



FNX Switch-Disconnector-Fuse Unit

About us



Switchgear Factory, Navi Mumbai



Switchgear Factory, Ahmednagar



L&T Electrical & Automation (E&A) is a market leader for electrical distribution, monitoring and control solutions in the low voltage category.

Popular among customers as L&T Switchgear, E&A offers a wide range of low and medium voltage switchgear, motor starters, electrical systems, industrial automation, building electrical solutions, energy management solutions, electrical modernization solutions and metering solutions. It products and solutions cater to key sectors of economy like industries, utilities, infrastructure, building and agriculture.

E&A's manufacturing operations at Navi Mumbai, Ahmednagar, Vadodara, Coimbatore and Mysuru in India adhere to global practices of excellence and receive support from well-equipped in-house design and development centres as well as tooling facilities that contribute to precision in manufacturing.

Switchgear Factory, Vadodara

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Superior Features





FNX incorporates state-of-the-art technology and a range with superior design features to deliver key operational advantages.

1 Versatile handle (patented)

The handle coupling has the following user-friendly features:

- Door interlock (defeatable)
- Padlock with / without door interlock
- Choice of operating quadrant
- Flexibility (±3 mm mismatch operational quadrant)

2 Positive ON / OFF indication

Clear ON-OFF indication is provided on the switch by a red pointer.

③ Mechanism

The mechanism is front-operated and a quick-make / quick-break one. The contact closing is spring-assisted and is independent of manual speed of operation.

(4) Flexibility in mounting

The Switch-Disconnector-Fuse unit can be mounted at any angle in a vertical plane.

(5) Generous terminal capacity

Terminals are suitable for AI / Cu links / cable lug connections.

6 Stationary fuse holders

Fuses remain stationary during switching operation.

(7) Telescopic shaft

Handle depth can be varied and fixed as per requirement during installation. This is possible because the telescopic shaft can be adjusted for stepless variable depth.

8 Large ground clearance

(9) Terminal shrouds & External terminal shrouds

• DIN rail mounting

Ratings upto 125 A can be mounted on 35 mm DIN rail for which the DIN rail mounting is available as an accessory

Easy inspection and replacement of contacts

Contacts can be easily inspected and replaced (if required) during maintenance. This way the electrical life can be equal to its mechanical life

Compact size

Being extremely compact, it results in saving of valuable panel space.

• Easy to operate

Low operating torque makes it very convenient to operate

FNX SDF Range

FNX SDF units are available in a wide range :



| Frames | Ratings | | |
|--------|--------------|--|--|
| 1 | 32 A, 63 A | | |
| 2 | 100 A,125 A | | |
| 3 | 125 A, 160 A | | |
| 4 | 200 A, 250 A | | |
| 5 | 315 A, 400 A | | |
| 6 | 630 A, 800 A | | |

| Versions |
|------------------|
| 3 Pole |
| 3 Pole + Neutral |
| 4 Pole |
| |

Advantages

The FNX SDF range provides users with a high level of safety. The complete range conforms to IS13947 (Part 3) / IEC60947-3 standards. It also carries the CC marking signifying compliance to stringent European safety norms.

FNX SDF's superior features translate into better safety for the users.

Fuse shrouds / Terminal shrouds provide protection against accidental direct contact. Terminal shrouds also protect against phase to phase short circuit through an external conducting path.

Extended terminal shrouds cover the terminations, including the cable lug and connectors.

Double isolation of fuses when FNX is in OFF position makes replacement of fuses risk-free.

Positive ON / OFF indication ensures that the handle indicates OFF position only when main contacts are actually open.

IP20 protection is provided by using fuse shrouds as standard.

Fuse indicators / fuse monitors provide safe and reliable indications.

Large ground clearance eliminates possibility of phase to ground flash over.

Built-in padlocking arrangement provided to lock the unit in OFF position prevents inadvertent operation of the unit.

Fuse barriers are provided on the Switch-Disconnector-Fuse units as an additional safety feature to eliminate the possibility of inter-phase short circuit.

Fuse puller facilitates safe removal of fuses.

Technical Data

| Frame Size | | Unit | I | I | II | II | |
|-----------------------------------|---|-------------|-----------------------------|-------------------|-----------------|------------|--|
| Type Designation | | | FNX 32 | FNX 63 | FNX 100 | FNX 125C | |
| Conformance to Standard | | | IEC 60947-3, IS/IEC 60947-3 | | | | |
| No. of Poles | | | | 3 Pole + Isolable | Neutral, 4 Pole | | |
| Thermal Current (I _{th} |) at 40°C | А | 32 | 63 | 100 | 125 | |
| Conventional Enclo | sed Thermal Current (I _{the}) | А | 32 | 63 | 100 | 125 | |
| Ref. Ambient Tempe | erature | °C | 40 | 40 | 40 | 40 | |
| Rated Insulation Vo | Itage (U _i) | V | 1000 | 1000 | 1000 | 1000 | |
| Rated Operational | /oltage (U _e) | V | 415 | 415 | 415 | 415 | |
| Rated Impulse with | stand Voltage (U _{imp}) | kV | 8 | 8 | 8 | 8 | |
| Dielectric Strength | | kV | 6 | 6 | 6 | 6 | |
| Rated Operational | Current (le) at 415 V | | - - | | | | |
| AC-21 A Utilization | Category | А | 32 | 63 | 100 | 125 | |
| AC-22 A Utilization | Category | А | 32 | 63 | 100 | 125 | |
| AC-23 A Utilization | Category | А | 32 | 63 | 100 | 125 | |
| Rated Operational | Current (Ie) at 690 V (AC-23 A) | А | 32 | 32 | 80 | - | |
| Breaking Capacity - | 436 V, AC-23 A | A (rms) | 256 | 504 | 800 | 1000 | |
| Making Capacity - 4 | 36 V, AC-23 A | A (rms) | 320 | 630 | 1000 | 1250 | |
| Mechanical Endura | nce (Number of operating cycles) | | 20,000 | 20,000 | 15,000 | 15,000 | |
| Maximum Torque (On terminal bolt) | | Nm | 4.5 | 4.5 | 4.5 | 4.5 | |
| Pollution Degree | | | III | III | | III | |
| Terminal Canacity | Main | Sq. mm | 35 | 35 | 50 | - | |
| Terminal Capacity | Neutral | Sq. mm | 35 | 35 | 50 | - | |
| Terminal Width | | | 16 | 16 | 20 | 20.5 | |
| Terminal Thickness | | | 1.6 | 1.6 | 3 | 3 | |
| Terminal Screw | | mm | M6 x 12 | M6 x 12 | M8 x 20 | M8 x 20 | |
| Weight 3-Pole / 4-P | ole | kg | 0.9 | 0.9 | 1.7 | 2.2 | |
| Rated Capacitor Po | wer (415 V, 50/60 Hz) | kVAr | 14 | 29 | 45 | - | |
| DC Rating at 220 \ | / DC | | | | | | |
| No. of Poles in Seri | es, Utilization Category at Rated C | urrent | 3, DC-23 A | 3, DC-23 A | 3, DC-23 A | 3, DC-23 A | |
| Suitable E&A Fuse | ; | | | | | | |
| DIN | Rated Fused Short circuit Current | kA | 80* | 80* | 100 | 100 | |
| DIN | Rating | A/Type/Size | 32/HF/14 x 51 | 63/HF/14 x 51 | 100/HN/000 | 125/HN/000 | |
| Short circuit making | Capacity (Icm) | А | 320 | 630 | 1000 | 1250 | |
| Operating Torque | | Kg-m | 0.4 | 0.4 | 0.4 | 0.4 | |
| Auxiliary Contacts r | no. of NO + NC (Accessories) | | 2 | 2 | 2 | 2 | |
| | W | mm | 113 | 113 | 112 | 148 | |
| Overall Dimensions | Н | mm | 108 | 108 | 144.5 | 217 | |
| | D | mm | 150 + 10 | 150 + 10 | 180 + 10 | 145 | |

* Cylindrical Fuse link

Technical Data

| Frame Size | | Unit | III | III | IV | IV | |
|---------------------------------------|---|-------------|-----------------------------------|-----------------|------------|------------|--|
| Type Designation | | | FNX 125 | FNX 160 | FNX 200 | FNX 250 | |
| Conformance to Sta | andard | | IEC 60947-3, IS/IEC 60947-3 | | | | |
| No. of Poles | | | 3 Pole + Isolable Neutral, 4 Pole | | | | |
| Thermal Current (I _{th} |) at 40°C | А | 125 | 160 | 200 | 250 | |
| Conventional Enclo | sed Thermal Current (I _{the}) | А | 125 | 160 | 200 | 250 | |
| Ref. Ambient Tempe | erature | °C | 40 | 40 | 40 | 40 | |
| Rated Insulation Vo | Itage (U _i) | V | 1000 | 1000 | 1000 | 1000 | |
| Rated Operational | /oltage (U _e) | V | 415 | 415 | 415 | 415 | |
| Rated Impulse with | stand Voltage (U _{imp}) | kV | 12 | 12 | 12 | 12 | |
| Dielectric Strength | | kV | 10 | 10 | 6 | 6 | |
| Rated Operational | Current (le) at 415 V | | | | | | |
| AC-21 A Utilization | Category | А | 125 | 160 | 200 | 250 | |
| AC-22 A Utilization | Category | А | 125 | 160 | 200 | 250 | |
| AC-23 A Utilization | Category | А | 125 | 160 | 200 | 250 | |
| Rated Operational | Current (Ie) at 690 V (AC-23 A) | А | 100 | 125 | 160 | 200 | |
| Breaking Capacity - | 436 V, AC-23 A | A (rms) | 1000 | 1280 | 1600 | 2000 | |
| Making Capacity - 4 | 36 V, AC-23 A | A (rms) | 1250 | 1600 | 2000 | 2500 | |
| Mechanical Endura | nce (Number of operating cycles) | | 15,000 | 15,000 | 10,000 | 10,000 | |
| Maximum Torque (On terminal bolt) | | Nm | 9.6 | 9.6 | 20 | 20 | |
| Pollution Degree | | | | | III | | |
| Torminal Canacity | Main | Sq. mm | 95 | 185 | 240 | 240 | |
| Terminal Capacity | Neutral | Sq. mm | 50 | 50 | 120 | 120 | |
| Terminal Width | | | 20 | 25 | 30 | 30 | |
| Terminal Thickness | | | 3 | 3 | 4 | 3 | |
| Terminal Screw | | mm | M8 x 20 | M8 x 20 | M10 x 30 | M10 x 30 | |
| Weight 3-Pole / 4-P | ole | kg | 3 / 3.3 | 3.2 / 3.65 | 4 / 4.7 | 5.2 / 6 | |
| Rated Capacitor Po | wer (415 V, 50/60 Hz) | kVAr | 57 | 57 | 92 | 115 | |
| DC Rating at 220 \ | / DC | | | | | | |
| No. of Poles in Seri | es, Utilization Category at Rated C | urrent | 2, DC-23 A | 2, DC-23 A | 2, DC-23 A | 2, DC-22 A | |
| Suitable E&A Fuse | • | | | | | | |
| | Rated Fused Short circuit Current | kA | 100 | 100 | 100 | 100 | |
| DIN | Rating | A/Type/Size | 125/HN/00 & 000 | 160/HN/00 & 000 | 200/HN/0 | 250/HN/1 | |
| Short circuit making Capacity (Icm) A | | А | 1250 | 1600 | 2000 | 2500 | |
| Operating Torque | | Kg-m | 1.2 | 1.2 | 2 | 2 | |
| Auxiliary Contacts r | o. of NO + NC (Accessories) | | 2 | 2 | 2 | 2 | |
| | W | mm | 251 | 251 | 299 | 299 | |
| Overall Dimensions | Н | mm | 187 | 187 | 231 | 231 | |
| | D | mm | 180 + 36 | 180 + 36 | 216 + 31 | 216 + 31 | |

Technical Data

| Frame Size | | Unit | V | V | VI | VI | |
|---------------------------------------|-------------------------------------|-------------|-----------------------------|-------------------|-----------------|-------------|--|
| Type Designation | | | FNX 315 | FNX 400 | FNX 630 | FNX 800 | |
| Conformance to Standard | | | IEC 60947-3, IS/IEC 60947-3 | | | | |
| No. of Poles | | | | 3 Pole + Isolable | Neutral, 4 Pole | | |
| Thermal Current (I _{th} |) at 40°C | А | 315 | 400 | 630 | 800 | |
| Conventional Enclo | sed Thermal Current (I_{the}) | А | 315 | 400 | 630 | 800 | |
| Ref. Ambient Temp | erature | °C | 40 | 40 | 40 | 40 | |
| Rated Insulation Vo | ltage (U _i) | V | 1000 | 1000 | 1000 | 1000 | |
| Rated Operational | Voltage (U _e) | V | 415 | 415 | 415 | 415 | |
| Rated Impulse with | stand Voltage (U _{imp}) | kV | 12 | 12 | 12 | 12 | |
| Dielectric Strength | | kV | 6 | 10 | 10 | 10 | |
| Rated Operational | Current (le) at 415 V | | | | | | |
| AC-21 A Utilization | Category | A | 315 | 400 | 630 | 800 | |
| AC-22 A Utilization | Category | А | 315 | 500 | 630 | 800 | |
| AC-23 A Utilization | Category | А | 315 | 400 | 630 | 800 | |
| Rated Operational | Current (Ie) at 690 V (AC-23 A) | А | 250 | 315 | 500 | 630 | |
| Breaking Capacity · | - 436 V, AC-23 A | A (rms) | 2520 | 3200 | 1600 | 6400 | |
| Making Capacity - 4 | 436 V, AC-23 A | A (rms) | 3150 | 4000 | 6300 | 8000 | |
| Mechanical Endura | nce (Number of operating cycles) | | 10,000 | 10,000 | 10,000 | 5000 | |
| Maximum Torque (On terminal bolt) | | Nm | 20 | 27 | 45 | 45 | |
| Pollution Degree | | | III | III | | III | |
| Terminal Capacity | Main | Sq. mm | 400 | 400 | 2 x 625 | 2 x 625 | |
| Terminal Odpacity | Neutral | Sq. mm | 240 | 240 | 400 | 400 | |
| Terminal Width | | | 40 | 40 | 60 | 60 | |
| Terminal Thickness | | | 3 | 5 | 6 | 8 | |
| Terminal Screw | | mm | M10 x 30 | M12 x 40 | M16 x 50 | M16 x 50 | |
| Weight 3-Pole / 4-P | ole | kg | 6.5 / 7.5 | 6.5 / 7.5 | 12.1 / 14 | 14.2 / 16.1 | |
| Rated Capacitor Po | ower (415 V, 50/60 Hz) | kVAr | 145 | 175 | 270 | 270 | |
| DC Rating at 220 \ | / DC | | | | | | |
| No. of Poles in Seri | es, Utilization Category at Rated C | Current | 2, DC-22 A | 2, DC-22 A | 2, DC-22 A | 2, DC-22 B | |
| Suitable E&A Fuse | 9 | | | | | | |
| DIN | Rated Fused Short circuit Current | kA | 100 | 100 | 100 | 100 | |
| DIN | Rating | A/Type/Size | 315/HN/1 | 400/HN/2 | 630/HN/3 | 800/HN/3 | |
| Short circuit making Capacity (Icm) A | | А | 3150 | 4000 | 6300 | 8000 | |
| Operating Torque Kg-m | | 2.5 | 2.5 | 2.5 | 2.8 | | |
| Auxiliary Contacts r | no. of NO + NC (Accessories) | | 2 | 2 | 2 | 2 | |
| | W | mm | 352 | 352 | 428 | 428 | |
| Overall Dimensions | H | mm | 230 | 230 | 242 | 242 | |
| | D | mm | 250 + 20 | 250 + 20 | 270 + 23 | 270 + 23 | |

Ordering Information

Ordering Information of FNX S-D-F

| Type Designation | | FNX 32 | FNX 63 | FNX 100 | FNX 125 | FNX 160 |
|------------------------|-----|---------|---------|---------|---------|---------|
| SDE Interiore : (DINI) | TPN | SK96903 | SK96904 | SK96906 | SK95806 | SK95807 |
| SDI Intenois (DIN) | 4P | SK96903 | SK96904 | SK96906 | SK95814 | SK95815 |

| Type Designation | | FNX 200 | FNX 250 | FNX 315 | FNX 400 | FNX 630 | FNX 800 |
|------------------|-----|---------|---------|---------|---------|---------|---------|
| | TPN | SK95808 | SK95809 | SK95810 | SK95811 | SK95812 | SK95813 |
| | 4P | SK95816 | SK95817 | SK95818 | SK95819 | SK95820 | SK95821 |

Ordering sufx oooo for all

Ordering Information of FNX S-D-F Spares & Accessories

| Description | Туре | Cat. No. |
|-------------------------------------|---------------------------|----------|
| | FNX 32 / 63 | SK91537 |
| | FNX 100 | SK91538 |
| Auxiliary contacts (1 NO + 1 NC) | FNX 125 / 160 | SK91539 |
| | FNX 200 / 250 | SK91540 |
| | FNX 315 / 400 / 630 / 800 | SK91541 |
| Handle Assembly | FNX 32 / 63 / 100 | SK91524 |
| | FNX 125 / 160 / 200 / 250 | SK91525 |
| | FNX 315 / 400 / 630 / 800 | SK91526 |

| Description | Туре | Cat. No. |
|----------------------|---------------------------|----------|
| DIN Rail Assembly | FNX 32 / 63 / 100 | SK91617 |
| Mechanical Interlock | FNX 125 / 160 / 200 / 250 | SK95232 |
| kit | FNX 315 / 400 / 630 / 800 | SK95545 |
| Fuse pulling handle | FNX 32 / 63 | SK91185 |
| | FNX 100 to FNX 800 | SK90126 |
| Castell Lock | FNX 32 / 63 / 100 | SK91530 |
| | FNX 125 / 160 / 200 / 250 | SK91531 |
| | FNX 315 / 400 / 630 / 800 | SK91531 |

Ordering suffix oooo for all

Spares & Accessories

A wide range of spares and accessories are available for Switch-Disconnector-Fuse units type FNX:

Extended terminal shroud

Terminals are shrouded for protection against phase to phase short circuit through an external conducting path and against accidental human contact with live terminals.

Mechanical interlock kit

Two Switch-Disconnector-Fuse units can be interlocked by mechanical interlock kit. After interlocking, the following three positions are possible:

- SDF 1 in ON position SDF 2 in OFF position
- SDF 2 in ON position SDF 1 in OFF position

Both SDFs in OFF position

Hence two mechanically interlocked SDFs can be used as a changeover switch.



Switch-Disconnector-Fuse units type FNX can be locked in OFF position with the help of Castell interlock.

Padlock

Switch-Disconnector-Fuse units type FNX can be locked in OFF position with the help of the padlock. This can be done with or without defeating door interlock.



Castell interlock

Auxiliary contacts

Auxiliary contacts

1NO + 1NC auxiliary contact is available as an accessory. This can be suitably wired in the control circuit with: (as perAC - 15)

- Rated operational current (I_e) 4A
- Rated operational voltage (U_e) 415V

Moving contacts

Moving contacts are available for range FNX 100 to FNX 800. One set of moving contact spare contains spring, guide and moving contact.

Fuse puller

A fuse puller facilitates safe removal of fuses.



Padlock



Fuse puller



Mechanical interlock kit





Note : All dimensions are in mm





Note : All dimensions are in mm





Type FNX 200 / FNX 250



Dimensions according to No. of poles

| | А | В | с |
|--------|-----|-----|-----|
| 3 Pole | 188 | 243 | 244 |
| 4 Pole | 244 | 299 | 300 |







Installation Details



Note : All dimensions are in mm

HRC Fuses - Cylindrical

Fuse Links Type HF

(Fuse links with cylindrical contact caps)

- Conforms to IEC60269 / IS13703
- Low watt loss Saves power
- Low let through energy
- High breaking capacity 80 kA
- Rated voltage 415 V
- Immediate fault indication through red pop up indicator
- Lower power loss in our fuses result in cooler running of associated products



| Size | Fuse Rating (A) | Cat. Nos. | Rated watt loss |
|---------|-----------------|-----------|-----------------|
| | 2 | SF90144 | 0.6 |
| | 4 | SF90145 | 0.6 |
| | 6 | SF90146 | 1.1 |
| | 8 | SF90147 | 1.2 |
| | 10 | SF90148 | 1.0 |
| 14 × 51 | 16 | SF90150 | 2.4 |
| 14 X 51 | 20 | SF90151 | 2.4 |
| | 25 | SF90152 | 3.2 |
| | 32 | SF90142 | 5.0 |
| | 40 | SF90143 | 5.0 |
| | 50 | SF90158 | 5.0 |
| | 63 | SF90159 | 7.4 |

Ordering Details

Fuse-pulling handle should be used for safe and easy removal of fuse links Suitable fuse - pulling handle for type HF : SK91185 $\,$

HRC Fuses - Blade / Knife type

Fuse Links Type HN

(Fuse links with blade contacts)

- Conforms to IEC60269 / IS13703
- Low watt loss Saves power
- Cooler running of associated products
- Low let through energy
- High breaking capacity 100 kA
- Immediate fault indication
- Rated voltage 415 V



| Size of the fuse link | Rating (A) | Cat. Nos. | Rated watt loss | Watt loss limits as per IS 13703 |
|-----------------------|---------------|-----------|--------------------|-------------------------------------|
| Size 000 | 63 | SF94940 | 5.3 | 100 Amp, Fuse-7.5 W |
| | 80 | SF94941 | 6.2 | |
| | 100 | SF94942 | 7 | |
| | New 3125 | SF94946 | 9.5 | |
| Size 00 | 63 | SF94027 | 5.7 | 100 Amp, Fuse-7.5 W |
| | 80 | SF94028 | 6.9 | |
| | 100 | SF94029 | 7.5 | |
| | 125 | SF94030 | 9.8 | |
| | 160 | SF94939 | 12 | |
| Size 0 | 80 | SF94128 | 8.3 | 160 Amp, Fuse-16 W |
| | 100 | SF94129 | 9.1 | |
| | 125 | SF94130 | 11.3 | |
| | 160 | SF94131 | 12.7 | |
| | 200 | SF94132 | 14.5 | |
| Size 1 | 125 | SF94230 | 10.3 | 250 Amp, Fuse-23 W |
| | 160 | SF94231 | 12.3 | |
| | 200 | SF94232 | 14.3 | |
| | 250 | SF94233 | 17.3 | |
| | 315 | SF94234 | 25.5 | |
| Size 2 | 200 | SF94332 | 14.1 | 400 Amp, Fuse-34 W |
| | 250 | SF94333 | 16.9 | |
| | 315 | SF94334 | 20.2 | |
| | 400 | SF94335 | 24.9 | |
| Size 3 | 315 | SF94434 | 20.5 | 630 Amp, Fuse-48 W |
| | 400 | SF94435 | 26.7 | |
| | 500 | SF94436 | 36.1 | |
| | 630 | SF94437 | 42.2 | |
| | 800 | SF94938 | 48 | |

Fuse-pulling handle should be used for safe and easy removal of fuse links Suitable fuse - pulling handle for type HN : SF90126

| Notes: | |
|--------|--|
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