# OPTIMIZE MOTOR CONTROL


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NIETZ

*Making Efficient Start*


# EDR

Intelligent & Competitive cost

# Soft Starters

Since
2005

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NIETZ

## WHO WE ARE

Innovation +
Driving Tomorrow

NIETZ is one Leading Manufacturer of industrial automation products, with more than millions units sold worldwide, established 2005 Shanghai, China. We are committed to building long-lasting and successful business relations with our partners, has gained good reputation and deep influence.

We aim to provide the best quality, unmatched reliability and low price in our services and our products. We aim to reduce your costs, streamline manufacturing, to improve productivity.

The products of NIETZ are Variable Frequency Inverters, AC Servo System, Soft Starter, Planetary Gearboxes and Complete Device,The products NIETZ are technological advanced products and it has quite wide product range and already used widely in various applications such as textile machine, air compressor, hoist, packing machine, printing machine, electronic machine and other industries, which exported to over 40 countries and regions such as Europe, South America, Southeast Asia, Middle East and so on.

NIETZ always aims to be the professional driving solution provider and your mutual-benefit partner.


An innovative product that integrates intelligent control, industrial aesthetics, and safe output. It is specifically designed for 0.75-11KW/400VAC three phase & 0.37-3.7KW/220VAC single phase asynchronous squirrel-cage motors, serving as a perfect replacement for traditional contactors and star-delta starters.

The product adopts two-phase EDR control, combined with a unique three-phase cooperative disconnection mechanism.This ensures no residual output voltage remains in the three-phase circuit when stopped, completely eliminating the risk of residual live voltage possible in traditional solutions and providing operators with a higher level of safety assurance. The entire series has a built-in bypass, which reduces heat generation during soft starter operation and improves installation efficiency.

While ensuring enough current capacity, this product features a book-style ultra-thin design. Its grey-white industrial-grade plastic shell is paired with precision cooling fins, with an overall thickness of just 48mm, allowing for quick installation on standard rails.

The front face is equipped with three high-precision adjustment potentiometers, corresponding to acceleration time,starting voltage, and deceleration time parameter adjustments respectively. The knob scales are clear and intuitive.

The product uses EDR to precisely control the voltage ramp-up curve, limiting the starting current to 3-4 times the rated value, reducing inrush current by 50% compared to direct starting.

The product features a boost start function, unique among similar mini-type soft starters. By presetting an initial torque pulse, it effectively overcomes static friction resistance, making it highly suitable for heavy-duty starting scenarios such as conveyors and mixers. Furthermore, the product supports a wide range main voltage input of 220-480V, ensuring compatibility with various on-site power environments.

This series of soft starters is suitable for equipment like fans, water pumps, and conveyor belts that require frequent starts and stops. It can significantly extend motor life and reduce impact on mechanical transmission systems. Its compact size (saving 60% installation space compared to traditional solutions) and lightweight design (under 1kg) make it an ideal choice for equipment upgrades and retrofits.

With an IP20 protection rating and an operating temperature range of -10 ° C to 40 ° C, it ensures stable operation in various industrial environments.

Adhering to the design philosophy of "Precise as Crystal, Thin as a Book," the EDR Series Motor Soft Starter perfectly integrates electrical safety, ease of use, and modern industrial aesthetics, providing users with a motor control solution that combines cost-effectiveness and reliability.

# Product Features

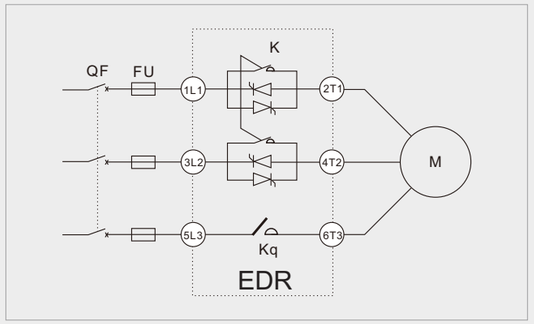
- **Direct Parameter Adjustment** – Start/stop time, and initial voltage can be set directly via three potentiometers.
- **Built-in Bypass** – All EDR models equipped bypass relay, no need for external bypass contactors.
- **Enhanced Safety** – Equipped with a main circuit relay to ensure no voltage output when stopped.
- **Voltage Ramp Start** – Smooth motor acceleration via controlled voltage ramp-up.
- **BOOST Start(3P3 Type)** – Optional pulse start mode for high-inertia or high-friction loads (e.g., conveyors, mixers).
- **Torque Control**– Maintains output torque during stopping to prevent water hammer effects in pump systems.
- **Quick DIN Rail Mounting** – Standard DIN rail clips for efficient on-site installation.
- **Plug-and-Play Terminals** – Removable control terminals simplify maintenance and upgrades.
- - **I/O Configuration(3P3 Type)**
- - 2 control inputs (start/stop signals)
- - 1 relay output (running signal)
- - 1 active full-voltage signal output (24VDC, max 20mA)
- - **Optional** – Built-in start/stop panel switch.

## Highlight

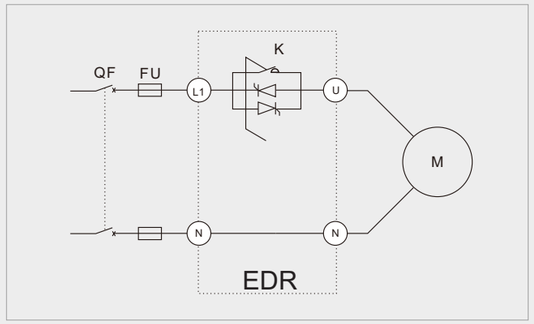
- Operating Voltage:
- 220-480V(Three phase) / 220V(single phase)
- Optional Built-in Control Power Supply
- Optional External 24VDC Control Power Supply
- Integrated Structure with IP20 Protection
- Control Board with Protective Coating.
- Direct Potentiometer Parameter Adjustment
- Built-in Bypass (All Models)
- Boost Start mode(3P3 Type)
- Supports Signal Light for Full-Voltage Indication
- Standard DIN Rail Mounting

  Effectively resists dust, moisture, and corrosive gases, significantly extending service life.

## Inernal control mode




Three Phase Type(3P3)



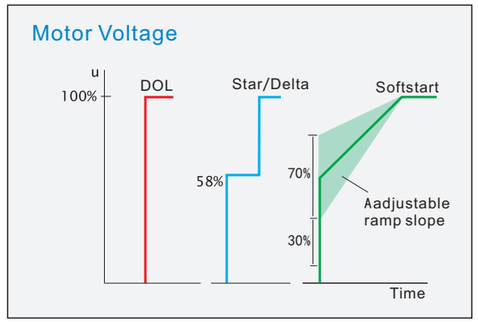

Single Phase Type(1P1)

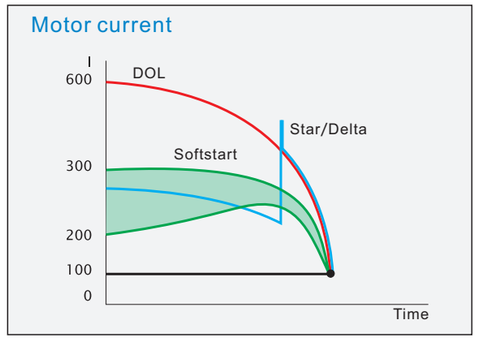


EDR series Soft Starter

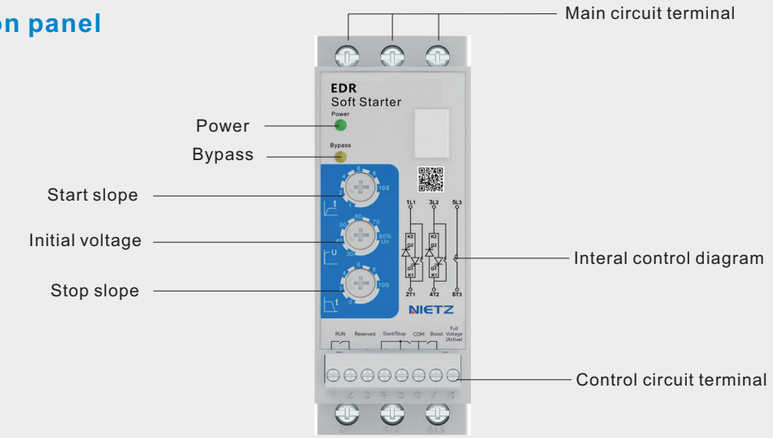
# Technical Specifications

| | |
|---|---|
| Main Voltage | 220-480V AC 50/60Hz(3 phase)<br>220V AC 50/60Hz(1 phase) |
| Control Voltage | -I Internal mode<br>(No need for control voltage )<br>-E External 24VDC |
| Rated Current | 1.5.....22A(3 phase)<br>2.....20A(1 phase) |
| Initial Voltage | 30%~80% |
| Start Slope | 1~10 Sec |
| Stop Slope | 0~10 Sec |
| Overload | 3 xIe for 7 Sec<br>Valid for 50 % on time and 50 % off time. |
| Starts Per Hour | ＜5, 5-10 (light load or no-load) |
| Working temperature | -10~+40℃ |
| Storage temperature | -25~+70℃ |
| Altitude | ≤1000m |
| Protection Grade | IP20 |




## Operation panel



## How to Order

EDR −40 22 − X − XXX − 1

| EDR | *1 | *2 | *3 | *4 | |
|---|---|---|---|---|---|
| EDR Series Soft Starter | Rated Voltage | Rated Current | Control Voltage | Control Mode | Optional 1 Panel Switch |

*：
1、Rated Voltage: 22:220V 40:400V 48:480V
2、Rated current: 1.5-22A(3P3 Type) / 2-20A(1P1 Type)
3、Control voltage: I:Internal mode E: External 24VDC
4、Control mode: 3P3: 3 phase control / 1P1: 1 phase control

### Model table

Table1 External 24V DC mode( 3P3 type )

| Model | Power | | | Current | Frame | Weight |
|---|---|---|---|---|---|---|
| | 220V Pe/kW | 400V Pe/kW | 480V Pe/kW | Ie A | F | kg |
| EDR-XX 1T5-E-3P3 | 0.37 | 0.75 | 1.1 | 1.5 | A | 0.4 |
| EDR-XX 2T2-E-3P3 | 0.55 | 1.1 | 1.5 | 2.2 | A | 0.4 |
| EDR-XX 03-E-3P3 | 0.75 | 1.5 | 2.2 | 3 | A | 0.4 |
| EDR-XX 4T5-E-3P3 | 1.1 | 2.2 | 3.7 | 4.5 | A | 0.4 |
| EDR-XX 7T5-E-3P3 | 1.5 | 3.7 | 5.5 | 7.5 | A | 0.4 |
| EDR-XX 11-E-3P3 | 2.2 | 5.5 | 7.5 | 11 | A | 0.4 |
| EDR-XX 15-E-3P3 | 3.7 | 7.5 | 11 | 15 | B | 0.52 |
| EDR-XX 22-E-3P3 | 5.5 | 11 | 15 | 22 | B | 0.52 |

Table2 Internal mode ( 3P3 type )

| Model | Power | Current | Frame | Weight |
|---|---|---|---|---|
| | 400V Pe/kW | Ie A | F | kg |
| EDR-40 1T5-I-3P3 | 0.75 | 1.5 | A | 0.53 |
| EDR-40 2T2-I-3P3 | 1.1 | 2.2 | A | 0.53 |
| EDR-40 03-I-3P3 | 1.5 | 3 | A | 0.53 |
| EDR-40 4T5-I-3P3 | 2.2 | 4.5 | A | 0.53 |
| EDR-40 7T5-I-3P3 | 3.7 | 7.5 | A | 0.53 |
| EDR-40 11-I-3P3 | 5.5 | 11 | A | 0.53 |
| EDR-40 15-I-3P3 | 7.5 | 15 | B | 0.65 |
| EDR-40 22-I-3P3 | 11 | 22 | B | 0.65 |

Table3 Internal/External mode ( 1P1 type )

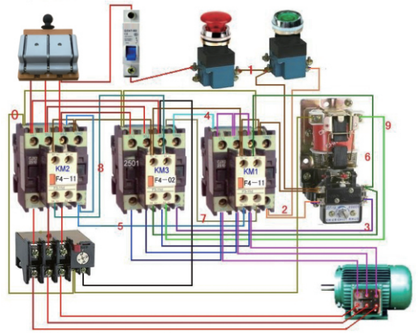
| Model | Power | Current | Frame | Weight |
|---|---|---|---|---|
| | 220V Pe/kW | Ie A | F | kg |
| EDR-22 02-X-1P1 | 0.37 | 2 | A | 0.4 |
| EDR-22 03-X-1P1 | 0.55 | 3 | A | 0.4 |
| EDR-22 04-X-1P1 | 0.75 | 4 | A | 0.4 |
| EDR-22 06-X-1P1 | 1.1 | 6 | A | 0.4 |
| EDR-22 09-X-1P1 | 1.5 | 9 | A | 0.4 |
| EDR-22 12-X-1P1 | 2.2 | 12 | A | 0.4 |
| EDR-22 18-X-1P1 | 3 | 18 | A | 0.4 |
| EDR-22 20-X-1P1 | 3.7 | 20 | A | 0.4 |

※1、1T5 means 1.5A, 4T5 means 4.5A, 7T5 means 7.5A in Rated current.

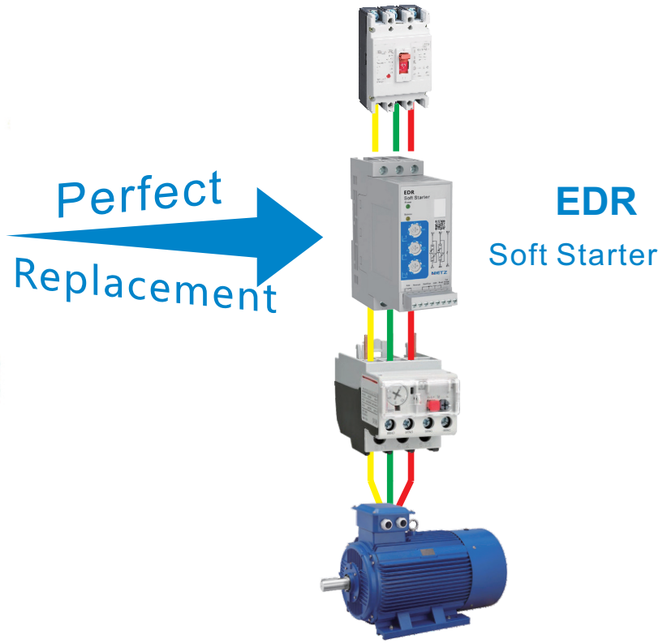


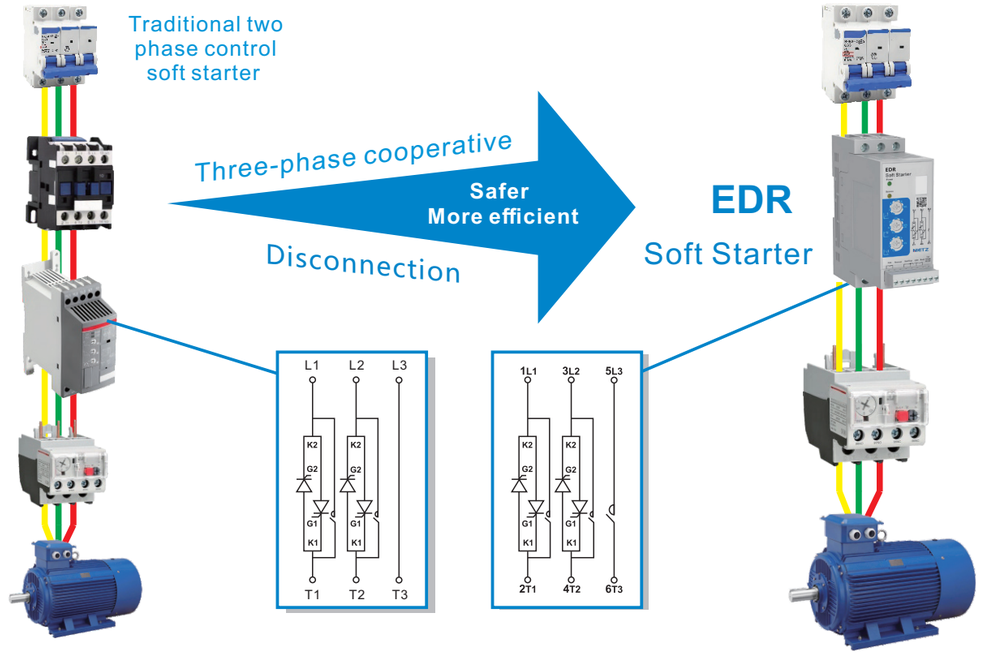


## EDR Application Legend



Star-Delta start



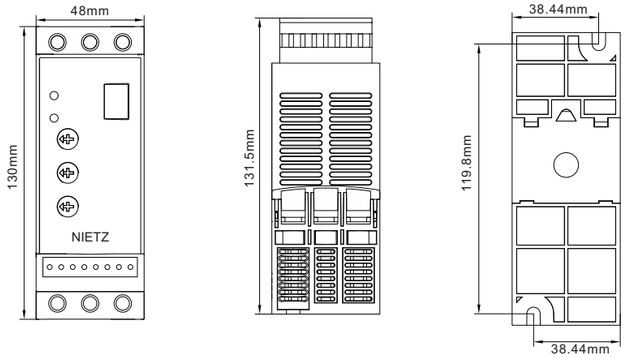



# Dimension

**Frame A**

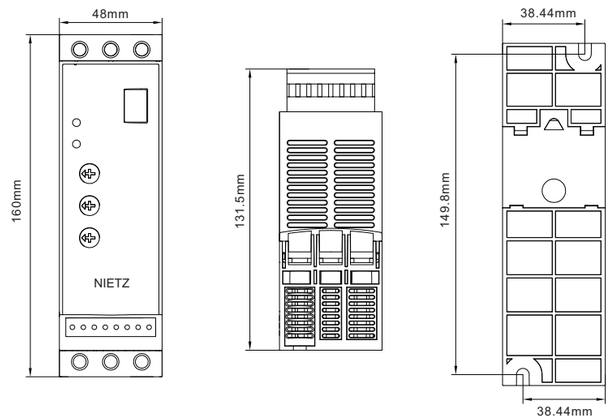
**1.5A~11A(3P3 Type)**

**2A~20A(1P1 Type)**




**Frame B**

**15A~22A(3P3 Type)**




## Maximum connection capacity and fastening torque table

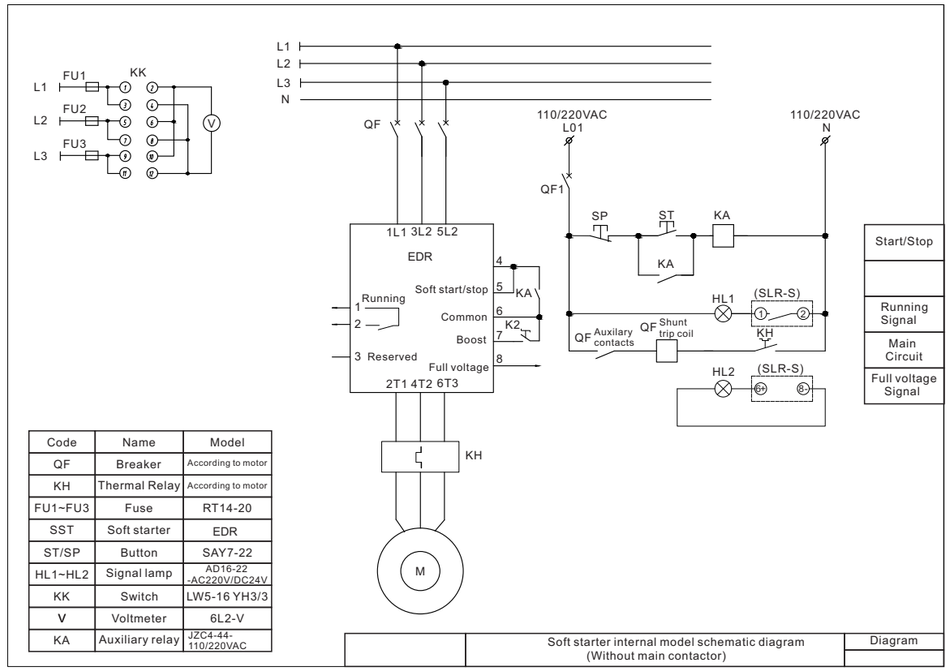
| Model | 1.5-11A | 15-22A |
|---|---|---|
| Main circuit | ϕ4mm Screw clamp | ϕ4mm Screw clamp |
| Flexible wire (No terminal lugs) | 1.5-6mm² | 6-10mm² |
| Flexible wire (With terminal lugs) | 1-6mm² | 5-10mm² |
| Hard wire | 1-6mm² | 5-10mm² |
| Tightening torque | 0.8N.m | 1.9~2.5N.m |

| Control circuit | Screw terminal | Screw terminal |
|---|---|---|
| Flexible wire (No terminal lugs) | 0.5-2.5mm² | 0.5-2.5mm² |
| Flexible wire (With terminal lugs) | 0.5-2.5mm² | 0.5-2.5mm² |
| Hard wire | 0.5-2.5mm² | 0.5-2.5mm² |
| Tightening torque | 0.5N.m | 0.5N.m |

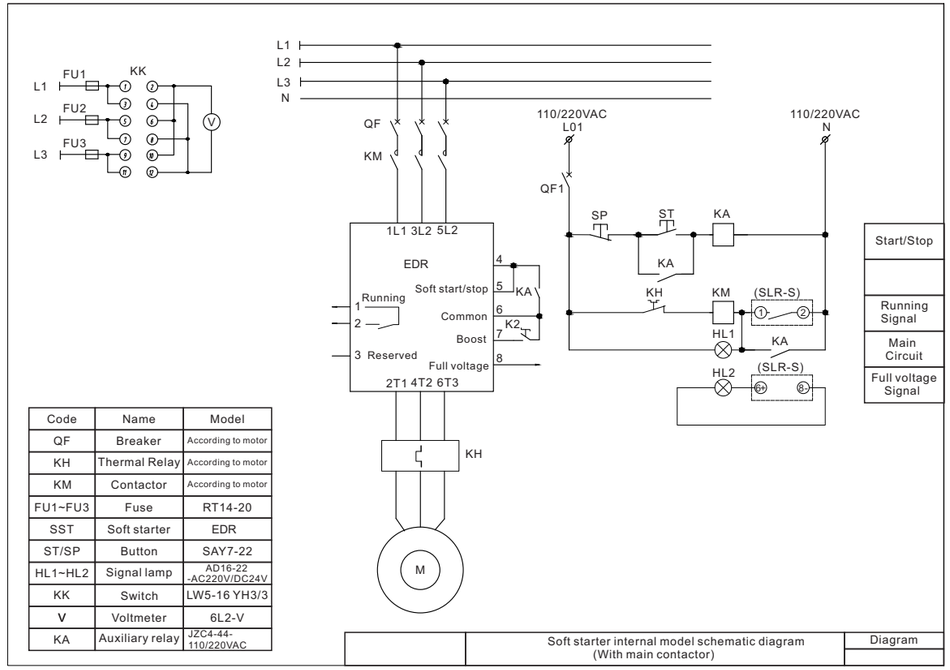




## Internal mode wiring diagram(3P3 Type)

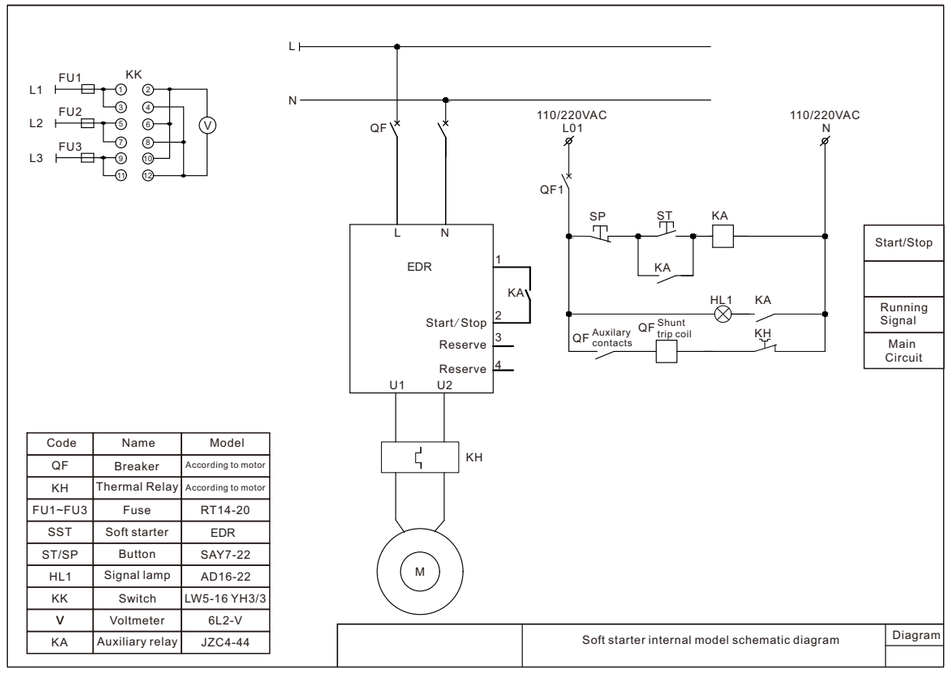



| Code | Name | Model |
|---|---|---|
| QF | Breaker | According to motor |
| KH | Thermal Relay | According to motor |
| FU1~FU3 | Fuse | RT14-20 |
| SST | Soft starter | EDR |
| ST/SP | Button | SAY7-22 |
| HL1~HL2 | Signal lamp | AD16-22 -AC220V/DC24V |
| KK | Switch | LW5-16 YH3/3 |
| V | Voltmeter | 6L2-V |
| KA | Auxiliary relay | JZC4-44-110/220VAC |

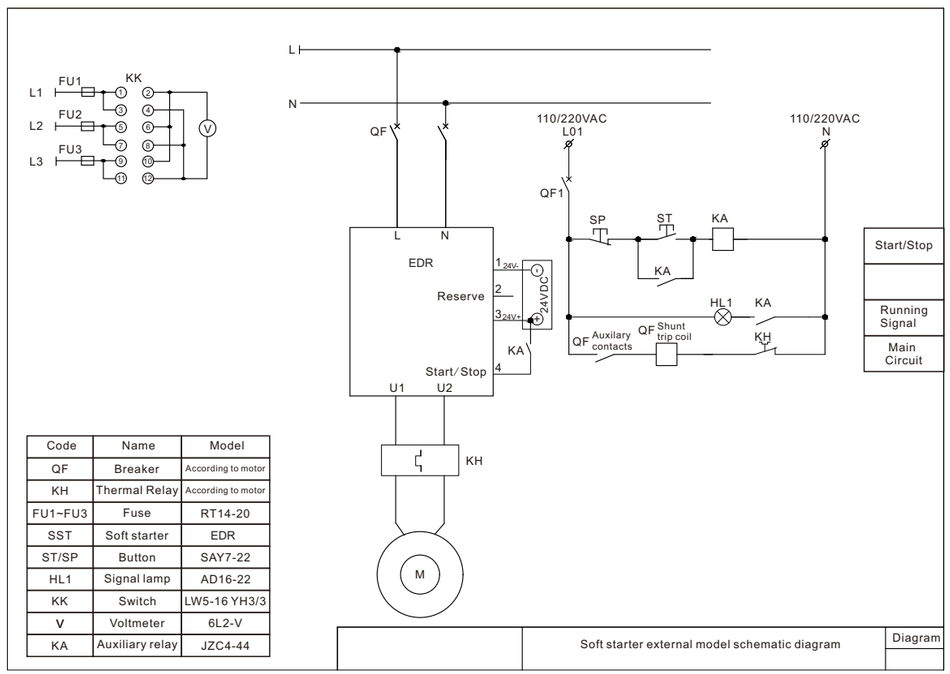



| Code | Name | Model |
|---|---|---|
| QF | Breaker | According to motor |
| KH | Thermal Relay | According to motor |
| KM | Contactor | According to motor |
| FU1~FU3 | Fuse | RT14-20 |
| SST | Soft starter | EDR |
| ST/SP | Button | SAY7-22 |
| HL1~HL2 | Signal lamp | AD16-22 -AC220V/DC24V |
| KK | Switch | LW5-16 YH3/3 |
| V | Voltmeter | 6L2-V |
| KA | Auxiliary relay | JZC4-44-110/220VAC |

## Internal mode wiring diagram(1P1 Type)




| Code | Name | Model |
|---|---|---|
| QF | Breaker | According to motor |
| KH | Thermal Relay | According to motor |
| FU1~FU3 | Fuse | RT14-20 |
| SST | Soft starter | EDR |
| ST/SP | Button | SAY7-22 |
| HL1 | Signal lamp | AD16-22 |
| KK | Switch | LW5-16 YH3/3 |
| V | Voltmeter | 6L2-V |
| KA | Auxiliary relay | JZC4-44 |




| Code | Name | Model |
|---|---|---|
| QF | Breaker | According to motor |
| KH | Thermal Relay | According to motor |
| FU1~FU3 | Fuse | RT14-20 |
| SST | Soft starter | EDR |
| ST/SP | Button | SAY7-22 |
| HL1 | Signal lamp | AD16-22 |
| KK | Switch | LW5-16 YH3/3 |
| V | Voltmeter | 6L2-V |
| KA | Auxiliary relay | JZC4-44 |





## Applications