

FNR series

Sealed rocker switches



DISTINCTIVE FEATURES

- Ideal for front / neutral / reverse selection
- Easy to install
- Excellent front panel sealing
- Backlit logos
- SIL2 capable



ENVIRONMENTAL SPECIFICATIONS

- Operating temperature : -40 °C to +85 °C (-40 °F to +185 °F)
- Panel sealing; IP69K according to DIN 40050-9



ELECTRICAL SPECIFICATIONS

- Maximum voltage rating with resistive load: 24 VDC
- Current rating with resistive load: 0.03 to 1 A
- Initial contact resistance: <100 mohms
- Insulation resistance: >10 Gohms at 500 VDC
- Dielectric strength: 1000 Vrms 50 Hz min.
- Electrical life: 1.000.000 cycles at 100 mA
100.000 cycles at 1 A

LED COMPONENT SPECIFICATIONS

| LED color | Forward current | Typ. forward voltage | Max. forward voltage |
|-----------|-----------------|---------------------------|----------------------|
| Blue | 20 mA | 3.3 V | 4 V |
| Green | 20 mA | 2.1 V | 2.5 V |
| Red | 20 mA | 1.9 V | 2.5 V |
| Yellow | 20 mA | 2 V | 2.5 V |
| White | 20 mA | 3.3 V | 4 V |
| Red/green | 20 mA | Red: 1.9 V / green: 2.1 V | 2.5 V |

A resistor must be series-connected by the user.

Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

LED forward current

The company reserves the right to change specifications without notice.



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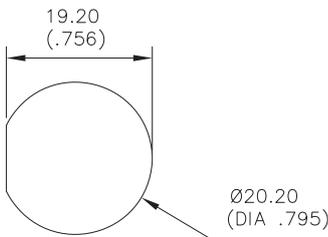
GENERAL SPECIFICATIONS

- Total travel: $\pm 15^\circ$.
- Typical operating force at center: $5\text{ N} \pm 1$
- Mechanical life: 1.000.000 cycles
- B10d : 1.000.000
- Torque: 1Nm min. 2Nm max. applied to nut

MATERIALS

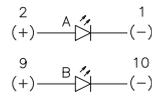
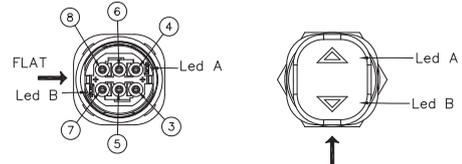
- Contacts : Gold alloy
 - Case : PBT
 - Actuator : PA6-6
 - Overmoulding: Polyamide
 - Output wires (flying leads terminals): AWG24, section 0.23 mm^2
- APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.

PANEL CUT-OUT

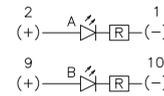


WIRING DIAGRAM

WIRING DIAGRAM



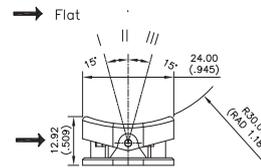
Without resistor



With resistor

| Wire colors (F & C output) | |
|----------------------------|--------|
| 10 | Brown |
| 9 | Orange |
| 8 | White |
| 7 | Black |
| 6 | Blue |
| 5 | Yellow |
| 4 | Red |
| 3 | Green |
| 2 | Purple |
| 1 | Grey |

POSITION



CONNECTOR FOR C OUTPUT

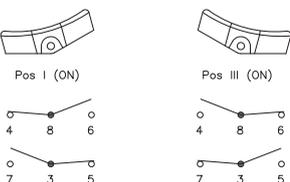
- Illuminated : Molex 510651000
- Non-illuminated : Molex 510650600

ELECTRICAL FUNCTIONS AND CONNECTIONS

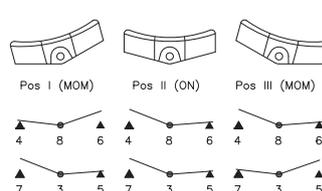
In the tables below, terminal connections as viewed from bottom of switch. Only the contact area is represented.

x = w/o terminal
o = with terminal
▲ = momentary

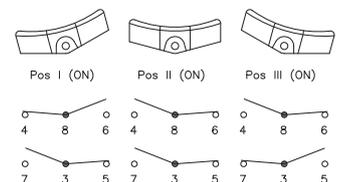
2 POSITIONS



3 POSITIONS MOM-ON-MOM



3 POSITIONS ON-ON-ON

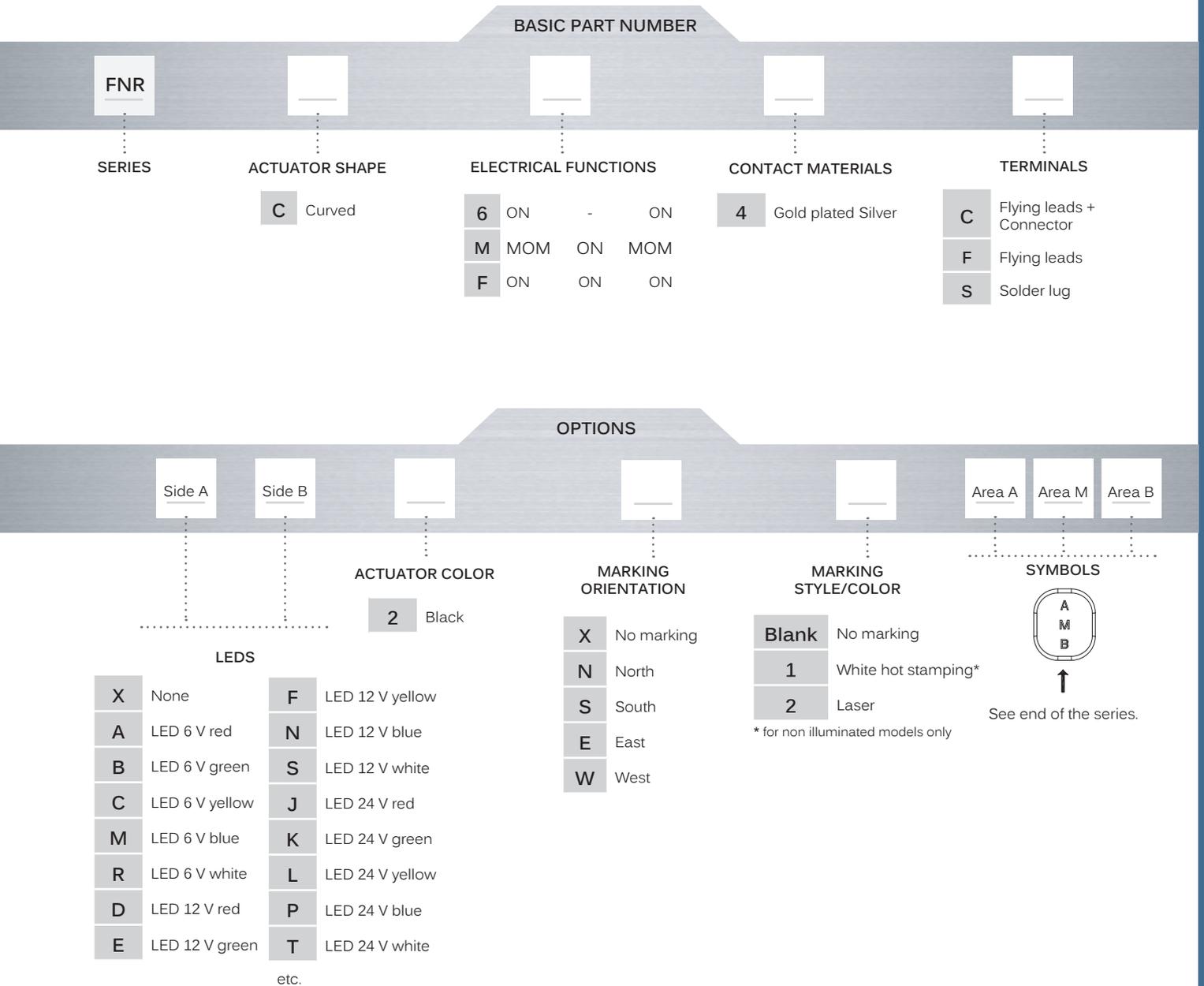


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BUILD YOUR PART NUMBER



ABOUT THIS SERIES

On the following pages, you will find successively basic part numbers of switches and options in the same order as in above chart.

Notice: please note that not all combinations of above numbers are available. Refer to the following pages for further information.

Mounting accessories: Standard hardware supplied : 1 hex nut and 1 O-Ring

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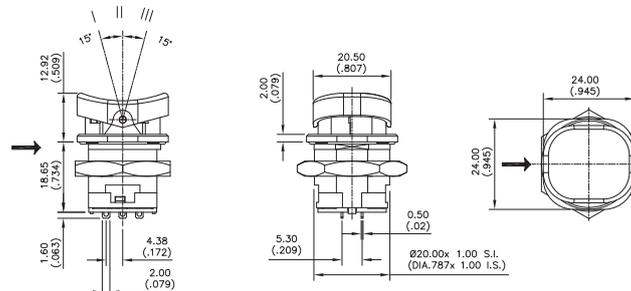
SOLDER LUG TERMINALS



CURVED ACTUATOR

| | | | |
|----------------|-----|----|-----|
| FNRC64S | ON | ON | ON |
| FNRCM4S | MOM | ON | MOM |
| FNRCF4S | ON | ON | ON |

→ Flat



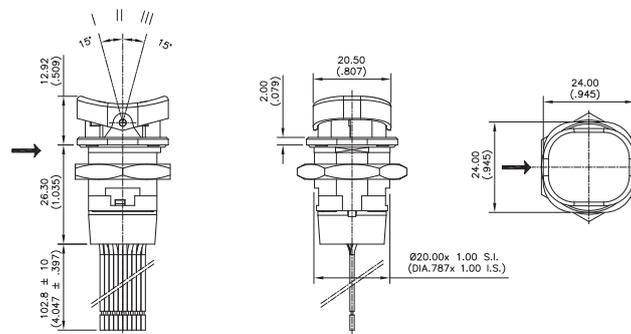
FLYING LEADS TERMINALS



CURVED ACTUATOR

| | | | |
|----------------|-----|----|-----|
| FNRC64F | ON | ON | ON |
| FNRCM4F | MOM | ON | MOM |
| FNRCF4F | ON | ON | ON |

→ Flat



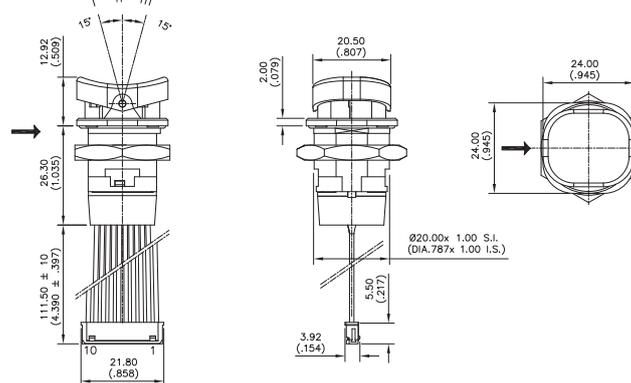
FLYING LEADS + CONNECTOR TERMINALS



CURVED ACTUATOR

| | | | |
|----------------|-----|----|-----|
| FNRC64C | ON | ON | ON |
| FNRCM4C | MOM | ON | MOM |
| FNRCF4C | ON | ON | ON |

→ Flat



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LEDS



Complete each enlarged box with one of the codes listed below.

X Without LED

| | Red | Green | Yellow | Blue | White | Red/green |
|-------------|----------|----------|----------|----------|----------|-----------|
| No resistor | U | V | W | Y | Z | - |
| 6 VDC | A | B | C | M | R | 1 |
| 12 VDC | D | E | F | N | S | 2 |
| 24 VDC | J | K | L | P | T | 3 |

12 VDC is calibrated for 15 VDC max
24 VDC is calibrated for 30 VDC max

Resistors can only be added in flying leads and flying leads + connector terminal option

ACTUATOR COLOR



2 Black

MARKING ORIENTATION



X No marking
N North
S South
E East
W West

MARKING STYLE /COLOR



Blank No marking
1 White hot stamping (for non illuminated models only)
2 Laser

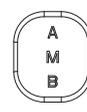
SYMBOLS



Blank No marking
Available symbols : Complete each enlarged box with the one of the codes listed below

X09 Up motion
X10 Down motion
XPL D
XWR F
X53 N
XPM R

MARKING AREA



| SYMBOL | | | D | F | N | R |
|--------|-----|-----|----------|----------|----------|----------|
| CODE | X09 | X10 | XPL | XWR | X53 | XPM |