

# C100

## Introduction

This quick start reference is meant to be a supplement to the User Manual included in the VFD packaging. This reference informs the installer of the proper steps for mounting, wiring, and basic programming/operation of the C100 VFD.



**Improper wiring and operation may result in serious personal injury or death.**

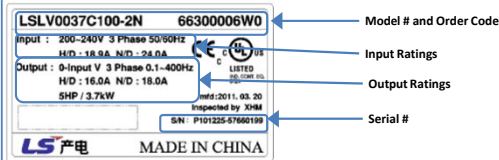
Follow the recommended wiring practices suggested in this document as well as the User Manual. The minimum size of the protective earth (ground) conductor shall comply with local safety regulations and applicable codes.

**Please review all C100 related documents included with the product before proceeding with any installation and wiring.**



## Step 1 – C100 Model Number and Mounting

Verify that you have ordered and received the correct VFD by checking the nameplate information. Utilize the example name plate below to assist you with this.



### Important!

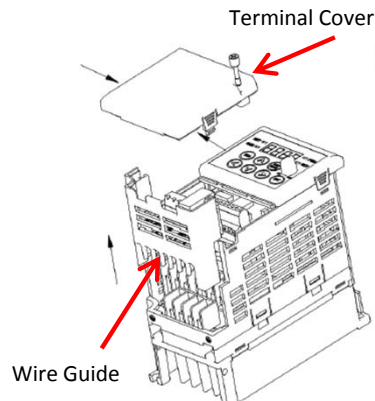
- Verify that the input voltage rating matches the voltage source which will be applied to the VFD.
- Confirm that the output power of the VFD is equal to or greater than the rating of the motor which will be connected.

### Mounting

In order to maximize the lifespan of your C100 VFD, follow the proper installation and environment recommendations. The User Manual contains further details on the exact dimensions and weights of each capacity C100.

### Cover Removal

After mounting, and in order to move onto the wiring step, loosen the captive screw on the terminal cover. Squeeze the tabs and “hinge off” the cover. Slide up the wire guide to expose the power terminals. This wire guide can be disposed of if you have purchased a NEMA 1 conduit kit.



## Step 2 – Connect Line and Motor Power

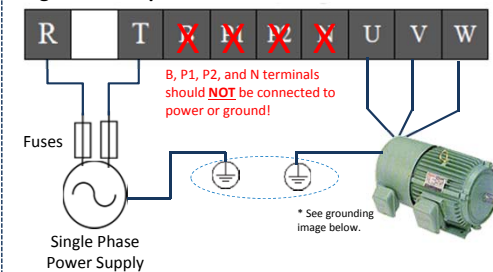
Utilize the below wiring diagrams to properly wire the main power connections to the VFD. **This step should be done with power OFF!** Refer to the User Manual for proper wire gauge recommendations. Be sure to follow good wiring and grounding practices. Follow applicable local codes if needed.



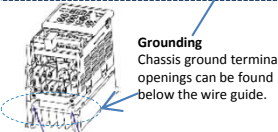
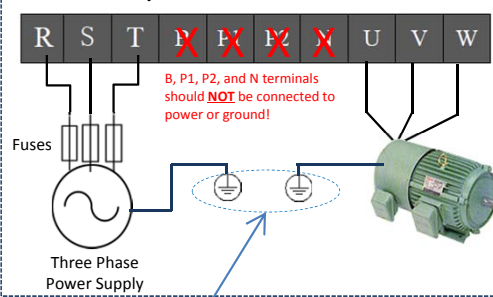
**Lethal voltages are present. Be sure that all power is turned OFF while performing the recommended power wiring. Reinstall all protective covers on the C100 before reapplying power**

Below is the proper wiring for both Single Phase and Three phase applications. The physical terminal layout will change across the different C100 capacities. Terminal names (e.g. R, S, T, etc) will remain consistent.

### Single Phase Input C100



### Three Phase Input C100

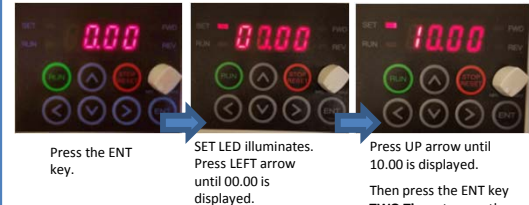


## Step 3 – Verify Motor Direction

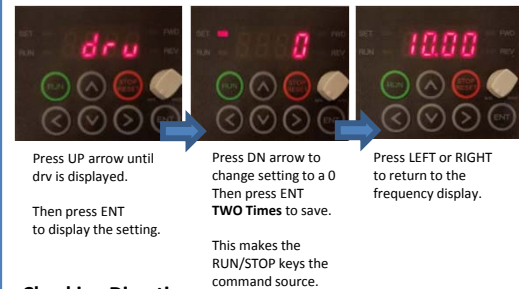
This step explains how to check motor direction by running the motor at a low speed via the keypad. Verify that the power and motor wiring matches the previous step and covers are installed before applying power.

At first power up, the display will look like below. “0.00” represents a frequency reference of 0.00 Hz.

### Setting Speed



### Setting Command Source



### Checking Direction

Check that it is safe to run the motor at low speed. When ready, press **RUN** to RUN the motor. The display will briefly show the output frequency of the VFD until it reaches 10Hz.

Look at the motor shaft to verify rotation is correct. Press the **STOP** key to STOP.

If motor direction is **incorrect**, stop the motor with the **STOP** key, and power down the VFD.

**Wait at least 5 minutes** to let the VFD capacitors to discharge.

Swap any two **output** leads between the VFD and the motor. This will change motor direction. Verify correct rotation via the previous steps.

## Step 4 – Keypad Navigation and Parameter Changes

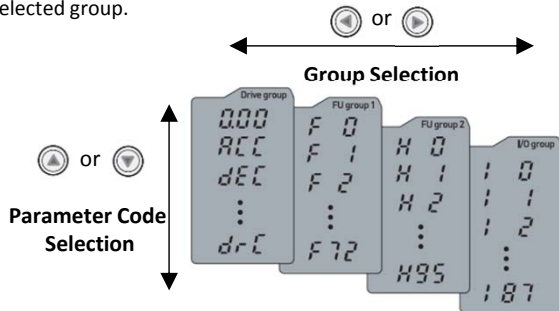
Navigate and select different parameters by using the directional arrows on the keypad (▲▼◀▶).

From the main screen (0.00), the UP and DN arrows will navigate through the drive group. The drive group contains many basic start up parameters and monitors. See below.

Code Change in Drive Group		
1		<ul style="list-style-type: none"> <li>The 1<sup>st</sup> code 0.00 of Drive group is displayed.</li> <li>Press the Up (▲) key once.</li> </ul>
2		<ul style="list-style-type: none"> <li>The 2<sup>nd</sup> code drc of Drive group is displayed.</li> <li>Press Up (▲) key once.</li> </ul>
3		<ul style="list-style-type: none"> <li>The 3<sup>rd</sup> code dec of Drive group is displayed.</li> <li>Keep pressing the Up (▲) key until the last code appears.</li> </ul>
4		<ul style="list-style-type: none"> <li>The last code drc of Drive group is displayed.</li> <li>Press the Up (▲) key again.</li> </ul>
5		<ul style="list-style-type: none"> <li>Return to the first code of Drive group.</li> </ul>

Use Down (▼) key for the reverse order.

Pressing the LEFT or RIGHT arrows will move through the different parameter groups. While the UP and DN arrows will navigate through the different parameter code #'s in the selected group.



Any of the above parameters and monitors settings can be accessed by pressing the ENT key.

### Changing Acceleration Time Example

1		<ul style="list-style-type: none"> <li>The 1<sup>st</sup> code of the parameter group is displayed when the Power is applied.</li> <li>Press the Up (▲) key.</li> </ul>
2		<ul style="list-style-type: none"> <li>The second code acc of Drive group is displayed.</li> <li>Press the ENT key.</li> </ul>
3		<ul style="list-style-type: none"> <li>The default code is 5.0 and the cursor is in the digit 0.</li> <li>Press the Left (◀) key once to move the cursor to the left.</li> </ul>
4		<ul style="list-style-type: none"> <li>The digit 5 is active, and then the parameter value can be changed.</li> <li>Press the Up (▲) key.</li> </ul>
5		<ul style="list-style-type: none"> <li>The value is increased to 6.0.</li> <li>Press the Left (◀) key to move the cursor to the left.</li> </ul>
6		<ul style="list-style-type: none"> <li>0.60 is displayed. The first 0 in 0.60 is active.</li> <li>Press the Up (▲) key once.</li> </ul>
7		<p><b>Important:</b> Press the ENT key <u>two</u> times to save the parameter.</p>
8		<ul style="list-style-type: none"> <li>acc is displayed. Accel time is changed to 16.0</li> </ul>

Pressing the Left (◀) or Right (▶) key while 16.0 is blinking will disable the setting.

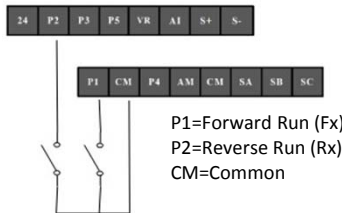
## Step 5 – Control Wiring

This step shows common wiring examples for both the run command and frequency reference.

### Run Command Wiring

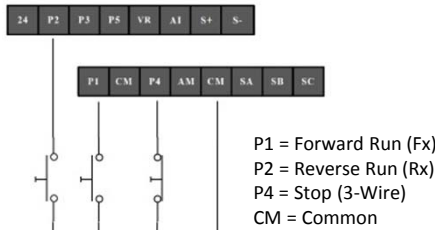
#### 2-Wire Control

2-wire control consists of **maintained** run signals. This can be accomplished via toggle switches, relays, jumpers, etc. Default parameters support this operation.



#### 3-Wire Control

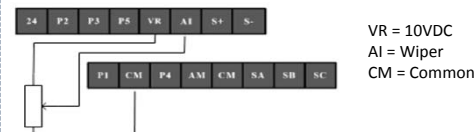
3-Wire control consists of **momentary** push buttons to run and stop the VFD. The Forward and Reverse buttons are Normally Open while the Stop button is Normally Closed. Set parameter I20=17 if using P4 (like below) for the Stop button.



### Frequency Reference Wiring

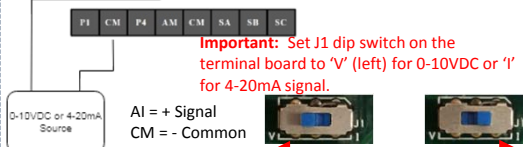
#### Speed POT Wiring (0-10VDC)

Controlling the VFD with an external speed POT can be accomplished by setting frq=3 and wiring like below.



#### PLC or Controller Wiring (0-10VDC or 4-20mA)

For other remote 0-10VDC signals also set frq=3. For 4-20mA signals set frq=4.



## Step 6 – Basic Setup Parameters

The basic drive and motor parameters are shown on the below table. Set the parameters according to your specific application.

### Required Motor Parameters

Set the below motor parameters based on the motor nameplate.

Group	No	Description	Default	Set Options	Notes
F	39	Motor Voltage	Depends on drive	40 - 110%	Set as a percentage of input voltage setting (Default: 220V & 380V)
H	30	Motor Capacity	Depends on drive	Depends on drive	Value is in kW. See below.
H	31	Motor Poles	4	2 - 12	Based on motor RPM. See below.
H	33	Motor Rated Current	Depends on drive	Depends on drive	Check motor nameplate

### HP to kW conversion chart

HP	1/4	1/2	1	1.5	2	3	5	7	10	15
kW	0.2	0.4	0.75	1.1	1.5	2.2	3.7	5.5	7.5	11.0

### Motor RPM to Poles chart

RPM	3600	1800	1200
Poles	2	4	6

Example:

If actual motor RPM is 3450.

Set Motor Poles = 2. This is due to motor slip. In this example The motor has 150 RPM of slip. (Slip=Synchronous speed-Rated Speed)

### Additional Parameters

Group	No	Description	Default	Set Options	Notes	
Drive	0.00	Command Freq	0.00	0 - Max Freq	Speed when frq=0 keypad	
Drive	ACC	Acc Time	20	0 - 6000	Unit is in seconds, from 0-	
Drive	dEC	Decel Time	30	1 - 6000	Max Speed	
Drive	drV	Run Command	1	Fx/Rx-1	0: Keypad	
					1: Fx/Rx-1	Start/Stop FW or REV wired separate (P1 = FW, P2 = Rev)
					2: Fx/Rx-2	2 Wire Start/Stop (P1 = FW, P2 = Rev)
					3: Comm RS485	For MODbus communications
Drive	Frq	Freq Command	0	Keypad-1	0: Keypad-1	
					1: Keypad-2	Press ENTER to save values
					2: Panel Pot V2 (0-5V)	Value Changes immediately
					3: Terminal A1 (0-10V)	Utilizes the POT on the keypad
F	67	Input Voltage (200V)	220	170 - 240V	Set J1 to V	
					4: Terminal A1 (4-20mA)	Set J1 to I
F	68	Input Voltage (400V)	380	320 - 480V	For MODbus communications	
					7: Comm RS485	For MODbus communications

Note: Not all set options are listed. Refer to the included User Manual for a complete listing.