

N3 Inverter Series Quick Start

TECO Westinghouse

Out of the box Startup



OVERVIEW

This document will enable the user to quickly get the motor turning with a minimum amount of external connections using the keypad. It will also provide familiarity with keypad navigation allowing the selection and changing of additional parameters. It must be realized that it is not a substitute for the N3 Series Manual and the user is urged to review this document before proceeding.

Steps 1 through 4 will allow the user to get the motor "up and running" in a simple mode using the keypad. The reverse side of this document shows other methods of control using the control terminals, and the changing of the acceleration and deceleration time. The factory default Basic "B" parameters are also shown for reference.

! DANGER

Please use caution when powering up and powering down the inverter as there are lethal voltages present.

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1 Check Nameplate & Remove Cover

Out of the box, check the inverter nameplate information. Make sure that the proper model has been received and that the input power requirements are available. Also check that the inverter output matches the Motor requirements

CAUTION

Model : xxxxxxxxxxxx
Motor Rating : xxHP/xxkW
INPUT : AC x phase 50/60 Hz
VOLTAGE : xxx-xxxV (+10%,-15%)
Amps : xx.x A
OUTPUT : AC 3 phases 0-400 Hz
VOLTAGE : 0 - xxxV
Amps : xx.x A
Enclosure Type and Rating

Remove the cover to expose the power terminals.
Note: The inverter shown below is an IP20 0.5 HP. Cover removal for other models will vary and the user is referred to the N3 manual for details



Remove Screw and Cover to expose the power terminals

- Go to STEP 2

2 Connect Motor and Line power

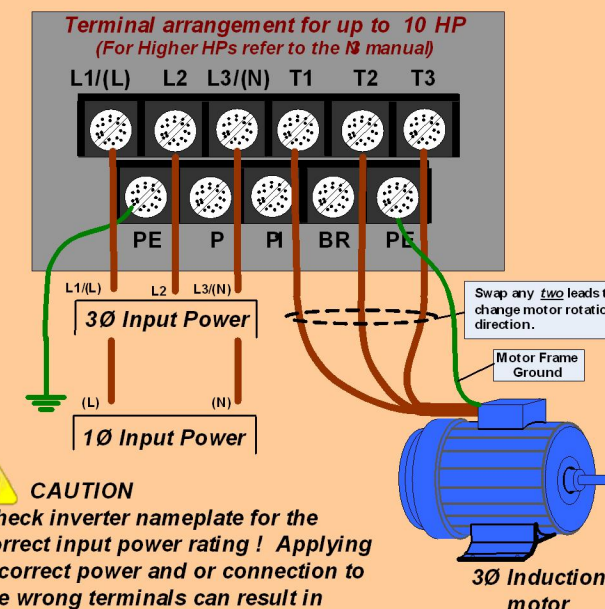
Secure (mount) the inverter in an environment that is free from harmful conditions that may cause damage such as excessive moisture, temperature extremes, chemical exposure etc. (see the N3 manual for further details)

With power OFF make the input power and motor connections in accordance with Fig. 1 below.

Note: the inverter terminal arrangement shown in Fig. 1 is for up to 10 HP. For higher HPs please refer to the N3 manual for terminal arrangement.

! DANGER

Do not apply power until all connections are correct and secure, and all protective covers are in place.



! CAUTION
Check inverter nameplate for the correct input power rating! Applying incorrect power and or connection to the wrong terminals can result in damage to the equipment and possibly bodily injury.

Fig.1 Input Power and Motor Connections

After all electrical connections are secure and all protective covers are in place, power up the inverter.

- Go to STEP 3

3 Enter Motor Data

On power up, the flashing display will show the applied line voltage with the VOLT LED flashing for about 2 sec. Then the initial output frequency (05.00 Hz) will be displayed with the Hz/RPM LED on and flashing



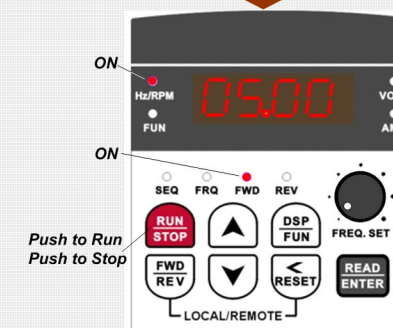
Enter the following motor nameplate data via the keypad as shown.

A001 = Motor rated voltage (Vac)
A002 = Motor rated current (Amps)
A003 = Motor rated power (HP)
A004 = Motor rated speed (Rpm) x 100
A005 = Motor rated frequency (Hz)

To access the A (advanced parameters) set b011=0001
Press the **DSP FUN** key to display **6000** Press the **▲** key to display **6001** Press the **◀** key to display **6001** Press the **▲** key to display **6011** Press the **READ ENTER** key; The display should read **0000** Press the **▲** key to display **0001** Press the **READ ENTER** key; The display should momentarily read **End** and then **6011** Next to access the A parameters, press the **◀** key 3 times to display **0000** and then the **▲** key to display **0000** Press the **◀** key once to display **A001** Press the **READ ENTER** key, then using the **◀**, **▲**, and **▼** keys, enter the motor nameplate rated voltage. Ex. **230.0** Press the **READ ENTER** key to save the value; the display should momentarily show **End** and then **A001** Press the **▲** key to access the next parameter **A002** motor nameplate rated current. Follow this procedure until parameters A001 thru A005 have been entered. To return to the main menu, press the **DSP FUN** key. - Go to Step 4

4 Run the motor with keypad

In this step using the keypad (default setting), the motor will initially be run at 5 Hz and the motor checked for proper rotation and operation. The digital operator should be displaying as shown below



Press the **RUN STOP** key; the motor should now be operating at low speed and the direction of rotation should be **FWD (clockwise)** as viewed from the shaft end of the motor. If the shaft rotation is not correct, press the **RUN STOP** key, then power down the inverter and swap any two of the motor leads, T1, T2, or T3. (See Fig. 1 in Step 2.)

! DANGER

After the power has been turned OFF, wait at least 5 minutes until the charge indicator Extinguishes completely before touching any wiring, circuit boards or components.

With all connections and protective covers secure - Power up the inverter and repeat Step 4. Then, using the **▲** and **▼** keys, run the motor at various speeds and check for proper operation. - Go to Step 5

5 Terminal Control

Out of the box (factory default), the Inverter is controlled entirely through the digital operator or keypad. In this step, other methods of frequency (speed) command source and start stop control will be covered.

Frequency Command Source

The output frequency of the inverter (motor speed) is controlled from the keypad by the UP/ DOWN keys as factory default (parameter B0004 = 0000). If this is the desired method of control then go to the next section. To control the frequency via the potentiometer on the keypad or by an external analog signal proceed as follows.

To control the output frequency with the keypad potentiometer - (Set B004=0001)

Press the **DSP FUN** key to display **6000**. Press the **▲** key to display **6004**. Press the **READ ENTER** key to display **0000**. Press the **▲** key to display **0001**. Press the **READ ENTER** key; The display should momentarily read **End** and then **6004**. Press the **DSP FUN** key to return to the main display.

or

To control the output frequency with an external analog input- (Set B004=0002)

Press the **DSP FUN** key to display **6000**. Press the **▲** key to display **6004**. Press the **READ ENTER** key to display **0000**. Press the **▲** key to display **0002**. Press the **READ ENTER** key; The display should momentarily read **End** and then **6004**. Press the **DSP FUN** key to return to the main display.

Power down the inverter and remove the cover to expose the control terminals. Make the connections as shown below.

! DANGER
After the power has been turned OFF, wait at least 5 minutes until the charge indicator Extinguishes completely before touching any wiring, circuit boards or components.

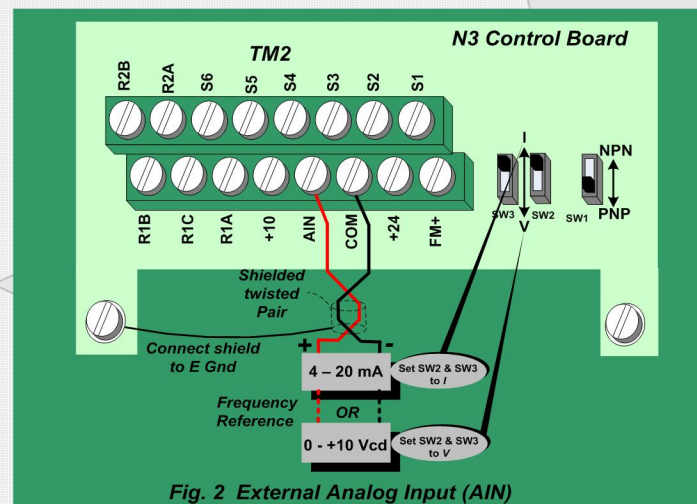


Fig. 2 External Analog Input (AIN)

Start / Stop Control

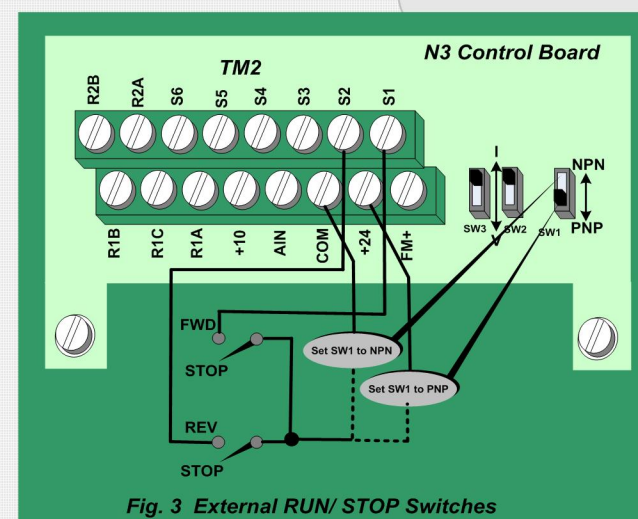
The Run and Stop commands are controlled from the keypad by the RUN/STOP key as factory default (parameter B0000 = 0000). If this is the desired method of control then go to the next section. To control the RUN and Stop functions via external switches connected to the control terminals proceed as follows

To control the RUN and STOP functions via the control terminals - (Set B000=0001)

Press the **DSP FUN** key to display **6000**. Press the **READ ENTER** key to display **0000**. Press the **▲** key to display **0001**. Press the **READ ENTER** key; the display should momentarily read **End** and then **6000**. Press the **DSP FUN** key to return to the main display.

Power down the inverter and remove the cover to expose the control terminals. Make the connections as shown below.

! DANGER
After the power has been turned OFF, wait at least 5 minutes until the charge indicator Extinguishes completely before touching any wiring, circuit boards or components.



NOTE : Two -wire control is shown in Fig. 3 above and is configured for FWD/STOP – REV/STOP. Other switch arrangements can be implemented such as RUN/STOP – FWD/REV, as well as three-wire control . For these arrangements, certain parameters need to be set. The user should refer to the N3 manual for detailed information.

6 Setting Acceleration and Deceleration

The acceleration and deceleration times are initially set via parameters B007 and B008 respectively at 10.0 sec. (Factory default). To change the acceleration and deceleration times, proceed as follows:

To change the acceleration time (parameter B007) -

Press the **DSP FUN** key to display **6000**. Press the **▲** key to display **0007**. Press the **READ ENTER** key to display **010.0**. Using the **RESET** key, select the digit to be changed and the **▲** **▼** keys to set the value of the digit.

Example: set the acceleration time to 5.5 seconds

The display is initially showing 10.0 sec.(factory default) **010.0**. Press the **RESET** key once to display **010.0**. Press the **▲** key (5) times to display **010.5**. Press the **RESET** key once to display **010.5**. Press the **▲** key (5) times to display **015.5**. Press the **RESET** key once to display **015.5**. Press the **▼** key once to display **005.5**. Press the **READ ENTER** key to save; the display should momentarily show **End** and then **6007**.

At this point, pressing the **DSP FUN** key will return you to the main display, or by pressing the **▲** key, the deceleration Parameter, **B008** may be selected.

To change the deceleration time (parameter B008) -

Press the **DSP FUN** key to display **6000**. Press the **▲** key to display **0008**. Press the **READ ENTER** key to display **010.0**. Using the **RESET** key, select the digit to be changed and the **▲** **▼** keys to set the value of the digit.

See example above for acceleration to set the value.

After the value has been set, pressing the **DSP FUN** key will return you to the main display.

The following table describes the factory default settings for the standard or "B" parameters.

| Parameter No. | Description | Factory Setting | |
|---------------|---|-----------------|---|
| | | Value | Function / Range |
| B000 | Run Command Source | 0000 | Keypad |
| B001 | Run/Stop-Forward/Reverse Operation Mode with External Terminals | 0000 | Forward/Stop-Reverse/Stop |
| B002 | Inhibit Reverse Operation | 0000 | Enable Reverse Command |
| B003 | Stopping Method | 0000 | Deceleration-to-Stop with DC injection braking (Rapid Stop) |
| B004 | Frequency Command Source | 0000 | Keypad |
| B005 | Frequency (Upper Limit) Hz | 50.00/60.00 | Range 0.01 – 400.00 |
| B006 | Frequency (Lower Limit) Hz | 0.00 | Range 0.00 – 400.00 |
| (1) B007 | Acceleration Time #1 sec. | 10.0 | Range 0.1 – 3600.0 |
| (1) B008 | Deceleration Time #1 sec. | 10.0 | Range 0.1 – 3600.0 |
| (2) B009 | Volts/Hz Patterns (Password Protected) | 9 | Range 0 - 18 |
| B0010 | Password Protection | 0000 | Disable Password |
| B0011 | Advanced Parameter "A" Access | 0000 | Disable Access |
| B0012 | Language Selection | 0000 | English |
| (1) B0013 | Display Motor Current (Amps) | 0000 | Disable Motor Current Display |
| (1) B0014 | Display Motor Voltage (VAC) | 0000 | Disable Motor Voltage Display |
| (1) B0015 | Display DC Bus Voltage (VDC) | 0000 | Disable DC Bus Voltage Display |
| (1) B0016 | Display PID Feedback (VDC) | 0000 | Disable PID Feedback Display |

(1) Can be modified during RUN (2) Only available in V/F mode)