



ایسترو ماشین  
**ISTR MACHINE**



**Rotary Gear Limit Switch**

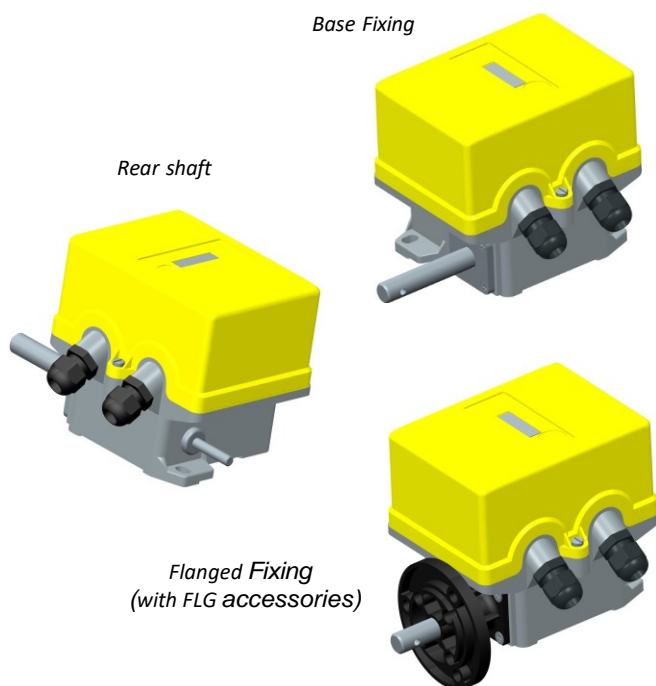
[www.istromachine.com](http://www.istromachine.com)

## Rotary Gear Limit switches

The Istromachine's rotary gear limit switch is a device used to control the number of rotation or direction angle of industrial and building machines. A typical application is controlling the position of the rolling shutter door or overhead cranes etc. The unit, through a gear system and cams transmission, controls 2, 4 or more microswitches so that after a defined number of revolutions, it can prepare the motor or the device to start or stop running. The microswitches have a calibration screw that operates independently on each cam; so it can calibrate the opening and closing of each micro according the functional requirements needed.

The gear-based transmission system allows you to choose different ratios. It can also be supplied with rear shaft version or complete of linear detector (potentiometer or encoder) too.

### Version and options available



### Characteristics

Case	aluminum housing self-extinguishing cover
Ratio	050-100-200
Protection class	IP65
Shaft type	steel mounted on ball bearing
Fixing type	- bottom - front (flanged with FLG accessories)
Microswitch	1NC-1NO changeover fast trigger self-cleaning silver alloy contacts Rated isolation voltage : Ui250V Rated thermal current : 8A Resistance Load : Ie 8A-250V Ac Inductive Load : Ie 3A-250V Ac Operation temperature : -25°C~ +70°C
Microswitch max n° / notes	max 6 - micrometric adjustment
Cam block	self-lubricating with transparent support for easier cam viewing
Cable entry	M16(max 2) included

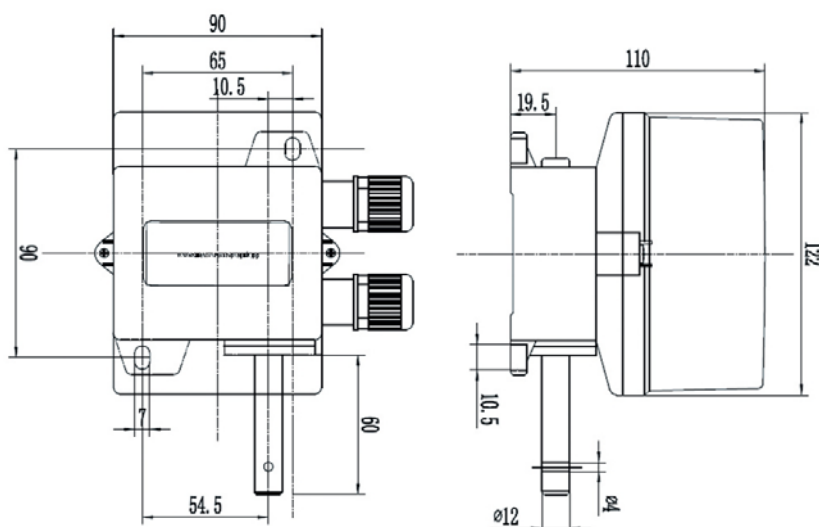
### Ratio

### Single shaft

### Rear shaft

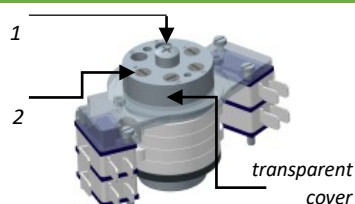
050	FGR 1:50	FGR 1:50B
100	FGR 1:100	FGR 1:100B
200	FGR 1:200	FGR 1:200B

### Dimensions



### Microswitch system calibration guide

- I. Loosen the main screw (1)
- II. Adjust the screws (2)
- III. Tighten the main screw (1)







## Rotary Gear Limit Switches

The **FGR1** rotary gear limit switch is a device used to control the number of rotation or direction angle of industrial and building machines. A typical application is controlling the position of the rolling shutter door or overhead cranes etc. The unit, through a gear system and cams transmission, controls 2, 4 or more microswitches so that after a defined number of revolutions, it can prepare the motor or the device to start or stop running. The microswitches have a calibration screw that operates independently on each cam; so it can calibrate the opening and closing of each micro according the functional requirements needed. The gear-based transmission system allows you to choose different ratios. It can also be supplied with rear shaft version or complete of linear detector (potentiometer or encoder) too.

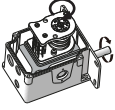
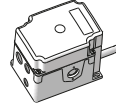
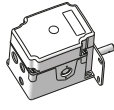
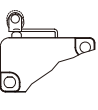



Markings	<b>CE</b>	
Case	thermoplastic glass fiber reinforced	
Ratio	012-033-050-075-100-150-200-400	
Protection class	IP65	
Shaft type	steel	
Fixing type	bottom / front (flanged version)	
Max n° of microswitch	4	
Climate temperature	Operating	-25° C + 70° C
	Storage	-30° C + 70° C
Cable entry	M20 or M16 (max 4)	
Microswitch cams	self-lubricating	
Micrometric adjustment screw	zamak material	
Weight KG (approx)	0.75	
Microswitch product ID	MFI.3 – Giovenzana line wheel drive control (long life)	
Standards	IEC/EN 61058-1, UL 1054	
Markings	<b>CE</b>	
Rated insulation voltage [U <sub>i</sub> ]	250V	
Rated thermal current [I <sub>th</sub> ]	16A	
Rated operating current	Resistive load	16A-250VAC
	Inductive load	4A-250VAC
Positive opening contacts	⤵	
Contact block	function	1NC+1NO changeover fast trigger
	contact	silver plated / self cleaning
	connections	fast-on 0.8x6.3mm



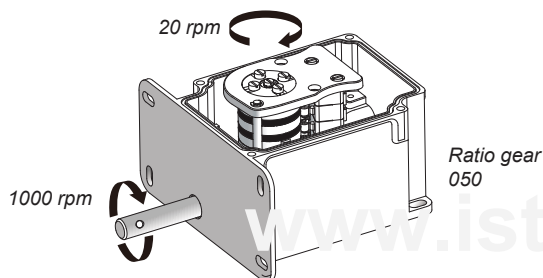
Options	
Rear shaft	available
Potentiometer	2 . 5 / 5 / 10 k $\Omega$ (*)
Encoder	–
Cam' s shape/Pinion available	5 / 15

(\*) Standard potentiometers: available other versions on request

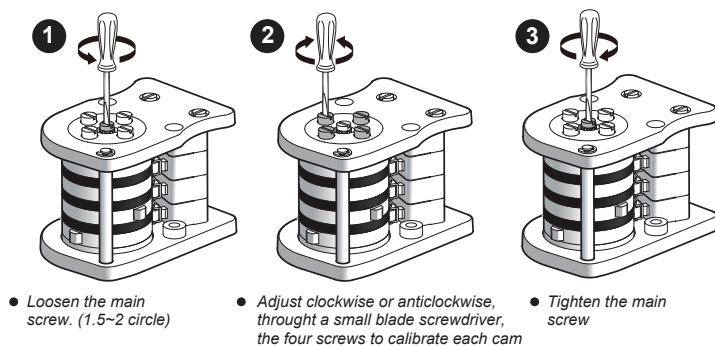
Ratio	Base Fixing	Flanged Fixing	N° microswitches 2-3-4	Microswitch cams
				
012	FGR1-100124	FGR1-100124F	4 silver plated	STANDARD
033	FGR1-100334	FGR1-100334F	4 silver plated	STANDARD
050	FGR1-100504	FGR1-100504F	4 silver plated	STANDARD
075	FGR1-100754	FGR1-100754F	4 silver plated	STANDARD
100	FGR1-101004	FGR1-101004F	4 silver plated	STANDARD
150	FGR1-101504	FGR1-101504F	4 silver plated	STANDARD
200	FGR1-102004	FGR1-102004F	4 silver plated	STANDARD
400	FGR1-104004	FGR1-104004F	4 silver plated	STANDARD

## Ratio

The **FGR1** rotary gear limit switch are available in different transmission ratio. The ratio is the difference between the number of rotation of the main shaft and the number of rotation of the cams



## Microswitch' s system calibration

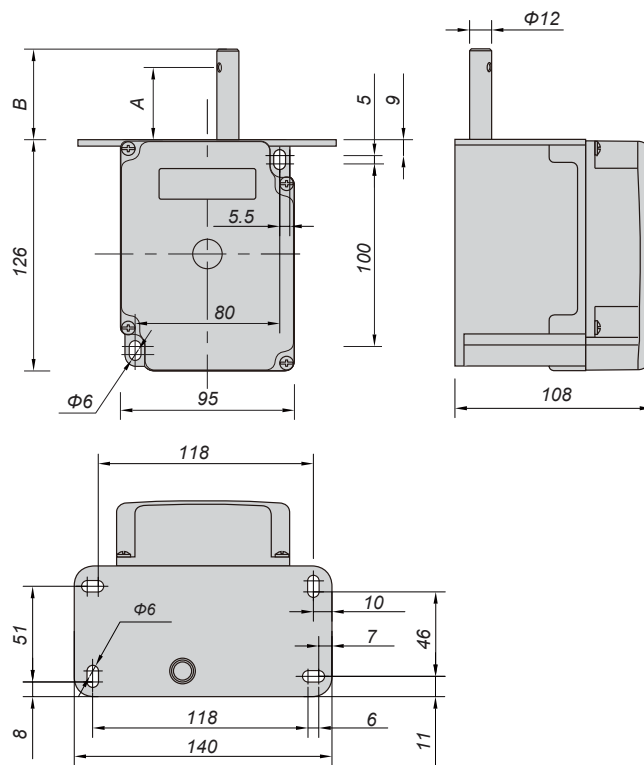


## Dimensions

### Flanged fixing FGR1-SERIES

Product size (mm)

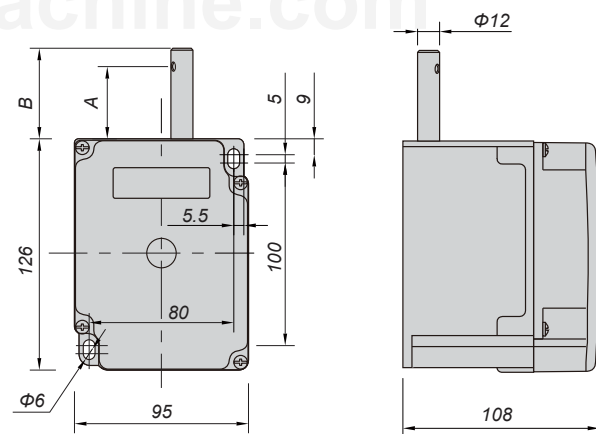
	170 Long worm	180 Long worm
A	39mm	49mm
B	49mm	59mm



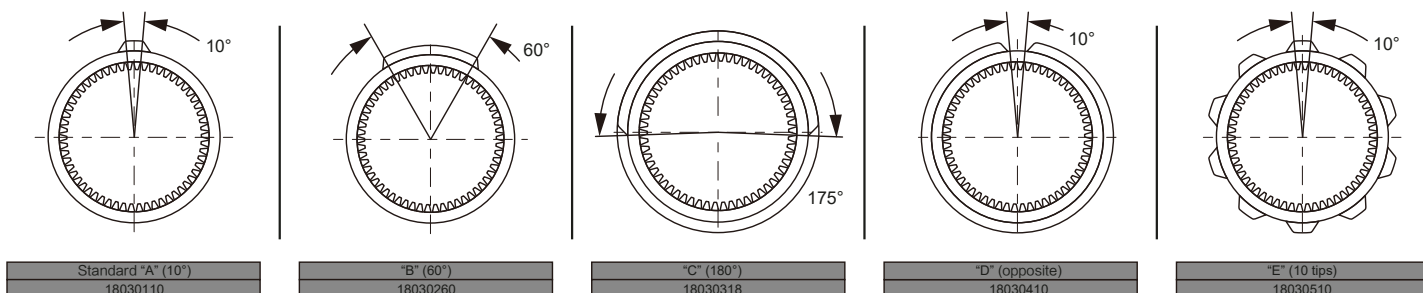
### Flanged fixing FGR1-SERIES

Product size (mm)

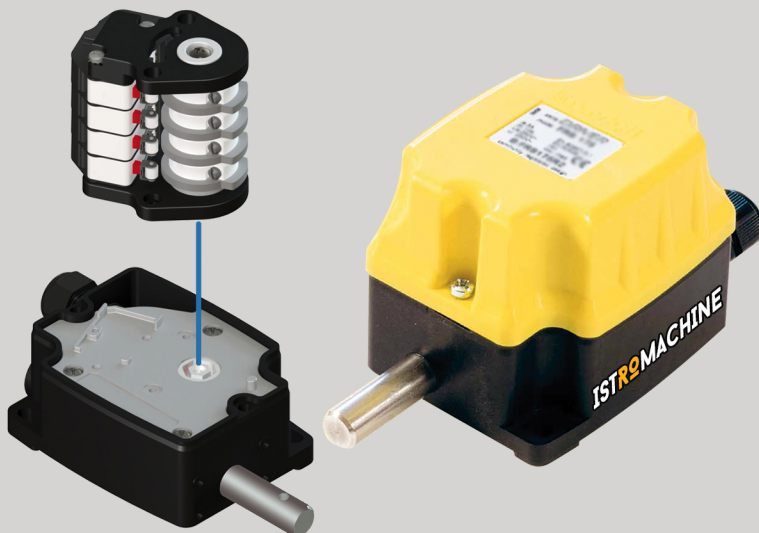
	170 Long worm	180 Long worm
A	39mm	49mm
B	49mm	59mm



## Camshapes



# Multi-Function Rotary Limit Switch



## FRS Series Rotary Limit Switch

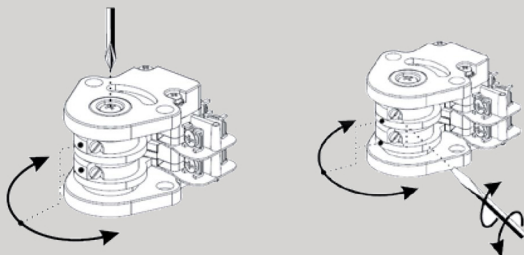
### Technical Data

Insulation voltage	~250V
Maximum operating voltage	~250V
Casing	reinforced nylon
Cover	high mechanical and thermal resistant thermoplastic
Operating temperature	C + 60 °C° 20 -
Drive	worm screw
Cable entries	M16 x 1,5
Insulation	according to CEI EN 60947-5-1
Protection degree	IP 65 CEI EN 60529
Protection against contact voltages	double insulation CEI EN 60439-1

### Contacts technical features

Microswitch	1NO 1NC rapid deviation and guaranteed opening type R
Homologation	IMQ CA02.03310
Insulating voltage Ui	~ V 250
Test voltage	~ V 2000
Category of usage	AC 15, Ue 250V, Ie 3A
Breaking power	according to EN 60947-5-1:2004
Mechanical lifetime	.30x106 op

### Microswitch's system calibration



#### 1. Optional basic regulation

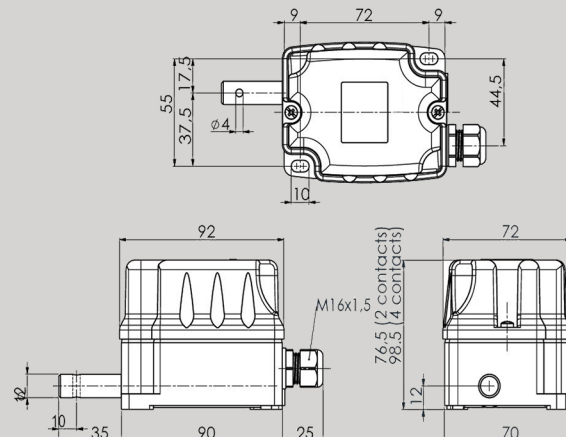
- loosen the upper screw
- rotate the cams manually
- tighten the upper screw

#### 2. Fine regulation

- rotate the regulation screw of each cam
- suggested screwdriver 4,0 x 0,8

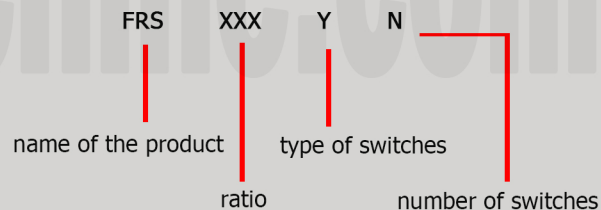
FRS Series rotary limit switch is a device with IP65 protection degree which allows you to control the movement of industrial and building machines. The shaft is connected to the motor, so that after a certain number of turns, the cams make the switches work, and then they can carry out their pre-set manoeuvre. The easy and thorough regulation of the cams allows you to set the rapid trip microswitches working point linearly and micrometrically. The choice of different cam profiles allows you to modify the limit switches function diagram.

### Dimensions



### Part numbers

part number is composed this way :



Unless other specification, limit switches are supplied with white A cams. for other profiles, add B / C at the end of the part number

### Standard ratio

Standard executions have the following reduction ratios:

- 1: 50 turns 2 or 4 contacts
- 1: 100 turns 2 or 4 contacts
- 1: 200 turns 2 or 4 contacts

### Standard cams profiles

#### Type

- |   |              |  |       |
|---|--------------|--|-------|
| A | pointed      |  | white |
| B | sector       |  | grey  |
| C | quarter-turn |  | red   |



# Multi-Function Rotary Limit Switch



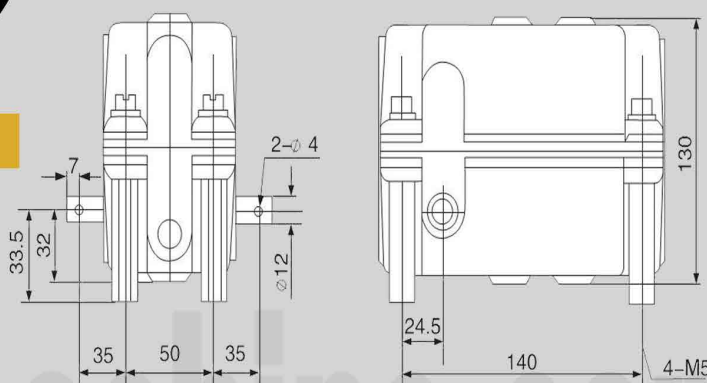
Multi-function Stroke Limiter synchronized with the controlled mechanism is connected with the input shaft of the limiter after being shifted by the external hanging wheel, and is converted into the angular displacement signal of the output shaft by the speed change of the reduce. Multi-Function Stroke Limiter is widely applied to control and limit trilinear coordinates of space of the lifting, transmission in building, port, mining and other industries, Multi-functions Stroke Limiter has many characteristics, like

- strong aluminum die-cast Housing
- Small volume
- many functions
- High precision
- Limit position adjustment
- Strong versatility and convenient maintenance and installation

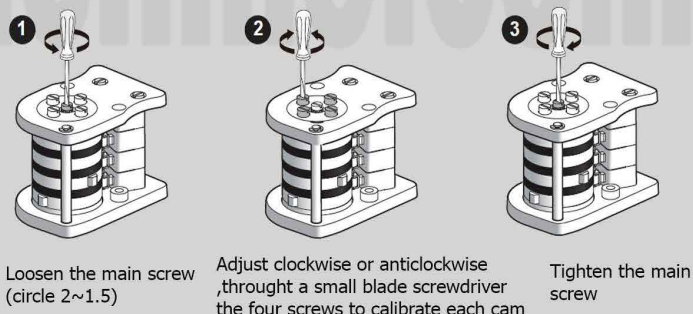
## Rotary Limit Switch

### Technical Data

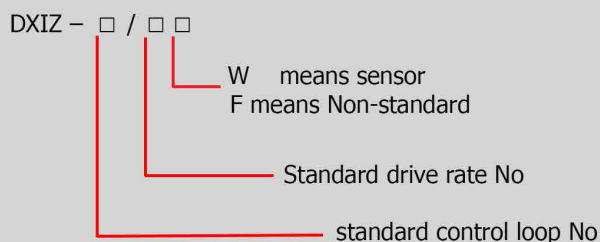
Rating load	10A/250VAC
Rated Voltage	AC 220/380V
Rated Current	6~10A
Operating speed	1mm-50cm/s
Operating frequency	Mechanical 120times/min
	Electrical 30times/min
Insulation resistance	100MΩ(Above)DC500V
Contact resistance	25MΩ(initial value)
Withstand voltage	Non-connection 1000VAC wire
	Every terminal 1500VAC
Vibration	Misoperation 10-55Hz Amplitude 1.5mm
Durable Impact	1000m/s <sup>2</sup>
Misoperation	300m/s <sup>2</sup>
Electrical Life	100,000above
Mechanical	1,000,000above
Protection degree	IP65
Operation temperature	-40°C ~ 55°C
Operating humidity	≤ 90%RH
Repeatable Positioning Accuracy	Angle Error of Memory Cam ≤0.005 rad (0.3°)
Potentiometer of Sensor	Standard Resistance 5KΩ, Independent Linearity 0.1% Mechanical Turning Angle 360°(continuously)



### Microswitch's system calibration



### Model and meaning



### Standard Drive Ratio

Drive Ratio No	1	2	3	4	5	6	7	8
Drive Ratio	1:13	1:17	1:46	1:60	1:78	1:210	1:274	1:960

### Non Standard Drive Ratio

Drive Ratio	1:20	1:26	1:30	1:35	1:87	1:105	1:135	1:140
	1:160	1:188	1:247	1:330	1:360	1:453	1:480	1:660

Function of model, specification and quantity according to example as follow

Model 1 : DXIZ - 4/7W  
Model 2 : DXIZ-6/F

Limit switch's control loop as 4 drive, Ratio: 1/274; with potentiometer  
Limit switch's control loop as 6, Non-standard, drive rate 1:600; without potentiometer

آدرس : تهران، خیابان کارگر شمالی، نبش خیابان هفتم، پلاک ۱۸۹۱ تلفکس: ۸۸۳۵۰۹۵۸

www.istromachine.com

Email: Info@istromachine.com

