

User Manual

REDUCED VOLTAGE
AUTOTRANSFORMER STARTER PANEL
MODEL TX



Over 50 years
as the experts

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Description

Nassar Electronics' Reduced Voltage Autotransformer Starters (RVATs) are manufactured with high-quality components and the most advanced technology on the market.

When electric motors are started at full voltage, they can draw currents up to 800% of the Rated Current and high torques up to 150% of the nominal value. These high current and torque values can cause problems in the power supply line, the controlled machine, or the material being processed. Reduced Voltage Autotransformer Starters (RVATs) are designed to reduce the voltage at the motor terminals during startup. Consequently, the current is reduced in proportion to the square of the percentage of this reduction, preventing the current and torque during startup from reaching values that may cause harmful fluctuations.

Closed transition starting allows the motor to remain connected to the power supply during the transition from reduced voltage start to line voltage, avoiding disturbances in the power supply line.

These types of starters apply reduced voltage to the motor through an autotransformer with taps to allow the motor to start at 50%, 65%, and 80% of line voltage.

Taps	Current	Startup Torque
80%	64%	64%
65%	42%	42%
50%	25%	25%

Technical Features

- Start Time: adjustable from 0 to 15 seconds maximum, with a 6-minute rest period.
- Starts per hour: Maximum 6, followed by 1 hour of rest.
- Starting system: Manual or automatic with external contact (TXA model).
- NEMA 4 (IP66) dust and water-resistant cabinet, for indoor use.
- Operating temperature: -15 to +45 °C

THE PANELS CAN INCLUDE THE FOLLOWING ADDITIONAL OPTIONS:

- ▮ Start and stop buttons for manual operation or manual-off-auto selector.
- ▮ Protection against low voltage, phase failure, and reverse sequence with Fasealert-3.
- ▮ Digital voltmeter.
- ▮ Digital ammeter.

Important Warnings

The wiring connection of the starter must be done by qualified personnel; always disconnect the voltage before beginning to connect or perform maintenance, as there is a risk of electric shock and even death. Do not take risks.

It's important to ensure that the power supply cables L1, L2, and L3 going to the switch are tightly secured, and also ensure that the outputs T1, T2, and T3 to the motor are tightly secured. If any connection is loose, it will heat up and cause damage to the starter.

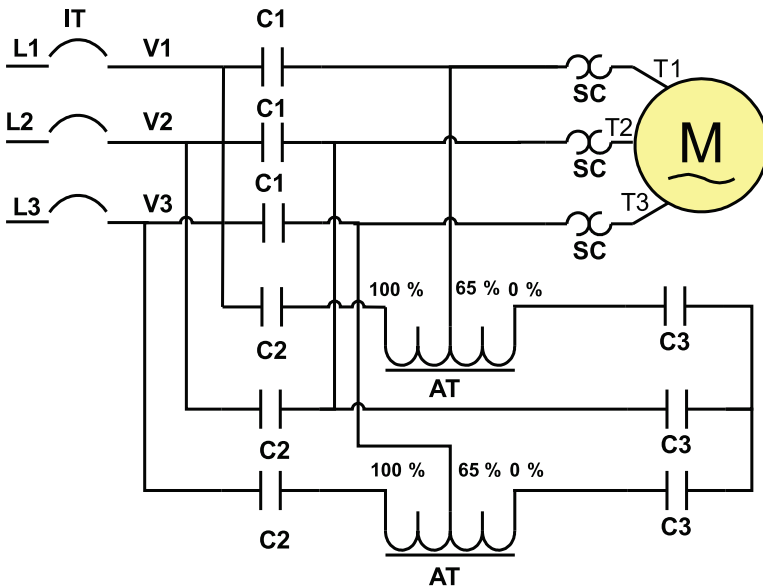
Cabinet Mounting

The cabinet should be mounted on the wall or another support structure, secured with 4 flat wash screws. The cabinet should not be placed outdoors, as sun, rain, and dust can deteriorate the exposed components. If it is to be installed outdoors, it is recommended to provide a sheet metal roof to protect it from rain and sun.

ATTENTION

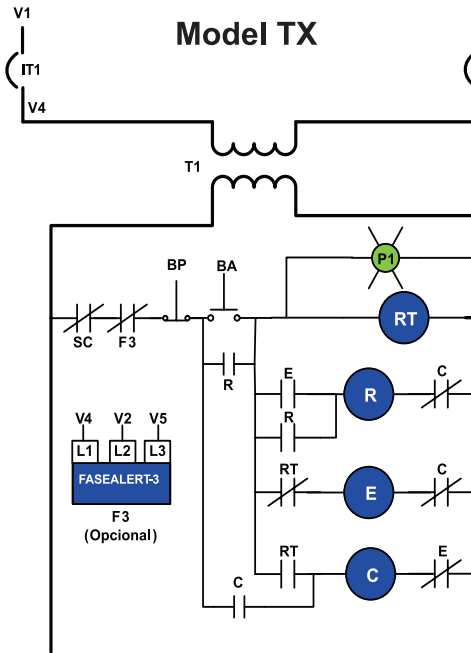
The cabinet is dust and water-resistant, so care should be taken to ensure the holes for the conduit tube are of the exact size, ensuring the joint is well sealed and the cabinet remains airtight.

Power Diagram



- IT** - Thermomagnetic switch
- C1** - Main contactor
- C2** - Start transition contactor
- C3** - Start transition contactor
- AT** - Autotransformer
- SC** - Overload relay

Control Diagram for TX / TXA



IT - Thermomagnetic switch

IT1 - Control thermomagnetic switch or fuses for 440 V

T1 - Control transformer 440/220 V (only for 440 V)

C - Main contactor

E - Start transition contactor

R - Start transition contactor

BP - Stop button

BA - Start button

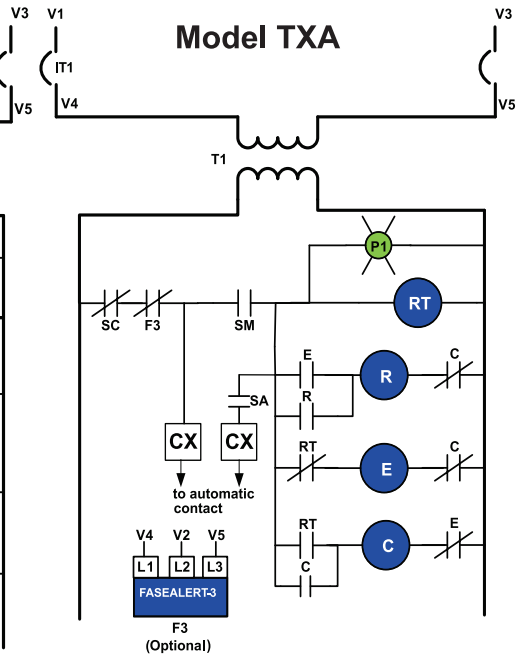
AT - Autotransformer

RT - Time relay RT-10

SC - Overload relay

F3 - Protection against low voltage and phase failure with Fasealert-3

P1 - Operating motor indicator light



IT - Thermomagnetic switch

IT1 - Control thermomagnetic switch or fuses for 440 V

T1 - Control transformer 440/220 V (only for 440 V)

C - Main contactor

E - Start transition contactor

R - Start transition contactor

SM - Manual selector

SA - Automatic selector

AT - Autotransformer

RT - Time relay RT-10

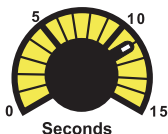
SC - Overload relay

F3 - Protection against low voltage and phase failure with Fasealert-3

P1 - Operating motor indicator light

Start Time Adjustment

Open the cabinet door, and you will find the time relay for adjusting the time the motor will be starting at reduced voltage. Adjust the time depending on the motor's inertia, typically the adjustment is from 5 to 8 seconds. If the load inertia is very large, other times up to 15 seconds can be adjusted (Consult the motor manufacturer about the maximum start time).



Start with Button Station

To start the motor, press the green "START" button, the "MOTOR OPERATING" indicator light will turn on. Once the adjusted time has passed, the motor switches to full voltage. To stop the motor, press the "STOP" button, and both the motor and the "MOTOR OPERATING" indicator light will turn off.

START

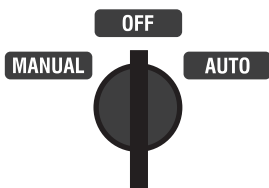


STOP

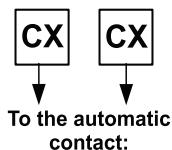


Start with Selector

To manually start the motor, set the selector to MANUAL. When the selector is in OFF, the motor cannot start. When the selector is in AUTO, it will start each time the CX and CX terminals close.

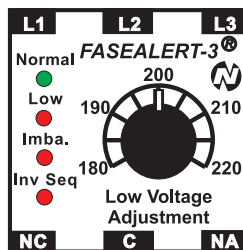


The CX and CX terminals connect to the external contact that allows the starter to automatically start the motor each time the contact closes.



Low Voltage Adjustment on the Fasealert-3

Open the cabinet door and at the top is the Fasealert-3. Adjust the low voltage cutoff using the knob on the front. It is recommended that for 220 V models, the setting is at 200V, and for 440V models, the setting is at 400V.



WARRANTY:

This product is covered by a warranty against manufacturing defects and components for a period of 1 year from the date of purchase. Contactors are not covered by the warranty. Nassar Electronics reserves the option to repair or replace the product at the manufacturing point F.O.B. if Nassar Electronics finds it defective. Any repairs or replacements needed due to inadequate maintenance, normal wear and tear, inadequate voltage supply, unfavorable environmental conditions, accidents, misuse, use outside of specifications, modifications, unauthorized repairs, use of unauthorized replacement parts, storage and handling, or any other cause not attributable to Nassar Electronics are not covered by this warranty. The buyer will be responsible for covering the necessary expenses for repairs or replacements. The costs of dismantling, reinstalling, and transporting the merchandise will be borne by the buyer/customer.

LIMITATION OF LIABILITY

THE LIABILITY OF NASSAR ELECTRONICS WILL BE LIMITED TO CONTRACT BREACHES, NEGLIGENCE, OR INTENTIONAL WRONGDOING. IN ANY CASE, THE AMOUNT OF LIABILITY ATTRIBUTABLE TO NASSAR ELECTRONICS WILL NOT EXCEED THE VALUE OF THE PRODUCT PURCHASED BY THE CUSTOMER FROM NASSAR ELECTRONICS. THE BUYER AGREES THAT NASSAR ELECTRONICS WILL NOT BE LIABLE FOR INCIDENTAL DAMAGES, INJURIES, DAMAGES TO OTHER EQUIPMENT/THIRD PARTIES, OR LOSSES OF ANY NATURE NOT COVERED BY THE WARRANTY.