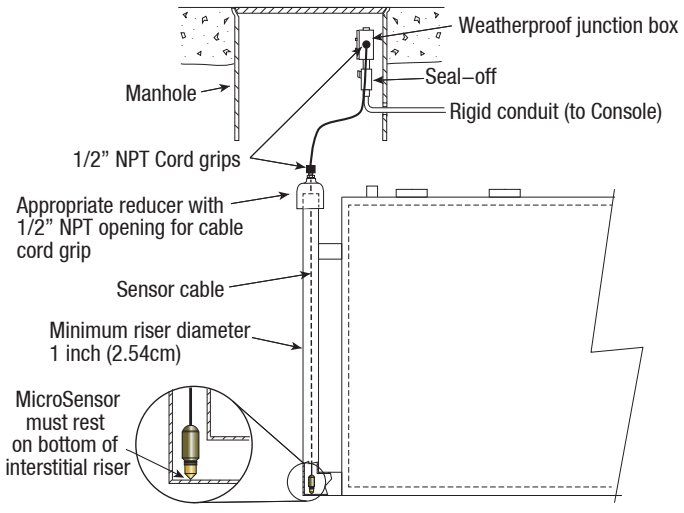
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85
- ☑ E–100
- ☑ Bio–Diesel 20
- ☑ Bio–Diesel 100
- ☑ Green Diesel
- ☑ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329956-001	Type A Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J	N/A					
TLS-300i						
TLS-300C						

Alarm Notification	Normal	Sensor in Normal State - No liquid detected
	Fuel alarm	Liquid detected at a minimum of 1” (2.54cm)
	Sensor out	Sensor not communicating to ATG / Console
Installation Kit	312020-928	2” Cap Adapter Kit (Sold separately)

Specifications	
Operating Principle	Optical
Product Activation Height	1” (2.54cm)
Operating Temp	-40 to +122°F (-40 to +50°C)
Dimensions	Dia. 0.63” (16mm), Length 2” (51mm)
Miscellaneous / Notes	Standard Cable Length: 25 Feet (7.6m); 312020-928 (2” [50mm] Riser cap and Adapter kit)
Third Party Evaluation Links	*TLS-350/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*MicroSensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Dual-Point Hydrostatic Reservoir Sensor (Brine Filled Double Wall Tank Sensor)**	The Hydrostatic Reservoir Sensor accurately detects fluid level change in the reservoir and interstice of a double wall storage tank. The Dual-Point version is ideal for high groundwater areas, and can differentiate between a high level alarm condition and a low level alarm condition. If an inner-wall leak occurs, the brine seeps into the tank triggering a low level alarm, if an outer wall leak occurs, fluid seeps into the interstice triggering a high level alarm.	Sensor Matrix Back
Form Number	**794380-303**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☑ Convault Tank
- ☑ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Fuel Compatibility

FUEL

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85[1]
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

[1]Single Use Only (Test per Sensor Operability Guide in E-10 or less)

Category

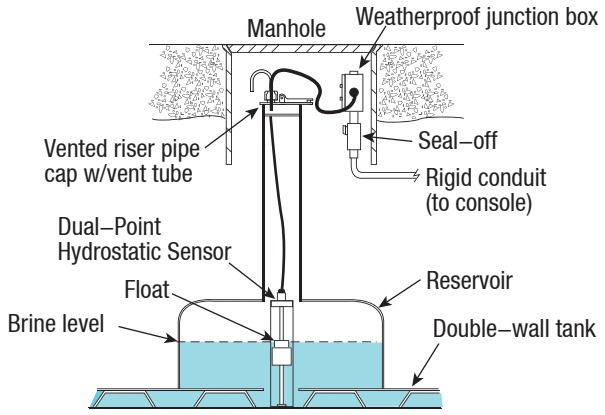
- ☐ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☑ Hydrostatic

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329958-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification		
	Normal	Float is in the Center position (correct amount of brine in reservoir)
	Low liquid	Brine drops below 1.2” (3cm)
	High liquid	Brine rises above 13.13” (33.4cm)
	Sensor out	Sensor not communicating to ATG / Console

Specifications	
Operating Principle	Reed Switch /Float
Product Activation Height	Low 1.2” (3cm), High 13.13” (33.4cm)
Operating Temp	-13 to +122°F (-25 to +50°C)
Dimensions	17.3” (43.9cm) High, 2.5” (6.4cm) Dia.
Miscellaneous / Notes	• Standard Cable Length: 12 ft (3.65m) • Vented riser cap assembly included • Reservoir solutions: Up to 50% ethylene glycol in water; up to 50% propylene glycol in water; salt brine solution of up to 30% CaCl.
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Dual-Point Hydrostatic Reservoir Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Single-Point Hydrostatic Reservoir Sensor (Brine Filled Double Wall Tank Sensor)**	The Hydrostatic Reservoir Sensor accurately detects fluid level change in the reservoir and interstice of a double wall storage tank.The Single-Point version can be used in low groundwater locations. If an inner-wall leak occurs, the brine seeps into the tank triggering a fuel alarm, or if the outer wall leaks, the brine seeps out of the tank interstice triggering a fuel alarm.
Form Number	**794380-301**	

Sensor Matrix Back

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☑ Convault Tank
- ☑ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☑ Hydrostatic

Fuel Compatibility

FUEL

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85[1]
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☐ Waste Oil
- ☐ Motor Oil

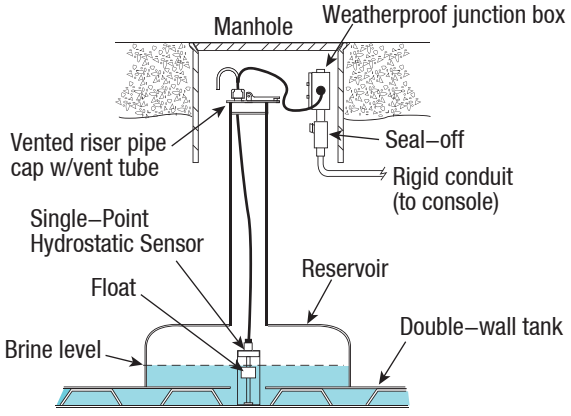
[1]Single Use Only (Test per Sensor Operability Guide in E-10 or less)

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329958-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification		
	Normal	Float is in the UP position (correct amount of brine in reservoir)
	Fuel alarm	Brine level below 1.74” (4.4cm)
	Sensor out	Sensor not communicating to ATG / Console

Specifications	
Operating Principle	Reed Switch /Float
Product Activation Height	1.75” (4.4cm)
Operating Temp	-13 to +135°F (-25 to +57°C)
Dimensions	6” (15cm) high, 2.5” (6.4cm) dia.
Miscellaneous / Notes	• Standard Cable Length: 12 ft (3.65m) • Vented riser cap assembly included • Reservoir solutions: Up to 50% ethylene glycol in water; up to 50% propylene glycol in water; salt brine solution of up to 30% CaCl
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Single-Point Hydrostatic Reservoir Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Single-Point Mini-Hydrostatic Sensor for Double Wall Sumps**	The Single-Point Mini-Hydrostatic sensor accurately detects fluid level change in the interstice reservoir of a double-wall sump. If a leak occurs in the sump interstice, the brine seeps out of the reservoir triggering a low level alarm.	Sensor Matrix Back
Form Number	**794380-304**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☐ Convault Tank
- ☑ Annular Space
- ☐ Monitoring Well
- ☐ Oil/Water Separator Tank

Category

- ☐ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☑ Hydrostatic

Fuel Compatibility

FUEL

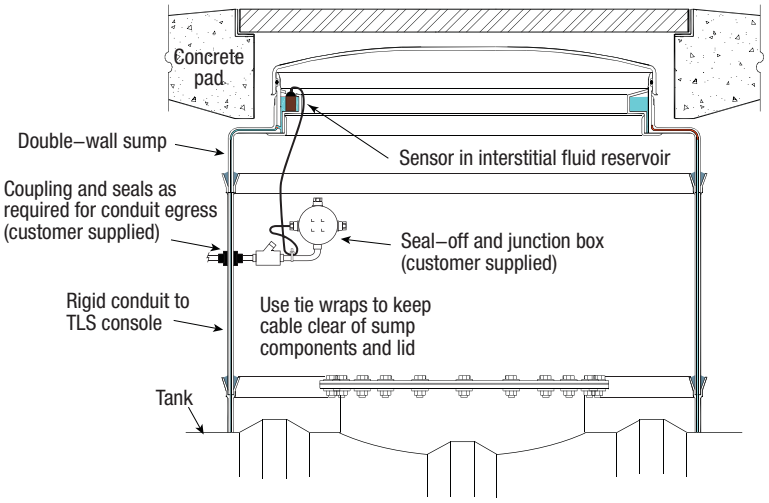
- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☑ E–85
- ☑ E–100
- ☑ Bio–Diesel 20
- ☑ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329958-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification		
	Normal	Float is in UP position (correct amount of brine in reservoir)
	Fuel alarm	Float is in DOWN position (low brine level in reservoir)
	Sensor out	Sensor not communicating to ATG / Console

Specifications	
Operating Principle	Reed Switch /Float
Product Activation Height	0.79" (2cm)
Operating Temp	-13 to +122°F (-25 to +50°C)
Dimensions	2.5" (6.4cm) high, 1.5" (3.8cm) dia.
Miscellaneous / Notes	Standard Cable Length: 8 Feet (2.43m); up to 50% ethylene glycol in water; up to 50% propylene glycol in water; salt brine solution of up to 30% CaCl.
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Single-Point Mini-Hydrostatic Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Vapor Sensor**	The Vapor Sensor detects hydrocarbon vapor exceeding the programmed threshold limit in the monitoring well.	Sensor Matrix Back
Form Number	**794390-700**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☑ Monitoring Well
- ☐ Oil/Water Separator Tank

Fuel Compatibility

FUEL

- ☑ Gas
- ☐ Diesel
- ☐ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☐ E–85
- ☐ E–100
- ☐ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☐ Green Diesel
- ☐ DEF
- ☐ Waste Oil
- ☐ Motor Oil

Category

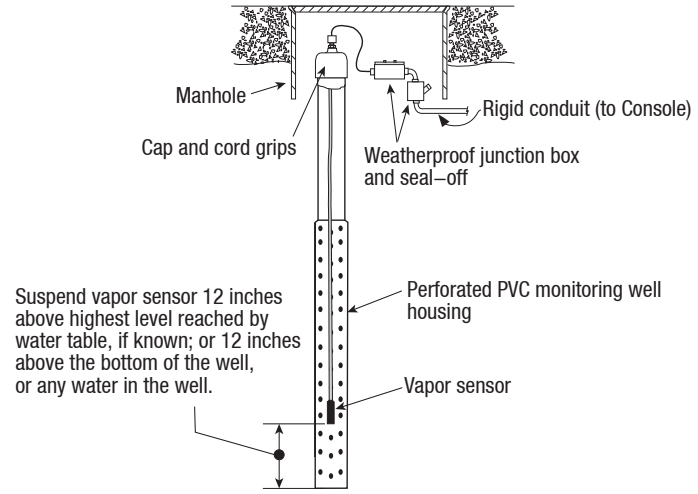
- ☐ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic
- ☑ Vapor
- ☐ Groundwater
- ☐ Oil/Water Separator

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	8	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	6	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			4	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329357-001	Vapor Sensor Interface Module	Up to 8	5	Sold Separately
TLS-350J	N/A					
TLS-300i						
TLS-300C						

Alarm Notification		
	Short alarm	A short has occurred in the sensor wiring or in the sensor.
	Water alarm	The vapor sensor is immersed in water and is incapable of detecting fuel vapors.
	Fuel alarm	Fuel vapors are present in the area being monitored by the sensor.
	Sensor Out alarm	Sensor setup was performed incorrectly; it is disconnected; or, it is not functioning properly.
Installation Kit	312020-939	4-inch (100mm) cap and adapter kit (Sold separately)

Specifications	
Operating Principle	Adsistor
Product Activation Height	Gasoline vapor >500 ppm
Operating Temp	-4 to +140°F -(20 to +60°C)
Dimensions (Sensor)	4.9” (12.4cm) long, 1.1” (2.8cm) dia.
Miscellaneous / Notes	Standard Cable 18 feet (5.5m)
Third Party Evaluation	*TLS-350/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Vapor Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Groundwater Sensor**	The Groundwater Sensor detects free hydrocarbons in the C5 to C16 range on the water table in up to 20 feet deep monitoring wells.	Sensor Matrix Back
Form Number	**794380-621 (7 - 10 foot [2 - 3m] wells); 794380-622 (10 - 15 foot [3 - 4.5m] wells); 794380-624 (15 - 20 foot [4.5 - 6m] wells)**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☑ Monitoring Well
- ☐ Oil/Water Separator Tank

Fuel Compatibility

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☐ E–85
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☑ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Category

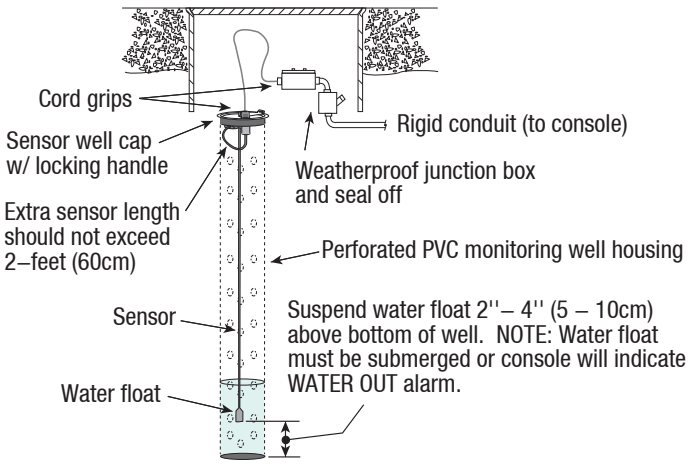
- ☐ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic
- ☐ Vapor
- ☑ Groundwater
- ☐ Oil/Water Separator

Console Compatibility (*International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	8	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	6	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			4	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329399-001	Groundwater Sensor Interface Module	Up to 8	5	Sold Separately
TLS-350J	N/A					
TLS-300i						
TLS-300C						

Alarm Notification		
	Normal	Sensor in water -no hydrocarbons detected.
	Water out	Sensor not in water - well dry
	Fuel alarm	Permeable material saturated with Fuel
	Sensor out	Sensor not communicating to ATG / Console

Specifications	
Operating Principle	Electrical conductivity
Product Activation Height	0.02” (0.5mm)
Operating Temp	+32 to +104°F (0 to +40°C)
Dimensions (Water Float)	4.9” (12.4cm) long, 1.1” (2.8cm) dia.
Miscellaneous / Notes	Locking cap included; cable length 64” (162.6cm)
Third Party Evaluation Links	*TLS-3XX/TLS-450 Series Consoles* *TLS4 (8601 Series) Consoles*
Product Link	*Groundwater Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Example Installation



Sensor Description	**Oil/Water Separator Sensor (OWSS)**	The Oil Water Separator Sensor (OWSS) allows you to utilize your existing Veeder-Root system for your Oil Water Separator tank. The OWSS facilitates operation of the tank by monitoring product thresholds, and will activate alarms on the TLS monitoring system when tank contents exceed a predetermined threshold. The probe also provides the conditions for these alarms and a full alarm history.	Sensor Matrix Back
Form Number	**794690-XXX**		

Where Used (Typical)

- ☐ Dispenser Pan
- ☐ Spill Containment
- ☐ STP Sump
- ☐ Convault Tank
- ☐ Annular Space
- ☐ Monitoring Well
- ☑ Oil/Water Separator Tank

Fuel Compatibility

FUEL

- ☑ Gas
- ☑ Diesel
- ☑ Kerosene
- ☑ Jet Fuel
- ☑ Aviation Gas
- ☑ E–15
- ☐ E–85
- ☐ E–100
- ☑ Bio–Diesel 20
- ☐ Bio–Diesel 100
- ☐ Green Diesel
- ☐ DEF
- ☑ Waste Oil
- ☑ Motor Oil

Category

- ☐ Discriminating
- ☐ Non–Discriminating
- ☐ Position Sensitive
- ☐ Level Sensing
- ☐ Static Testing
- ☐ Hydrostatic
- ☐ Vapor
- ☐ Groundwater
- ☑ Oil/Water Separator

Console Compatibility (International Only[1])	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Form #	**Module Description**	**# Of Modules Per Console**	**# Of Sensor Inputs Per Module**	**Availability**
TLS-450PLUS (8600 Series)	6A or Higher	332812-001	Universal Sensor Module (USM)	Up to 4 - TLS-4XX Up to 8 - TLS-4XX w/opt. TLS-XB	16	Sold Separately
TLS-450	4A or Higher	332812-001				
[1]TLS4 (8601 Series)	6A or Higher	330020-750	Universal Sensor Input Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)		330020-750				
[1]TLS4B (8601 Series)		330020-751			6	
TLS4c (8601 Series)		330020-751				
TLS-350/R/PLUS	124/324 or Higher	329358-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		330230-001	4 Probe / 8 Sensor Interface Module		8	Included
TLS-300C		330513-001	2 Probe / 8 Sensor Options			

Alarm Notification	Normal	Tank is properly setup with liquid
	Liquid warning	Oil is present in tank
	Liquid alarm	Oil has reached its maximum volume, remove from tank
	Sensor out	Sensor not communicating to ATG / Console

Specifications	
Operating Principle	Reed switch / float
Product Activation Height	Custom-Based on Tank Configuration
Operating Temp	0 to +140°F (0 to +60°C)
Dimensions	Custom-Based on Tank Configuration
Miscellaneous / Notes	Standard Cable Length: 12 Feet- See Appendix B in this manual for sensor sizing
Product Link	*Oil Water Separator Sensor*
Warranty with System	1 Yr Parts & Labor
Warranty (When purchased separately)	1 Yr Parts Only

Appendix A - Sensor Type Programming Table

The table below is helpful when selecting Sensor Type (for TLS-3XX Series consoles) or Sensor Model (for TLS4/8601 and TLS-450 and TLS-450PLUS consoles) during sensor setup.

Sensor Type Programming Table for TLS Consoles

Sensor	Form Number	Sensor Category (Location)	TLS-3XX Series Sensor Type	TLS4/8601 Series TLS-450 and TLS-450PLUS Sensor Model
Discriminating Dispenser Pan and Sump Sensors - Standard	794380-322 (DPS), 794380-352 (CSS)	Sump/Pan	Liquid Sensor Setup: Sensor Type - Dual Float Discriminating	Device Setup Liquid Sensor: Model - Dual Float Discriminating
Discriminating Dispenser Pan and Sump Sensors - Optical	794380-320 (DPO), 794380-350 (CSO)	Sump/Pan	3-Wire C.L. Setup: Sensor Mode - Standard	Device Setup Type B Sensor: Model - Ultra/Z-1 (Standard)
Mag Sump Sensor	857080-XXX	Sump/Pan	Smart Sensor Setup: Sensor Category- Mag Sensor	Device Setup MAG Sensor
Solid-State Dispenser Pan and Containment Sump	794380-321 (DP); 794380-351 (CS)	Sump/Pan	2-Wire C.L. Setup: Sensor Type - Ultra 2	Device Setup Type A Sensor: Model - Ultra 2
Piping Sump	794380-208	Sump/Pan	Liquid Sensor Setup: Sensor Type - Tri-State Liquid	Device Setup Liquid Sensor: Model - Tri-State
Position-Sensitive Sensor **High Alcohol Compatible!**	794380-323	Sump/Pan	Liquid Sensor Setup: Sensor Type - Tri-State Liquid	Device Setup Liquid Sensor: Model - Tri-State
Discriminating Interstitial Sensor for Double-Wall Fiberglass Tanks	794380-343	Annular Space	2-Wire C.L. Setup: Sensor Type - Discrim Interstitial	Device Setup Type A Sensor: Model - Discrim. Interstitial
Interstitial Sensors for Double-Wall Fiberglass Tanks	794390-409	Annular Space	Liquid Sensor Setup: Sensor Type - Tri-State Liquid	Device Setup Liquid Sensor: Model - Tri-State
Interstitial High Alcohol Sensor for Double-Wall Fiberglass Tanks **High Alcohol Compatible!**	794380-345	Annular Space	2-Wire C.L. Setup: Sensor Type - Ultra 2	Device Setup Type A Sensor: Model - Ultra 2
Interstitial Sensors for Steel Tanks	794390-4X0	Annular Space	Liquid Sensor Setup: Sensor Type - Tri-State Liquid	Device Setup Liquid Sensor: Model - Tri-State
Position Sensitive Interstitial Sensor for Steel Tanks **High Alcohol Compatible!**	794380-333	Annular Space	Liquid Sensor Setup: Sensor Type - Tri-State Liquid	Device Setup Liquid Sensor: Model - Tri-State
Interstitial High Alcohol Sensors for Steel Tanks **High Alcohol Compatible!**	794380-430	Annular Space	Liquid Sensor Setup: Sensor Type - Tri-State Liquid	Device Setup Liquid Sensor: Model - Tri-State
MicroSensor **High Alcohol Compatible!**	794380-344	Annular Space	2-Wire C.L. Setup: Sensor Type - Ultra 2	Device Setup Type A Sensor: Model - Ultra 2
Hydrostatic Reservoir	794380-301 (1 float)	Annular Space	Liquid Sensor Setup: Sensor Type - Tri-State Liquid	Device Setup Liquid Sensor: Model - Tri-State
	794380-303 (1 float)	Annular Space	Liquid Sensor Setup: Sensor Type - Dual Point Hydrostatic	Device Setup Liquid Sensor: Model - Dual Point Hydrostatic
Single-Point Mini Hydrostatic Sensor for Double Wall Sumps	794380-304	Annular Space	Liquid Sensor Setup: Sensor Type - Tri-State Liquid	Device Setup Liquid Sensor: Model - Tri-State
Vapor	794390-700	Monitor Well	Vapor Sensor Setup	Device Setup Vapor Sensor
Groundwater	794380-62X	Monitor Well	Groundwater Sensor Setup	Device Setup Groundwater Sensor
Oil/Water Separator	794690-XXX	Oil/Water Separator Tank	Liquid Sensor Setup: Sensor Type - Dual Float Discriminating	Device Setup Liquid Sensor: Model -Dual Float Discriminating

Appendix B - How To Order An Oil/Water Separator Sensor (OWSS)

Sensor Sizing

To determine the correct sensor length for the oil/water separator tank application use the manufacturer's tank chart to determine height - to - volume thresholds for warning and alarm conditions and make three measurements, including verifying fluid depths on the manufacturer's tank chart.

1. **Determining The Lowest Point Of The Bottom (Alarm) Float**
   Measure and record the distance from inside the top of the tank to the maximum depth of waste oil/water interface in the tank as recommended by the tank's manufacturer (Fig.B-1). Subtract 3 inches from this measurement to determine the lowest permissible point in the tank for the centerline of the sensor's bottom (alarm) float and **note this measurement as D1**.

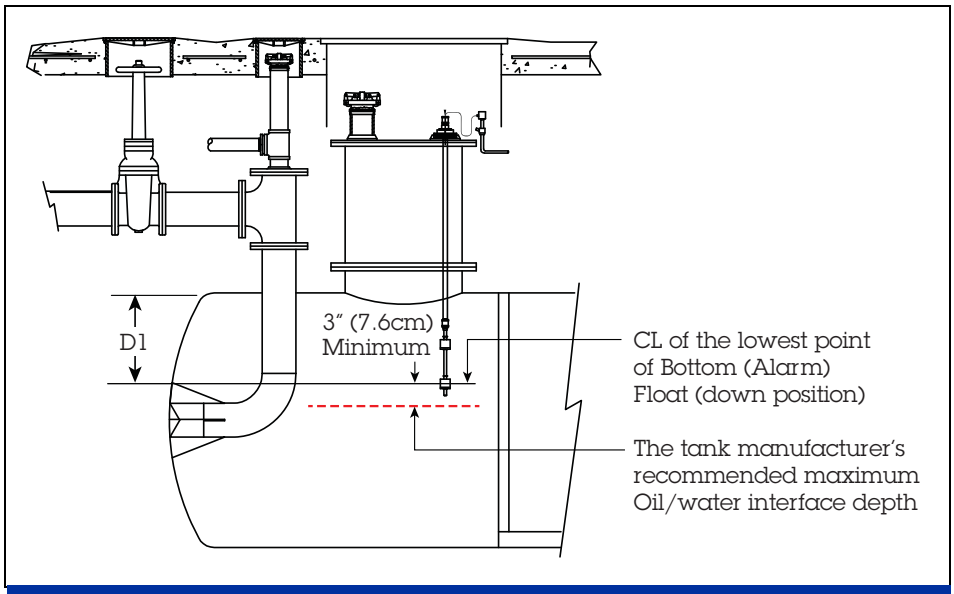
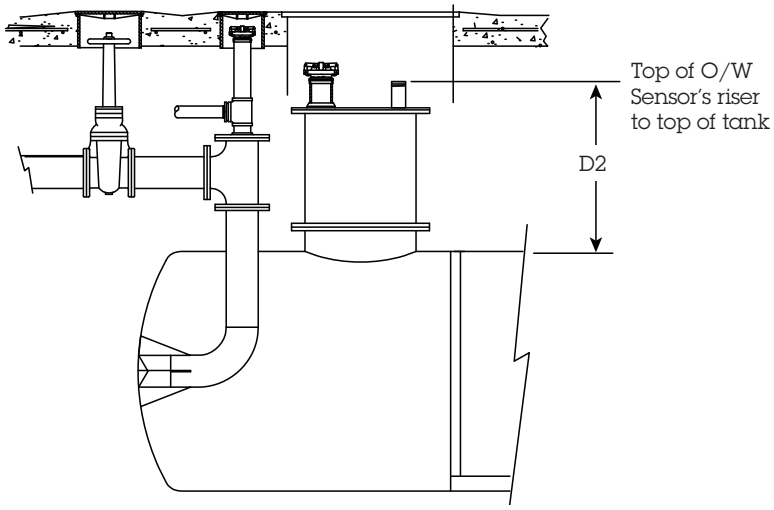
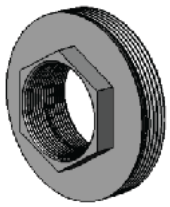


Fig. B-1.- Determining Lowest Point For O/W Sensor's Bottom Float

2. **Determining Distance From Top Of Riser To Top Of Tank**
   Measure from the top of the riser down to the top of the tank and if using the riser reducing 4x2 fitting **note this measurement as D2**, OR, If using the riser reducing 4x2 coupling add 3" to the measured distance and **note this measurement as D2** (Fig.B-2



If using a 4" to 2" reducing fitting riser adapter (example at right) no height adjustment is needed to measurement D2.



If using a 4" to 2" reducing coupling riser adapter (example at right) **add 3 inches to the results of measurement D2**.

Fig. B-2.- Determining Distance D2

3. **Determining The Top (Warning) Float Position**
   Consult the tank chart to determine the height of the top warning level (centerline of the top float). Measure the distance from the top of the tank to the centerline of the top float (Fig.B-3). **Note this measurement as D3.**

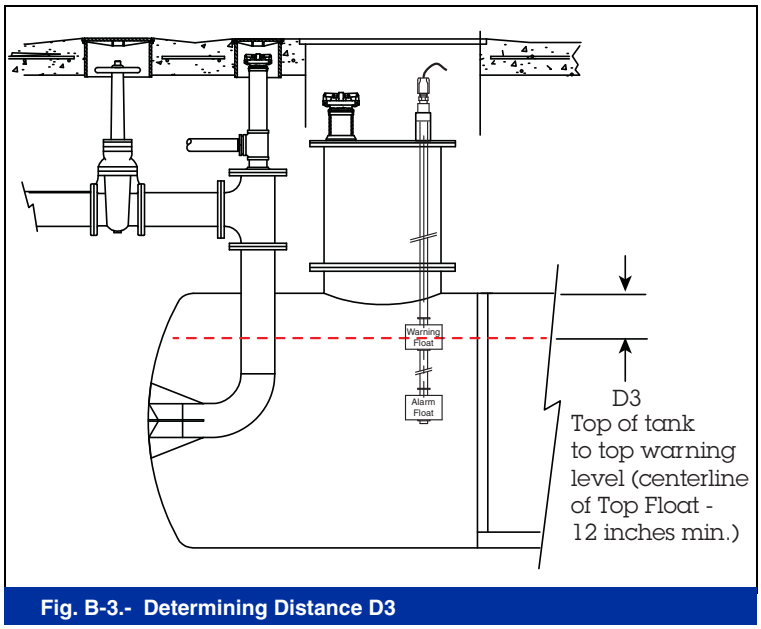


Fig. B-3.- Determining Distance D3

4. **Determining Correct Sensor To Order**
   Use the D1, D2 and D3 measurements made in Steps 1 - 3 to determine the part number of the sensor from the V-R Oil/Water Separator Sensor matrix shown in Fig.B-4.

   For example: D1 = 33”, D2 = 24.5, D3 = 13”
   D2 + D3 = Top float position, i.e., 24.5 + 13 = 37.5” (Dimension A in the V-R P/N matrix)
   D1 - D3 = Bottom float position, i.e., 33 - 13 = 20” (Dimension B in the V-R P/N matrix)

   Using the OWSS float positions calculated in the example above, the top float (Warning) would activate at 13 inches below the top of the tank and the bottom float (Alarm) would activate at 33” below the top of the tank. The correct part number for these example float positions would be 764690-053.

   Round dimension A or B down to the nearest available option if necessary. Note: doing so will impact the float Warnings and Alarms generated on the TLS system.

Alarm Conditions

Alarm Type	Alarm Condition
Liquid Warning	Oil present in tank
Liquid Alarm	Oil has reached its maximum volume, remove from tank
Sensor Out Alarm	No communication to ATG
Normal	Tank is properly setup with liquid

Order OWSS part number 764690-XXX, where XXX equals the three digits where Dimensions A and B intersect in the part number matrix:

DIMENSION "B"

DIMENSION "A"	5"	10"	15"	20"	25"	30"	35"	40"	45"	50"
18"	-010	-011	-012	-013	-014	-015	-016	-017	-018	-019
22"	-020	-021	-022	-023	-024	-025	-026	-027	-028	-029
26"	-030	-031	-032	-033	-034	-035	-036	-037	-038	-039
30"	-040	-041	-042	-043	-044	-045	-046	-047	-048	-049
34"	-050	-051	-052	-053	-054	-055	-056	-057	-058	-059
38"	-060	-061	-062	-063	-064	-065	-066	-067	-068	-069
42"	-070	-071	-072	-073	-074	-075	-076	-077	-078	-079
46"	-080	-081	-082	-083	-084	-085	-086	-087	-088	-089
50"	-090	-091	-092	-093	-094	-095	-096	-097	-098	-099
54"	-100	-101	-102	-103	-104	-105	-106	-107	-108	-109
58"	-110	-111	-112	-113	-114	-115	-116	-117	-118	-119
62"	-120	-121	-122	-123	-124	-125	-126	-127	-128	-129
66"	-130	-131	-132	-133	-134	-135	-136	-137	-138	-139
70"	-140	-141	-142	-143	-144	-145	-146	-147	-148	-149
74"	-150	-151	-152	-153	-154	-155	-156	-157	-158	-159
78"	-160	-161	-162	-163	-164	-165	-166	-167	-168	-169
82"	-170	-171	-172	-173	-174	-175	-176	-177	-178	-179
86"	-180	-181	-182	-183	-184	-185	-186	-187	-188	-189
90"	-190	-191	-192	-193	-194	-195	-196	-197	-198	-199

Fig. B-4.- Oil/Water Separator Sensor Part Number Matrix

Appendix C - Direct Burial Cable

The Veeder-Root direct burial cable system provides everything needed for an alternative wiring installation method for use with our probes and sensors. Installation of buried cable should only be done in those locations where existing conduit is not available, and where local codes permit the use of buried cable instead of conduit, and epoxy splices instead of junction boxes. Before considering buried cable runs, check with the local authority having jurisdiction to be sure that direct burial practices are acceptable at your location.

If you are unfamiliar with direct burial techniques, you should consider either of two Veeder-Root kits:

- Direct Burial Cable Site Preparation kit (P/N 848100-500) which contains the Direct Burial Installation Manual, a splice kit installation manual and the 890-SL joint sealant instruction guide.
- Direct Burial Cable Site Demonstration kit (P/N 848100-502) which contains one splice kit with installation instructions, a 890-SL joint sealant instruction guide, a 6-inch piece of 2 conductor direct burial wire.

After reviewing the contents of these kits, and after verifying local code requirements, you should be much more informed as to the applicability of this wiring method for your site.

Direct Burial Cable Specifications

2-CONDUCTOR, SHIELDED CABLE		3-CONDUCTOR, SHIELDED CABLE	
Item	Description	Item	Description
Primaries		Primaries	
Conductor	#18 AWG (19/30) tinned copper	Conductor	#18 AWG (19/30) tinned copper
Insulation Type	Fluoropolymer	Insulation Type	Fluoropolymer
Primary O.D.	0.063” (1.6mm) nominal	Primary O.D.	0.063” (1.6mm) nominal
Drain	#20 AWG (7/28) tinned copper, located under the tape	Drain	#20 AWG (7/28) tinned copper, located under the tape
Jacket		Jacket	
Insulation type	Fluoropolymer	Insulation type	Fluoropolymer
Final O.D.	0.161” (4.1mm)	Final O.D.	0.171”(4.34mm)
Color	Red tint	Color	blue tint
UL temp rating	257°F (125°C)	UL temp rating	392°F (200°C)

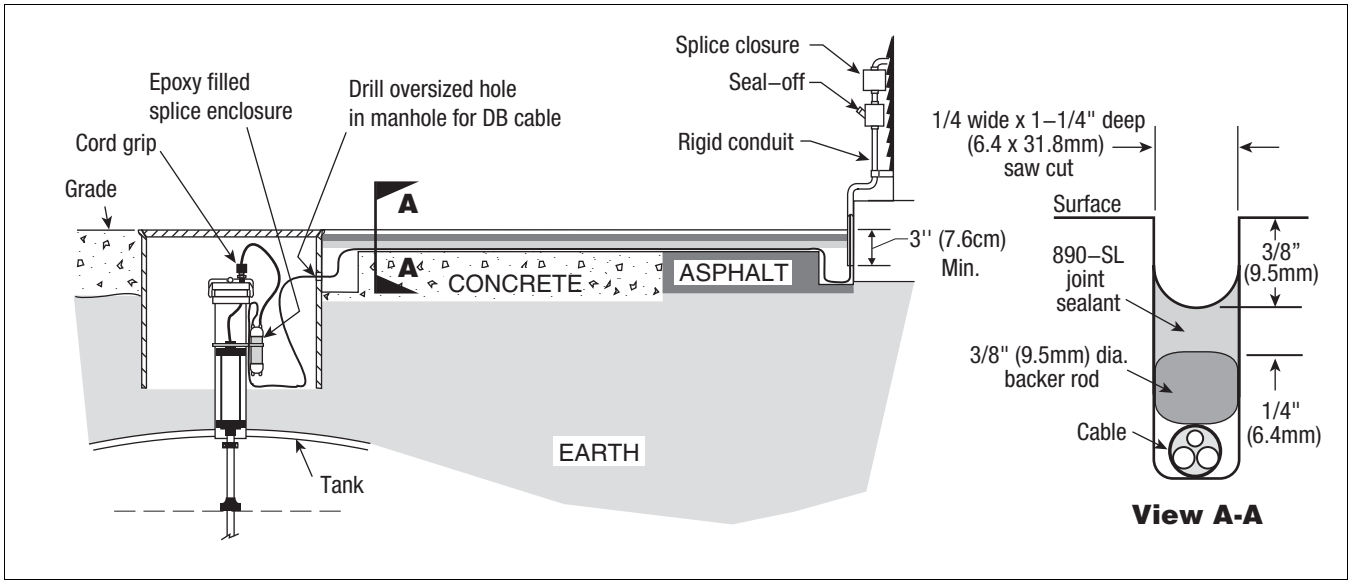
Direct Burial Cable Components

Order equal lengths of filler rod and either type cable. Refer to V-R manual 576013-858 to estimate length.

- Filler rod - P/N 848100-1XX (lengths of 100 to 2000 feet [30.5 to 610m], in increments of 100 feet [30.5m])
- Filler rod installation tool P/N 848100-904 (adjusts to 1/8” [0.32cm], 1/4” [6.4mm], 3/8” [9.5mm], or 1/2” [12.7mm] saw cuts)
- 2-conductor cable - P/N 848100-2XX (lengths of 100 to 2000 feet (30.5 to 610m), in increments of 100 feet)
- 3-conductor cable - P/N 848100-3XX (lengths of 100 to 2000 feet, in increments of 100 feet)
- Cartridge of 890-SL sealant P/N 848100-800 (60 linear feet [18m] in 1/4” [6.4mm] wide cut)
- 4.5 gallon (17 liter) can of 890-SL sealant P/N 848100-805 (1200 linear feet [365m] in 1/4” [6.4mm] wide cut)

- Sealant cartridge gun, manual driven - P/N 8481021 (for use with P/N 848100-800 cartridge)
- Sealant bulk gun, air driven - P/N 848100-903 (for use with P/N 848100-805 4.5 gallon (17 liter) can)

Direct Burial Cable Installation Example



VEEDER-ROOT

For technical support, sales or other assistance, please visit:
www.veeder.com