



GAPSWITCH 400

Process Instrumentation

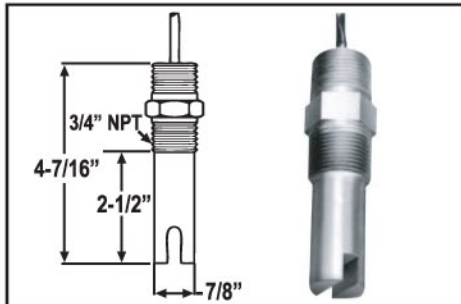
Ultrasonic Gap Level Switch for Liquids.

The **ECHO GapSwitch Series** are a range of ultrasonic gap switches for monitoring and controlling liquid level. They provide highly reliable, fixed point liquid level indication with a repeatability of 2mm or better. All versions are solid state and therefore require no maintenance and provide many years of trouble free operation.

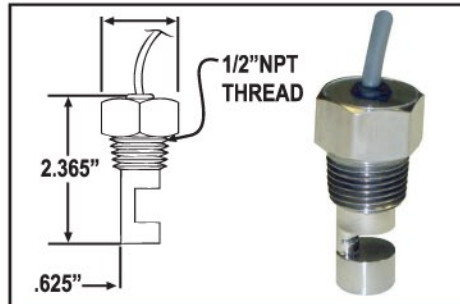
Ultrasonic sound waves travel from the transmitter to the receiver through the gap. Air dissipates the sound energy while liquid enhances it. Thus, when liquid is present, the sound energy easily traverses the gap to the receiver and the control head activates the relay or analog output.

The ECHO GapSwitch Series are offered in a variety of configurations to suit mounting arrangements, output requirements and a wide variation in liquid viscosity. Where very arduous conditions exist, units can be supplied in alternative materials of construction such as Teflon, Kynar, Monel or Hastelloy. High temperature and cryogenic versions are also available.

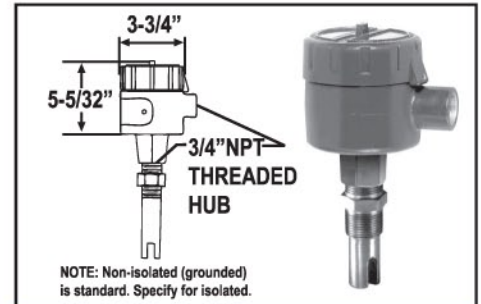
- **No Moving Parts - No Maintenance**
- **Exotic Materials for Corrosive Materials**
- **General Purpose & Explosion Proof Versions**
- **316L Stainless Steel Standard with 3/4" NPT**
- **Capable of High Temperature & Pressure**



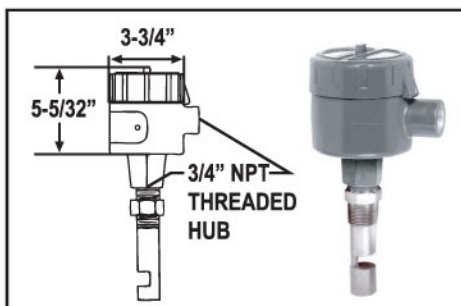
GS400 - Low Cost, No Control Head
2-wire (4/20mA = DRY/WET) or 1A SPST Relay
Process Temp: -20° to 160°F (-29° to 71°C)
Pressure Limit: 1,000 psig (69 bar)



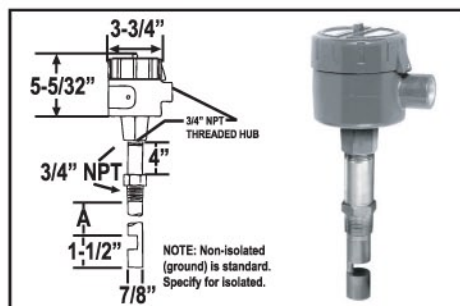
GS401 - Mini Switch, No Control Head
2-wire (4/20mA = DRY/WET) or 1A SPST Relay
Process Temp: -20° to 175°F (-29° to 80°C)
Pressure Limit: 250 psig (17.2 bar)



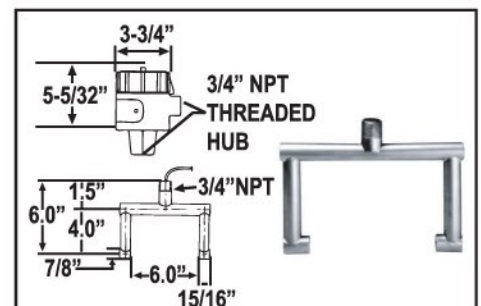
GS402 - Vertical Gap Switch
10 Amp DPDT Relay
Process Temp: -40° to 300°F (-40° to 149°C)
Pressure Limit: 1,000 psig (69 bar)



GS404 - Horizontal Gap Switch
10 Amp DPDT Relay
Process Temp: -40° to 300°F (-40° to 149°C)
Pressure Limit: 1,000 psig (69 bar)



GS405 - HIGH Temperature Gap Switch
10 Amp DPDT Relay
Process Temp: -40° to 550°F (-40° to 288°C)
Pressure Limit: 1,000 psig (69 bar)



GS409 - SludgeSwitch with 6" Vertical Gap
10 Amp DPDT Relay
Process Temp: -40° to 250°F (-40° to 121°C)
Pressure Limit: Consult Factory

Technical Specification: GapSwitch 400 Series



TECHNOLOGY / OPERATION

Measuring Principle Ultrasonic Gap Level Switch

PERFORMANCE

Repeatability 2 mm or better
 Sensitivity Self-draining liquids only
 Power Supply Version Dependent: 110VAC, 230VAC, 12 VDC, 24 VDC, 2-Wire

OUTPUTS

Relay Version Dependent: 1 DPDT rated 10A @ 120/230VAC, 5A @ 24VDC
 Delay 0.5 seconds

ENVIRONMENT

Standard Temperature Range Process: Version Dependent, Control Head: -20° to 170°F (-29° to 77°C)
 HIGH Temperature Range (GS405) Process: -40° to 550°F (-40° to 288°C), Control Head: -20° to 170°F (-29° to 77°C)
 Pressure Limit Version Dependent, Standard 1000 psig (69 bar)
 Outdoor Rating NEMA 4X Weatherproof/ EX Version: NEMA 7

DESIGN

Standard Insertion Length Standard is 2.5 inch
 Mounting Arrangement Side or Top Mounting
 Mounting Thread Version Dependent, Standard is 3/4 inch NPT
 Housing Material Cast Aluminum, Epoxy Painted Enclosure
 Wetted Material Standard: 316L Stainless Steel, Optional: PTFE, PVDF, Monel, Hast. C
 Weight Version Dependent: Approx. 1 lb (0.5 kg)

APPROVALS

Standard General Purpose
 Hazardous Area (Optional) FM & CSA Approved Class I, II, III; Div 1 & 2, Group C,D,E,F,G

WARRANTY

Product Warranty 1 year

Our policy is one of constant development and improvement. ECHO reserves the right to amend details as necessary. Environmental conditions can affect accuracy slightly.

PART NUMBER CONFIGURATOR																	
MODEL	GapSwitch - Ultrasonic Gap Level Switch	G	S	4													
CONFIGURATION	Low Cost - No Control Head (Loop Powered only, 1 ft cable)				0	0	L	X	S	L	0	0	1	G	P		
	Low Cost - No Control Head (24 VDC, 1A SPST, 1ft cable)				0	0	R	X	S	L	0	0	1	G	P		
	Mini Switch - (Loop Powered only, 1 ft cable)				0	1	L	X	S	L	0	0		G	P		
	Mini Switch - (24 VDC, 1A SPST, 1ft cable)				0	1	R	X	S	L	0	0		G	P		
	Vertical Gap (316L Stainless Steel only)				0	2			S						X	X	
	Horizontal Gap				0	4									X	X	
	High Temperature - Horizontal Gap, up to 450°F				0	5									X	X	
	SludgeSwitch - 6" Vertical Gap (316L Stainless Steel only)				0	9			S	L	0	0	1	G	P	X	X
POWER SUPPLY	110 VAC (Available for Models 402, 404, 405, 409)						1										
	230 VAC (Available for Models 402, 404, 405, 409)						2										
	24 VDC (Available for Models 402, 404, 405, 409)						3										
	12 VDC (Available for Models 402, 404, 405)						4										
OUTPUT	DPDT Rated 10A							1									
SENSOR MATERIALS	316L Stainless Steel (Standard for all gap switches)								S								
	PTFE (Available for Models 404 and 405 Only)								T								
	PVDF (Available for Models 404 and 405 Only)								K								
EXTENDED LENGTH	None - Standard Insertion Length									L	0	0					
	Custom Insertion Length for SS316L only INCHES from 05" - 99")									C	X	X					
MOUNTING	3/4" NPT (Standard), Not an option for Model 401												1				
	Special Option 1/4" NPT (Model 401 Only)												2				
	Special Option 1/2" NPT (Model 401 Only)												3				
APPROVALS	General Purpose (Standard)													G	P		
	Explosion Proof													E	X		
CABLE LENGTH	Extended Cable Length (Available for Model 400 and 401 only)															X	X