

DRAW WIRE LINEAR LIMIT SWITCHES

MR221W Heavy Duty Draw Wire Limit Switches

MR220 SERIES

MICRONOR MR221W series Draw Wire Limit Switches are for use in the most demanding industrial applications – including dams, bridges, flood control channels, cranes, hoists, lift platforms, elevators, hazardous areas, and high security areas where linear position must be monitored.

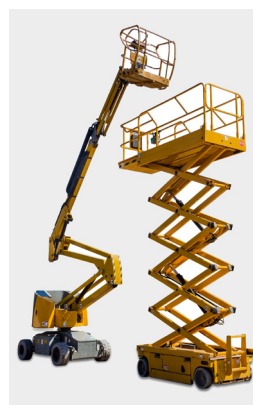
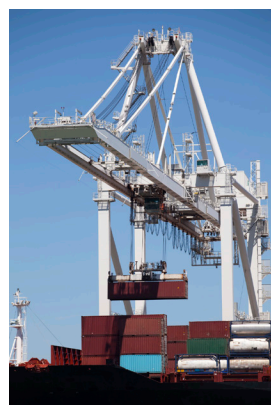
The MR221W is the integration of Micronor’s proven MR221 series heavy duty rotary limit switch and a robust spring-loaded draw wire extension module for conversion to linear motion. The product provides intermediate or end limit feedback during operation of a hoist, door or gate. Each cam switch channel is independently programmable over the full travel of the draw wire. Wiring to the COM, NO and NC contacts are easy via Phoenix COMBICON screw-down wiring blocks.

Features

- Choice of draw wire lengths, from 1.5m to 50m
- Choice of 2, 4, 6 or 8 cam switch channels
- Option of 4-20mA position feedback
- Choice of Wire Pull Direction - Up, Down, Left, or Right
- NEMA/UL 4/4X/IP66 rated cam switch housing
- Gear reducer, coupling & cam switches combined in one compact unit
- Industrial grade, heavy duty sealed bearings
- Conduit hubs provided for direct use of ½" NPT conduit
- Easy to program cam switches

Applications

- Dam, tainter or flood control gates
- Hydraulic-powered extension booms
- Elevators, cranes, hoists and lift platforms
- Lift and bascule bridges
- Hazardous area doors - furnace, blast, shield, biohazard, etc.
- Test chambers
- Security doors

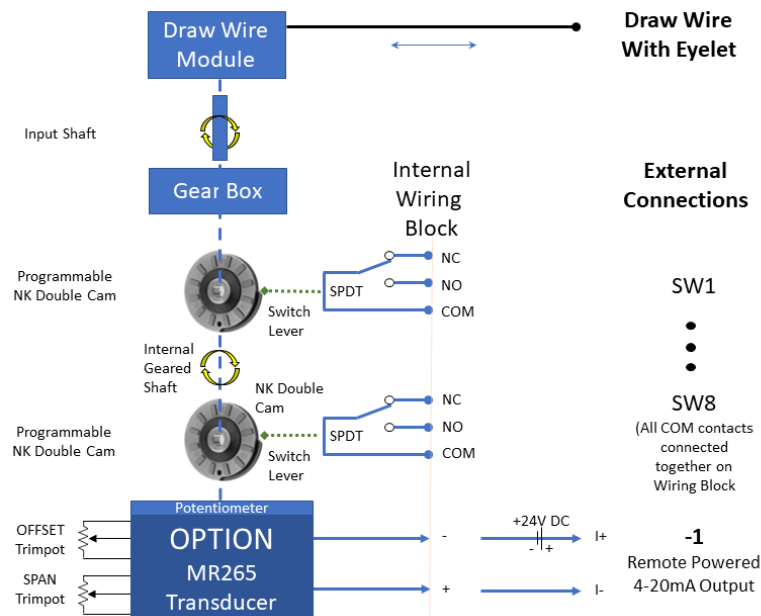


Specifications

Draw Wire Module	Wire material Wire mounting Linearity Wire acceleration Wire retraction force Wire extension force Linear travel per shaft revolution	Coated polyimid stainless steel, Ø1.0mm Eyelet For 5m Module, <0.02% FSO or 1mm For 5m module, 5g For 5m module, 4N (min) For 5m module, 16N (max) For 5m module, 315.07mm/input shaft revolution
Switch Rating	Mechanical Life Resistive Load Inductive Load Motor Load Temperature	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
Cam Programming	1 - 2 (COM - NC) 1 - 3 (COM - NO) Repeatability	With Cam Valley Profile: 4°...180° (1...50%) With Cam Peak Profile: 4°...356° (1...99%) 1.8°
Cam Switch Mechanical Rating	Max RPM Mechanical Life Bearing Life	3000 rpm 10 x 10 ⁶ Cycles (typical) 10 years (87,660 hours) continuous running with 350 N (78 ibf) side load at 1000 RPM
Position Feedback (Option)	Type Ext Burden Resistance Loop Voltage Linearity / Accuracy Temperature	MR265, Precision Potentiometer-Based, Loop Powered 4-20mA Output 500Ω 24-30V DC (absolute maximum ratings), Typical 15mA @ 24V DC (no load) ±0.5% MR22X operating/storage temperature derated to 0-70°C
Wire Range	24-10 AWG	Via Phoenix MKDS 5/3-6,35 COMBICON modular wiring blocks with screw connection
Temperature	Storage / Operating	-30°C to +70°C / -20°C to +60°C
Ingress Protection	IP	IP66 per EN60529 / NEMA 4/4x (Cam Switch Housing Only) NOTE: IP rating applies only when unit is installed, connected and torqued properly.
Mechanical Stress	Vibration Shock	50 m/s ² (5g), 10-1000 Hz, per IEC 60068-2-6 490 m/s ² (50g), 3ms, per IEC 60068-2-27
Weight	Unit	6 kg (13.3 lb), typical, with 5m draw wire module

Specifications subject to change without notice

Schematic



CAM PROGRAMMING

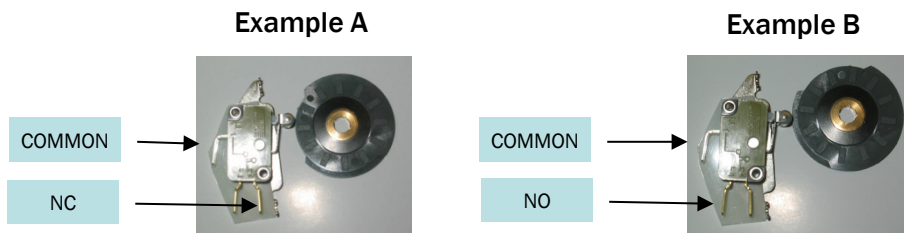
The MR221-MR222 limit switches are pre-wired to PHOENIX Screw-Down Wiring Strips. Each limit switch has three connections which are pre-wired with AMP FASTON crimp-on receptacles and brought out to the wiring blocks:

- COMMON (labeled 1 on the switch)
- NC (labeled 2 on the switch)
- NO (labeled 4 on the switch)

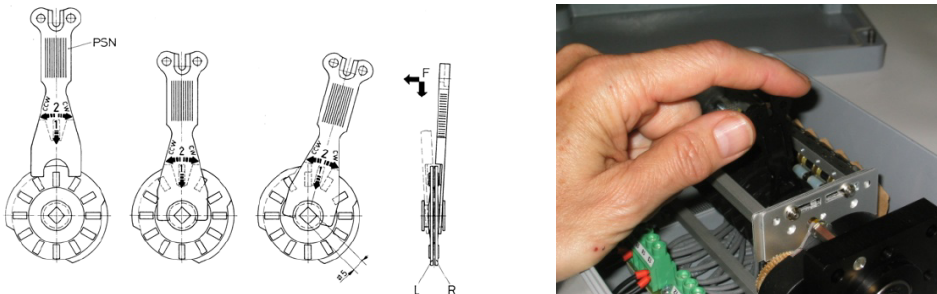
The Micronor Programmable Cam Switches are designed to be both versatile and easy to operate. However, initial planning is required for cams to be programmed to function as desired. Due to the design of the cam, switches cannot be engaged for more than 180°. If the system requires that the switch does not make contact for more than 180°, the normally closed (NC) contact must be wired.

As shown in Example A, a system might require that the connection for a switch be made from 0° to 70° and there be no connection from 71° to 359°. To accomplish this, the switch must be wired in the normally closed position.

As shown in Example B, a system that requires a connection for 290°, the normally open contact must be wired so that a connection is made when the switch is engaged, and no connection is made when the switch is disengaged.



The following instructions may be used to program the start and stop times of each switch using the supplied PSN (black) cam programming tool.



- Step 1** Turn external shaft to the desired START position via dial setting. Insert PSN key with the numbered side away from the cam and the 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 to the desired STOP position, flip over the PSN key and repeat steps 1 and 2 on the other side of the cam.
- Step 4** Test the unit to confirm that the switches engage (START) and disengage (STOP) at the appropriate positions.

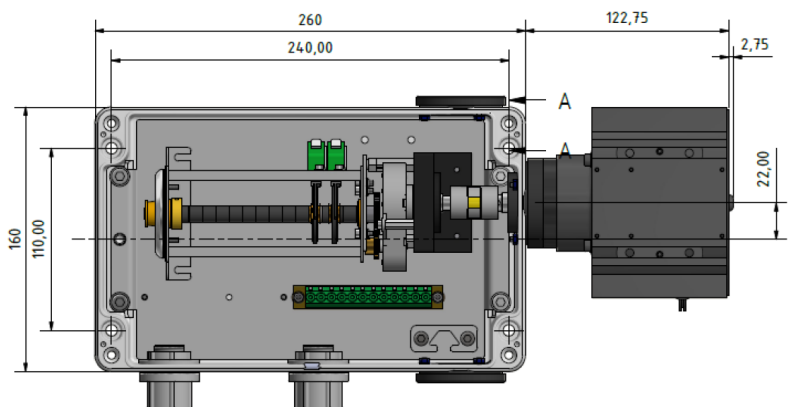
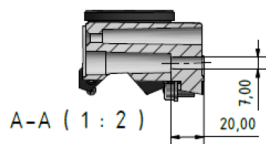
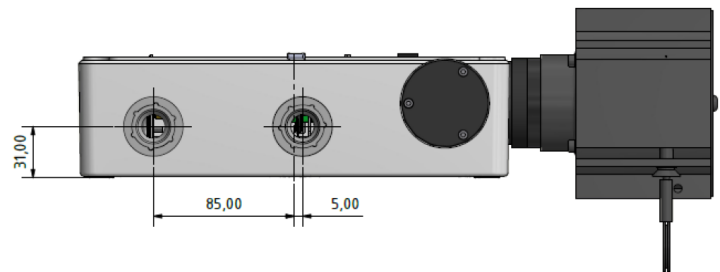
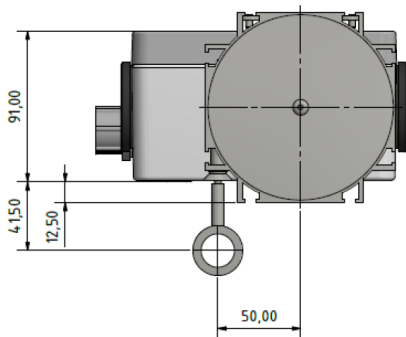
General Installation Instructions

- Use copper conductors rated at least 60°C
- Tighten terminal torque is 5-7 in-lbs
- Unused conduit ports must be properly sealed to prevent moisture and water leakage into the unit.

List of Contents

- One draw wire limit switch unit
- One PSN Cam programming tool (stored in internal holder)
- One Wire Jumper (Installed across all COMMONS on terminal block)
- One copper grounding screw and slit washer (installed inside unit)
- Water proof plugs (installed on threaded conduit hole)
- MR221-MR222 User Guide (one per shipment)

Reference Drawing (5m version)



Ordering Info

Example:

MR221W-L2-5M-0-0 2 Channels with 5m Pull Length, No analog output, Pull Down Direction

MR221W - **L8** - **5M** - **0** - **0**

Model
MR221W

No. of Switches (Channels)
L2 L4 L6 L8

Draw Wire Lengths (in Meters)
1.5M, 3M, 5M, 7.5M
10M, 15M, 30M, 40M, 50M

Position Transducer Output Option
0 None
1 MR265 Loop-Powered 4-20mA Output

Wire Pull Direction Option
0 Down (default)
1 Up
2 Right
3 Left

Replacement Parts

6099.07.778
6099.22.846

PSN (black) Cam Programming Key for NK Double Cams
Microswitch mounted on bracket

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