Power Wiring Diagram for Drives Under 20HP

- Power Source 3 phase
- 200-240V+10% (50,60Hz+5%)
- 380-480V+10% (50,60Hz+5%)

Note: Grounding terminals are internally connected.

Grounding resistance less than 0.1Ω

Main circuit (power) terminals

Power Wiring Diagram: 20-30HP (230VAC) & 20-60HP (460VAC)

- Power Source 3 phase
- 200-240V+10% (50,60Hz+5%)
- 380-480V+10% (50,60Hz+5%)

Note: Grounding terminals are internally connected.

Grounding resistance less than 0.1Ω

Main circuit (power) terminals

“3Ø IM” denotes three phase induction motor.
**POWER WIRING DIAGRAM: 40-50HP(230VAC) & 75-100HP(460VAC)**

**GS3-FB - WIRING DIAGRAM - OPEN COLLECTOR TYPE ENCODER**

**DURAPULSE GS3-xxxx**

- **Grounding resistance less than 0.1Ω**
- **O Main circuit (power) terminals**

**3Ø IM** denotes three phase induction motor.

**PG** denotes encoder pulse generator.

---

**Power Source 3 phase**

- 200-240V+-10% (50,60Hz+-5%)
- 380-480V+-10% (50,60Hz+-5%)

**Grounding terminals are internally connected.**

**Note:**
- **Main circuit (power) terminals**
- **Control circuit terminal**
- **Shielded leads**

---

**Mechanical Coupling to Motor**

**To Motor Grounding Terminal**

**Encoder Output 12VDC**

**O Main circuit (power) terminals**
“3Ø IM” denotes three phase induction motor.
“PG” denotes encoder pulse generator.
**Warning:** Do not plug a modem or telephone into the DURAPULSE RJ-12 Serial Comm Port, or permanent damage may result.
CONTROL WIRING DIAGRAM FOR SOURCING INPUTS

DURAPULSE
AC Drive
GS3-xxxx

Multi-function Digital Inputs:

- ★Forward/Stop
- ★Reverse/Stop
- ★External Fault (N.O.)
- ★Multi-Speed 1
- ★Multi-Speed 2
- ★Multi-Speed 3
- ★Multi-Speed 4
- ★JOG
- ★External Reset
- ★Second Accel/Decel Time
- ★External Base Block (N.O.)

DI1
DI2
DI3
DI4
DI5
DI6
DI7
DI8
DI9
DI10
DI11

+24V Power Source
(20mA max.)

Input Mode Setting

Sink

Sink

Multi-function Output Contact:

- ★AC Drive Running
- 240VAC/24VDC@3A Resistive (N.C.)
- 240VAC/24VDC@0.5A Inductive (N.C.)
- 240VAC/24VDC@5A Resistive (N.O.)
- 240VAC/24VDC@1.5A Inductive (N.O.)

Multi-function Digital Outputs:

- DO1
- DO2
- DO3
- DO4
- DOC

12-48VDC @50mA

★AC Drive Fault

12-48VDC @50mA

★At Speed

12-48VDC @50mA

★Zero Speed

12-48VDC

Digital Frequency Output:

48VDC @50mA max.

★1:1, Duty = 50%

Multi-function Analog Output:

- AO

Potentiometer (3-5 kΩ) (may be required for some meters)

Voltmeter

Output Frequency indication

0-10 VDC @ 2mA

RS-485 Serial Comm Port:

1: +15V
2: GND
3: SG-
4: SG+
5: NC

Multi-function Digital Outputs:

- DOC

12-48VDC @50mA

AC Drive Running

240VAC/24VDC@3A Resistive (N.C.)

240VAC/24VDC@0.5A Inductive (N.C.)

240VAC/24VDC@5A Resistive (N.O.)

240VAC/24VDC@1.5A Inductive (N.O.)

12-48VDC

Digital Output Com.

DCM

ACM

See Power Wiring Diagram.

Potentiometer

5kΩ

Analog Inputs:

- ★+10V Power Source
- A11 (0 to 10V)
- A12 (0-20mA or 4-20mA)
- A13 (-10 to +10V)

ACM

Analog Signal Common

Factory default setting

Factory default source of frequency command is via the keypad up/down keys

ACM and DCM are isolated from each other

Main circuit (power) terminals

Control circuit terminal

Shielded leads

Warning: Do not plug a modem or telephone into the DURAPULSE RJ-12 Serial Comm Port, or permanent damage may result.
**DURAPULSE ABBREVIATED PARAMETER LIST**

This abbreviated parameter list contains only the most commonly used parameters. For the complete DURAPULSE parameter listing, see the DURAPULSE Drives User Manual, GS3-M.

To prevent the “Duplicate Function” error, you must first change parameter P4.13 to any value between 03 and 06 BEFORE changing P4.00 to 02.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0.00</td>
<td>Motor Nameplate Voltage</td>
<td>230V class: 200/208/220/230/240&lt;br&gt;460V class: 380/400/415/440/460/480</td>
</tr>
<tr>
<td>P0.01</td>
<td>Motor Nameplate Amps</td>
<td>Drive Rated Amps x 0.4 to 1.0</td>
</tr>
<tr>
<td>P0.02</td>
<td>Motor Base Frequency</td>
<td>50/60/400</td>
</tr>
<tr>
<td>P0.03</td>
<td>Motor Base RPM</td>
<td>375 to 24,000 rpm</td>
</tr>
<tr>
<td>P0.04</td>
<td>Motor Maximum RPM</td>
<td>P 0.03 to 24,000 rpm</td>
</tr>
<tr>
<td>P1.00</td>
<td>Stop Methods</td>
<td>00: Ramp to Stop&lt;br&gt;01: Coast to Stop</td>
</tr>
<tr>
<td>P1.01</td>
<td>Acceleration Time 1</td>
<td>0.1 to 600.0 sec</td>
</tr>
<tr>
<td>P1.02</td>
<td>Deceleration Time 1</td>
<td>0.1 to 600.0 sec</td>
</tr>
<tr>
<td>P2.00</td>
<td>Volts/Hertz Settings</td>
<td>00: General Purpose&lt;br&gt;01: High Starting Torque&lt;br&gt;02: Fans and Pumps&lt;br&gt;03: Custom</td>
</tr>
<tr>
<td>P2.02</td>
<td>Auto-torque Boost</td>
<td>00 to 10</td>
</tr>
<tr>
<td>P3.00</td>
<td>Source of Operation Command</td>
<td>00: Operation determined by digital keypad&lt;br&gt;01: Operation determined by external control terminals, keypad STOP is enabled&lt;br&gt;02: Operation determined by external control terminals, keypad STOP is disabled&lt;br&gt;03: Operation determined by RS-485 interface, keypad STOP is enabled&lt;br&gt;04: Operation determined by RS-485 interface, keypad STOP is disabled</td>
</tr>
<tr>
<td>*P3.31</td>
<td>2nd Source of Operation Command</td>
<td>00: DI1 - FWD / STOP; DI2 - REV / STOP&lt;br&gt;01: DI1 - RUN / STOP; DI2 - REV / FWD&lt;br&gt;02: DI1 RUN momentary (N.O.)&lt;br&gt;DI2 REV / FWD&lt;br&gt;DI3 STOP momentary (N.C.)</td>
</tr>
<tr>
<td>P3.01</td>
<td>Multi-function Inputs (DI1 - DI2)</td>
<td>00: DI1 - FWD / STOP; DI2 - REV / STOP&lt;br&gt;01: DI1 - RUN / STOP; DI2 - REV / FWD</td>
</tr>
<tr>
<td>P3.02</td>
<td>Multi-function Input (DI3)</td>
<td>00: External Fault (N.O.)&lt;br&gt;11: External Base Block (N.C.)&lt;br&gt;12: Second Accel/Decel Time&lt;br&gt;13: Speed Hold</td>
</tr>
<tr>
<td>P3.03</td>
<td>Multi-function Input (DI4)</td>
<td>01: External Fault (N.C.)&lt;br&gt;14: Increase Speed&lt;br&gt;15: Decrease Speed</td>
</tr>
<tr>
<td>P3.04</td>
<td>Multi-function Input (DI5)</td>
<td>02: External Reset&lt;br&gt;16: Reset Speed to Zero</td>
</tr>
<tr>
<td>P3.05</td>
<td>Multi-function Input (DI6)</td>
<td>03: Multi-Speed Bit 1&lt;br&gt;17: PID Disable (N.O.)&lt;br&gt;18: PID Disable (N.C.)</td>
</tr>
<tr>
<td>P3.06</td>
<td>Multi-function Input (DI7)</td>
<td>04: Multi-Speed Bit 2&lt;br&gt;19: 1st/2nd Source Select (N.O.)&lt;br&gt;20: 1st/2nd Source Select (N.C.)</td>
</tr>
<tr>
<td>P3.07</td>
<td>Multi-function Input (DI8)</td>
<td>05: Multi-Speed Bit 3&lt;br&gt;99: Input Disable</td>
</tr>
<tr>
<td>P3.08</td>
<td>Multi-function Input (DI9)</td>
<td>06: Multi-Speed Bit 4&lt;br&gt;10: External Base Block (N.O.)&lt;br&gt; *19: 1st/2nd Source Select (N.O.)&lt;br&gt; *20: 1st/2nd Source Select (N.C.)</td>
</tr>
<tr>
<td>P3.09</td>
<td>Multi-function Input (DI10)</td>
<td>07: Manual Keyboard Control&lt;br&gt;11: External Base Block (N.O.)&lt;br&gt;12: Second Accel/Decel Time&lt;br&gt;13: Speed Hold</td>
</tr>
<tr>
<td>P3.10</td>
<td>Multi-function Input (DI11)</td>
<td>09: Jog&lt;br&gt;14: Increase Speed&lt;br&gt;15: Decrease Speed&lt;br&gt;16: Reset Speed to Zero</td>
</tr>
</tbody>
</table>

* Marked parameters and settings are available only with firmware v1.04 or higher.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3.12</td>
<td>Multi-Function Output (DO1)</td>
<td></td>
</tr>
<tr>
<td>P3.13</td>
<td>Multi-Function Output (DO2)</td>
<td></td>
</tr>
<tr>
<td>P3.14</td>
<td>Multi-Function Output (DO3)</td>
<td></td>
</tr>
<tr>
<td>P4.00</td>
<td>Source of Frequency Command</td>
<td>01: Frequency determined by digital keypad up/down 02: Frequency determined by 0 to +10V input on AI1 terminal 03: Frequency determined by 0 to 20mA input on AI2 terminal 04: Frequency determined by 0 to 20mA input on AI2 terminal 05: Frequency determined by RS-485 communication interface 06: Frequency determined by 10V - +10V input on (AI3) terminal</td>
</tr>
<tr>
<td>*P4.13</td>
<td>2nd Source of Frequency Command</td>
<td></td>
</tr>
<tr>
<td>P 4.01</td>
<td>AI Offset Polarity</td>
<td>00: Offset disabled 01: Positive Offset 02: Negative Offset</td>
</tr>
<tr>
<td>*P4.14</td>
<td>2nd AI Offset Polarity</td>
<td></td>
</tr>
<tr>
<td>P4.02</td>
<td>Analog Input Offset</td>
<td>0.0 to 100.0%</td>
</tr>
<tr>
<td>*P4.15</td>
<td>2nd Analog In Offset</td>
<td></td>
</tr>
<tr>
<td>P4.03</td>
<td>Analog Input Gain</td>
<td>0.0 to 300.0%</td>
</tr>
<tr>
<td>*P4.16</td>
<td>2nd Analog In Gain</td>
<td></td>
</tr>
<tr>
<td>P4.11</td>
<td>Analog Output Signal</td>
<td>00: Frequency Hz 01: Current A 02: PV</td>
</tr>
<tr>
<td>P4.12</td>
<td>Analog Output Gain</td>
<td>00 to 200%</td>
</tr>
<tr>
<td>P7.00</td>
<td>Input Terminal for PID Feedback</td>
<td>00: Inhibit PID operation 01: Forward Acting PID feedback; PV from AI1 (0 to +10V) 02: Forward Acting PID feedback; PV from AI2 (4 to 20mA) 03: Reverse Acting PID feedback; PV from AI1 (0 to +10V) 04: Reverse Acting PID feedback; PV from AI2 (4 to 20mA)</td>
</tr>
<tr>
<td>P7.02</td>
<td>PID Setpoint Source</td>
<td>00: Keypad 01: Serial Communications 02: Al1 (0 to +10V) 03: Al2 (4 to 20mA)</td>
</tr>
<tr>
<td>P7.20</td>
<td>Proportional Control</td>
<td>0.0 to 10.0</td>
</tr>
<tr>
<td>P7.21</td>
<td>Integral Control</td>
<td>0.00 to 100.0 sec 0.00: Disable</td>
</tr>
<tr>
<td>P7.22</td>
<td>Derivative Control</td>
<td>0.00 to 1.00 sec</td>
</tr>
<tr>
<td>P8.00</td>
<td>User Defined Display Function</td>
<td>00: Output Frequency (Hz) 01: Motor Speed (rpm) 02: Output Freq. x Scaled Freq 03: Output Current (A) 04: Motor Load (%) 05: Output Voltage (V) 06: DC Bus Voltage (V) 07: PID Setpoint 08: PID Feedback (PV) 09: Frequency Setpoint</td>
</tr>
<tr>
<td>P8.01</td>
<td>FrequencyScaleFactor</td>
<td>0.01 to 160.0</td>
</tr>
<tr>
<td>P9.08</td>
<td>Restore to Default</td>
<td>99:Restores ALL parameters to factory defaults</td>
</tr>
<tr>
<td>**P9.39</td>
<td>Firmware Version</td>
<td>#.##</td>
</tr>
</tbody>
</table>

* Marked parameters and settings are available only with firmware v1.04 and higher.
** P9.39 is available only with firmware v1.02 and higher.
Our technical support group is glad to work with you in answering your questions. If you cannot find the solution to your particular application, or, if for any reason you need additional technical assistance, please call technical support at 770-844-4200.

We are available weekdays from 9:00 a.m. to 6:00 p.m. Eastern Time.

We also encourage you to visit our web site where you can find technical and non-technical information about our products and our company. Visit us at www.automationdirect.com.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
</table>
| P 6.31    | Present Fault Record | 00: No Fault occurred  
01: Over-current (oc)  
02: Over-voltage (ov)  
03: Over-temperature  
04: Overload (oL)  
05: Thermal Overload (oL1)  
06: Over-torque (oL2)  
07: External Fault (EF) |
| P 6.32    | Second Most Recent Fault Record | 08: CPU Failure 1 (CF1)  
09: CPU Failure 2 (CF2)  
10: CPU Failure 3 (CF3)  
11: Hardware Protection Failure (HPF)  
12: Over-current during accel (OCA)  
13: Over-current during decel (OCd)  
14: Over-current during steady state (OCn)  
15: Ground Fault or Fuse Failure (GFF)  
17: Input Power Three-phase Loss  
19: Auto Ramp Fault  
20: Parameters Locked  
21: PID Feedback Loss (FbE)  
22: Encoder Feedback Loss  
23: Output Shorted (OCC)  
24: Momentary Power Loss |
| P 6.33    | Third Most Recent Fault Record | |
| P 6.34    | Fourth Most Recent Fault Record | |
| P 6.35    | Fifth Most Recent Fault Record | |
| P 6.36    | Sixth Most Recent Fault Record | |

Technical Support

Telephone: 770-844-4200  
(Mon.-Fri., 9:00 a.m. - 6:00 p.m. E.T.)

Web: www.automationdirect.com

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