

# SAI CONTROL SYSTEM

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## Proximity Switches

Sai Control System has been manufacturing the wide range of high quality proximity switches over two decades. These switches are used in all areas of control & automation such as machine tools, packaging, injection molding, automobile industries, process industries, textile industries, pharmaceutical, forging and other automated systems.

### Advantages

- Non Contact Operation • No Operating Force Require
- Bounce free Operation • Corrosion Resistance
- High Operating Frequency • Vibration Resistance
- IP67 Grade of Protection • High Repeat Accuracy
- Suitable for intrinsically safe operation in hazardous area.
- Long Life

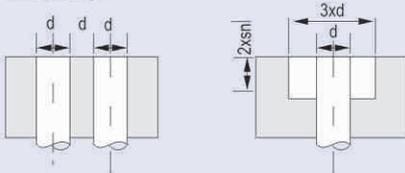
### Operating Temperature

Operating Temperature of Proximity Switches is 0 to 55° C. & Temperature up to 100° C can be manufactured on request.

### Protections

AC Proximity Switches are protected against transient and surges. DC switches are protected against short circuit and reverse polarity.

### Mounting

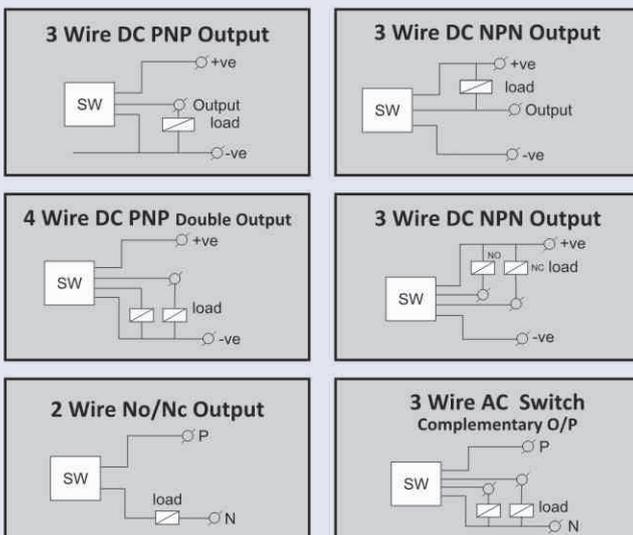


### Switching Hysteresis

This is the difference between Switch ON and Switch OFF point of the switch. This is adjusted within 5% to 15% of the specified sensing distance.

### Output Connections

3 Wire / 4 Wire DC



## Types of Proximity Switches

Type	Sensing Principle	Features	Application
Inductive	Damping of Oscillations of Conductive Material	Senses only metallic objects	Machine Tools Automation Material Handling Position Sensing
Capacitive	Senses Dielectric Properties of object material	Senses Metallic, Non Metallic, Liquid	Food, Pharmaceuticals Plastic
Optical	Infra Red Reflection	Senses any object with longer sensing distance	Foundry, Automobile Pharmaceuticals Plastics, Position Level Sensing
Magnetic	Magnetic Reluctance Reed Switch	Senses only ferrous magnetic materials	Automation Pneumatic Hydraulic Cylinders

### Constructions

The proximity Switches are available in tubular enclosures with Diameter 4 mm to 80 mm and square shapes. The enclosure are made of stainless steel, nickel plated brass tube or engineering plastics.

## Inductive Proximity Switches

### Operating Principle

The LC Oscillator circuit generates the electromagnetic field over the active face, energy is drawn from oscillator resulting damping of the oscillator. This change is detected by electronic circuit and is converted into an effective output signal.

### Application

- For position sensing in Automation.
- Automobile •Food •Pharmaceuticals.
  - Steel •Cement •Engineering Industries.

### Sensing Distance

The sensing distance is the distance between the target and sensing face at which the switch operates. The sensing distance is usually specified considering M.S. as sensing objects.

### Correction Factor For Inductive Proximity Switch

Object Material	Correction Factor
M.S.	1
S.S.	0.8
Brass	0.5
Aluminum	0.45
Cu	0.4

**New**

**Analog Output Inductive Proximity Switch**

Size M18, M30, M50  
O/P-0-10VDC  
Supply 24VDC



**INDUCTIVE** Type : IPS13 - DC / IPS12 - AC

	Ø6.5		M8 <span style="color: orange;">CE</span>		M12 <span style="color: orange;">CE</span>	
						
	DC		DC		DC	AC
	Ø6.5		M8		M12	
	35, 50, 65		35, 45, 65		35, 50, 65	90
	F-1.5	NF-2	F-1.5	NF-2	F-2.5	NF-4
	Nickel Brass, SS		Nickel Brass, SS		Nickel Brass, SS	
	200		200		200	400
	10-30		10-30		10-30	110/230
	3K		3K		1.5K	20Hz

<p>Sensing Distance F - Flush mounting NF - Non Flush mounting</p>	M18 <span style="color: orange;">CE</span>		M30 <span style="color: orange;">CE</span>		M50	
						
	DC	AC	DC	AC	DC	AC
	M18		M30		M50	
	40, 50, 65	80	65	80	55	65
	F-5	NF-8	F-10	NF-15	F-15	NF-20
	NC plated Brass		NC plated Brass		NC plated Brass	
	200	400	200	400	200	400
	10-30	110/230/ 90-240	10-30	110/230 90-240	10-30	110/230 90-240
	1K	20	200	20	100	15

<p>Ordering Information on Page No. 8</p>	M60		M80		D8	
						
	DC	AC	DC	AC	DC	
	M60		M80		D8	
	65	80	65	80	8x8x40	
	F-18	NF-25	F-25	NF-35	F-1.5	
	NC plated Brass		NC plated Brass		Metallic	
	200	400	200	400	100	
	10-30	110/230/ 90-240	10-30	110/230/ 90-240	10-30	
	100	15	100	15	1K	

<p>Switches in any shape any size is available</p>	D17		D20		D25	
						
	DC		DC		DC	AC
	D17		D20		D25	
	17x17x30		20x20x38		25x25x65	
	4-5		5		Full Sensing - 8mm	
	Plastic		Plastic		Plastic	
	200		200		400	
	10-30		10-30		10-30	
	500		500		50	

## INDUCTIVE Type : IPS13 - DC / IPS12 - AC

	D40		DS40(Full sensing)		DK20	
	DC		DC		DC	
	D40		DS40		DK20	
	40x40x112		40x40x112		50x20x20	
	15		Full Sensing-13mm		5	
	Plastic		Plastic		Plastic	
	400		400		200	
Dimension (Dia)	10-30	110/230/90-240	10-30	10-30	10-30	10-30
Length (mm)	100	15	50	300	300	300
Sensing Distance (mm)						
Enclosure						
Load Current (mA)						
Supply Voltage (V)						
Switching Frequency (Hz)						

<p>0-10 volt Analog output Proximity switches are available</p>	D2612		D2510		D2242	
	DC		DC		DC	AC
	D2612		D2510		D2242	
	40x26x12		50x25x10		50x42x22	
	4		5		5	
	Plastic		Plastic		Metal	
	200		200		200	400
Dimension (Dia)	10-30	10-30	10-30	10-30	110/230	110/230
Length (mm)	300	300	300	100	20	20
Sensing Distance (mm)						
Enclosure						
Load Current (mA)						
Supply Voltage (V)						
Switching Frequency (Hz)						

	IN10		D80		G10	
	DC		DC	AC	DC	
	IN10		D80		G10	
	60x11.8		80x80x30		60x30x50	
	2.5		35		10mm Gap	
	Metal		Plastic		Plastic	
	200		200	400	200	
Dimension (Dia)	10-30	10-30	110/230	10-30		
Length (mm)	100	50	15	200		
Sensing Distance (mm)						
Enclosure						
Load Current (mA)						
Supply Voltage (V)						
Switching Frequency (Hz)						

<p>Proximity Switches with Connector</p>	M8 <span style="color: orange;">CE</span>		M12 <span style="color: orange;">CE</span>		M18 <span style="color: orange;">CE</span>	
	DC		DC	AC	DC	AC
	M8		M12		M18	
	50,65		55,90		50,70,80	
	F-1.5	NF-2	F-2.5	NF-4	F-5	NF-8
	NC plated Brass/SS		NC plated Brass		NC plated Brass	
	200		200	200	200	400
Dimension (Dia)	10-30	10-30	230/110	10-30	230/110	
Length (mm)	1k	1K	100	500	1.5K	
Sensing Distance (mm)						
Enclosure						
Load Current (mA)						
Supply Voltage (V)						
Switching Frequency (Hz)						

## INDUCTIVE Type : IPS13 - DC / IPS12 - AC (Switches with connector)

	M30		M50		DF40	
Dimension (Dia)	M30		M50		DF40	
Length (mm)	80		80		40x40x112	
Sensing Distance (mm)	F-10	NF-15	F-15	NF-20	15mm	
Enclosure	NC plated Brass		NC plated Brass		Plastic	
Load Current (mA)	200	400	200	200	200	200
Supply Voltage (V)	10-30	110/230 90-240	10-30	110/230 90-240	10-30	110/230 90-240
Switching Frequency (Hz)	200	20	100	15	100	15

## Capacitive Proximity Switches

### Introduction

The capacitive proximity switches are used for sensing metallic as well as non metallic material.

### The Major Applications of Capacitive Switches

- Liquid level / Plastic Granules / Component / Sand / Bulk Material Level
- Food / Grain / Paper & Rubber / Glass Industries

### Working Principle

The switches works on the principle of resonant oscillator circuit. Two brass plates are used as electrodes of capacitor & the sensing objects acts as a dielectric media. The change in capacitance the object is sensed by a sensing circuit and output signal is generated.

## CAPACITIVE Type : CPS13 - DC / CPS12 - AC

	M18		M30		M30	
Dimension (Dia)	M18		M30		Ø34	
Length (mm)	80		80		80	
Sensing Distance (mm)	10		15		15	
Enclosure	NC plated Brass		NC plated Brass		Plastic	
Load Current (mA)	200	200	200	200	200	200
Supply Voltage (V)	10-30	10-30	230/110	10-30	230/110	230/110
Switching Frequency (Hz)	20	20	15	20	15	15

Sensing Distance F - Flush mounting NF - Non Flush mounting	M50		D40		D80	
Dimension (Dia)	M50		D40		D80	
Length (mm)	80	80	40x40x112.5		80x80x30	
Sensing Distance (mm)	F-18	NF-22	15		35	
Enclosure	NC Plated Brass		Plastic		Plastic	
Load Current (mA)	200	400	200	400	200	400
Supply Voltage (V)	10-30	110/230	10-30	230/110	10-30	230/110
Switching Frequency (Hz)	100	15	20	20	20	20



**Optical Proximity Switches**

**Introduction**

Sai Control System offers optical proximity switches with modulated Infra Red beam consisting of transmitter and receiver. The state of the art modulation and detection circuit ensures reliable operation of sensor in hostile environment and are unaffected by temperature variation and stray light.

**Applications**

These are widely used for sensing metals and non metals like wood, glass, paper and water etc. These switches are used for automation in various industries like pharmaceuticals machines, packaging machines, food processing, textile machines, conveyor system, automobile engineering industries, cement plants, safety and security appliances.

OPTICAL	Type : OPS13 - DC / OPS12 - AC								
	M12			M18			M30		
Dimension (Dia)	DC			DC			DC		
Length (mm)	M12			M18			M30		
Sensing Distance (mm)	80			80			80		
Enclosure	DS-50	RR-200	TB-1Mtr	DS-300	RR-1Mtr	TB-5Mtr	DS-1Mtr	RR-3Mtr	TB-20Mtr
Load Current (mA)	NC Plated Brass			NC Plated Brass/Plastic			NC Plated Brass		
Supply Voltage (V)	100			200			200		
Switching Frequency (Hz)	10-30			10-30			10-30		
	50			50			50		

<b>DS : Diffuse Scan</b> <b>RR : Retro Reflective</b> <b>TB : Through Beam</b>	H17x50x55			F50			F100					
	DC			DC			DC					
	Dimension (Dia)			H17x50x55			F50			F100		
	Length (mm)			17x50x55			90x70x15			xxx		
	Sensing Distance (mm)			DS-200	RR-600	TB-3Mtr	GAP-50mm			GAP-100mm		
	Enclosure			Plastic			Plastic			Plastic		
	Load Current (mA)			200			200			200		
	Supply Voltage (V)			10-30			10-30			10-30		
	Switching Frequency (Hz)			50			50			50		

<b>Power Supply Unit</b> <b>For Sensor is</b> <b>Available</b>	H17x50x115			70x50x15			60x20x15					
	DC			DC			DC					
	Dimension (Dia)			H17x50x55			70x50x15			60x20x15		
	Length (mm)			17x50x55			70x50x15			60x20x15		
	Sensing Distance (mm)			GAP-20mm			GAP-3mm			GAP-5mm		
	Enclosure			Plastic			Plastic			Plastic		
	Load Current (mA)			200			200			200		
	Supply Voltage (V)			10-30			10-30			10-30		
	Switching Frequency (Hz)			50			100			200		



**Magnetic Proximity Switches**

The Magnetic Proximity Switches are available in Two Categories.

- Position sensing switches with Reed Element.
- 2 Wire/ 3 Wire Hall Effect Sensor.

The Magnetic Proximity Switches are available in different shapes and sizes.

These switches incorporated hermetically sealed reed element, the sensing object should be a magnetic only. These switches are provided with 2/3 Core built in cable and output is potential free contact & PNP as well as NPN output is available to switch external load directly.

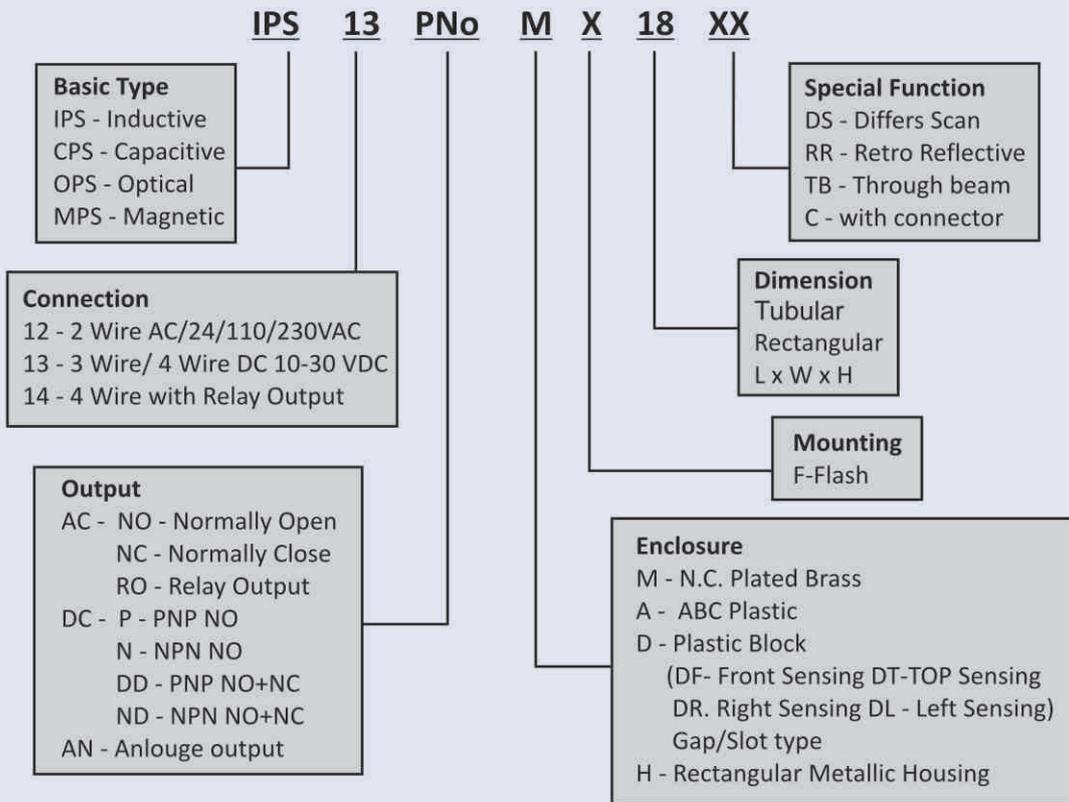
The switching voltage and contact rating depends upon switch size. Special model of latching type switched are available. High temperature magnetic switches are also available.

MAGNETIC	Type :MPS13 - DC / MPS12 - DC		
	M12	M18	M30
			
<b>Dimension</b>	DC M12	DC M18	DC M30
<b>Length</b>	30,35,80	50,80	50,80
<b>Sensing Distance</b>	5mm	10mm	20mm
<b>Enclosure</b>	Nickel Plated Brass	Nickel Plated Brass	Nickel Plated Brass
<b>Load Current</b>	200	200	200      500
<b>Supply Voltage</b>	10-30	10-30	10-30      90-230 VAC
<b>Switching Frequency</b>	50	50	45      15

Sensing Distance is Depends on the Power of Magnet	35x25x12	30x7x5	26x12x12
			
<b>Dimension</b>	DC 35x25x12	DC 30x7x5	DC 26x12x12
<b>Length</b>	35,25,12	30	26
<b>Sensing Distance</b>	10	10	10
<b>Enclosure</b>	Metalic	Plastic	Plastic
<b>Load Current</b>	200	200	200
<b>Supply Voltage</b>	10-30	10-30	10-30
<b>Switching Frequency</b>	50	50	50

	33x15x12	22x10x7	17x19x12
			
<b>Dimension</b>	DC 33x15x12	DC 22x10x7	DC 17x19x12
<b>Length</b>	33,15,12	22,10,7	17,19,12
<b>Sensing Distance</b>	10	10	10
<b>Enclosure</b>	Metalic	Plastic	Plastic
<b>Load Current</b>	200	200	200
<b>Supply Voltage</b>	10-30	10-30	10-30
<b>Switching Frequency</b>	50	50	50

## Ordering Information



## Other Range of Product

### Level Switches



**Rotary Paddle Type, Tilt Switch,  
RF Admittance Type Level Switches,  
Chate Jam Switch, Vibrating fork type level Switches**

### Vibrator Controllers



**Digital Voltage & Frequency Controllers  
For Vibratory Bowl & Linear Vibrator**

### Safety Switches



**Pull Cord Switches  
Belt Sway Switches  
Zero Speed Switches  
Trip Indicator for operated Switches  
Belt Loading Monitor  
Belt Tear Switches**