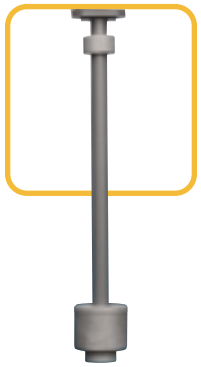
cynergy3 components™

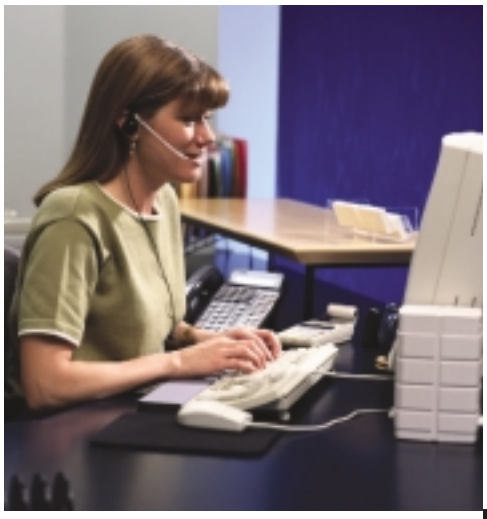


Liquid Level and Flow Sensors

Liquid level & flow sensors

Cynergy3 components Limited has been involved in the manufacture of Reed Switches, Reed Relays, Liquid Level and Flow Switches, for over 40 years.

Design, development and manufacturing are all contained within two sites. Many of Cynergy3's own manufactured Reed Switches are used within other Cynergy3 products. This all helps Cynergy3 to maintain complete control over production, delivery and quality, as well as providing our customers with fast and accurate responses.



The Wimborne site incorporates a clean room, where Reed Switches are manufactured, a comprehensive range of coil winding equipment, Float Switch, Flow Switch and Reed Relay production lines. Specialised automated and semi-automated test equipment is used for each of the product ranges, to ensure the standard of quality.

The Christchurch site, TAV Engineering, can offer an extensive range of customised float switches and level control equipment for petrochemical, oil, hydraulics, railway, mining, aviation, marine, food & general engineering industries. TAV's products are quality designed to meet the challenges of liquid level control, where reliability is paramount.

All TAV products are built to specific customer requirements, for safe area, intrinsically safe and hazardous area applications.

The Company aims to provide high quality products, based on innovative engineering skills and reliable production processes. We develop close partnerships with our customers by working with them, from early feasibility studies through to delivering production quantities.

The Company ensures that it is able to compete in a world market, by solving customer's problems and providing them with the best possible solution.

Cynergy3 produces a comprehensive range of Reed Switch/Magnet operated Float Switches, to suit most applications. There are vertical or horizontal types and internal or external mounting options, in a range of materials to operate in most liquids, from boiling water to aggressive chemicals. Cynergy3 is known for providing customer specific designs to meet their particular applications and design parameters.

The majority of the Cynergy3 range of Float Switches have both WRAS (Water Regulations Advisory Scheme) and UL (Underwriters Laboratories) approvals.

TAV can offer level switches for use Hazardous Area EExd 11C T110°C, Intrinsically Safe Area EEx ia IIC T4 and with Lloyds Register qualification.

ISO 9001 registered production facility, liquid level & flow sensors for over forty years

Certificate No. FM 2050

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Selector Guide

Contents

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Selecting the right float switch

There are different methods for selecting the right float switch for a particular application. This note suggests one such method.

1. Physical arrangement and choice of float switch style

The choice of styles that may be suitable for an application will depend on the physical arrangement of the tank, the available mounting positions, the tank wall thickness and whether access is available to the inside of the tank.

Consideration should also be given to whether there is the possibility of a build up of deposits, from the liquid, on the float body. These deposits can, over a period of time, accumulate to such an extent that the float switch can fail to operate. There are particular series designed to limit the effects of this build up.

There are also choices of mounting thread, for some series.

2. Material selection

The selection of most suitable materials, for float switch and gasket, can be made by reference to the Chemical Compatibility chart (www.cynergy3.com). This gives a good indication of the suitability, of the float switch materials, in a wide range of liquids. It may be necessary, for some liquids, to obtain a sample float switch to test the compatibility.

3. Electrical

It is important to fully understand the nature of the load, to be switched by the float switch, and to make sure that the switch is capable of handling this load. The electrical ratings, shown in Cynergy^3 float switch specifications, are all for purely resistive loads. Any loads that have either inductive or capacitive components should have the appropriate contact protection measure applied, by reference to the Contact Protection application note, available at www.cynergy3.com

4. Cables

Cynergy^3 has standard, UL approved, cable types for the various float switches, which are shown on the product data sheets. Other cables, or connectors, can be supplied subject to special quotation and order.

5. Options

Cynergy^3 has, over the years, produced many variants of its float switches to match particular customer requirements. Please contact Technical Support for advice about any particular special requirement.

6. Environment

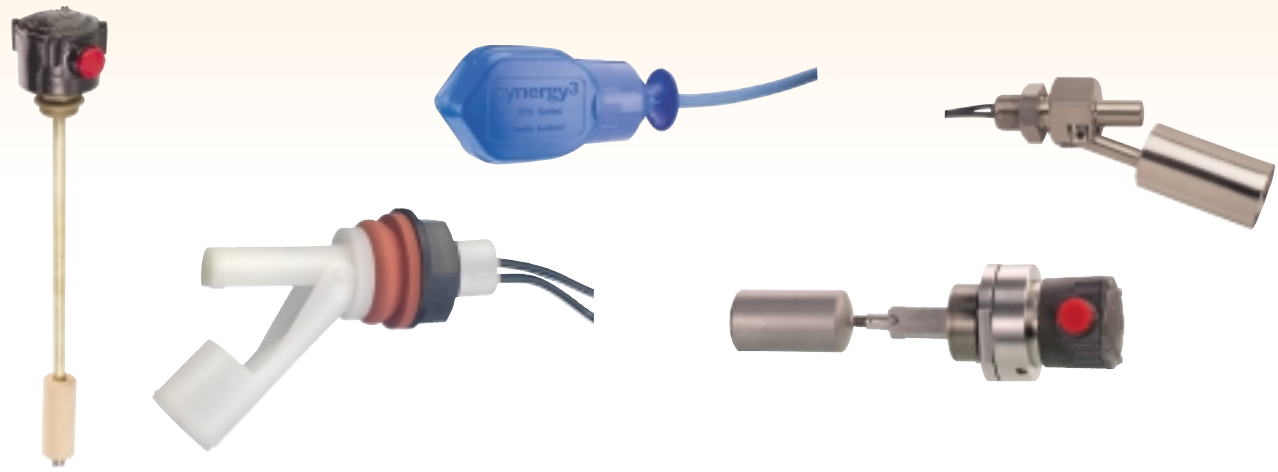
The application environment is critical to the choice of float switch. A water tank for an industrial process control may only require a simple plastic float switch. However, if the application is in a hazardous area, for example a petrochemical storage tank where flammable gases, vapours and dust are present, a stainless steel explosion proof float switch will be required. Cynergy^3 can supply float switches for all environments, including Industrial Process Control, Safe Area, Intrinsically Safe and Hazardous Area (ATEX) meeting the required industry directives.

Custom Solutions Hazardous Area

Introduction

Cynergy^3 Components can offer an extensive range of customised float switches from our dedicated facility in Christchurch, UK. TAV Engineering Ltd, a Cynergy^3 Company, has over 40 years experience in designing and manufacturing purpose built float switches and level control equipment for petrochemical, oil, hydraulics, railway, mining, aviation, marine, food & general engineering industries. TAV's products are quality designed to meet the challenges of liquid level control, where reliability is paramount.

"Quality, innovation and customer service have



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Custom Designs

All TAV products are built to specific customer requirements, for safe area, intrinsically safe and hazardous area applications. Drawing on an extensive family of over 500 designs, TAV's experienced Design Engineers can customize switching levels, contact types and mounting styles offering a fast turnaround (typically 2-3 weeks) on small quantity requirements.

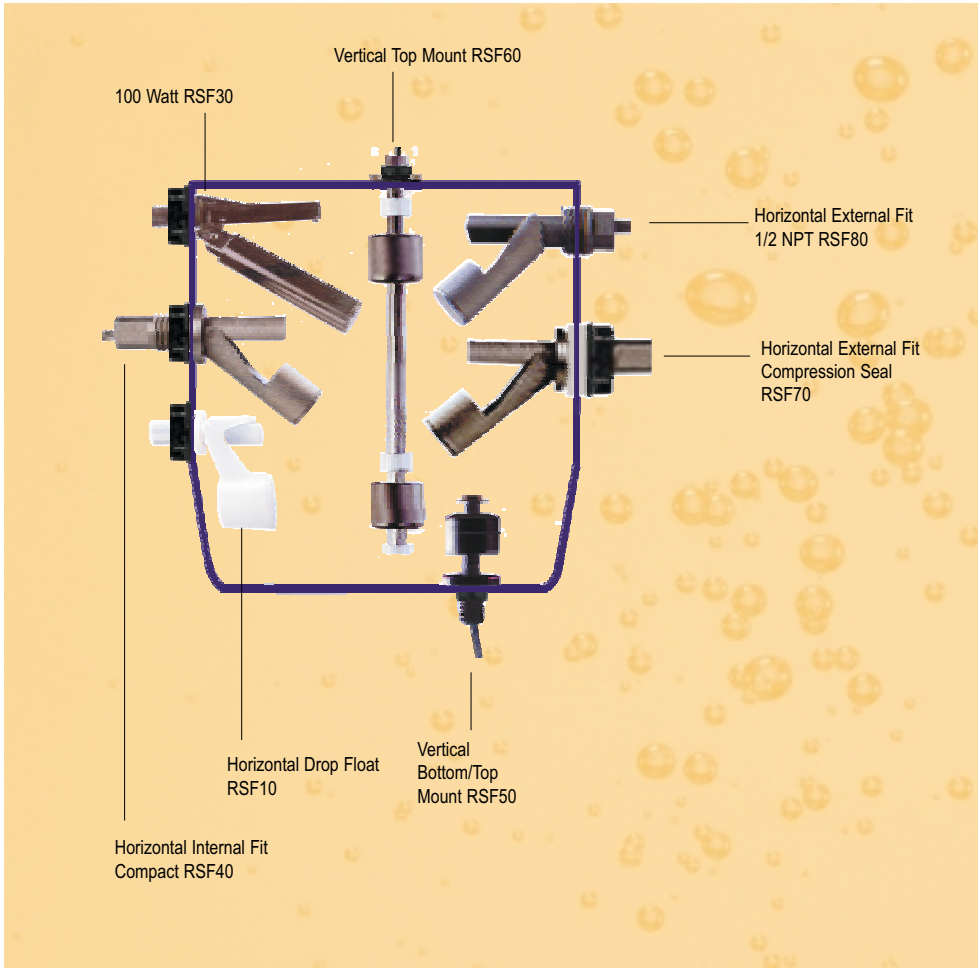
Approvals and Quality Controls

Manufacturing site
Quality Management Systems
ISO9001:2000 approved

Hazardous Area
ATEX - EExd IIC T110°C
(Tamb = -50°C to + 100°C)

Intrinsically Safe Area
ATEX - EEx ia IIC T4
(Tamb = -50°C to +110°C)

Lloyds Register
Type Approvals



been key in Cynergy³'s success for over 40 years"

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Horizontal Plastic

Compact Internal Fitting RSF40

The RSF40 series is designed as a compact internal fitting device, with a wide range of options, making this ideal for size sensitive applications. Mounting of this series requires access to the inside of the tank.

Typical applications include vending machines, commercial washing machines and evaporator units.

They are manufactured in a variety of materials, with a choice of gasket materials, to suit most commonly used liquids.

The switch action may be reversed by rotating the device through 180°.

Some of these types are also available with 1/2" BSF thread.

- **Compact design**
- **Reliable reed switch contacts**
- **Available in Nylon, Acetal, Polypropylene or PPS**
- **WRAS approval**
- **Many variants are UL recognised components file number E171218**

Technical Specifications	RSF41	RSF43	RSF44	RSF46
Material	Acetal	Nylon	Polypropylene	Polyphenylene Sulphide (PPS)
Colour	Red	Black	Opaque	Grey
Temp. Range °C	-10 / +60	-20 /+75	-20 / +100	-10 / +120*
°F	+14 / +140	-4 / +167	-4 / +212	+14 / +248*
Min. Fluid S.G.	0.875	0.85	0.85	0.85
Must Close Level (S.G.=1)	5mm	7mm	8mm	9mm
Must Open Level (S.G.=1)	18mm	20mm	20mm	24mm

*Maximum temperature requires ETFE cable to be specified.

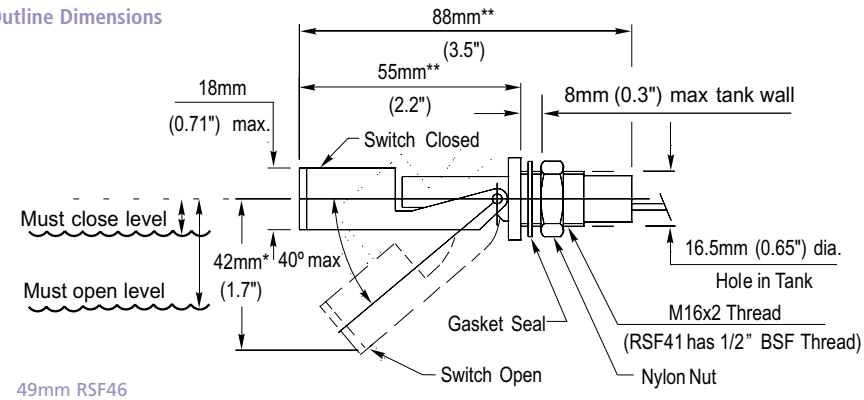
Electrical Specifications	
Contact Form	N/O (N/C)
Switching Power Max. VA	25
Switching Voltage AC Max.	240
Switching Voltage DC Max.	120
Switching Current Max. A	0.6

All ratings are for resistive load only.

Standard Parts	Material	Leadouts	Gaskets
RSF43Y100RF	Nylon	1.0m PVC 16/0.2 UL approved	Nitrile
RSF44Y100RF	Polypropylene	1.0m PVC 16/0.2 UL approved	Nitrile
RSF46Y100RF	PPS	1.0m PVC 16/0.2 UL approved	Nitrile

Custom versions can be made for particular applications. Please contact Cynergy3 with your requirements.

Outline Dimensions



* 49mm RSF46

** Add 10mm to dims, RSF46

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Compact External Fitting with Compression Seal RSF70

The RSF70 series is designed for external fitting, achieved with a high grade compression seal. This avoids the need for access to the inside of the chamber and is ideally suited to applications where space or fitting time are prime considerations.

They are manufactured in a variety of materials, with a choice of gasket materials, to suit most commonly used liquids.

The switch action may be reversed by rotating the device through 180°.

Typical applications include auxiliary tanks on vehicles and commercial dishwashers.

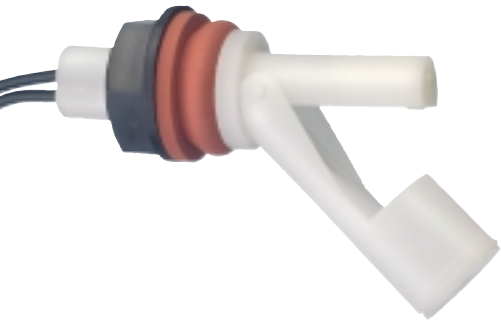
- **External fitting**
- **Fast fitting**
- **Compact size**
- **WRAS approval**
- **Many variants are UL recognised components file number E171218**

Technical Specifications	RSF73	RSF74	RSF76
Material	Nylon	Polypropylene	Polyphenylene Sulphide (PPS)
Colour	Black	Opaque	Grey
Temp. Range °C	-20 /+75	-20 / +100	-10 / +120*
°F	-4 / +167	-4 / +212	+14 / +248*
Min. Fluid S.G.	0.85	0.85	0.85
Must Close Level (S.G.=1)	7mm	8mm	9mm
Must Open Level (S.G.=1)	20mm	20mm	24mm

*Maximum temperature requires ETFE cable to be specified.

Electrical Specifications	
Contact Form	N/O (N/C)
Switching Power Max. VA	25
Switching Voltage AC Max.	240
Switching Voltage DC Max.	120
Switching Current Max. A	0.6

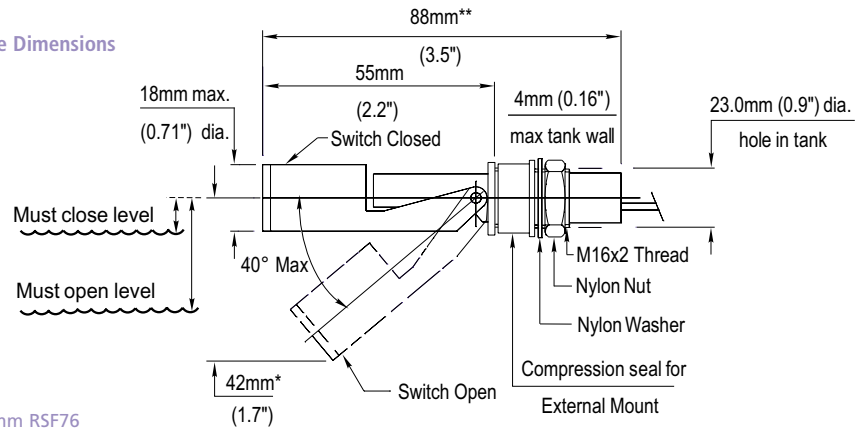
All ratings are for resistive load only.



Standard Parts	Material	Leadouts	Gaskets
RSF73Y100RN	Nylon	1.0m PVC 16/0.2 UL approved	Nitrile
RSF74Y100RN	Polypropylene	1.0m PVC 16/0.2 UL approved	Nitrile
RSF76Y100RN	PPS	1.0m PVC 16/0.2 UL approved	Nitrile

Custom versions can be made for particular applications. Please contact Cynergy3 with your requirements.

Outline Dimensions



* 49mm RSF76

** Add 10mm to dims. RSF76

Horizontal Plastic

Compact External Fitting with ½" Taper Thread RSF80

The RSF80 series is designed for external fitting, achieved with a 1/2" NPT taper thread. This avoids the need for access to the inside of the chamber and is ideally suited to applications where space or fitting time are prime considerations.

They are manufactured in a variety of materials to suit most commonly used liquids.

The switch action may be reversed by rotating the device through 180°.

Typical applications are Diesel Level for Generators, Hydraulic Oil and Gearbox Oil Level.

- **External fitting**
- **Quick to install**
- **Available in Nylon, Polypropylene or PPS**
- **Ideal for tanks with inaccessible tops or bottoms**
- **WRAS approval**
- **Many variants are UL recognised components file number E171218**

Technical Specifications	RSF83	RSF84	RSF86
Material	Nylon	Polypropylene	PPS
Colour	Black	Opaque	Grey
Temp. Range °C	-20 / +75	-20 / +100	-10 / +120*
°F	-4 / +167	-4 / +212	+14 / +248*
Min. Fluid S.G.	0.85	0.85	0.85
Must close (S.G.=1)	7mm	8mm	9mm
Must open (S.G.=1)	20mm	20mm	24mm

*Maximum temperature requires ETFE cable to be specified.

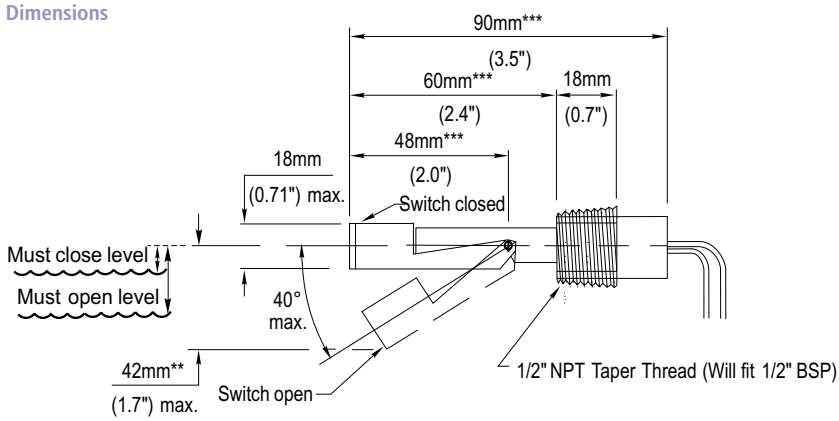
Electrical Specifications	
Contact Form	N/O (N/C)
Switching Power Max. VA	25
Switching Voltage AC Max.	240
Switching Voltage DC Max.	120
Switching Current Max. A	0.6

All ratings are for resistive load only.

Standard Parts	Material	Leadouts
RSF83Y100R	Nylon	1.0m PVC 16/0.2 UL approved
RSF84Y100R	Polypropylene	1.0m PVC 16/0.2 UL approved
RSF86Y100R	PPS	1.0m PVC 16/0.2 UL approved

Custom versions can be made for particular applications. Please contact Cynergy3 with your requirements.

Outline Dimensions



** 49mm RSF86

*** Add 10mm to dims, RSF86

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High Level Switch for Boiling Water RSF10

The RSF10 series drop float has been designed to eliminate problems associated with limescale build up around the pivot point of a conventional float switch. It is also suitable in more viscous liquids, that might affect the pivot action of a standard float type.

The drop float actuator allows the switch housing and float pivots to be located above the surface of the liquid and provides normally closed switch contact, opening as the liquid level rises. They are manufactured in a variety of materials, with a choice of gasket materials, to suit most commonly used liquids.

Typical applications include wall kettles and hot vending machines.

- **Pivot clear of liquid**
- **Compact design**
- **Available in Polypropylene or PPS**
- **Many variants are UL recognised components file number E171218**
- **WRAS approval**

Technical Specifications	RSF14	RSF16
Material	Polypropylene	Polyphenylene Sulphide (PPS)
Colour	Opaque	Grey
Temp. Range °C °F	-20/+100 -4 /+212	-10/ +120* +14 / +248*
Min. Fluid S.G.	0.75	0.75
Must Close Level (S.G.=1)	39mm	33mm
Must Open Level (S.G.=1)	24mm	22mm

*Maximum temperature requires ETFE cable to be specified.

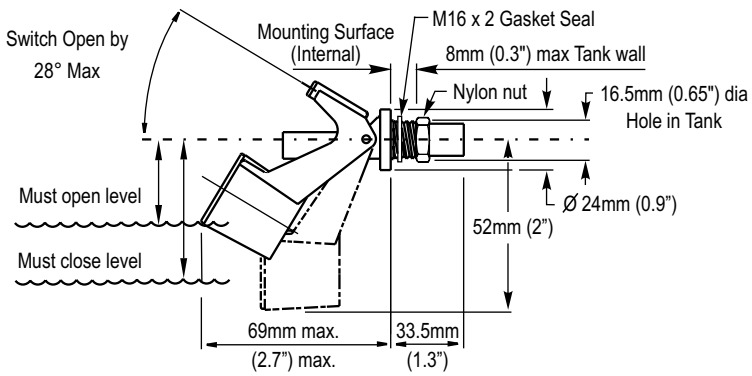
Electrical Specifications	
Contact Form	N/C
Switching Power Max. VA	25
Switching Voltage AC Max.	240
Switching Voltage DC Max.	120
Switching Current Max. A	0.6

All ratings are for resistive load only.

Standard Parts	Material	Leadouts	Gaskets
RSF14Y100RF	Polypropylene	1.0m PVC 16/0.2 UL approved	Nitrile
RSF16Y100RF	PPS	1.0m PVC 16/0.2 UL approved	Nitrile

Custom versions can be made for particular applications. Please contact Cynergy3 with your requirements.

Outline Dimensions



Horizontal Plastic

Low Level Switch for Boiling Water RSF20

The RSF20 is designed to eliminate the problems associated with limescale build up around the pivot point on a conventional float switch.

This particular series is primarily for applications where a low level condition has to be monitored, in a system where the liquid is usually maintained at a high level, or where a wider differential is required between the opening and closing levels.

The extended drop float actuator allows the switch housing and float pivots to be located above the surface of the liquid, while the excess buoyancy of the float chamber itself ensures that it remains buoyant, even when scale builds up on the float chamber. Typical applications include wall kettles and hot vending machines.

The switch action is closed when the level is low (float down), and opens as the liquid level rises.

- **Low level switch position**
- **Hot/boiling water**
- **High buoyancy float**
- **WRAS approved for use in hot and cold water**
- **Many variants are UL recognised components. file number E171218**

Technical Specifications	RSF26
Material	Polyphenylene Sulphide (PPS)
Colour	Grey
Temp. Range °C	-10/ +120*
°F	+14 / +248*
Min. Fluid S.G.	0.75
Must Close Level (S.G.=1)	140mm
Must Open Level (S.G.=1)	110mm

* Maximum temperature requires ETFE cable to be specified.

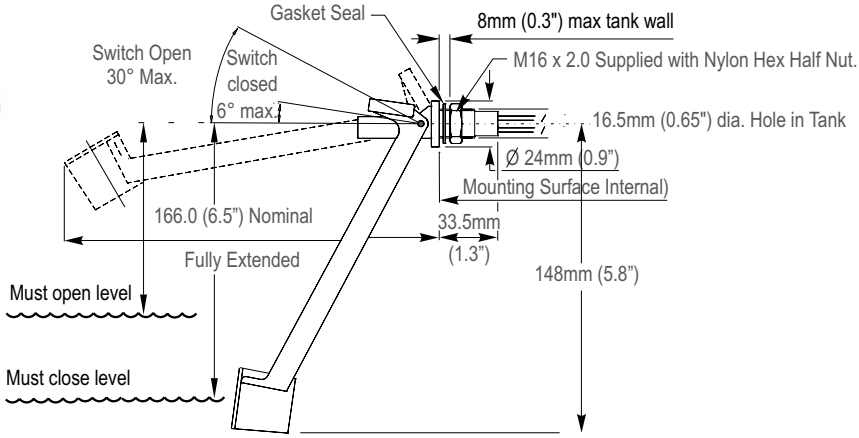
Electrical Specifications	
Contact Form	N/C
Switching Power Max. VA	25
Switching Voltage AC Max.	240
Switching Voltage DC Max.	120
Switching Current Max. A	0.6

All ratings are for resistive load only.

Standard Parts	Material	Leadouts	Gaskets
RSF26Y100RF	PPS	1.0m PVC 16/0.2 UL approved	Nitrile

Custom versions can be made for particular applications. Please contact Cynergy3 with your requirements.

Outline Dimensions



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100 Watt Internal Fitting RSF30

The RSF30 series is a range of higher power side entry, internally fitted devices. These may be used for directly switching some small loads of less than 100VA. Mounting of this series requires access to the inside of the tank. They are manufactured in Nylon or Polypropylene, with a choice of gasket materials, to suit most commonly used liquids.

The switch action may be reversed by rotating the device through 180°.

- **100W contacts**
- **Rugged design**
- **Reliable reed switch contacts**
- **WRAS approval**
- **Many variants are UL recognised components file number E171218**

Technical Specifications	RSF33	RSF34
Material	Nylon	Polypropylene
Colour	Black	Opaque
Temp. Range °C	-20 / +75	-20/ +100
°F	-4 / +167	-4 /+212
Min. Fluid S.G.	0.8	0.8
Must Close Level (S.G.=1)	20mm	23mm
Must Open Level (S.G.=1)	47mm	52mm

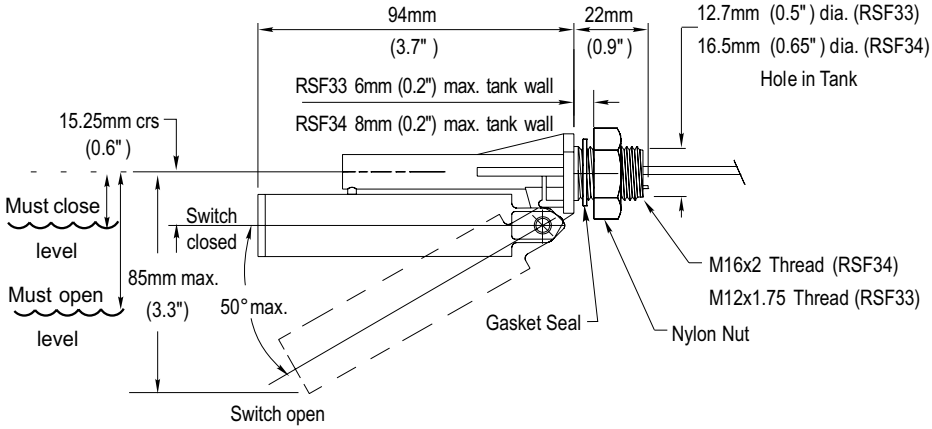
Electrical Specifications	
Contact Form	N/O (N/C)
Switching Power Max VA	100
Switching Voltage AC Max	240
Switching Voltage DC Max	120
Switching Current Max. A	5

All ratings are for resistive load only.

Standard Parts	Material	Leadouts	Gaskets
RSF33W100RC	Nylon	1.0m PVC 16/0.2 UL approved	Nitrile
RSF34W100RF	Polypropylene	1.0m PVC 16/0.2 UL approved	Nitrile

Custom versions can be made for particular applications. Please contact Cynergy3 with your requirements.

Outline Dimensions



Horizontal Stainless Steel

Compact Internal Fitting Switch SSF211

The SSF211 series is a horizontally mounted switch that is fitted internally in the side of the tank, so requires access to the inside of the tank.

They are manufactured in 304 grade Stainless Steel, for those liquids and environments that require the use of Stainless Steel and will work in liquids of SG 0.8 minimum.

The switch action may be reversed by mounting the device with the float able to move upwards away from the body, instead of the more normal downwards direction.

- **Stainless steel**
- **Internal fitting**
- **Compact design**
- **Temperature range to 180°C**
- **User configurable N/O or N/C action**

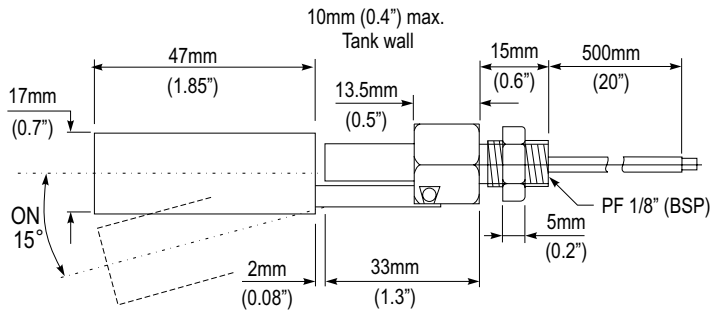
Technical Specifications			
Mounting style	Internal	Cable length - standard	500mm
Mounting thread	1/8" BSP	Cable size	17/0.10 - AWG22
Float & Stem material	304 grade	Cable conductor material	Tinned copper
Maximum Temperature	120°C/180°C	Cable sheath material	XLPE
Maximum Pressure	5 bar	Cable temperature rating	125°C
Float SG	0.7	Sealing gasket	Not supplied
Minimum fluid SG	0.8	Tightening torque for fixing nut	2.0kg/cm

Electrical Specifications	
Contact Form	N/O
Switching Power Max. VA	50
Switching Current Max. A	0.5
Switching Voltage AC	300
Switching Voltage DC	300

All ratings are for resistive load only.

Standard Parts	Version	Leadouts
SSF211X050	120°C	50cm XLPE wires
SSF211X050H	180°C	50cm XLPE wires

Outline Dimensions



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Compact External Fitting with ½" NPT Taper Thread SSF212

The SSF212 series is a horizontally mounted switch that is mounted externally in the side of the tank, with a 1/2" NPT (fits 1/2" BSP) thread.

They are manufactured in 304 grade Stainless Steel, for those liquids and environments that require the use of Stainless Steel and will work in liquids of SG 0.8 minimum.

The switch action may be reversed by mounting the device with the orientation arrow pointing downwards, instead of the normal upwards direction.

A version is available, Type SSF212XP, with a plug and socket, for customer wiring.

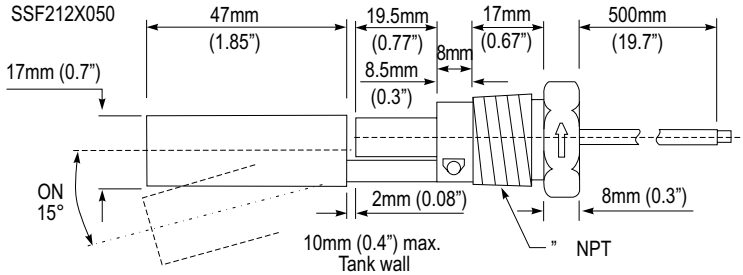
- **Stainless steel**
- **External fitting**
- **Compact design**
- **Temperature range to 180°C**
- **User configurable N/O or N/C action**

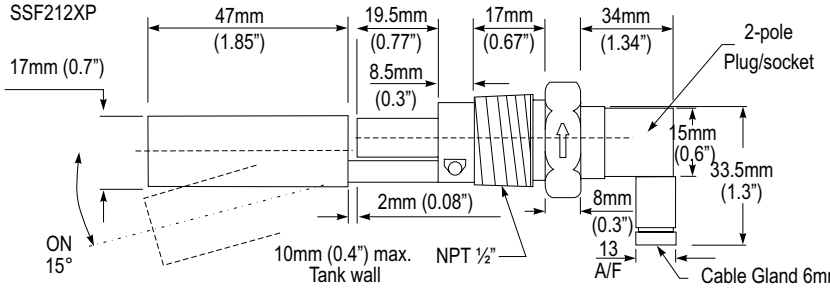
Technical Specifications			
Mounting style	External	Cable length - standard	500mm
Mounting thread	1/2" NPT	Cable size	17/0.10 - AWG22
Float & Stem material	304 grade	Cable conductor material	Tinned copper
Maximum Temperature	120°C/180°C	Cable sheath material	XLPE
Maximum Pressure	5 bar	Cable temperature rating	125°C
Float SG	0.7	Sealing gasket	Not supplied
Minimum fluid SG	0.8	Tightening torque for fixing nut	N/A

Electrical Specifications	
Contact Form	N/O
Switching Power Max. VA	50
Switching Current Max. A	0.5
Switching Voltage AC	300
Switching Voltage DC	300

All ratings are for resistive load only.

Standard Parts	Version	Leadouts
SSF212X050	120°C	50cm XLPE wires
SSF212X050H	180°C	50cm XLPE wires
SSF212XP	120°C	Plug and socket connection
SSF212XPH	180°C	Plug and socket connection





Outline Dimensions

Horizontal Stainless Steel

Miniature Internal Fitting Switch SSF213

The SSF213 series is a miniature horizontally mounted switch that is fitted internally in the side of the tank, so requires access to the inside of the tank.

Total length inside tank for this type is 54.5mm.

They are manufactured in 304 grade Stainless Steel and will work in liquids of SG 0.8 minimum.

The switch action may be reversed by mounting the device with the float able to move upwards away from the body, instead of the normal downwards direction.

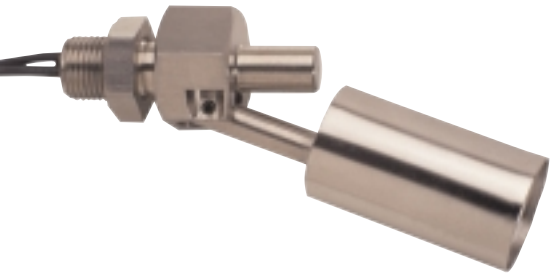
- **Stainless steel**
- **Internal fitting**
- **Miniature design**
- **Temperature range to 120°C**
- **User configurable N/O or N/C action**

Technical Specifications			
Mounting style	Internal	Cable length - standard	500mm
Mounting thread	1/8" BSP	Cable size	17/0.10 - AWG22
Float & Stem material	304 grade	Cable conductor material	Tinned copper
Maximum Temperature	120°C	Cable sheath material	XLPE
Maximum Pressure	5 bar	Cable temperature rating	125°C
Float SG	0.7	Sealing gasket	Not supplied
Minimum fluid SG	0.8	Tightening torque for fixing nut	2.0kg/cm

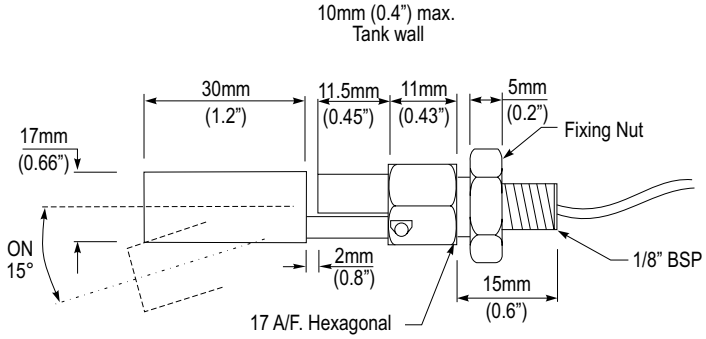
Electrical Specifications	
Contact Form	N/O
Switching Power Max. VA	1
Switching Current Max. A	0.1
Switching Voltage AC	24
Switching Voltage DC	24

All ratings are for resistive load only.

Standard Parts	Leadouts
SSF213T050	50cm XLPE wires



Outline Dimensions



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Vertical Plastic

Miniature Single Switch RSF50

The RSF50 series are compact vertically mounted devices with a single switch point. Mounting is in the top or bottom of the tank from the inside, so requires access to the inside of the tank.

Typical applications include printing systems and chemical dosing equipment.

They are manufactured in a variety of materials, with a choice of gasket materials, to suit most commonly used liquids.

The switch action may be reversed by removing the float, inverting it and then refitting it to the stem.

All types are also available with 1/8" NPT tapered thread.

- **Compact design**
- **User configurable N/O or N/C operation**
- **Reliable reed switch contacts**
- **Available in PPS, Polypropylene and Nylon**
- **WRAS approved**
- **Many variants are UL recognised components file number E171218**

Technical Specifications	RSF53	RSF54	RSF56
Material	Nylon	Polypropylene	Polyphenylene Sulphide (PPS)
Colour	Black	Opaque	Grey
Temp. Range °C	-20 / +75	-20 / +100	-10 / +120*
°F	-4 / +167	-4 / +212	+14 / +248*
Min, Fluid S.G.	0.8	0.65	0.85
Must Close Level (S.G. = 1)	11.5mm	15.0mm	9.5mm
Must Open Level (S.G. = 1)	22.5mm	26.0mm	20.5mm

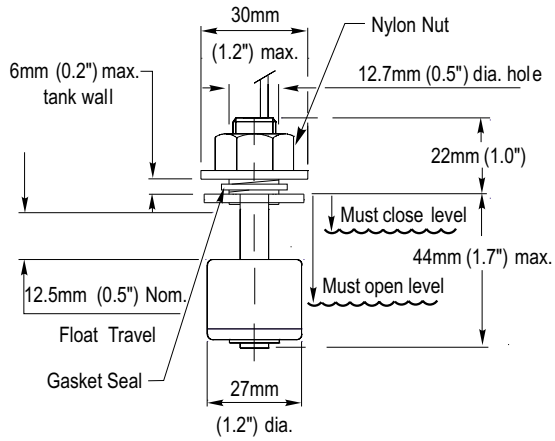
*Maximum temperature requires ETFE cable to be specified.

Electrical Specifications	(RSF53/54/56)
Contact Form	N/O (N/C)
Switching Power Max. VA	25
Switching Voltage AC Max.	240
Switching Voltage DC Max.	120
Switching Current Max. A	0.6

All ratings are for resistive load only.

Standard Parts	Material	Leadouts	Gaskets
RSF53Y100RC	Nylon	1.0m PVC 16/0.2 UL approved	Nitrile
RSF54Y100RC	Polypropylene	1.0m PVC 16/0.2 UL approved	Nitrile
RSF56Y100RC	PPS	1.0m PVC 16/0.2 UL approved	Nitrile

Outline Dimensions



Thread sizes
RSF53/4/6 M12x1.75 Thread

Note: Float Chamber may be inverted for alternative switch action.

Vertical Plastic

Dual Switch Point Series RSF66

The RSF66 floatswitch series has been specifically designed to offer the user a deep penetration float with a number of switching options to cater for a variety of system requirements. Manufactured from high grade Polyphenylene Sulphide (PPS) the RSF66 is compatible with most liquids and chemicals offering switching capabilities up to 240V AC.

The two float range provide Make/Make, or Break/Break, switch action with a choice of 50 or 100mm separations. This type is particularly suitable for controlling filling or emptying of tanks via electromechanical relays.

High & low level Switch

- **Simple to fit and use**
- **PPS material**
- **WRAS approved**
- **Many variants are UL recognised component file number E171218**

Technical Specifications (Common to both Single and Double Float versions)

Mechanical			Electrical	
Material		PPS	Switching Power Max. VA	25
Colour		Grey	Switching Voltage AC Max.	240
Temp. Range	°C	-10 / +85	Switching Voltage DC Max.	120
	°F	+14 / +185	Switching Current Max. A	0.6
Min. Fluid S.G.		0.85	All ratings are for resistive load only	

Single Float Version

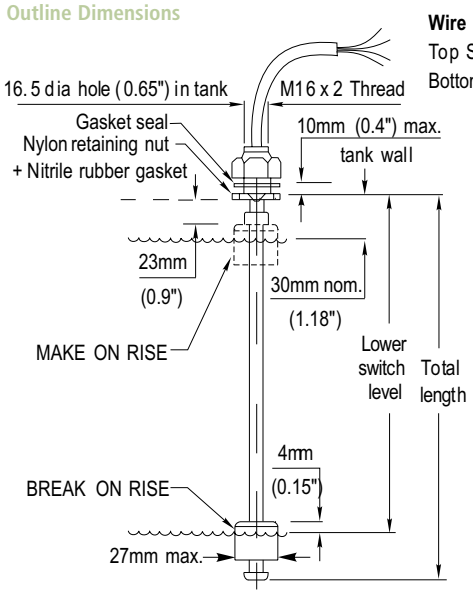
Standard Parts	Upper Switch Level	Lower Switch Level	Total length	Gasket
RSF66A25B75	30mm	75mm	102mm	Nitrile
RSF66A25B100	30mm	100mm	127mm	Nitrile
RSF66A25B125	30mm	125mm	152mm	Nitrile
RSF66A25B150	30mm	150mm	177mm	Nitrile
RSF66A25B175	30mm	175mm	202mm	Nitrile

Two Float version

Standard Parts		Upper Switch Level	Lower Switch Level	Total length	Gasket
RSF66A50A100	For Emptying	50mm	100mm	134mm	Nitrile
RSF66A50A150		50mm	150mm	184mm	Nitrile
RSF66B50B100	For Filling	50mm	100mm	127mm	Nitrile
RSF66B50B150		50mm	150mm	177mm	Nitrile

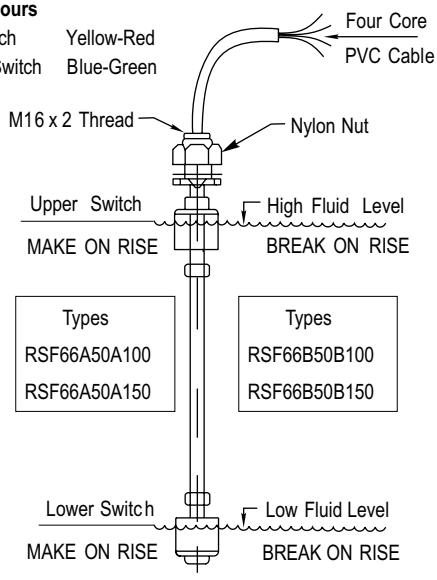
Custom versions can be made for particular applications. Please contact Cynergy3 with your requirements.

Outline Dimensions



Wire colours

Top Switch Yellow-Red
Bottom Switch Blue-Green



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Custom Vertical Switch Series RSF60

The RSF60 series is designed to offer a vertical float switch with factory configurable options of one, two or three switch positions, in one unit. Floats are manufactured in Polypropylene (PP) or Polyphenylene Sulphide (PPS), which are compatible with a wide range of liquids (refer to factory for specific chemical suitability).

Units can be factory assembled on to PVC extension tubes, or the user can obtain a range of PP and SS extension tubes. Please see pages 18 and 34 for details.

- **Factory configurable to customer requirements**
- **1, 2 or 3 switch options**
- **Long reach**
- **PPS Stem material**
- **WRAS approved**
- **Many variants are UL recognised components file number E171218**
- **Extension tubes available**

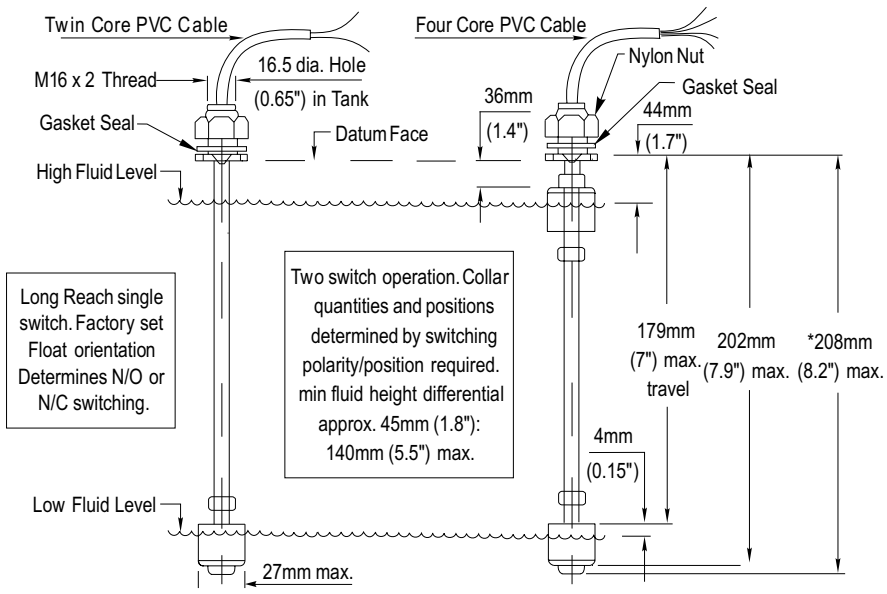
Technical Specifications		RSF64	RSF66
Material	Float	PP	PPS
	Stem	PPS	PPS
Float colour		Opaque	Grey
Temp. Range °C		-20 / +85	-10 / +120*
	°F	-4 / +185	+14 / +248*
Min. Fluid S.G		0.65	0.85

*Maximum temperature requires ETFE cable to be specified.

Electrical Specifications	
Contact Form	N/O or N/C
Switching Power Max. VA	25
Switching Voltage AC Max.	240
Switching Voltage DC Max.	120
Switching Current Max. A	0.6

All ratings are for resistive load only.

Outline Dimensions



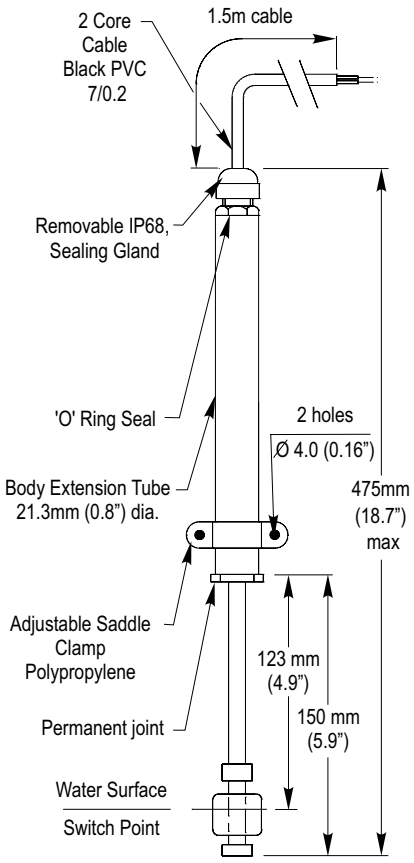
Vertical Plastic

Variable Insertion Depth Float Switches
RSF64EXS

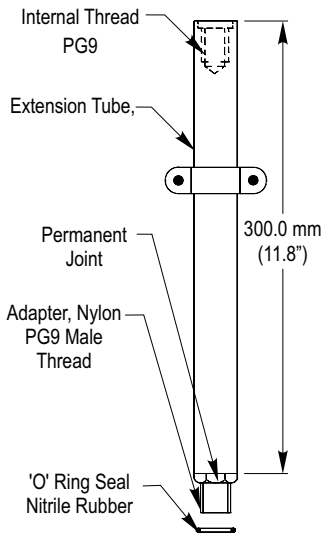
A vertical float switch, with either normally open or normally closed (when the float is down) switching action, permanently coupled to a 300mm PVC tube. This provides a float switch, whose overall depth can be varied between 150mm and 450mm, by adjusting its position in a sliding clamp.

Further 306mm PVC extension tubes may be added, up to a maximum of three, to provide insertion depths up to 1350mm.

Outline Dimensions



Switch Assembly



Extension Assembly

Technical Specifications	
Operating Temperature °C	0 / +75
Minimum S.G. of Fluid	0.65
Float material	Polypropylene
Stem material	Polyphenylene Sulphide
Tube material	PVC Class 7
Cable length (Metres)	1.5
Maximum Switching Voltage (V ac/dc)	250/120
Maximum Switching Current (A)	0.5
Maximum Switching Power (W/VA)	25

All ratings are for resistive load only.

	RSF64EXS	RSF64BEXS	RSF64EXT
Switching Action	N/O	N/C	Tube only
Switching depth	123 - 423mm	123 - 423mm	Add 306mm per

Please see page 34 for details of other extension tubes.

- **Insertion depth 150mm - 1350mm**
- **Easy to install**
- **Adjustable level**

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Vertical Stainless Steel

Miniature Internal Fit SSF22

The SSF22 series is a compact vertically mounted device designed to achieve reliable switching. Mounting is in the top or bottom of the tank from the inside, so requires access to the inside of the tank.

They are manufactured in 316 grade Stainless Steel.

The switch action may be reversed by removing the float, inverting it and then refitting it to the stem.

- **Stainless steel**
- **Compact design**
- **Temperature range to 120°C**
- **User configurable N/O or N/C action**

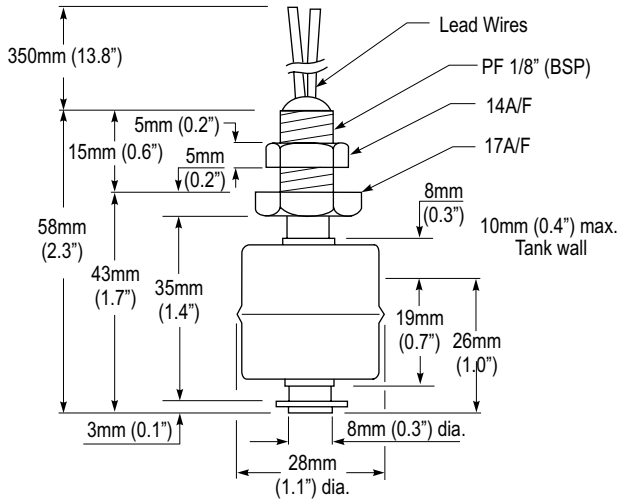
Technical Specifications			
Mounting style	Internal	Cable length - standard	350mm
Mounting thread	1/8" BSP	Cable size	17/0.1 - AWG22
Float & Stem material	316 grade	Cable conductor material	Tinned copper
Maximum Temperature	120°C	Cable sheath material	XLPE
Maximum Pressure	10 bar	Cable temperature rating	125°C
Float SG	0.7	Sealing gasket	Not supplied
Minimum fluid SG	0.8	Tightening torque for fixing nut	2.0Kg/cm

Electrical Specifications	
Contact type	N/O or N/C
Switching Power Max. VA	50
Switching Current Max. A	0.5
Switching Voltage AC Max.	300
Switching Voltage DC Max.	300
Breakdown Voltage Min. DC	600

All ratings are for resistive load only.

Standard Parts	Leadouts
SSF22X035	35cm XLPE wires

Outline Dimensions



Vertical Stainless Steel

Miniature Internal Side Mount SSF24

The SSF24 series is a compact horizontally mounted device designed to achieve reliable switching.

Mounting is in the side of the tank from the inside, so requires access to the inside of the tank.

They are manufactured in 316 grade Stainless Steel and will work in liquids of SG 0.8 minimum.

The switch action may be reversed by removing the float, inverting it and then refitting it to the stem.

- **Stainless steel**
- **Internal fitting**
- **Compact design**
- **Temperature range to 120°C**
- **User configurable N/O or N/C action**

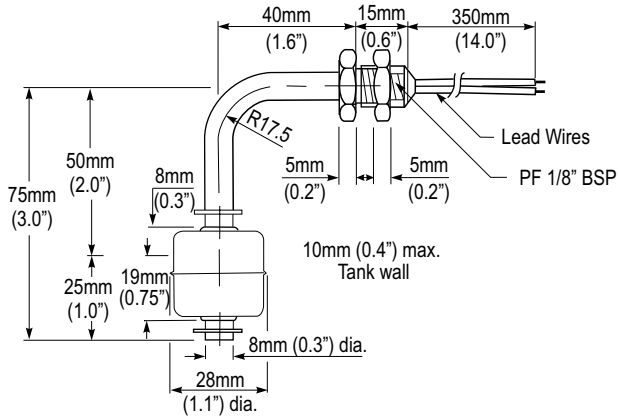
Technical Specifications			
Mounting style	Internal	Cable length - standard	350mm
Mounting thread	1/8" BSP	Cable size	17/0.1 - AWG22
Float & Stem material	316 grade	Cable conductor material	Tinned copper
Maximum Temperature	120°C	Cable sheath material	XLPE
Maximum Pressure	10 bar	Cable temperature rating	125°C
Float SG	0.7	Sealing gasket	Not supplied
Minimum fluid SG	0.8	Tightening torque for fixing nut	2.0Kg/cm

Electrical Specifications	
Contact type	N/O or N/C
Switching Power Max. VA	50
Switching Current Max. A	0.5
Switching Voltage AC Max.	300
Switching Voltage DC Max.	300
Breakdown Voltage Min. DC	600

All ratings are for resistive load only.

Standard Parts	Leadouts
SSF24X035	35cm XLPE wires

Outline Dimensions



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High Temperature Internal Fitting SSF26

The SSF26 series is a vertically mounted device designed to achieve reliable switching at higher temperatures. Mounting is in the top or bottom of the tank from the inside, so requires access to the inside of the tank.

This type is capable of working at temperatures up to 200°C.

They are manufactured in 316 grade Stainless Steel and will work in liquids of SG 0.65 minimum.

The switch action may be reversed by removing the float, inverting it and then refitting it to the stem.

Typical application is in Deep Frying Oil Tanks.

- **Stainless steel**
- **Internal fitting**
- **Temperature range to 200°C**
- **User configurable N/O or N/C action**

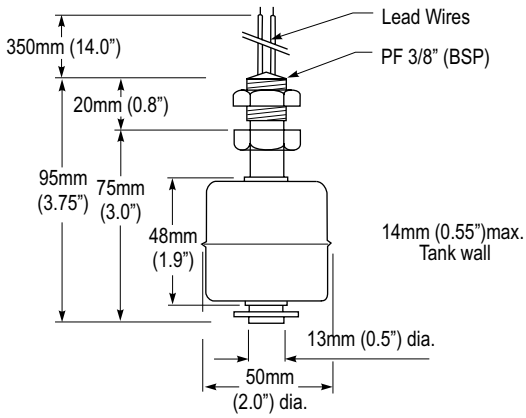
Technical Specifications			
Mounting style	Internal	Cable length - standard	350mm
Mounting thread	3/8" BSP	Cable size	17/0.10 - AWG22
Float & Stem material	316 grade	Cable conductor material	Tinned copper
Maximum Temperature	200°C	Cable sheath material	XLPE
Maximum Pressure	10 bar	Cable temperature rating	200°C
Float SG	0.55	Sealing gasket	Not supplied
Minimum fluid SG	0.65	Tightening torque for fixing nut	2.0Kg/cm

Electrical Specifications	
Contact type	N/O or N/C
Switching Power Max. VA	50
Switching Current Max. A	0.5
Switching Voltage AC Max.	300
Switching Voltage DC Max.	300
Breakdown Voltage Min. DC	600

All ratings are for resistive load only.

Standard Parts	Leadouts
SSF26X035	35cm XLPE wires

Outline Dimensions



Vertical Stainless Steel

High Pressure Internal Fitting SSF28

The SSF28 series is a vertically mounted device designed to achieve reliable switching at higher pressures. Mounting is in the top or bottom of the tank from the inside, so requires access to the inside of the tank.

This type is capable of working at pressures of up to 40 bar.

They are manufactured in 316 grade Stainless Steel and will work in liquids of SG 0.7 minimum.

The switch action may be reversed by removing the float, inverting it and then refitting it to the stem.

- **Stainless steel**
- **Internal fitting**
- **Temperature range to 120°C**
- **Pressure up to 40 bar**
- **User configurable N/O or N/C action**

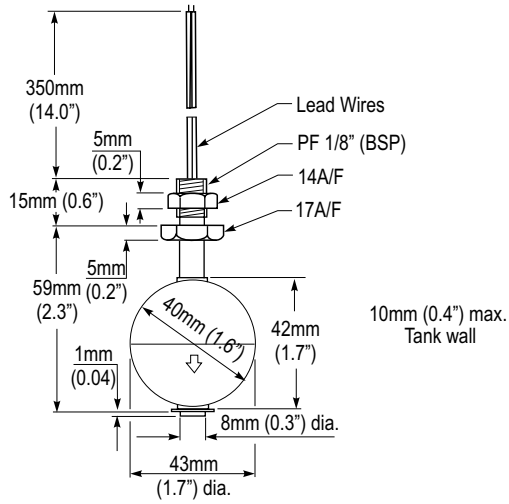
Technical Specifications			
Mounting style	Internal	Cable length - standard	350mm
Mounting thread	1/8" BSP	Cable size	17/0.10 - AWG22
Float & Stem material	316 grade	Cable conductor material	Tinned copper
Maximum Temperature	120°C	Cable sheath material	XLPE
Maximum Pressure	40 bar	Cable temperature rating	125°C
Float SG	0.6	Sealing gasket	Not supplied
Minimum fluid SG	0.7	Tightening torque for fixing nut	2.0Kg/cm

Electrical Specifications	
Contact type	N/O or N/C
Switching Power Max. VA	50
Switching Current Max. A	0.5
Switching Voltage AC Max.	300
Switching Voltage DC Max.	300
Breakdown Voltage Min. DC	600

All ratings are for resistive load only.

Standard Parts	Leadouts
SSF28X035	35cm XLPE wires

Outline Dimensions



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High Pressure Internal Side Mount SSF29

The SSF29 series is a horizontally mounted device designed to achieve reliable switching at higher pressures. Mounting is in the side of the tank from the inside, so requires access to the inside of the tank.

This type is capable of working at pressures of up to 40 bar.

They are manufactured in 316 grade Stainless Steel and will work in liquids of SG 0.7 minimum.

The switch action may be reversed by removing the float, inverting it and then refitting it to the stem.

- **Stainless steel**
- **Internal fitting**
- **Temperature range to 120°C**
- **Pressure up to 40 bar**
- **User configurable N/O or N/C action**

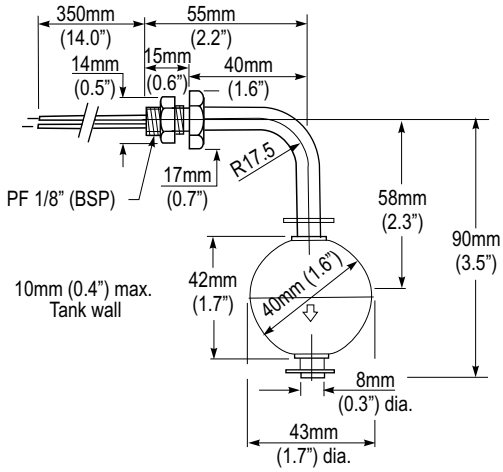
Technical Specifications			
Mounting style	Internal	Cable length - standard	350mm
Mounting thread	1/8" BSP	Cable size	17/0.10 - AWG22
Float & Stem material	316 grade	Cable conductor material	Tinned copper
Maximum Temperature	120°C	Cable sheath material	XLPE
Maximum Pressure	40 bar	Cable temperature rating	125°C
Float SG	0.6	Sealing gasket	Not supplied
Minimum fluid SG	0.7	Tightening torque for fixing nut	2.0Kg/cm

Electrical Specifications	
Contact type	N/O or N/C
Switching Power Max. VA	50
Switching Current Max. A	0.5
Switching Voltage AC Max.	300
Switching Voltage DC Max.	300
Breakdown Voltage Min. DC	600

All ratings are for resistive load only.

Standard Parts	Leadouts
SSF29X035	35cm XLPE wires

Outline Dimensions



Multi Level

Dual Switch Point Series – SSF67

The SSF67 has been designed to give the user a deep penetration float switch with a number of switching options, to cater for a wide variety of system requirements. Manufactured in Stainless Steel 316L grade material, these switches are suitable for use in many aggressive liquids or hygienic applications.

The single float version provides high level (make on rise) and low level (make on fall) switch contacts. Suitable for high and low level alarms and control signals.

This switch is screw mounted vertically with a M16x2 thread, so requires access to the inside of the tank.

Typical applications are in water, diesel, oil, hydraulic tanks and reservoirs or in chemicals storage and process control. Extension tubes available, see p34.

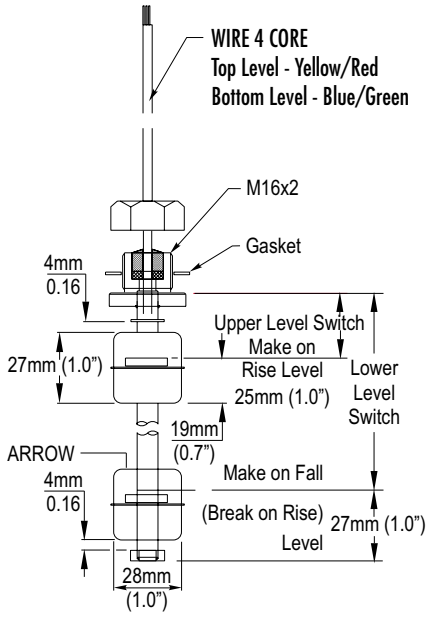
- **Stainless Steel 316L material**
- **Single or dual switching levels**
- **Close tolerance switching**
- **Process temperature to 135°C**

Mechanical		Electrical	
Material	Stainless Steel 316L	Switching Power Max. VA	25
Temp. Range °C	-20 / +135	Switching Voltage AC Max.	250
°F	-4 / +275	Switching Voltage DC Max.	120
Min. Fluid S.G.	0.80	Switching Current Max. A	0.6
Minimum high level mm	25	All ratings are for resistive load only	
Maximum low level mm	3500		
Switching differential (each level) nominal mm	1		
Maximum pressure bar	10 (up to 500mm stem length)		

Single Float Version Cynergy^3 no.	Upper Switch Level	Lower Switch Level	Total length	Gasket
SSF67A25B75	25mm	75mm	102mm	Nitrile
SSF67A25B100	25mm	100mm	127mm	Nitrile
SSF67A25B125	25mm	125mm	152mm	Nitrile
SSF67A25B150	25mm	150mm	177mm	Nitrile
SSF67A25B175	25mm	175mm	202mm	Nitrile

Custom versions can be made for particular applications. Please contact Cynergy^3 with your requirements.

Outline Dimensions



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Continuous Output Level Transducer – SSF67V

This transducer will give an output of 4-20mA over a measuring span of up to 2500mm. The output changes from 4mA at low level to 20mA at high level.

The transducer is top mounting, via a screwed entry, has a brass or stainless steel shaft and either a stainless steel or foamed float, and is normally installed from outside the tank. Volt free reed switches and resistors are mounted in the stem, to provide a varying resistance, as the float rises or falls, which is then converted into a 4 to 20mA stepped output.

- **4-20mA transducer for safe area use**
- **Maximum process temperature 100°C**
- **Maximum span 2500mm**
- **Standard 10mm stepped accuracy**
- **Standard screw entry G1.0" to G2.5"**

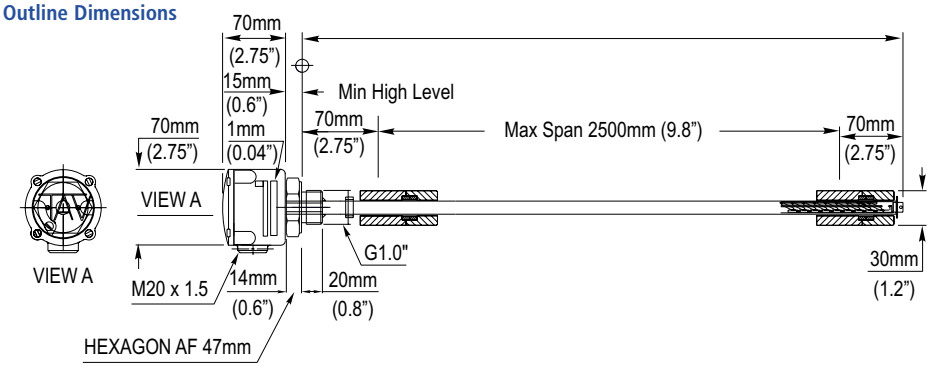
Mechanical
IP 65 enclosure in die cast Aluminium Alloy, hard anodised or polyester finish, with Nitrile O-ring and M20x1.5 conduit entry.
Stem assembly in Brass or Stainless Steel, fully silver soldered or TIG welded construction
Screwed entry mounting G1.0" to G2.5"
Float can be constructed in either Stainless Steel 316L, High temperature plastic foam or D300 closed cell PVC
Maximum Process Temperature 100°C
Maximum Ambient Temperature 70°C
Minimum high level 70mm
Maximum measurement span 2500mm
Standard 10mm stepped accuracy

Electrical
Output 4 to 20mA. 4 mA can be either High or Low
Input supply required is 15 to 30 Vdc
Can be connected to analogue or digital displays

Standards and Approvals
This design is tested to and meets the following standards:
DEFSTAN 59-41 Iss.4 :1992
BS1597 : 1995
2&3 EN50081-1 :1992
EN50082-1 : 1992

Standard Parts	Upper Level	Measuring Span	Screw Entry	Float Material
SSF67V70S500	70mm	500mm	G1"	D300 PVC Foam
SSF67V70S1000	70mm	1000mm	G1"	D300 PVC Foam
SSF67V70S1500	70mm	1500mm	G1"	D300 PVC Foam

Outline Dimensions



Cable Suspended

Submersible Level Probe SLP

This is a single switch point liquid level probe, for use in water or aqueous liquids, designed to be suspended into the liquid by its cable. It can be configured to give make or break action on either rise or fall, by removing the protective shield and reversing the float orientation. The switching level may be adjusted by varying the cable length. The reedswitch contact is suitable for switching signal levels, up to 50 volts.

The main uses for this probe are level switch for narrow boreholes, or applications with restricted space, and also as a signal switch for reservoir high or low level monitoring.

These are manufactured with standard PVC cable lengths of 15 or 25 metres but can be manufactured with other lengths.

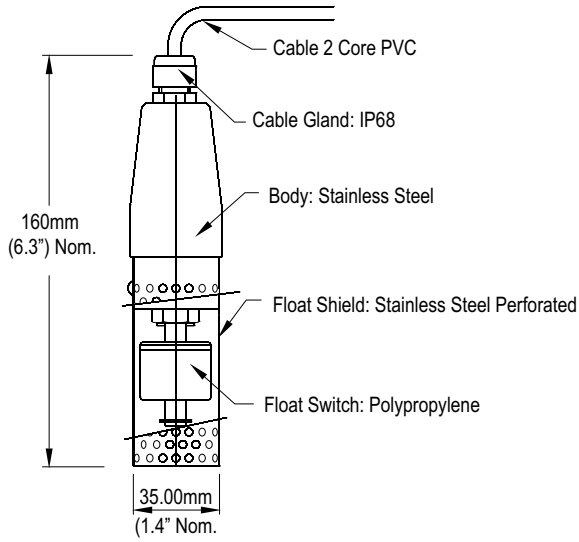
Other switch types and configurations, cable gland and cable type are possible, please contact Cynergy^3 with your requirements.

- **Submersible probe**
- **Low space requirement**
- **Cable mounted**
- **N/O or N/C configurable**
- **No power requirement**

Technical Specifications		Electrical Specifications	
Float	Polypropylene	Contact Form	N/O (N/C)
Housing	Stainless Steel	Switching Power Max. VA	25
Shield	Stainless Steel	Switching Voltage AC/DC Max.	50
Cable gland	Nylon	Switching Current Max. A	0.6
Cable	2 core PVC sheathed		
Cable length	15M / 25M		
Temp. Range °C	0 / +55		
°F	+32 / +131		
Min. Fluid S.G.	0.8		
Max working pressure	5 bar	All ratings are for resistive load only	

Cynergy^3 no.	Cable Length
SLP4AP15	15 metres
SLP4AP25	25 metres

Outline Dimensions



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Suspended High Power Switches

These switches are manufactured with an outer case of blow moulded PEHD (High Density Polyethylene) and an intermediate filling of non-hygroscopic closed cell polyurethane foam around a sealed switch housing. They can be supplied with either make on rise (N/O), make on fall (N/C) or change over (C/O) switching action. The N/O and N/C versions have an earth protection wire within the 5 metre cable, which can be either PVC (for general purpose applications) or WRAS approved (for drinking water applications). External counterweights are supplied to adjust the pivot position.

Contact Cynergy3 for other cable types and lengths.

- **Direct power switching**
- **Cable mounting**
- **WRAS approved**
- **100 metre depth capability**

Technical Specifications		10 Amp	20 Amp
Switching Power Max.	AC	750 VA	1500 VA
	DC	180W	360W
Switching Current Max.	Resistive	10 Amps	20 Amps
	DC Inductive	1Amp	2 Amps
	AC Inductive	4 Amps	8 Amps
Switching Voltage Max.	DC	110	110
	AC	250	250

Material Specifications	
Body Material	High Density Polyethylene
Standard Cable	5 metres PVC sheathed 3 Core
W cable for Drinking Water	WRAS approved 3 core cable
U cable for Fuel Oils	Polyurethane sheathed 3 core cable
Temperature range °C	0 to 55°C
°F	+ 32 / +131
Max. working pressure	10 bar

Cable Suspended

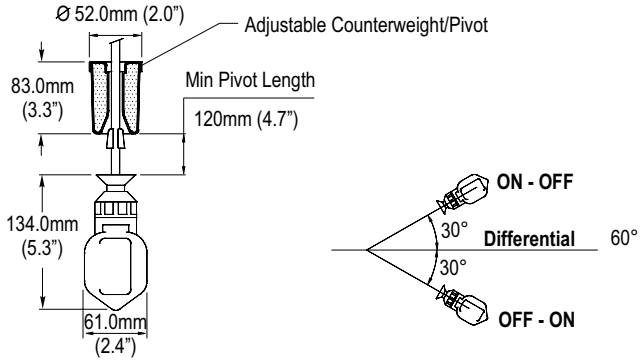
High Power Switch for: Indoor/Covered Tanks FFS Exposed Tanks or Turbulent Liquid FFSMC

FFS Series

This is designed for use in non-turbulent water, with fairly constant ambient temperature, such as in indoor tanks or covered reservoirs. The switching element is a microswitch, having UL, VDE and CENELEC approvals, with either 10 or 20 Amp contacts, activated by a moving ball and having an electrical life of 200,000 operations.

- **WRAS approved**
- **Cable mounting**
- **100m depth capability**

Mechanical

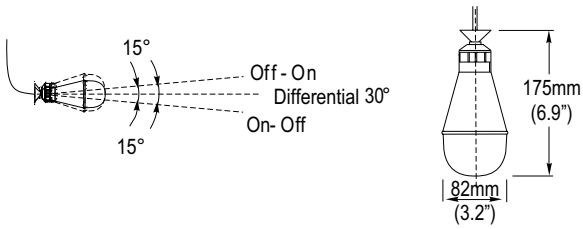


FFSMC Series

This is suitable for open reservoirs and turbulent water and industrial wastewater. The switching element is self cleaning with 10 Amp contacts, and makes the complete switch insensitive to humidity and condensation, caused by wide temperature fluctuations. The switch is fitted with additional internal weight, such that it brings the centre of gravity and rotation close to the cable entry.

- **Operates in turbulent fluids**
- **Unaffected by suspended solids**
- **WRAS approved**
- **Cable mounting**
- **100m depth capability**

Mechanical



Part Numbering System for both products

FFSMC 10 A W 10

- **Series** — FFSMC
- **Max. current** — 10
- **Contact Form** — A
  - A = n/o
  - B = n/c
  - C = c/o
- **Cable covering:** — W
  - W = WRAS Approved
  - Blank = PVC
  - U = Polyurethane
  - N = Neoprene
  - S = Silicone
- **Cable length in metres** — 10
  - Blank = 5M standard

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Switch for Turbulent Liquids & Confined Spaces LM10

This is suitable for use in water, industrial wastewater and sewage, that can have wide variations of temperature. This compact design of switch is for use in more confined spaces, where there is not enough room for the larger FFSMC type.

The rounded body design and floating attitude prevents accumulation of solids on the body. The switch has additional internal ballast, to bring the centre of gravity and rotation close to the cable entry point.

The switching element is a self cleaning type, that makes the complete switch insensitive to humidity and condensation, allowing this type to operate in widely fluctuating temperatures. The switch contacts are rated at 10 Amp resistive.

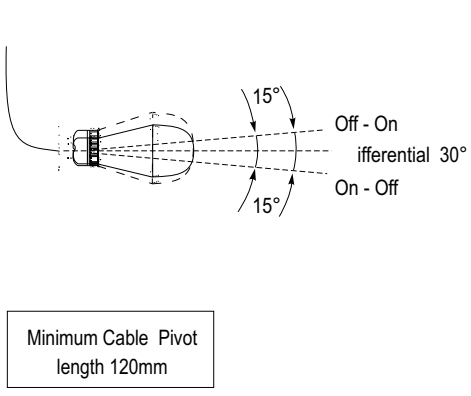
Supplied, as standard, with 5 metres cable and adjustable counterweight.

- **For smaller tanks and restricted space**
- **Use in sewer and industrial waste water**
- **Shape avoids "ragging", in sewer systems**
- **Unaffected by suspended solids**
- **Operates in turbulent fluids**

Technical Specifications	LM10A	LM10B	LM10C
Contact Form	N/O	N/C	C/O
Material		High Density Polyethylene	
Temp Range °C		0 / +55	
°F		+ 32 / +131	
Cable (standard length 5m)		With protective earth	no earth
Standard cable covering		PVC	
U cable option for Fuel oils		Polyurethane	
Max. working pressure		10 bar	
Electrical Specifications			
Switching Power Max.		AC : 750 VA/DC : 180W	
Switching Voltage		AC : 250 V/DC : 110 V	
Switching Current Max. Resistive		10 A	
Switching Current Max. Inductive		AC : 4A/DC : 1 A	

It is necessary to use an auxiliary relay, when switching pump motors or any loads that are not purely resistive.

Mechanical



Minimum Cable Pivot length 120mm

CE

Custom Solutions

Custom Float Switches

Float Switch with manual check facility

- Fluid level sensors for hazardous area use
- Suitable for critical "high high" alarm level indication
- Manual check facility
- Full ATEX certification if required
  EExd IIC T110˚C
  (Tamb = -50°C to + 100°C) EEx ia IIC T4
  (Tamb = -50°C to +110°C)
- Up to 4 discrete float levels
- Flanged or screwed entry mount
- Full custom design facility
- Lloyds Type Approval
- Marine & Petrochemical applications

Vertical top entry float switch with optional manual check facility designed for hazardous area applications in marine and petrochemical industries. Up to 4 discrete float levels can be specified. Mounting options include screwed entry or flanged.

Level Transducer

- 4-20mA continuous output
- Maximum span 3 metres
- Available with aluminium IP65 & stainless steel enclosures IP68
- Supply voltage 15-30VDC
- 10mm stepped accuracy
- Can be supplied with analogue/digital display
- Marine, petrochemical & process control applications
- Full custom design facility

Transducer Available for
Hazardous Area ATEX - EExd IIC T110°C (Tamb = -50°C to + 100°C)

Vertical top entry level transducer in aluminium or stainless steel, giving a continuous 4-20mA output level indication up to 3 metres in length. Reliable reed switch operation with resolution down to 10mm. Can be configured with an analogue or digital display for remote fluid level monitoring in marine, petrochemical and process control applications. Requires a DC supply voltage of 15-30V.

Side Entry Float Switch

- Aluminium enclosure IP65
- Stainless steel enclosure IP68
- Screwed options 2" NPT or 2" BSP (G2)
- Maximum pressure 50 bar
- Two independent SPDT contacts
- Lloyds type approval
- Process Control applications
- Full custom design facility
- Can be supplied fitted to most international standard flanges

Horizontally mounted screwed entry float switch for process control applications. Available in both aluminium and stainless steel, with many contact configuration options.

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from TAV Engineering

Further Information

To discuss your application requirements call Cynergy3 on **01202 897969** or TAV direct on **01425 270444**. Alternatively visit the TAV website for outline specifications on all TAV products and capabilities at www.tavengineering.co.uk

Float Switch Screwed Entry

- Fluid level sensors for safe area and intrinsically safe use
- Economical design
- Screwed entry – all international thread sizes available
- Anodised aluminium alloy enclosure IP65
- Brass or stainless steel 316L stem
- Up to 4 discrete float levels
- Closed cell foam or stainless steel 316L floats
- Full custom design facility

Top mount screwed entry float switch for process control applications in safe or intrinsically safe areas. Cost effective design with anodised aluminium enclosure and brass stem. Options of closed cell or stainless steel 316L float switches and up to 4 discrete levels specified by the customer.

Diplacer with or without manual check facility

- Fluid level sensors for safe and hazardous area use
- Suitable for critical "low" alarm level indication
- Specifically designed for levels greater than 1 or 2 metres or high pressure applications
- 2 discrete levels
- Flanged or screwed entry mount
- Full custom design facility
- Petrochemical applications
- Full ATEX certification if required EExd IIC T110˚C (T_{amb} = -50˚C to +100˚C) EEx ia IIC T4 (T_{amb} = -50˚C to +110˚C)

Float switch with cable mounted displacer float designed for long reach fluid level sensing applications greater than 1 or 2 metres. Available for safe and hazardous area applications. 2 discrete levels can be specified, with optional manual check facility.

Bulk Solid Level Sensor

- Point and continuous level measurement for dry bulk products
- Roto-Bin-Dicator® paddle type
- No calibration required
- High or low level alarm switch
- Top, bottom or side mount
- Explosion proof and stainless enclosure available
- Aggregates, feed, grain and powder level sensing applications

Dry bulk level sensing equipment from Bindicator™. These high reliability point and continuous level sensing products are designed for demanding applications in bulk product process controls where the material can be powder, granular or slurry based.

For further information on Cynergy3's dedicated facility, TAV Engineering please refer to page 2.

Flow Sensors

Flow Switches Series FS

Our range of Flow Switches are reed switch based devices which are manufactured in Acetal resin. These switches are designed for use in liquid flow systems up to 10 Bar pressure. Advanced design ensures minimal fluid flow restriction.

- **Maximum operating pressure 10 bar. (140 PSI)**
- **Low flow version available**
- **WRAS approval**
- **Temperature rated to 85°C (185°F)**

Electrical Specifications	All Types
Contact form	N/O
Switching Power Max. VA	15
Switching Voltage AC Max.	240
Switching Voltage DC Max.	120
Switching Current Max. A	1.0

All ratings are for resistive load only.

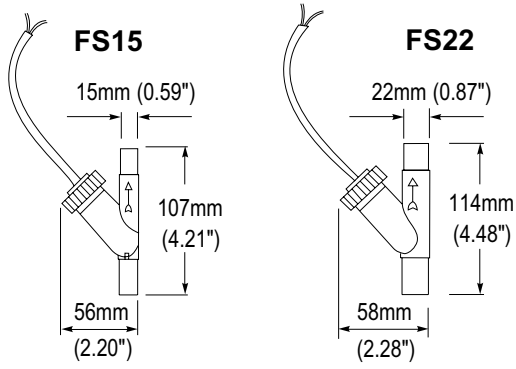
Technical Specifications		FS15A	FS15LF	FS22A
Operate Flow Rate*	litres/min	2.0	0.90	3.75
	US gals/min	0.53	0.24	0.99
Release Flow Rate**	litres/min	0.3	0.25	1.40
	US gals/min	0.08	0.07	0.37

* The switch will have operated when the flow rate rises above this value.
** The switch will have released when the flow rate falls below this value.

Installation

Flow switches can be mounted horizontally or vertically. As the operating piston is returned to its original position by gravity the cap must always be upwards. Greater operate flow sensitivity is achieved with vertical installation.
Supplied with 25cm Cable.

Outline Dimensions



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Flowsonic Ultrasonic Flow Meter UF

This innovative design provides a high accuracy, non-invasive, flow measurement device at a fraction of the cost of other current non-invasive systems. The unique measurement technique automatically compensates for viscosity and temperature variations. The measurement of flow is by ultrasonic transit time in-line cell.

The flow path is designed to minimise pressure drop and, having no moving parts within, will not clog or jam. The flowsonic sensor also allows contaminants to pass through without affecting its performance.

The flowsonic sensor can be supplied with either a 4-20mA analogue output, or a pulsed Open Collector (Open Drain) output.

- **Non-invasive sensor technology**
- **No moving parts**
- **Automatic viscosity and temperature compensation**
- **Unaffected by fluid contaminants**
- **Low pressure drop**
- **Push fit connection option**

Technical Specifications	UF25C	UF25P
Max. flow L/min	25	
Min. flow L/min	0.5	
Output	4-20mA	Pulse

Performance	UF25C	UF25P
Accuracy 3% of reading or	± 0.1L/min	
Repeatability 1% of reading or	± 0.05L/min	
Linearity	1% of full scale	
Resolution better than	0.05L/min	
Reverse flow	0-25L/min	
Response time	Better than 0.4s	

Interface	UF25C	UF25P
Connection	3 wires (RED input, BLUE common, GREEN output)	
Supply	7.5 - 26VDC (input current <60mA @ 9VDC)	
Output	4-20mA	1000 pulses/L
	Analogue (4.20mA) max load impedance 100 ohms	

Operation	
Principle	Ultrasonic transit time in-line flow cell
Temp. range (fluid)	-10°C to 85°C
Continuous fluid sound	Maintains performance regardless of fluid type, temperature or viscosity for speed measurement fluids with sound speeds 1250 - 1750 m/s

Physical characteristics	
Flow tube material	Glass filled plastic, Grivory HTV-4X1 (WRAS and FDA approved)
Flow tube internal diameter	12.5mm
Connection thread	3/8" BSP
Internal bore of connection	10mm
Suitable pushfit adaptor (to fit ½" OD Tube)	John Guest Speedfit PI451613S
Maximum pressure	15 bar
Case material	Nylon 66
Case integrity	Ultrasonically welded, not liquid proof
Connection	4 core shielded, PVC sheathed, 100cm long standard

Ordering Code

UF 25 P 100

- UF — Series
- 25 — Flow range (25 = 0 to 25L/min)
- P — Output (P = pulse, C = 4-20mA)
- 100 — Cable length (cms)

Extension Tubes for Float Switches

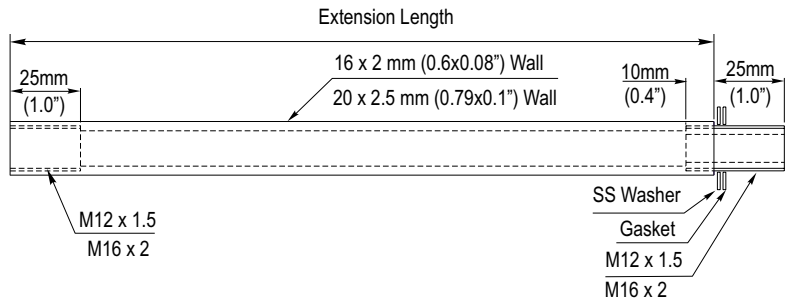
Cynergy3 have a range of extension tubes available in Polypropylene or Stainless Steel (316L grade), which extend the reach of the various vertical float switches.

The Polypropylene tubes, with either M12 or M16 threads, are intended for use with our plastic types of float switches and are available in 250mm, 500mm and 750mm lengths.

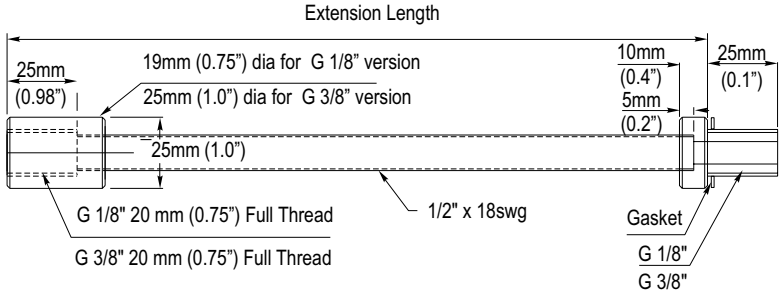
Stainless steel extension tubes, with either 1/8BSP (G1/8) or 3/8BSP (G3/8), are intended for use with our stainless steel float switches and are available in lengths from 250mm to 1000mm.

Cynergy3 Part	Material	Thread type	Extension length	Gasket
EXT025M12PP	Polypropylene	M12x1.75	250mm	Nitrile
EXT050M12PP	Polypropylene	M12x1.75	500mm	Nitrile
EXT075M12PP	Polypropylene	M12x1.75	750mm	Nitrile
EXT025M16PP	Polypropylene	M16x2	250mm	Nitrile
EXT050M16PP	Polypropylene	M16x2	500mm	Nitrile
EXT075M16PP	Polypropylene	M16x2	750mm	Nitrile
EXT025G18SS	316 grade SS	G1/8	250mm	Nitrile
EXT050G18SS	316 grade SS	G1/8	500mm	Nitrile
EXT075G18SS	316 grade SS	G1/8	750mm	Nitrile
EXT100G18SS	316 grade SS	G1/8	1000mm	Nitrile
EXT025G38SS	316 grade SS	G3/8	250mm	Nitrile
EXT050G38SS	316 grade SS	G3/8	500mm	Nitrile
EXT075G38SS	316 grade SS	G3/8	750mm	Nitrile
EXT100G38SS	316 grade SS	G3/8	1000mm	Nitrile

Outline Dimensions Ext. PP Versions



Outline Dimensions Ext. SS Versions



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Cynergy3 has a number of Application Notes available through the website www.cynergy3.com

These include:

- Selecting the right float switch
- Chemical compatibility
- Installation instructions
- Contact protection
- Pump control circuit

Float switches from Cynergy3 and TAV Engineering are highly reliable and will give long service, provided they are not used outside their specified capabilities. It is, therefore, necessary to ensure that the correct float switch selection is made to avoid any potential for failure.

The most common causes of failure in float switches are material incompatibility with the liquid in which the switch is being used or failure to fully understand the load being switched.

Material Compatibility

The Cynergy3 chemical compatibility chart shows the relative suitability of the materials for use in most common liquids.

Switching Capacity

It is important to make sure that the product of volts and amps is less than the switching power max figure specified.

Electrical Load

Capacitive loads: Long wires

There is a danger that the switching of a capacitive load may cause an initial current surge that will exceed the rating of the contact, which can dramatically reduce life and even cause early sticking. Measures should be taken to reduce the inrush current to a minimum. The most common solution is to fit a resistor in series with the switch.

Inductive loads: Relays, Solenoids and Motors

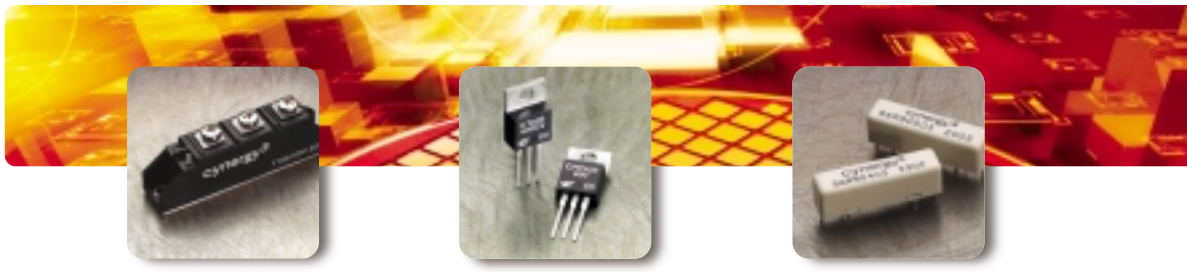
Many applications involve interfacing the main load through a relay system, in order to handle larger values of voltage or current. Coil operated relays or solenoid control valves possess considerable inductive values. The significant factor to guard against is the release of energy, temporarily stored in the coil, at the time when the reed switch opens. The collapsing magnetic field, when an inductive circuit current is broken, causes a voltage transient or back emf, which will eventually lead to complete welding of the switch.

The two most common methods of suppression are diode and RC (resistor capacitor) suppression.

Motors

The circuit can appear as a high inductance and low resistance, at the moment of switch closure. Surge current during starting could be some 5 or 15 times the steady value and, depending on the type of motor and starting characteristics, could last for several seconds in the worst case.

cynergy3 components™



Power Modules

Cynergy3 Components produces a wide range of power modules. These are power switching/control circuit elements integrated into convenient, electrically isolated base packages, offering a broad spectrum of commonly used diode, SCR or SCR/diode circuit configurations and ratings. The modules are mechanically and thermally optimized for ease of assembly, long life and reliable operation.

Discrete Semiconductors

Cynergy3 offers a range of triacs, thyristors and rectifiers in popular industry standard packages. The TO-220 and TO-247 are available in both isolated and non-isolated packages from 6A to 55A, with up to 1000V switching. High Temperature versions are available up to 150°C. In addition, Cynergy3 provides discrete semiconductor die with ratings from 1A to 450A.

High Voltage & RF Reed Relays

Cynergy3 Components has over 40 years' experience in the design and manufacture of reed switches and reed relays, up to 15kV isolation and 20Amps carrying current through 30MHz RF. Its ISO9001 certified manufacturing facility in Wimborne, UK, features a state-of-the-art reed switch clean room facility. The company provides a standard range of designs for radio communications systems, electro medical, semiconductor / cable test and high voltage power supplies. Its team of engineers can deliver fully customized solutions using latest 3D modeling and rapid prototyping systems, through to fully tooled parts for high volume production. Call Cynergy3 with your application requirements.

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