

Technical Bulletin

FECA-TE-140

Line voltage quality can damage the Dc link contactor

Inverter type	Frenic-MEGA, Frenic-Eco
Software version	All
Required options	See below
Related documentation	FRENIC-MEGA and Eco Instruction Manuals
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Revision	None

Introduction

In many installations, especially in areas that the power isn't stable or a VFD is running from a generator, the power supply quality doesn't meet specifications. There are installations where the incoming line voltage sometimes becomes lower than the specification for the drives. Supplying the drives DC link contactor with a voltage lower than recommended can lead to failure of the contactor coil. This technical Bulletin will provide details to help reduce or eliminate contactor failure.



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Specifications

Models

The following inverters are affected by this situation:

Frenic-MEGA

FRN060G1S-2U TO FRN150G1S-2U

FRN125G1S-4U TO FRN350G1S-4U

Frenic-Eco/Frenic-EcoPUMP

FRN050F1S-2U/2DY TO FRN100F1S-2U/2DY

FRN075F1S-4U/4DY TO FRN350F1S-4U/4DY

Voltages

Frenic-Eco 200V is nominally 208V, and 400V is nominally 460V

Frenic-MEGA 200V is nominally 230V, and 400V is nominally 460V

Voltage Tolerance

The specifications for the Frenic series of drives for a 200V drive is 200-240V +10% to -15% (Some drives voltage ratings are 200-230V). For a 400V drive the specifications is 380-480V +10% to -15%.

Instruction Manual References on Voltage

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- Ensure that the number of input phases and the rated voltage of the product match the number of phases and the voltage of the AC power supply to which the product is to be connected.

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2.3.3 Wiring precautions

Follow the rules below when performing wiring for the inverter.

- (1) Make sure that the source voltage is within the rated voltage range specified on the nameplate.



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Additional materials needed

Fuses and fuse holder – sized per application

3 phase voltage monitor

MEGA - Customizable Logic program (See below)

Eco – On delay timer

Wiring to meet codes, standards, and application.

The voltage monitor will monitor the voltage and actuate a relay contact, when outside the acceptable range, the voltage monitor will keep the drive from starting and will be wired into the control system of the drive. The MEGA requires a customizable logic program. The Frenic-Eco, requires an external On-Delay timer to be added to the circuit. The customizable logic program and the On-Delay timer will prevent the VFD from starting for a certain period to prevent the drive from starting until the DC contactor is fully engaged to prevent damage. Refer to **Figure 1 & 2** for wiring details.

Set up and wiring

Frenic-MEGA

460V setup – Follow the wiring and procedures in **Figures 1 & 3** for models 125HP to 200HP and refer to **Figure 1 & 4** for models 250HP to 1000HP. All other models should omit the wiring for R1, T1, and the NC contact on the Under Voltage Detector.

230V setup – Follow the wiring in **Figure 1 & 3** for the 60HP to 125HP models and **Figure 1 & 4** for the 150HP model. For models other than the 60HP to 125HP and 150HP, omit the wiring for R1 & T1 and the NC contact on the Under Voltage Detector.

Frenic-Eco

460V setup – Follow the wiring and procedures in **Figures 2 & 4** for models 75HP and up. All other models should omit the wiring for R1, T1, and the NC contact on the Under Voltage Detector.

208V setup – Follow the wiring in **Figure 2 & 3** for models 50HP and up. For models other than the 50HP, omit the wiring for R1 & T1 and the NC contact on the Under Voltage Detector.

Control Wiring

Frenic-MEGA

Wire the NO contact on the Under Voltage Detector to one of the X inputs on the VFD. Program the X input for a value of 7, or “coast to stop” with an on-delay timer.

Frenic-Eco

X2 on the Eco is preprogrammed for an inverted “coast to stop” or 1007. The X input will close and release the coast to stop after the timer has elapsed.

Frenic-MEGA

Customizable logic function codes

E01 – 100, no function for X1 terminal

H96 – 1, start check function is turned off

U00 – 1, enable customizable logic

U01 – 4001, X1 input. *May change depending upon the installation

U03 – 1, through output and general purpose timer

U04 – 2, off-delay timer

U05 – 2s, on delay timer in seconds

U71 – 1, output of step 1 SO01

U81 – 7, coast to stop

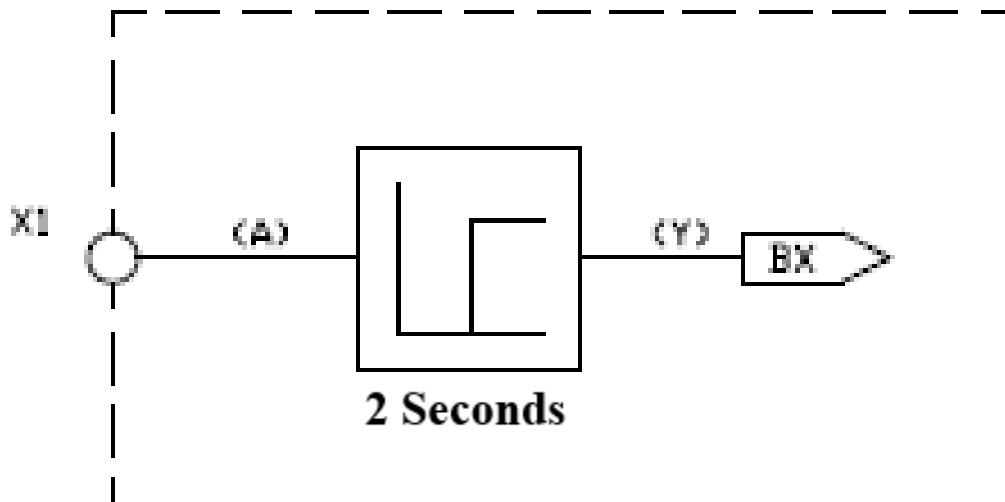


Figure 1
Frenic-MEGA

AC208/230/460V, 3Phase

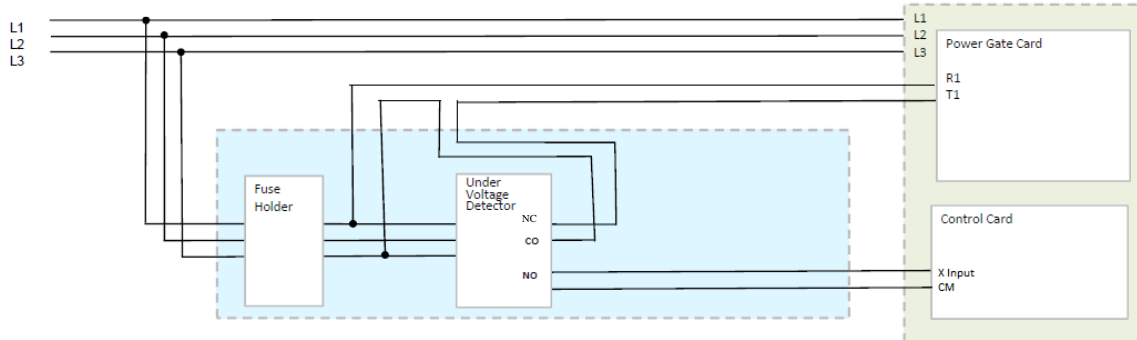


Figure 2
Frenic-Eco

AC208/230/460V, 3Phase

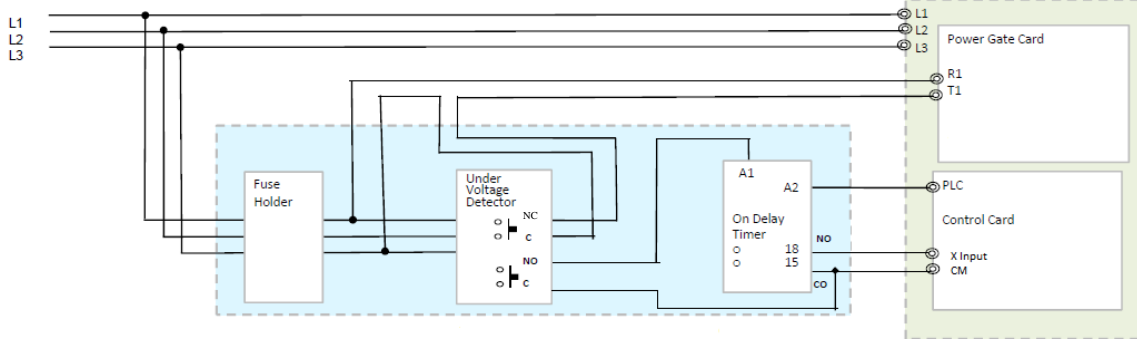


Figure 3

When connecting single phase AC power to R1 & T1, change the position of the connectors that are labelled CN R (Red) & CN W (White) on the control card like the picture on the right.

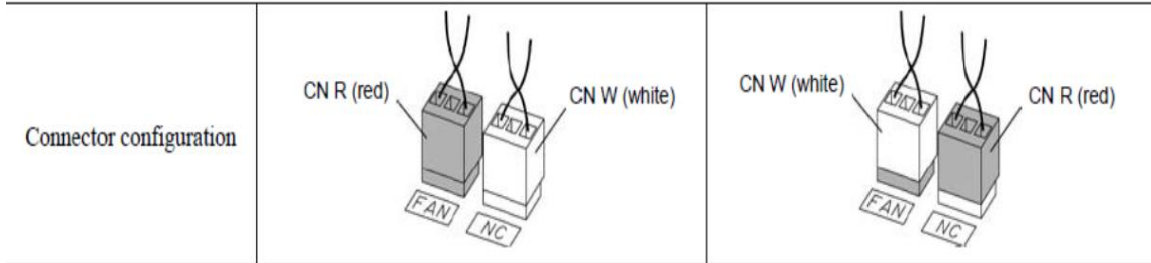
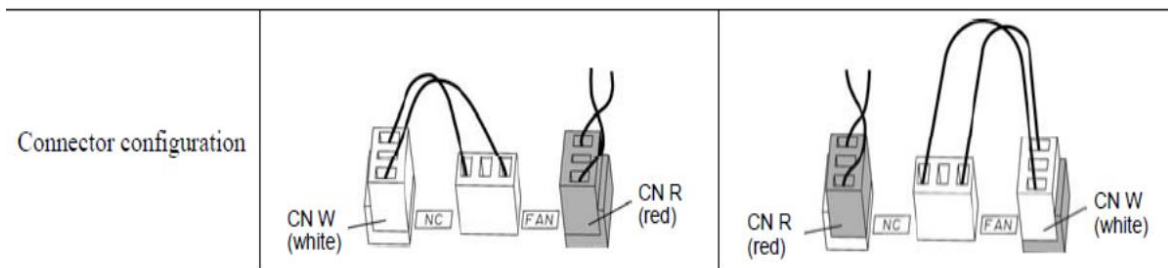


Figure 4

When connecting single phase AC power to R1 & T1, change the position of the connectors that are labeled CN R (Red) & CN W (White) on the control card like the picture on the right.



For further information:

See the **FRENIC-MEGA Instruction Manual (INR-SI47-1457a-E)** and or the **FRENIC-Eco Instruction Manual (INR-SI47-1225C-E)**.