## micronor sensors

## **GENERAL PURPOSE ROTARY LIMIT SWITCHES**

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**KWG series** CE-Approved Geared Limit Switches

MICRONOR KWG series Limit General Purpose Geared Switches are for use in industrial applications - dam gates, flood channels, bridges, cranes, hoists, presses, packers, machine tools, handling devices, etc. - where a limit switch is required.

The primary purpose of the switch is to control the intermediate or end limits of rotary or linear rotation (when coupled to the shaft of a rope or wire drum). Each cam switch channel is independently programmable from 4° to 356°. Wiring to the SPDT contacts and transducer output is easy via Phoenix COMBICON screw-down wiring blocks.



#### **Features**

- Compact design with medium duty sealed bearings .
- Size depends on number of switches and MR265 option •
- Choice of 2 10 channels depending •
- Optional 4-20mA Position Transducer feedback •
- NEMA/UL 1/4/4X/IP64 rated Die Cast Aluminum Housing .
- High torque Ø9mm stainless steel shaft
- PG16 threaded holes for installing cable glands or conduit hubs •
- Modular, easy to replace, limit switches .
- For Draw Wire (Linear) Limit Switches, see KWGW series

Heavy Duty NEMA 1/4/4X corrosion resistant and watertight housing. Material is proprietary copper-free aluminum die cast housing with powder coat finish.

High Strength Stainless Steel Shaft Ø9mm With Flat

Heavy duty stainless steel bearing block and internal precision gearing

Fully programmable NK4202.180 double cams, adjusted with supplied PSN cam programming tool which can be stowed inside unit.



0-360°

indicator dial for

ease of cam

programming

CE/VDE approved KS25B4 switches are field replaceable using a standard Phillips

OPTIONAL MR265 transducer provides 4-20mA loop-powered position feedback

FIELD PROVEN DESIGN MICRONOR KWG120 series rotary limit switches proven in 20+ years of worldwide. industrial applications.



**KWG SERIES** 









Satellite Antennas

## KWG120 Housing (122mm x120mm)

Die Cast Aluminum Housing, With/Without 4-20mA Transducer Option



#### KWG160 Housing (160mm x 160mm)

Die Cast Aluminum Housing, With/Without 4-20mA Transducer Option







KWG General Specifications				
Enclosure Ratings	Type 1/4/4X + IP64	Die cast (copper free) aluminum housing with powder coat finish, uses proprietary copper-free aluminum alloy with corrosion resistance similar to stainless steel. NOTE: IP rating applies only when unit installed, connected and torgued properly.		
Switch Rating KS25B4 (Standard)	Type Mechanical Life Switching Power Temperature Ingress Protection Approvals	Changeover switch 10,000,000 cycles (typical) 250 VAC/4 A 60 VDC/1A -40°C to +85°C IP00 VDE		
Switch Rating S840 V20 (Optional)	Type Mechanical Life Resistive Load Inductive Load Motor Load Temperature Ingress Protection Approvals	Changeover switch with wiping action 10,000,000 cycles (typical) 230 VAC/6 A Continuous/10 A Momentary 24 VDC/6 A Continuous/10 A Momentary 230 VAC/Power Factor 0.7/3 A 125 VDC/0.5 A, 80 VDC/0.75 A, 40 VDC/1 A, 24 VDC/3 A 230 VAC/Power Factor 0.85/10A -40°C to +85°C IP40 VDE, cURus		
Cam Programming	1 - 2 (COM - NC) 1 - 3 (COM - NO) Repeatability	With Cam Valley Profile: 4°180° (150%) With Cam Peak Profile: 4°356° (199%) 1.8°		
Mechanical Rating	Max RPM Mechanical Life Max Radial (Side) Load Max Axial (Thrust) Load Repeatability Hysteresis Vibration Resistance Shock Resistsance	1500 rpm 10'000'000 cycles, 200'000 hrs (typical) 450 N (100 lbf) 200 N (45 lbf) Dependent on gear ratio Dependent on gear ratio 200 m/s <sup>2</sup> , 102000Hz, IEC 60068-2-6 2500 m/s <sup>2</sup> , 6ms, IEC 60068-2-27		
Wire Range	Max 2.5 mm² 22-14 AWG)	External connections via internal Phoenix Contact terminal block		
External Interface	Threaded mounting holes provided for PG16 cable gland	PG16 cable glands not provided. PG16 cable gland accepts 10-14mm OD cable. Hole= Ø21mm (supplied with cap), KWG120=1, KWG160=2. Hole can be enlarged by user to accomodate other cable glands, conduit hubs, or similar fittings.		
Temperature	-40°C to +85°C	Operating and storage		
Ingress Protection Weight	IP64 KWG120, 1.5kg (3.3 lbs) KWG160, 2kg (4.4 lbs)	ТурісаІ		

Specifications subject to change without notice

MR265 Specifications (4-20mA Transducer OPTION)				
Description	Potentimeter-based transducer	MR265 option is a precision, 2-wire, potentiometer-based, loop-powered position output option. Precision position feedback to internal transducer circuit is accomplished via a high precision, high resolution, industrial-grade wirewound potentiometer with exceptionally wide 0-330 ° angular travel.		
Transducer Settings	Offset, Span trimpots	4mA point set via Offfset trimpot 20mA point set via Span trimpot		
External Buden Resistance	500Ω			
Loop Voltage Requirements	18-30V DC, Absolute max ratings	Typical 15mA @ 24V DC (no load)		
Linearity/Accuracy	± 0.5%			
Temperature	0°C to +70°C	KWG operating/storage range is to be derated due to MR265 electronics rating		
		Specifications subject to change without notice		

# For linear limit switch requirements, consult KWGW Draw Wire Limit Switch product information (KWG120W and KWG160W).

Limit switch function is based on same KWG120 (designated KWG120W) and KWG160 (designated KWG160W) configurations. Travel length options from 1.5m to 50m.



Applications:

- Safety limits in harsh environments
- Dam and Flow gates
- Furnace door position
- Elevators
- Scissor lifts

**Replacement Parts** 



KS25B4 6099.00.035



S840 V20 6099.22.846



PSN Cam Programing Tool 6099.07.778

#### **CAM PROGRAMMING**

MICRONOR KWG series Limit Switches are wired by the user according to the needs of the applciation. As shown to the right, KWG units are supplied with special quick connect jumpers that allow the user to custom connect COM and either NC or NO contact to the Phoenix terminal block.

Selecting the proper contacts (COM/NO or COM/NC) depends on the number of revolutions that a contact must be closed. For switch closure  $\leq$ 50% of the gear ratio, the user should use the COM/NC contacts corresponding to the plunger/roller is riding in the Cam Valley. For switch closure >50% of the gear ratio, the user should use the COM/NO contacts corresponding to the plunger/roller being depressed by the Cam Peak. See figures below for K (Standard KS25B4) and L (Optional S840 V20) switches.





It is recommended that the user initially document his limit switch settings so it is clear whether COM/NC or COM/NO contacts are needed for a particular limit switch channel. Either a table or diagram of of the Closed/Open settings will allow the user to establish the ON and OFF points and translate them to the 0-360 scale of the internal Reference Dial and Cams.

The following instructions may be used to program the On/Off cam settings of each switch using the supplied PSN (black) cam programming tool.





- STEP 1 Turn External shaft to the desired ON position (contact closes) via the dial setting. Insert PSN key with the the numbered side away from the cam and notched side towards the cam.
- STEP 2 While gently applying pressure against the cam with the key, rotate the cam to the desired position.
- STEP 3 Turn external shaft tot he desired OFF position, flip over the PSN key and respeat Steps 1 and 2 on the other side of the cam.
- STEP 4 Test the unit to confirm that the switch contact Closes (ON) and Open (OFF) at the appropriate input shaft position.

#### **General Installation Instructions**

- Use copper conductors rated at least 60°C
- Terminal torque is 0.5 0.6 Nm (4.4 5.5 in-lbs)
- Unused PG16 ports must be properly sealed to prevent moisture and water leakage into the unit.

#### List of Contents

- One geared limit switch unit
- One PSN Cam programming tool (stored in internal holder)
- One Wire Jumper Set (for wiring selected switch contacts (COM-NO or COM-NC) to wiring block NOTE: 2 jumpers provided for each channel ordered.
- One copper grounding screw and slit washer (installed inside unit)
- KWG User Guide (one per shipment)

#### Schematic Diagram



## **Ordering Info**

Examples:

KWG120-K5-M100-0	KWG120 with max 5 Channels (KS25B4), gear ratio 100:1, without MR265 Analog Output
KWG120-K4-M100-1	KWG120 with max 4 Channels (KS25B4), gear ratio 100:1, with MR265 Analog Output
KWG160-L5-M100-0	KWG160 with max 5 Channels (S840 V20), gear ratio 100:1, without MR265 Analog Output
KWG160-L4-M100-1	KWG160 with max 3 Channels (S840 V20), gear ratio 100:1, with MR265 Analog Output

	H	(WG120	) - К	8 -	M 1	00	- 0
<u>Shaft Option</u> KWG120 KWG160	Size 120mm, For Size 160mm, For	1-5 Channels 6-10 Channels					
<u>No. of Switch</u> K2 to K5 K6 to K10 K2 to K4 K5 to K8	es (Channels) For Size KWG120 For Size KWG160 For Size KWG120 For Size KWG160	), Standard KS2 ), Standard KS2 ), Standard KS2 ), Standard KS2	25B4 switches ( 25B4 switches ( 25B4 switches v 25B4 switches v	Dnly Only with MR265 with MR265			
L2 to L3 L4 to L5 L2 L3 to L4	For Size KWG120 For Size KWG160 For Size KWG120 For Size KWG160	), Standard S84 ), Standard S84 ), Standard S84 ), Standard S84	0 V20 microsw 0 V20 microsw 0 V20 microsw 0 V20 microsw	vitches Only vitches Only vitches with vitches with	MR265 MR265		
Gear Ratio Step UP (D1:x D2 1:2	)					1	
Single         Stage         S           U1         U1.25         U2.75         U3.5           Multistage         Stage         Stage         Stage           M12.5         M20         M50         M202	<ul> <li>Stage Step DOWN (Ux:1) U1.25 U2 U2.6 U3.5 U4 U5.0</li> <li>Stage Step DOWN (Mx:1)</li> <li>M20 M25 M30 M50 M75 M100</li> </ul>		For special For special For special For Draw V see KWG12 For Heavy D	available: gear ratios switches - o Vire Linear OW data sh Duty IP66 a	- contact contact sa r Limit Sv leet pplicatior	sales ales witch - ns - see	
M200 M300 M600 M750 M2250 M2500 Bold ratios are Special Other s	M300 M420 M1000 M1600 Se standard, quick gear ratios availab	s <b>ship configur</b> a le upon reques	ations				

#### Position Transducer Output Option

0 None

1 MR265 2-Wire 4-20mA loop-powered transducer output

#### **Replacement Parts**

6099.07.778	PSN (black) Cam Programming Key for NK Single and Double Cams
6099.00.035	Type K Switch, KS25B4 changeover switch with silver contacts
6099.22.846	Type L Switch, S840 V20 changeover switch with silver contacts

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