



Motor Starters Type MN

- Direct-On-Line Starters
- Star-Delta Starters



Larsen & Toubro Limited, India's largest manufacturer of low voltage switchgear products introduces the new MN range of starters. These starters are available in Direct-On-Line (DOL) and Star-Delta versions. This range represents the culmination of intensive R&D and extensive field trials. MN starters, comprising MN contactors and MN relays, provide Overload and Single phasing protection to your motors.



MN starter family conforms to IS13947-4, IEC 60947-4



Starter Range

Salient Features

- Conform to IS 13947 (Part 4) & IEC 60947-4
- Built-in single phasing protection
- In Star Delta Starters, Star contactor has same rating as Hold-on & Delta
- Suitable for Industrial & Rural applications
- Terminal block for ease of termination
- Starter enclosure with IP 54⁰ of protection

Applications

MN starters are available in following versions:

- Direct-On-Line starter
- Semi automatic Star-Delta, starter (SASD)
- Fully automatic Star-Delta, starter (FASD)

All MN DOL & Star-Delta starters are suitable for 3-Phase Squirrel Cage motors. MN DOL starters are available in following ratings:

- MN 16 DOL-upto 10 HP (7.5kW)
- MN 25 DOL-upto 15 HP (11kW)
- MN 32 DOL-upto 20 HP (15kW)
- MN 45 DOL-upto 30 HP (22.5kW)
- MN 65 DOL-upto 45 HP (33.5kW)

MN Star-Delta starters are available in following ratings:

- MN 16 Star-Delta-upto 15 HP (11kW)
- MN 25 Star-Delta-upto 25 HP (18.5kW)
- MN 32 Star-Delta-upto 35 HP (26kW)
- MN 45 Star-Delta-upto 50 HP (37.5kW)
- MN 65 Star-Delta-upto 75 HP (55kW)
- MN 80 Star-Delta-upto 90 HP (67.5kW)
- MN 110 Star-Delta-upto 125 HP (90kW)
- MN 140 Star-Delta-upto 175 HP (130kW)

MN 45, MN 65, MN 80, MN 110 & MN 140 Star-Delta starters are available only in FASD version.

Construction

MN starters consist of MNX contactors & MN relays. The relay is directly mounted on the contactor. The colour of the sheet steel enclosure is two-toned. The box is powder coated and gray in colour. The cover is powder coated with ivory colour. The push button is flush mounted in an enclosure cover, which has been given an altogether 'new look'.

Operational Details

Relay Setting

A screwdriver is used to set the relay indicator (which is on the dial) to the full load current setting. This ensures optimum protection under Overload and Single Phasing of the motor. In case of Star-Delta Starters, the relay must be set at the values $I_n / \sqrt{3}$ ($0.58 I_n$) as given in the selection table, since the connected relay carries only the phase current in Motors having Delta connected winding.

MN DOL starters

- MN 16, 25, 32, 45, 65 DOL starters incorporate type MNX contactors.
- MN 16, 25, 32 DOL starters incorporate MN 2 relays.
- MN 45, 65 DOL starters incorporate MN 5 relays.

MN Star-Delta Starters

MN Star-Delta starters are available in semi automatic and fully automatic versions.

MN 16, 25, 32, 45, 65, 80, 110, 140 Star-Delta starters incorporate type MNX contactors.

- MN 16, 25, 32, Star-Delta starters incorporate MN 2 relays.
- MN 45, 65, 80, 110, Star-Delta starters incorporate MN 5 relays.
- MN 140 Star-Delta starters incorporate MN 12L relays.

In case of SASD Starters, the motor gets connected in Star connection when the green button is pressed, after releasing the green button motor gets connected in Delta connection. The button must be released only when the motor reaches its normal speed.

In case of FASD Starter, motor gets connected in Star connection, when the green button is pressed. An electronic timer automatically performs the change-over function from Star to Delta.



Features & Benefits

Single Phasing Protection

MN relays having phase failure sensitive tripping mechanism provides reliable protection against Single Phasing & Overload conditions. MN relays are compensated for variation in ambient temperature from -5°C to 55°C .

IP 54 degree of protection

Corrosion resistant powder coated enclosure with IP/54 protection class makes MN starters most suitable for chemical factories, polluted industrial and dusty agricultural environment.

Terminal Block

MN Star-Delta starters are provided with terminal block with proper terminal marking for ease of wiring. Terminal block can accommodate both aluminium & copper cables.

Base Plate Mounting

MN Star-Delta starters are mounted on base plate that can absorb vibrations and it makes MN starters maintenance friendly.

Electronic Timer

MN Fully Automatic Star-Delta starters are provided with Electronic Timer for high repeat accuracy.

Trip Test Facility

This facility enables the user to manually check the operation of the trip mechanism. Move the trip slide in the direction shown on the relay. The relay trips with an audible 'Click' sound, indicating that the trip mechanism is in good working order.

Off / Reset Push-Button

The relay will trip in case of overloads or single phasing conditions.

Simultaneously 'Alarm Contact' (97-98) will close. The motor cannot be restarted until the relay has been reset. To reset the relay, allow the bimetals to cool down sufficiently & push this button to reset the trip contact (95-96).

If the relay is in reset condition, pressing this push-button will open 'Trip Contact'. But now the alarm contact will not close. This indicates healthy operation of the relay mechanism. The trip contact will again close when this button is released.

Auto-Manual Reset Switch

There are two modes of reset available : Manual and Auto. By default the relay is in the Manual reset mode and can be converted to Auto reset mode by moving the switch to Auto position marked on the label.

Overall Dimensions

