MOTOR CONTROL

REGAL

# MD100G Series, Low Voltage Variable Frequency Drive

**Quick Start Manual**


marathon™ Drives

A Regal Brand

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*Marathon Drive*

# MD100G Quick Start Up Instructions

**This is for use by persons familiar with vfds and is intended to highlight details specfic to this model for the purpose of commissioning.**



**It is assumed personnel using this document are familiar with local code requirements for wire size & circuit protection,**

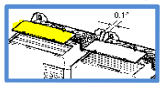
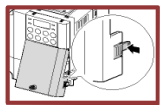
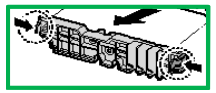
## Wiring

**the dangers associated with high voltage, and are capable of safely mechanically mounting the VFD.**

**1** Motor FLA can never exceed VFD output rating. Check VFD nameplate to ensure compatibility. Confirm the line voltage is within the VFD input range.

**2** Mounting clearances: 4" above and 2" from the sides of the enclosure. VFD must be mounted vertically to ensure adequate cooling.

For side by side installation - remove **top covers** (n/a on 4KW and below) using flat blade screwdriver.

**3** Remove **front cover** (one bolt),and **control circuit cover** (both hinge at the top).

Remove **cable guide** in the power section by pressing in both edges and pulling out at the same time (5.5 KW and above)

**4** Identify motor connections U,V,W, and Connect motor leads at this time. Do not connect anything to P1, P2, or N(-).

**5** Ground the inverter properly using the provided ground lugs. **Do not** daisy chain grounds. Never power a VFD that is undgrounded.

**6** Control wiring is shown below for the most common dry contact start / analog speed refrence configurations.

i/O (Blue) Terminal block functions

labels visible by the wire entrance

P1 = fwd start/run (CCW rotation shaft end)

P2 = rev start/run

P3 = emeg. Stop

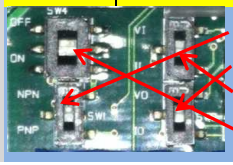
P4 = alarm reset

*motor rotation can also be reversed by switching any two motor leads*

Use CM terminal for P1-P7 connections.

Externally Sourced 0-10VDC or 4-20mA


I2




SW 1 = **NPN**/PNP

**Bold = default**

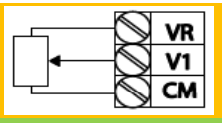
SW2: input **Volt.**/Curr.

SW3 = output **Volt.**/Curr.

SW4 = term. res. on/off

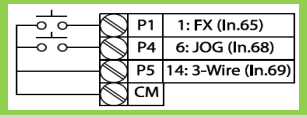
Internally Sourced using Pot.

- Maximum Voltage Output: 12V
- Maximum Current Output: 100mA
- Potentiometer: 1–5kΩ




3 wire operation (push button)

Change parameter IN.69 = 14




Terminal 'EG' is used only for open collector output (Q1)

**7** With control wiring complete, connect de-engerized line side power cabling to R(L1), S(L2), T(L3). These terminals are located are on the lower left side.

**8** Re-install cable guide, control circuit and power covers before energizing branch circuit protection feeding the VFD.

**! Double check at this time to ensure the ground circuit is firmly connected to both the inverter and earth ground.**

**! Anytime after mains power is disconnected from VFD input terminals wait 10 minutes before removing any covers.**

*Marathon Drive*

# S100 Start Up Instructions



**Parmeters**
**Test Run**

**Failure to set the motor parameters correctly can cause permanent motor damage.**

**Confirm shaft rotation before coupling load to motor to avoid equipment damage.**

Up/Down
changes field value
Left/Right
scrolls to parameter group or moves cursor when editing
ESC
return to 0.00 or cancel parameter setting


## Motor 1

**Begin** by pressing [>] once and [^] four times to display dr.14

Press 'ENT'. Use [^] and [v] to select motor kW (kW = HP/ 1.341)

Press 'ENT'twice and the value will be set.

**Next** set motor data and line voltage:

using [>] scroll to bA.0

then use [^] to scroll to below:

| | | |
|---|---|---|
| poles | bA.11 | 4 = 1800 rpm |
| nameplate rpm | bA.12 | e.g., 1785 |
| rated A | bA.13 | nameplate FLA |
| motor voltage | bA.15 | nameplate data |
| efficiency | bA.16 | displayed as % |
| line voltage | bA.19 | e.g., 208, 480V |

## Overload setting 2

If fan or pump load change

Pr.4 to '0' for 120% OL setting

For 150% OL setting, leave as '1'.

## Auto Restart 3

If fan or pump load and auto restart after a fault is deisred, change

Pr.8 to a '1' to enable function.

| | | |
|---|---|---|
| # of restarts | Pr.9 | 0-10 attempts |
| sec. between | Pr.10 | 0-60 seconds |

## Acc/Dec 4

With the display not on a parameter group but instead 0.00 hit the [^] and ACC will appear. Preses 'ENT' and enter acceleration in seconds. To repeat for dEC press [^] again.

*Default values may be too long for some machines, while being too short for some fans and pumps.*

## Loss of Speed Reference 5

When speed signal loss is encountered default reaction is run to at 0 Hz.

| | | |
|---|---|---|
| action taken | Pr.12 | 0 = run freq. set in Pr.14 |
| | | 1 = free wheel |
| | | 2 = decel to stop |
| speed at loss | Pr.14 | default = 0 |

## Min/Max freqeuncy 6

For some fan & pumps a minimum speed above zero may be necessary.

| | | |
|---|---|---|
| on/off | Ad.24 | 0/1 |
| min | Ad.25 | 0.5 Hz |
| max | Ad.25 | 60 Hz |

Max freq. from max. analog input defined in In.1

## Rotation check using jog 7

Set dr.90 to '1'. Pressing 'ESC" will now enable the jog function

Press and hold [RUN] and the unit will accelerate the motor to 10 Hz.

(accelerating to 10 Hz shown)


Release [RUN] and the unit will ramp to zero. Jog speed can be changed in :

dr.11

If motor speed is backward, change any two motor leads at the drive terminals

## Monitor Funcitons

With 0.00 displayed press [v] three times. Displayed in sequential order:

| | |
|---|---|
| uOL | Output Voltage |
| dCL | DC Link Voltage |
| rPM | Motor RPM |
| CUr | Output Current |

Is also possible to reverse motor rotation from the keypad, using:

drC and choosing F or r

## Troubleshooting

**Unit does not power up**

*Verify voltage at input terminals*


**VFD will not rotate motor shaft even though displays shows 60Hz**

- *Verify motor connections U, V, W*
- *Jumper start command (blue terminal block P1 to CM) to ensure run command received*

**Alarms**

OVT Overvoltage

- *Increase deceleration time*
- *Verify VFD grounding*

OCT Overcurrent

- *Increase acceleration time*
- *If using PID reduce gains*

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