

# Technical Sheet

## Limit switch Series FRM-KST

### Main features

Thanks to its long experience in rotary limit switches manufacturing, Ravioli has now manufactured a product combining the FRM mechanical precision and the accurate electronics of KST Kostal absolute sensor Generation 2.

The FRM limit switch, connected to the machine through its shaft, let the sensor motion be reduced to a single turn; the sensor is also protected against atmospheric agents as well as shocks, and it is featured with an easy internal connection.

KST Kostal Generation 2 sensor is mechanically interfaced with Ravioli FRM limit switch; it can identify angular positions as well as the motion direction. High resolution, reliability and repetitivity are assured even in heavy conditions.



### Technical features

#### Limit switch

Compliance with EEC Directives	2006/42/CE 2014/35/UE RoHS
Compliance with rules	EN 60947-1 EN 60947-5-1 EN 60204-1 EN 60529
Insulation voltage	250V~
Maximum operating voltage	250V~
Black lower casing	reinforced nylon
Yellow cover	high mechanical and thermal resistant thermoplastic
Operating temperature	-20 °C + 60 °C
Drive	worm screw
Cable entries	standard: 2 glands M20x1,5 Option: further glands
Protection degree	IP 66
Isolation degree	Class II
Max. rotation speed	500 rpm
Homologation	CE
Weight	approximately 800 g
Product	made in Italy - covered by a registered design

#### Sensor

Operating voltage	5...24 V
Operating current	50mA
Operating temperature	-20°...+70°C
Interface	RS485; asynchronous; half duplex
Transfer rate	9.600 / 19.200 / 38.400 / 57.600 bps
Angle detection range	Single 360° turn
Resolution	0,0879°/ step (12 bit = 4096 steps over 360°)
Maximum deviation	+/- 0,2° +/- 4 bits in 8192 / 360°
Protection Degree	IP 20
Interference reception	EN 61326-1
Interference emission	Group 1 Class B EN 61326-1 / EN 55011:2016
Maximum rotational speed	160°/s

### Dimensions



## Sensor electrical connection



mod. FRM\_KST\_eri/m\_22

## Standard and Custom executions

Standard ratios are 1: 5 – 10 – 15 – 25 – 35 – 50 – 75 – 100 – 150 – 200 – 300 up to 900 both on out 1 and on out 2. Standard executions are with 2 – 4 – 6 switches.

Various customized versions are available like: different ratios, models with two shafts, frontal or sideways cable entries, custom-made shafts or labels.

## Switching elements and cams

Each cam is calibrated with its own micrometrical regulation screw, all calibrations can be easily carried out through a screwdriver.



Microswitch	1NO 1NC rapid positive-opening, self-cleaning contacts
Compliance with rules	EN 60947-5-1
Insulation voltage	250V~
Test voltage	2000V~
Category of usage	AC-15, U <sub>e</sub> 250V, I <sub>e</sub> 3A
Thermal current I <sub>th</sub>	10A
Breaking power	according to EN 60947-5-1
Insulation	according to EN 60947-5-1
Mechanical lifetime	10 · 10 <sup>6</sup> manoeuvres
Terminals	with screws - with fingerproof screw (on demand)
Terminals identification	according to EN 50013
Protection fuse	6A gl
Lifetime on resistive charge	250V~ 6A: 10 <sup>5</sup> cycles
Lifetime on inductive charge	250V~ 3A: 0,3 · 10 <sup>5</sup> cycles
Lifetime in d.c.	24V= 20W L/R 40ms: 3 · 10 <sup>5</sup> cycles
Homologations	CE

## Accessories

The series ranges several accessories, which make easier the use of the limit switches and meet several needs.

A number of cog wheels, male shaft and flexible shaft have been studied to convey easily the motion from the shaft of the motor to the shaft of the limit switch.

**Further technical features, part numbers as well as installation and maintenance information are indicated on our official catalogue about our Driver FRM limit switches on our website [www.raviolispa.com](http://www.raviolispa.com)**