

# DURAPULSE GS30 AC Drives – Introduction



| DURAPULSE GS30 AC Drives |    |     |      |     |     |     |     |     |    |    |      |    |    |    |    |    |     |
|--------------------------|----|-----|------|-----|-----|-----|-----|-----|----|----|------|----|----|----|----|----|-----|
| Motor Rating             | HP | 1/2 | 1    | 2   | 3   | 5   | 7.5 | 10  | 15 | 20 | 25   | 30 | 40 | 50 | 60 | 75 | 100 |
|                          | kW | 0.4 | 0.75 | 1.5 | 2.2 | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75  |
| 230V Single-phase        | ✓  | ✓   | ✓    | ✓   |     |     |     |     |    |    |      |    |    |    |    |    |     |
| 230V Three-phase         | ✓  | ✓   | ✓    | ✓   | ✓   | ✓   | ✓   | ✓   | ✓  | ✓  | ✓    | ✓  | ✓  | ✓  |    |    |     |
| 460V Three-phase         | ✓  | ✓   | ✓    | ✓   | ✓   | ✓   | ✓   | ✓   | ✓  | ✓  | ✓    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓   |

✓ = GS30 model available

## Overview

The DURAPulse GS30 high performance flux-vector drives provide advanced drive functionality—all in a compact unit that has been reduced 40% in size compared to its predecessor.

These new drives include the same standard features as our GS family of drives: dynamic braking, built-in PID control, removable keypad, and RS-485 Modbus communication.

The GS30 drive expands the DURApulse family by adding internal tension control loop expanded parameter sets for greater versatility. Optional EtherCAT® and single- or dual-port EtherNet/IP communication cards. Support for up to four (4) independent IM motor parameter sets or control of a single AC PM motor.

DURApulse GS30 AC drives offer several control modes for induction or permanent magnet AC motors. Standard V/Hz and sensorless vector (SVC) modes provide quick setup and control. Field Oriented Vector control (FOC) provides high precision open loop control. For full closed loop vector control, FOCPG provides 1:1000 precision. Torque control mode, with open or closed loop control, is also available.

DURAPULSE GS30 offers two analog inputs, one analog output, seven digital inputs (including one pulse train input up to 33kHz), two digital outputs, one SPDT relay output, and two STO inputs. All of the analog and digital I/O can be configured for a wide variety of input or output functions. Two option card slots are available on all models so you can add additional I/O AND a communication card or backup power supply. This provides greater flexibility to equip the new GS30 to your specific needs.

## Features

- Broad offering from 1/2 to 100 hp
- Single-phase 230VAC up to 3HP
- Three-phase 230VAC up to 50hp and 460VAC up to 100hp
- Dual rating design – CT/VT Ratings
- “Zero Stack” side-by-side zero gap installation
- Compact Design
- Advanced LCD keypad with parameter descriptions
- Spring clamp terminal blocks
- Quick setting wheel dial for quick speed changes and parameter scrolling
- Flexible carrier frequency to 15kHz and output frequency to 599.0 Hz
- STO – Safe Torque Off (TÜV Certified)
- Built-in PLC to support up to 5K steps
- Built-in USB port for fast & easy programming
- Free downloadable software for drive configuration and PLC programming
- Field-upgradable firmware (drive & communication option cards)
- Local/Remote control mode selection or digital/comm input with Hand/Off/Auto control
- Display custom values/units on keypad
- Momentary power loss restarts
- 100kA Short Circuit Current Rating (Frames A-F)
- DC Bus Connection Terminals
- Analog I/O – configurable 2 Inputs and 1 Output
- Multi-Motor Control (4 total)
- Built-in Dynamic Braking (up to 30hp@230VAC, 40hp@460VAC) – optional resistors
- PID Controller – including sleep and wake
- Password protection
- RTD and/or PTC input motor protection
- Modularized design eases maintenance and expansion, including quick replacement of cooling fan
- High speed communication interfaces with MODBUS RTU built in, plus optional cards with additional interface types
- Circuit boards have conformal coating for improved environmental tolerance
- Excellent heat-sink design; able to operate at 50°C ambient temperature
- Fire Mode – Run fire mode during emergencies to have uninterrupted smoke

removal and system pressure

- Two-year warranty
- CE, TÜV, UL, cUL approvals

## Option Cards

- Ethernet communication interface – single or dual port cards supports both EtherNet/IP and ModbusTCP
- EtherCAT communication interface
- Encoder interface - open collector or line driver
- Extension I/O - discrete, relay, and analog
- Backup I/O power supply

## Accessories

- AC line reactors
- dV/dT output filters
- EMI filters
- RF filter
- Braking resistors
- Fuses
- NEMA 1 Conduit boxes
- DIN rail mounting kits for drives up to 5hp
- Replacement cooling fans
- Replacement keypad
- Optional advanced LCD keypad (and remote-mount bezel kit)
- GSoft2 drive configuration software
- GSLogic PLC programming software
- Type A to B USB cable
- Detailed descriptions and specifications for GS30 accessories are available in the “GS/ DURApulse Accessories” section.

## Typical Applications

- Conveyors
- Compressors
- Material handling
- Extruding
- Grinding
- Shop tools
- Fans
- Pumps
- HVAC
- Mixing
- Unwinding
- Rewinding

# DURAPULSE GS30 AC Drives – Selection

## Selecting the Proper Drive Rating

| Selecting the Proper Drive Rating   |  |   |  |   |          |     |     |             |    |    |             |    |    |
|---|--|---|--|---|----------|-----|-----|-------------|----|----|-------------|----|----|
| <b>Determine Motor Voltage and Full-Load Amperage (FLA)</b>   |  |   |  |   |          |     |     |             |    |    |             |    |    |
|   | Motor voltage and FLA are located on the nameplate of the motor.<br><i>NOTE: FLA of motors that have been rewound may be higher than stated.</i>   |   |  |   |          |     |     |             |    |    |             |    |    |
| <b>Determine Motor Overload Requirements</b>  |  |   |  |   |          |     |     |             |    |    |             |    |    |
|   | Many applications experience temporary overload conditions due to starting requirements or impact loading. Most AC drives are designed to operate at 150% overload for 60 seconds. If the application requires an overload greater than 150% or longer than 60 seconds, the AC drive must be oversized.<br><i>NOTE: Applications that require replacement of existing motor starters with AC drives may require up to 600% overload.</i>                               |   |  |   |          |     |     |             |    |    |             |    |    |
| <b>Determine Application Type: Constant Torque or Variable Torque</b>   |  |   |  |   |          |     |     |             |    |    |             |    |    |
|   | This torque requirement has a direct effect on which drive to select. Variable Torque applications are generally easier to start; typically fans and pumps. Most other applications outside fans and pumps fall into the Constant Torque category (machine control, conveyors, etc.). If you are unsure of the application, assume Constant Torque. The specification, derating, and selection tables are generally segregated by Constant Torque and Variable Torque. |   |  |   |          |     |     |             |    |    |             |    |    |
| <b>Installation Altitude</b>  |  |   |  |   |          |     |     |             |    |    |             |    |    |
|   | AC drives rely on air flow for cooling. As altitude increases, air becomes less dense. This decrease in air density derates the cooling properties of ambient air. Therefore, the AC drive must be oversized to compensate for the decrease in cooling. GS30 drives are designed to operate at 100% capacity at altitudes up to 1000 meters.<br><i>NOTE: For use above 1000m, the AC drive must be derated as described below.</i>                                     |   |  |   |          |     |     |             |    |    |             |    |    |
| <b>Derate Output Current Based on Altitude Above 1000 Meters</b>  |  |   |  |   |          |     |     |             |    |    |             |    |    |
|   | <ul style="list-style-type: none"> <li>• If the AC drive is installed at an altitude of 0–1000m, follow normal operation restrictions.</li> <li>• If installed at an altitude of 1000–2000m, decrease 1% of the rated current or lower 0.5°C of temperature for every 100m increase in altitude.</li> <li>• Maximum altitude for Corner Grounded is 2000m. If installation at an altitude higher than 2000m is required, please contact AutomationDirect.</li> </ul>   |   |  |   |          |     |     |             |    |    |             |    |    |
| <p><b>Derating for Altitude</b></p> <table border="1" style="margin: 10px auto;"> <caption>Derating for Altitude Data</caption> <thead> <tr> <th>Altitude (m)</th> <th>Current Rated Ratio (%) - 50°C (IP20/UL Open Type)</th> <th>Current Rated Ratio (%) - 40°C (IP40/NEMA 1/ UL Type 1)</th> </tr> </thead> <tbody> <tr> <td>0 - 1000</td> <td>100</td> <td>100</td> </tr> <tr> <td>1000 - 2000</td> <td>90</td> <td>90</td> </tr> <tr> <td>2000 - 2500</td> <td>90</td> <td>90</td> </tr> </tbody> </table> |  | Altitude (m)  | Current Rated Ratio (%) - 50°C (IP20/UL Open Type) | Current Rated Ratio (%) - 40°C (IP40/NEMA 1/ UL Type 1) | 0 - 1000 | 100 | 100 | 1000 - 2000 | 90 | 90 | 2000 - 2500 | 90 | 90 |
| Altitude (m)  | Current Rated Ratio (%) - 50°C (IP20/UL Open Type)   | Current Rated Ratio (%) - 40°C (IP40/NEMA 1/ UL Type 1) |  |   |          |     |     |             |    |    |             |    |    |
| 0 - 1000  | 100  | 100   |  |   |          |     |     |             |    |    |             |    |    |
| 1000 - 2000   | 90   | 90  |  |   |          |     |     |             |    |    |             |    |    |
| 2000 - 2500   | 90   | 90  |  |   |          |     |     |             |    |    |             |    |    |

# DURAPULSE GS30 AC Drives – Selection

## Selecting the Proper Drive Rating, *continued*

### Determine Maximum Enclosure Internal Temperature

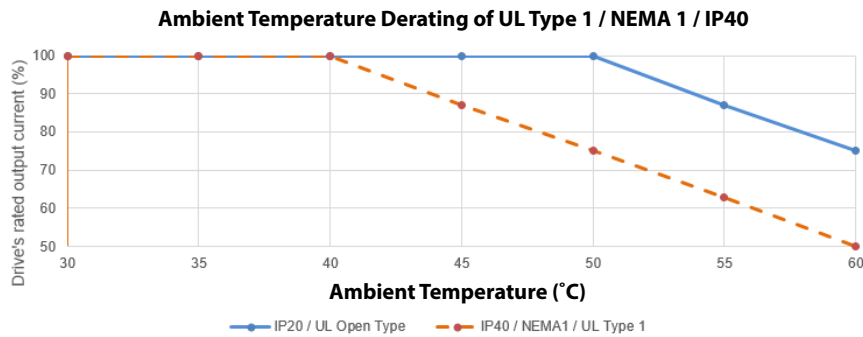
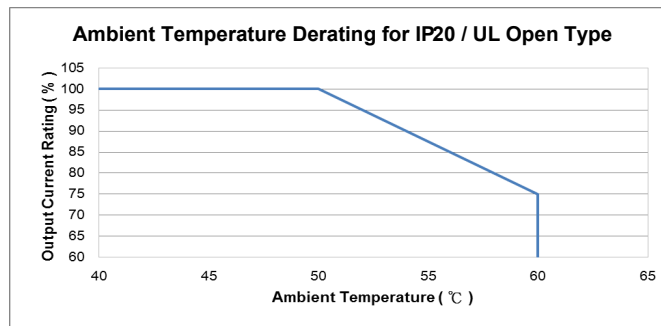
AC drives generate a significant amount of heat and can cause the internal temperature of an enclosure to exceed the rating of the GS30 drive, even when the ambient temperature is less than 104°F (40°C). Enclosure ventilation and/or cooling may be required to reduce maximum internal temperature to 104°F (40°C) or less. Ambient temperature measurements/calculations should be made for the maximum expected temperature.

**NOTE:** For use above 104°F (40°C), the AC drive must be derated as described below.

### Derate Output Current Based on Temperature Above 104°F (40°C) or 122°F (50°C)

| Drive Derating by Temperature and Protection Level |  |
|--|--|
| Protection Level                                   | Derating   |
| <b>UL Open Type / IP20*</b>                        | When the GS30 drive is operating at rated current, the ambient temperature has to be between -20°C and +50°C. When ambient temperature exceeds 50°C, decrease the rated current by 2.5% for every 1°C temperature increase. Maximum allowable temperature is 60°C. |
| <b>UL Type 1 / NEMA 1 / IP40*</b>                  | When the GS30 drive is operating at rated current, the ambient temperature has to be between -20°C and +40°C. When ambient temperature exceeds 40°C, decrease the rated current by 2.5% for every 1°C temperature increase. Maximum allowable temperature is 50°C. |

\* For more information about environmental ratings, refer to the "Operating Temperature and Protection Level" table (pg.<?>).



# DURAPULSE GS30 AC Drives – Selection

## Selecting the Proper Drive Rating, *continued*

| <b>Derate Output Current Based on Carrier Frequency (if necessary)</b>  |                  |
|---|------------------|
| <b>Carrier Frequency Effects</b>  |                  |
| AC Drives rectify the incoming 50 or 60Hz line power resulting in DC power at 0Hz. The resulting DC power is then pulse-width modulated and supplied to the motor by the drive's power electronics. IGBTs invert the DC power, simulating a sine wave at the desired frequency (that's what allows variable speed in AC induction motors). The speed at which the IGBTs are turned ON and OFF is called Carrier Frequency. In GS30 drives, the Carrier Frequency can range from 2kHz to 15kHz. Though Carrier Frequency can be adjusted, there are trade-offs between high Carrier Frequencies and low Carrier Frequencies. |                  |
| <b>Benefits of Higher Carrier Frequencies:</b>  |                  |
| <ul style="list-style-type: none"> <li>• Better efficiency (lower harmonic losses) in the motor</li> <li>• Lower audible noise</li> </ul>   |                  |
| <b>Benefits of Lower Carrier Frequencies:</b>   |                  |
| <ul style="list-style-type: none"> <li>• Better efficiency in the drive</li> <li>• Lower EMI (electrical noise)</li> <li>• Reduced reflective wave peak voltage</li> </ul> <p>As a general rule, the Carrier Frequency should be set as low as possible without creating unacceptable audible noise in the motor. Smaller systems can have higher Carrier Frequencies, but larger drives (&gt;20 or 30hp) should not have Carrier Frequencies set higher than 6kHz. Heavy duty applications typically run around 2–4 kHz.</p>   |                  |
| <b>Derating Tables</b>  |                  |
| <p>The tables below show the derating curves for 230V GS30 drives running in two different modes under variable torque and constant torque conditions.</p> <p>Line 1: Ta = 50°C / Load = 100%</p> <p>Line 2: Ta = 50°C / Load = 75% or Ta = 40°C / Load = 100%</p> <p>Line 3: Ta = 50°C / Load = 50% or Ta = 35°C / Load = 100%</p> <p>Set PWM mode via P11.41.<br/>                     SVPWM = Space Vector Pulse Width Modulation mode<br/>                     DPWM = Two Phase Pulse Width Modulation mode</p>   |                  |
| <b>230V Drive Variable Torque Carrier Frequency Derating</b>  |                  |
| <b>SVPWM Mode</b>   | <b>DPWM Mode</b> |
|   |                  |
| <b>230V Drive Constant Torque Carrier Frequency Derating</b>  |                  |
| <b>SVPWM Mode</b>   | <b>DPWM Mode</b> |
|   |                  |

# DURAPULSE GS30 AC Drives – Selection

## Selecting the Proper Drive Rating, *continued*

| <b>Derate Output Current Based on Carrier Frequency (if necessary)</b>  |                    |
|---|--------------------|
| <b>Derating Tables, continued</b>   |                    |
| <p>The tables below show the derating curves for 460V GS30 drives running in two different modes under variable torque and constant torque conditions.</p> <p>Line 1: Ta = 50°C / Load = 100%</p> <p>Line 2: Ta = 50°C / Load = 75% or Ta = 40°C / Load = 100%</p> <p>Line 3: Ta = 50°C / Load = 50% or Ta = 35°C / Load = 100%</p> <p>Set PWM mode via P11.41.<br/>                     SVPWM = Space Vector Pulse Width Modulation mode<br/>                     DPWM = Two Phase Pulse Width Modulation mode</p> |                    |
| <b>460V Drive Variable Torque Carrier Frequency Derating</b>  |                    |
| <b>SVPWM Mode</b>   | <b>DPWM Mode</b>   |
| <p>460V models</p>  | <p>460V models</p> |
| <b>460V Drive Constant Torque Carrier Frequency Derating</b>  |                    |
| <b>SVPWM Mode</b>   | <b>DPWM Mode</b>   |
| <p>460V models</p>  | <p>460V models</p> |

# DURAPULSE GS30 AC Drives – Selection Specifications

## GS30 Drive Model Selection Tables

| GS30 230V <sup>1</sup> 1-Phase Specifications – Frame Sizes A, B, C |                                      |                                      |   |                     |                     |      |      |
|---|--------------------------------------|--------------------------------------|---|---------------------|---------------------|------|------|
| <b>Model Name</b>   |                                      | <b>GS31-20P5</b>                     | <b>GS31-21P0</b>                              | <b>GS31-22P0</b>    | <b>GS31-23P0</b>    |      |      |
| <b>Price</b>  |                                      | \$239.00                             | \$251.00                                      | \$294.00            | \$321.00            |      |      |
| <b>Frame Size</b>   |                                      | A                                    | B   | C                   | C                   |      |      |
| <b>Drawing</b>  |                                      | <a href="#">PDF</a>                  | <a href="#">PDF</a>                           | <a href="#">PDF</a> | <a href="#">PDF</a> |      |      |
| <b>Output Rating</b>  | <b>Max Motor Output</b>              | <i>hp</i>                            | 1/2   | 1                   | 2                   | 3    |      |
|   |                                      | <i>kW</i>                            | 0.4   | 0.75                | 1.5                 | 2.2  |      |
|   | <b>CT</b>                            | <b>Rated Output Capacity</b>         | <i>kVA</i>                                    | 1.1                 | 1.9                 | 2.9  | 4.2  |
|   |                                      | <b>Rated Output Current</b>          | <i>A</i>                                      | 2.8                 | 5.0                 | 7.5  | 11   |
|   |                                      | <b>Carrier Frequency<sup>3</sup></b> | <i>kHz</i>                                    | 2–15 (default 4)    |                     |      |      |
|   | <b>VT</b>                            | <b>Rated Output Capacity</b>         | <i>kVA</i>                                    | 1.2                 | 2.0                 | 3.2  | 4.8  |
| <b>Rated Output Current</b>   |                                      | <i>A</i>                             | 3.2   | 5.2                 | 8.5                 | 12.5 |      |
| <b>Carrier Frequency<sup>3</sup></b>                                |                                      | <i>kHz</i>                           | 2–15 (default 4)                              |                     |                     |      |      |
| <b>Input Rating<sup>2</sup></b>                                     | <b>CT</b>                            | <b>Rated Input Current</b>           | <i>A</i>                                      | 7.3                 | 11.2                | 16.5 | 24.2 |
|   | <b>VT</b>                            | <b>Rated Input Current</b>           | <i>A</i>                                      | 8.3                 | 11.7                | 18.5 | 27.5 |
|   | <b>Rated Voltage/Frequency</b>       |                                      | One-phase 200-240 VAC (-15% to +10%) 50/60 Hz |                     |                     |      |      |
|   | <b>Operating Voltage Range (VAC)</b> |                                      | 170–265                                       |                     |                     |      |      |
| <b>Frequency Tolerance (Hz)</b>                                     |                                      | 47–63                                |   |                     |                     |      |      |
| <b>IE2 Efficiency - Relative Power Loss</b>                         |                                      | 3.5                                  | 2.8   | 2.7                 | 2.5                 |      |      |
| <b>SCCR Rating</b>  |                                      | 100kA                                |   |                     |                     |      |      |
| <b>Weight (kg [lb])</b>   |                                      | 0.76 [1.7]                           | 0.81 [1.8]                                    | 1.05 [2.3]          | 1.24 [2.7]          |      |      |
| <b>Cooling Method</b>   |                                      | Convective                           |   | Fan                 |                     |      |      |
| <b>IP Rating</b>  |                                      | IP20                                 |   |                     |                     |      |      |
| See table below for notes.  |                                      |                                      |   |                     |                     |      |      |

| GS30 230V <sup>1</sup> 3-Phase Specifications – Frame Sizes A, B, C  |                                      |                                      |   |                     |                     |                     |      |      |
|--|--------------------------------------|--------------------------------------|---|---------------------|---------------------|---------------------|------|------|
| <b>Model Name</b>  |                                      | <b>GS33-20P5</b>                     | <b>GS33-21P0</b>                            | <b>GS33-22P0</b>    | <b>GS33-23P0</b>    | <b>GS33-25P0</b>    |      |      |
| <b>Price</b>   |                                      | \$282.00                             | \$291.00                                    | \$320.00            | \$334.00            | \$349.00            |      |      |
| <b>Frame Size</b>  |                                      | A                                    | A   | B                   | C                   | C                   |      |      |
| <b>Drawing</b>   |                                      | <a href="#">PDF</a>                  | <a href="#">PDF</a>                         | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> |      |      |
| <b>Output Rating</b>   | <b>Max Motor Output</b>              | <i>hp</i>                            | 1/2   | 1                   | 2                   | 3                   | 5    |      |
|  |                                      | <i>kW</i>                            | 0.4   | 0.75                | 1.5                 | 2.2                 | 3.7  |      |
|  | <b>CT</b>                            | <b>Rated Output Capacity</b>         | <i>kVA</i>                                  | 1.9                 | 1.9                 | 2.9                 | 4.2  | 6.5  |
|  |                                      | <b>Rated Output Current</b>          | <i>A</i>                                    | 5.0                 | 5.0                 | 7.5                 | 11.0 | 17.0 |
|  |                                      | <b>Carrier Frequency<sup>3</sup></b> | <i>kHz</i>                                  | 2–15 (default 4)    |                     |                     |      |      |
|  | <b>VT</b>                            | <b>Rated Output Capacity</b>         | <i>kVA</i>                                  | 1.2                 | 2.0                 | 3.0                 | 4.8  | 7.4  |
| <b>Rated Output Current</b>  |                                      | <i>A</i>                             | 3.2   | 5.2                 | 8.0                 | 12.5                | 19.5 |      |
| <b>Carrier Frequency<sup>3</sup></b>   |                                      | <i>kHz</i>                           | 2–15 (default 4)                            |                     |                     |                     |      |      |
| <b>Input Rating<sup>2</sup></b>  | <b>CT</b>                            | <b>Rated Input Current</b>           | <i>A</i>                                    | 3.4                 | 6.0                 | 9.0                 | 13.2 | 20.4 |
|  | <b>VT</b>                            | <b>Rated Input Current</b>           | <i>A</i>                                    | 3.8                 | 6.2                 | 9.6                 | 15.0 | 23.4 |
|  | <b>Rated Voltage/Frequency</b>       |                                      | 3-phase 200–240 VAC (-15% to +10%) 50/60 Hz |                     |                     |                     |      |      |
|  | <b>Operating Voltage Range (VAC)</b> |                                      | 170-265                                     |                     |                     |                     |      |      |
| <b>Frequency Tolerance (Hz)</b>  |                                      | 47-63                                |   |                     |                     |                     |      |      |
| <b>IE2 Efficiency - Relative Power Loss</b>  |                                      | 3.5                                  | 3.0   | 2.6                 | 2.5                 | 2.3                 |      |      |
| <b>SCCR Rating</b>   |                                      | 100kA                                |   |                     |                     |                     |      |      |
| <b>Weight (kg [lb])</b>  |                                      | 0.76 [1.7]                           | 0.81 [1.8]                                  | 1.05 [2.3]          | 1.24 [2.7]          | 1.24 [2.7]          |      |      |
| <b>Cooling Method</b>  |                                      | Convective                           |   | Fan                 |                     |                     |      |      |
| <b>IP Rating</b>   |                                      | IP20                                 |   |                     |                     |                     |      |      |
| <p>1 - For Use With Three-Phase Motors Only.</p> <p>2 - If 3-phase power source is non-symmetrical, refer to "Circuit Connections – RFI Jumper" in the GS30 AC Drives User Manual, Chapter 2. Please refer to "GS30 DURApulse Accessories – Fusing" (pg.tGSX-77) for input fusing information.</p> <p>3 - The carrier frequency is a factory default. Decrease the current value if you need to increase the carrier frequency. Refer to "Derate Output Current Based on Carrier Frequency".</p> |                                      |                                      |   |                     |                     |                     |      |      |

# DURAPULSE GS30 AC Drives – Selection Specifications

## GS30 Drive Model Selection Tables, *continued*

| GS30 230V <sup>1</sup> 3-Phase Specifications – Frame Sizes D, E, F |                                      |   |                     |                     |                     |      |      |
|---|--------------------------------------|---|---------------------|---------------------|---------------------|------|------|
| <b>Model Name</b>   |                                      | <b>GS33-27P5</b>                            | <b>GS33-2010</b>    | <b>GS33-2015</b>    | <b>GS33-2020</b>    |      |      |
| <b>Price</b>  |                                      | \$486.00                                    | \$597.00            | \$744.00            | \$999.00            |      |      |
| <b>Frame Size</b>   |                                      | D   | E                   | E                   | F                   |      |      |
| <b>Drawing</b>  |                                      | <a href="#">PDF</a>                         | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> |      |      |
| <b>Output Rating</b>  | <b>Max Motor Output</b>              | <b>hp</b>                                   | 7.5                 | 10                  | 15                  | 20   |      |
|   |                                      | <b>kW</b>                                   | 5.5                 | 7.5                 | 11                  | 15   |      |
|   | <b>CT</b>                            | <b>Rated Output Capacity</b>                | <b>kVA</b>          | 9.5                 | 12.6                | 18.7 | 24.8 |
|   |                                      | <b>Rated Output Current</b>                 | <b>A</b>            | 25.0                | 33.0                | 49.0 | 65.0 |
|   |                                      | <b>Carrier Frequency<sup>3</sup></b>        | <b>kHz</b>          | 2–15 (default 4)    |                     |      |      |
|   | <b>VT</b>                            | <b>Rated Output Capacity</b>                | <b>kVA</b>          | 10.3                | 13.7                | 19.4 | 26.3 |
| <b>Rated Output Current</b>   |                                      | <b>A</b>                                    | 27.0                | 36.0                | 51.0                | 69.0 |      |
| <b>Carrier Frequency<sup>3</sup></b>                                |                                      | <b>kHz</b>                                  | 2–15 (default 4)    |                     |                     |      |      |
| <b>Input Rating<sup>2</sup></b>                                     | <b>CT Rated Input Current</b>        | <b>A</b>                                    | 30.0                | 39.6                | 58.8                | 78.0 |      |
|   | <b>VT Rated Input Current</b>        | <b>A</b>                                    | 32.4                | 43.2                | 61.2                | 82.8 |      |
|   | <b>Rated Voltage/Frequency</b>       | 3-phase 200–240 VAC (-15% to +10%) 50/60 Hz |                     |                     |                     |      |      |
|   | <b>Operating Voltage Range (VAC)</b> | 170-265                                     |                     |                     |                     |      |      |
|   | <b>Frequency Tolerance (Hz)</b>      | 47-63                                       |                     |                     |                     |      |      |
| <b>IE2 Efficiency - Relative Power Loss</b>                         |                                      | 2.4   | 2.4                 | 2.3                 | 2.1                 |      |      |
| <b>SCCR Rating</b>  |                                      | 100kA                                       |                     |                     |                     |      |      |
| <b>Weight (kg [lb])</b>   |                                      | 2.07 [4.6]                                  | 3.97 [8.8]          | 3.97 [8.8]          | 6.30 [13.9]         |      |      |
| <b>Cooling Method</b>   |                                      | Fan   |                     |                     |                     |      |      |
| <b>IP Rating</b>  |                                      | IP20  |                     |                     |                     |      |      |
| See table below for notes.  |                                      |   |                     |                     |                     |      |      |

| GS30 230V <sup>1</sup> 3-Phase Specifications – Frame Sizes G, I |                                      |   |                     |                     |                     |      |      |
|--|--------------------------------------|---|---------------------|---------------------|---------------------|------|------|
| <b>Model Name</b>  |                                      | <b>GS33-2025</b>                            | <b>GS33-2030</b>    | <b>GS33-2040</b>    | <b>GS33-2050</b>    |      |      |
| <b>Price</b>   |                                      | \$1,092.00                                  | \$1,256.00          | \$1,892.00          | \$2,159.00          |      |      |
| <b>Frame Size</b>  |                                      | G   | G                   | I                   | I                   |      |      |
| <b>Drawing</b>   |                                      | <a href="#">PDF</a>                         | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> |      |      |
| <b>Output Rating</b>   | <b>Max Motor Output</b>              | <b>hp</b>                                   | 25                  | 30                  | 40                  | 50   |      |
|  |                                      | <b>kW</b>                                   | 18.5                | 22                  | 30                  | 37   |      |
|  | <b>CT</b>                            | <b>Rated Output Capacity</b>                | <b>kVA</b>          | 28.9                | 34.4                | 46.9 | 57.8 |
|  |                                      | <b>Rated Output Current</b>                 | <b>A</b>            | 75                  | 90                  | 120  | 146  |
|  |                                      | <b>Carrier Frequency<sup>3</sup></b>        | <b>kHz</b>          | 2–15 (default 4)    |                     |      |      |
|  | <b>VT</b>                            | <b>Rated Output Capacity</b>                | <b>kVA</b>          | 31.6                | 37.6                | 51.3 | 63.3 |
| <b>Rated Output Current</b>                                      |                                      | <b>A</b>                                    | 81                  | 102                 | 134                 | 160  |      |
| <b>Carrier Frequency<sup>3</sup></b>                             |                                      | <b>kHz</b>                                  | 2–15 (default 4)    |                     |                     |      |      |
| <b>Input Rating<sup>2</sup></b>                                  | <b>CT Rated Input Current</b>        | <b>A</b>                                    | 77                  | 92                  | 117                 | 143  |      |
|  | <b>VT Rated Input Current</b>        | <b>A</b>                                    | 85                  | 103                 | 126                 | 161  |      |
|  | <b>Rated Voltage/Frequency</b>       | 3-phase 200–240 VAC (-15% to +10%) 50/60 Hz |                     |                     |                     |      |      |
|  | <b>Operating Voltage Range (VAC)</b> | 170-265                                     |                     |                     |                     |      |      |
| <b>Frequency Tolerance (Hz)</b>                                  |                                      | 47-63                                       |                     |                     |                     |      |      |
| <b>IE2 Efficiency - Relative Power Loss</b>                      |                                      | 2.3   | 2.4                 | 2.3                 | 2.3                 |      |      |
| <b>SCCR Rating</b>   |                                      | 5kA   |                     | 10kA                |                     |      |      |
| <b>Weight (kg [lb])</b>  |                                      | 11.8 [26.0]                                 | 11.8 [26.0]         | 29.1 [64.2]         | 30.4 [67.0]         |      |      |
| <b>Cooling Method</b>  |                                      | Fan   |                     |                     |                     |      |      |
| <b>IP Rating</b>   |                                      | IP20  |                     |                     |                     |      |      |

1 - For Use With Three-Phase Motors Only.

2 - If 3-phase power source is non-symmetrical, refer to "Circuit Connections – RFI Jumper" in the GS30 AC Drives User Manual, Chapter 2.

Please refer to "GS30 DURApulse Accessories – Fusing" (pg.tGSX-77) for input fusing information.

3 - The carrier frequency is a factory default. Decrease the current value if you need to increase the carrier frequency. Refer to "Derate Output Current Based on Carrier Frequency".

# DURAPULSE GS30 AC Drives – Selection Specifications

## GS30 Drive Model Selection Tables, *continued*

| GS30 460V <sup>1</sup> 3-Phase Specifications – Frame Sizes A, B, C |                                      |   |                     |                     |                     |                     |                     |     |
|---|--------------------------------------|---|---------------------|---------------------|---------------------|---------------------|---------------------|-----|
| <b>Model Name</b>   |                                      |   | <b>GS33-40P5</b>    | <b>GS33-41P0</b>    | <b>GS33-42P0</b>    | <b>GS33-43P0</b>    | <b>GS33-45P0</b>    |     |
| <b>Price</b>  |                                      |   | \$282.00            | \$292.00            | \$302.00            | \$345.00            | \$363.00            |     |
| <b>Frame Size</b>   |                                      |   | A                   | A                   | B                   | C                   | C                   |     |
| <b>Drawing</b>  |                                      |   | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> |     |
| <b>Output Rating</b>  | <b>Max Motor Output</b>              | <b>hp</b>                                   | 1/2                 | 1                   | 2                   | 3                   | 5                   |     |
|   |                                      | <b>kW</b>                                   | 0.4                 | 0.75                | 1.5                 | 2.2                 | 3.7                 |     |
|   | <b>CT</b>                            | <b>Rated Output Capacity</b>                | <b>kVA</b>          | 1.1                 | 2.3                 | 3.2                 | 4.3                 | 6.9 |
|   |                                      | <b>Rated Output Current</b>                 | <b>A</b>            | 1.5                 | 3.0                 | 4.2                 | 5.7                 | 9.0 |
|   |                                      | <b>Carrier Frequency<sup>3</sup></b>        | <b>kHz</b>          | 2–15 (default 4)    |                     |                     |                     |     |
|   | <b>VT</b>                            | <b>Rated Output Capacity</b>                | <b>kVA</b>          | 1.4                 | 2.5                 | 3.5                 | 5.0                 | 8.0 |
| <b>Rated Output Current</b>   |                                      | <b>A</b>                                    | 1.8                 | 3.3                 | 4.6                 | 6.5                 | 10.5                |     |
| <b>Carrier Frequency<sup>3</sup></b>                                |                                      | <b>kHz</b>                                  | 2–15 (default 4)    |                     |                     |                     |                     |     |
| <b>Input Rating<sup>2</sup></b>                                     | <b>CT Rated Input Current</b>        | <b>A</b>                                    | 2.1                 | 4.2                 | 5.8                 | 6.1                 | 9.9                 |     |
|   | <b>VT Rated Input Current</b>        | <b>A</b>                                    | 2.5                 | 4.6                 | 6.4                 | 7.2                 | 11.6                |     |
|   | <b>Rated Voltage/Frequency</b>       | 3-phase 380–480 VAC (-15% to +10%) 50/60 Hz |                     |                     |                     |                     |                     |     |
|   | <b>Operating Voltage Range (VAC)</b> | 323-528                                     |                     |                     |                     |                     |                     |     |
| <b>Frequency Tolerance (Hz)</b>                                     |                                      | 47-63                                       |                     |                     |                     |                     |                     |     |
| <b>IE2 Efficiency - Relative Power Loss</b>                         |                                      |   | 4.4                 | 2.8                 | 2.4                 | 2.3                 | 3.1                 |     |
| <b>SCCR Rating</b>  |                                      | 100kA                                       |                     |                     |                     |                     |                     |     |
| <b>Weight (kg [lb])</b>   |                                      |   | 0.76 [1.7]          | 0.77 [1.7]          | 1.05 [2.3]          | 1.24 [2.7]          | 1.24 [2.7]          |     |
| <b>Cooling Method</b>   |                                      | Convective                                  |                     |                     | Fan                 |                     |                     |     |
| <b>IP Rating</b>  |                                      | IP20  |                     |                     |                     |                     |                     |     |
| See table below for notes.  |                                      |   |                     |                     |                     |                     |                     |     |

| GS30 230V <sup>1</sup> 3-Phase Specifications – Frame Sizes D, E, F  |                                      |   |                     |                     |                     |                     |                     |                     |      |
|--|--------------------------------------|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------|
| <b>Model Name</b>  |                                      |   | <b>GS33-47P5</b>    | <b>GS33-4010</b>    | <b>GS33-4015</b>    | <b>GS33-4020</b>    | <b>GS33-4025</b>    | <b>GS33-4030</b>    |      |
| <b>Price</b>   |                                      |   | \$489.00            | \$629.00            | \$790.00            | \$979.00            | \$1,151.00          | \$1,303.00          |      |
| <b>Frame Size</b>  |                                      |   | D                   | D                   | E                   | E                   | F                   | F                   |      |
| <b>Drawing</b>   |                                      |   | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> |      |
| <b>Output Rating</b>   | <b>Max Motor Output</b>              | <b>hp</b>                                   | 7.5                 | 10                  | 15                  | 20                  | 25                  | 30                  |      |
|  |                                      | <b>kW</b>                                   | 5.5                 | 7.5                 | 11                  | 15                  | 18.5                | 22                  |      |
|  | <b>CT</b>                            | <b>Rated Output Capacity</b>                | <b>kVA</b>          | 9.9                 | 13.3                | 19.1                | 24.4                | 29                  | 34.3 |
|  |                                      | <b>Rated Output Current</b>                 | <b>A</b>            | 13.0                | 17.5                | 25.0                | 32.0                | 38.0                | 45.0 |
|  |                                      | <b>Carrier Frequency<sup>3</sup></b>        | <b>kHz</b>          | 2–15 (default 4)    |                     |                     |                     |                     |      |
|  | <b>VT</b>                            | <b>Rated Output Capacity</b>                | <b>kVA</b>          | 11.1                | 15.1                | 21.3                | 27.4                | 31.6                | 37.3 |
| <b>Rated Output Current</b>  |                                      | <b>A</b>                                    | 14.5                | 19.8                | 28.0                | 36.0                | 41.5                | 49.0                |      |
| <b>Carrier Frequency<sup>3</sup></b>   |                                      | <b>kHz</b>                                  | 2–15 (default 4)    |                     |                     |                     |                     |                     |      |
| <b>Input Rating<sup>2</sup></b>  | <b>CT Rated Input Current</b>        | <b>A</b>                                    | 14.3                | 19.3                | 27.5                | 35.2                | 41.8                | 49.5                |      |
|  | <b>VT Rated Input Current</b>        | <b>A</b>                                    | 16.0                | 21.8                | 30.8                | 39.6                | 45.7                | 53.9                |      |
|  | <b>Rated Voltage/Frequency</b>       | 3-phase 380–480 VAC (-15% to +10%) 50/60 Hz |                     |                     |                     |                     |                     |                     |      |
|  | <b>Operating Voltage Range (VAC)</b> | 323-528                                     |                     |                     |                     |                     |                     |                     |      |
| <b>Frequency Tolerance (Hz)</b>  |                                      | 47-63                                       |                     |                     |                     |                     |                     |                     |      |
| <b>IE2 Efficiency - Relative Power Loss</b>  |                                      |   | 2.0                 | 1.9                 | 1.7                 | 1.6                 | 1.5                 | 1.4                 |      |
| <b>SCCR Rating</b>   |                                      | 100kA                                       |                     |                     |                     |                     |                     |                     |      |
| <b>Weight (kg [lb])</b>  |                                      |   | 2.07 [4.6]          | 2.07 [4.6]          | 3.97 [8.8]          | 3.97 [8.8]          | 6.30 [13.9]         | 6.30 [13.9]         |      |
| <b>Cooling Method</b>  |                                      | Fan   |                     |                     |                     |                     |                     |                     |      |
| <b>IP Rating</b>   |                                      | IP20  |                     |                     |                     |                     |                     |                     |      |
| <p>1 - For Use With Three-Phase Motors Only.</p> <p>2 - If 3-phase power source is non-symmetrical, refer to "Circuit Connections – RFI Jumper" in the GS30 AC Drives User Manual, Chapter 2. Please refer to "GS30 DURApulse Accessories – Fusing" (pg.tGSX-77) for input fusing information.</p> <p>3 - The carrier frequency is a factory default. Decrease the current value if you need to increase the carrier frequency. Refer to "Derate Output Current Based on Carrier Frequency".</p> |                                      |   |                     |                     |                     |                     |                     |                     |      |



# DURAPULSE GS30 AC Drives – Selection Specifications

## GS30 Drive Model Selection Tables, *continued*

| GS30 460V <sup>1</sup> 3-Phase Specifications – Frame Sizes G, H, I  |                                |                       |   |                     |                     |                     |      |       |
|--|--------------------------------|-----------------------|---|---------------------|---------------------|---------------------|------|-------|
| Model Name   |                                | GS33-4040             | GS33-4050                                   | GS33-4060           | GS33-4075           | GS33-4100           |      |       |
| Price  |                                | \$1,673.00            | \$2,020.00                                  | \$2,306.00          | \$2,560.00          | \$2,978.00          |      |       |
| Frame Size   |                                | G                     | H   | H                   | I                   | I                   |      |       |
| Drawing  |                                | <a href="#">PDF</a>   | <a href="#">PDF</a>                         | <a href="#">PDF</a> | <a href="#">PDF</a> | <a href="#">PDF</a> |      |       |
| Output Rating  | Max Motor Output               | hp                    | 40  | 50                  | 60                  | 75                  | 100  |       |
|  |                                | kW                    | 30  | 37                  | 45                  | 55                  | 75   |       |
|  | CT                             | Rated Output Capacity | kVA   | 46.9                | 57.8                | 70.3                | 85.9 | 117.2 |
|  |                                | Rated Output Current  | A   | 60                  | 75                  | 91                  | 112  | 150   |
|  | Carrier Frequency <sup>3</sup> |                       | kHz   | 2–15 (default 4)    |                     |                     |      |       |
|  | VT                             | Rated Output Capacity | kVA   | 51.3                | 63.3                | 76.9                | 94   | 128.2 |
| Rated Output Current   |                                | A                     | 69  | 85                  | 108                 | 128                 | 180  |       |
| Carrier Frequency <sup>3</sup>   |                                | kHz                   | 2–15 (default 4)                            |                     |                     |                     |      |       |
| Input Rating <sup>2</sup>  | CT                             | Rated Input Current   | A   | 63                  | 66                  | 80                  | 110  | 147   |
|  | VT                             | Rated Input Current   | A   | 72.5                | 77                  | 97                  | 123  | 173   |
|  | Rated Voltage/Frequency        |                       | 3-phase 380–480 VAC (-15% to +10%) 50/60 Hz |                     |                     |                     |      |       |
|  | Operating Voltage Range (VAC)  |                       | 323-528                                     |                     |                     |                     |      |       |
| Frequency Tolerance (Hz)   |                                | 47-63                 |   |                     |                     |                     |      |       |
| IE2 Efficiency - Relative Power Loss   |                                | 1.4                   | 2.0   | 1.8                 | 1.7                 | 1.7                 |      |       |
| SCCR Rating  |                                | 5kA                   |   | 10kA                |                     |                     |      |       |
| Weight (kg [lb])   |                                | 11.7 [25.8]           | 25.1 [55.3]                                 | 28.6 [63.1]         | 32.6 [71.9]         | 36 [79.4]           |      |       |
| Cooling Method   |                                | Fan                   |   |                     |                     |                     |      |       |
| IP Rating  |                                | IP20                  |   |                     |                     |                     |      |       |
| <p>1 - For Use With Three-Phase Motors Only.</p> <p>2 - If 3-phase power source is non-symmetrical, refer to "Circuit Connections – RFI Jumper" in the GS30 AC Drives User Manual, Chapter 2. Please refer to "GS30 DURApulse Accessories – Fusing" (pg.tGSX-77) for input fusing information.</p> <p>3 - The carrier frequency is a factory default. Decrease the current value if you need to increase the carrier frequency. Refer to "Derate Output Current Based on Carrier Frequency".</p> |                                |                       |   |                     |                     |                     |      |       |

# DURAPULSE GS30 AC Drives – General Specifications

## GS30 Drive Model Selection Tables, *continued*

| GS30 General Specifications (Applicable to All Models)   |  |   |
|--|--|---|
| Control Characteristics  | <b>Control Method</b>                  | See GS30 Motor Control table (below)  |
|  | <b>Applicable Motor</b>                | IM (Induction Motor), PM motor control (IPM and SPM)  |
|  | <b>Speed Control Range<sup>1</sup></b> | See GS30 Motor Control table (below)  |
|  | <b>Torque Limits</b>                   | VT: 160% of output current, max<br>CT: 180% of output current, max  |
|  | <b>Max. Output Frequency</b>           | 0.00–599.00 Hz  |
|  | <b>Overload Capacity</b>               | VT: rated output current of 120% 60 sec. every 5 minutes, 150% 3 sec. every 30 seconds<br>CT: rated output current of 150% 60 sec. every 5 minutes, 200% 3 sec. every 30 seconds  |
|  | <b>Frequency Setting Signal</b>        | 0–10 V / -10–10 V<br>4–20 mA / 0–10 V<br>1 channel pulse input (33kHz), 1 channel pulse output (33kHz)  |
|  | <b>Digital Inputs</b>                  | Seven (7) - 24VDC NPN or PNP, includes 1 frequency input 33kHz  |
|  | <b>Digital Outputs</b>                 | Three (3) - (2)-48VDC, (1) Relay-250VAC/30VDC   |
|  | <b>Analog Inputs</b>                   | Two (2) - (1) voltage, (1) selectable Voltage or Current  |
|  | <b>Analog Outputs</b>                  | One (1) - selectable voltage or current   |
|  | <b>Frequency Output</b>                | One (1) - 30VDC, 33kHz  |
|  | Protection Characteristics             | <b>Safe Torque Off</b>  |
| <b>Main Functions</b>  |  | Multiple motor switching (a maximum of four independent motor parameter settings), Fast start-up, Deceleration Energy Back (DEB) function, Wobble frequency function, Fast deceleration function, Master and Auxiliary frequency source selectable, Restart after momentary power loss, Speed tracking, Over-torque detection, Torque limit, 16-step speed (including the master speed), Accel./ decel. time switch, S-curve accel./decel., three-wire operation control, JOG frequency, Frequency upper/lower limit settings, DC brake at start-up and stop, PID control, Built-in PLC (5000 steps), Tension control function, Built-in RS-485 (Modbus). |
| <b>Application Macro</b>   |  | Built-in application parameter groups (pump, fan, etc.) and user-defined application parameter groups. Tension Control Parameter Group.   |
| Option Cards   | <b>Motor Protection</b>                | Over-current, over-voltage, over-heating, phase loss, over-load.  |
|  | <b>Stall Prevention</b>                | Stall prevention during acceleration, deceleration, and running (independent settings).   |
| Agency Approvals   | <b>Communication</b>                   | GS30A-CM-EIP1, GS30A-CM-EIP2, GS30A-CM-ECAT, GS30A-CM-EIPKITP2  |
|  | <b>Encoder</b>                         | GS30A-FB-LD, GS30-FB-OC   |
|  | <b>Extension I/O</b>                   | GS30A-06CDD, GS30A-2AD2DA, GS30A-02TRC, GS30A-03TRA   |
|  | <b>24V Power</b>                       | GS30-BPS  |
| <b>Agency Approvals</b>  |  | UL, CE <sup>2</sup> , TÜV (SIL 2), RoHS, REACH  |
| <p>1: Control accuracy may vary depending on the environment, application conditions, or different motors. For more information, contact AutomationDirect.<br/>2: See CE declaration here: <a href="https://support.automationdirect.com/docs/GS30A-CE.pdf">https://support.automationdirect.com/docs/GS30A-CE.pdf</a></p> |  |   |

| GS30 Motor Control (Applicable to All Models) |                                |                                   |                               |               |   |
|---|--------------------------------|-----------------------------------|-------------------------------|---------------|---|
| Motor Control                                 | Motor Type                     | Control Mode                      |                               | Start Torque  | Speed Control Range (Turndown/Accuracy) |
|   |                                | Description                       | Symbol                        |               |   |
| Motor Control                                 | Induction Motor (IM)           | Volts/Hz                          | IMVF                          | 150% @ 3Hz    | 1:50                                    |
|   |                                | Volts/Hz+encoder                  | IMVFPG                        |               |   |
|   |                                | Sensorless vector                 | IMSVC                         |               |   |
|   |                                | Field oriented control sensorless | IMFOC                         | 200% @ 0.5 Hz | 1:100                                   |
|   |                                | Torque sensorless                 | IMTQC                         |               |   |
|   |                                | Field oriented control+encoder    | IMFOCPG                       | 200% @ 0Hz    | 1:1000                                  |
|   | Torque+encoder                 | IMTQCPG                           |                               |               |   |
|   | Sensorless vector              | PMSVC                             | 100% @ 1/20th motor frequency |               |   |
|   | Permanent Magnet AC Motor (PM) | Field oriented control sensorless | PMSVC or IPM                  | 150% @ 0Hz    | 1:100                                   |
|   |                                | Field oriented control+encoder    | PMFOCPG                       | 200% @ 0Hz    | 1:1000                                  |
| Torque+encoder                                |                                | PMTQCPG                           | ±5%                           |               |   |

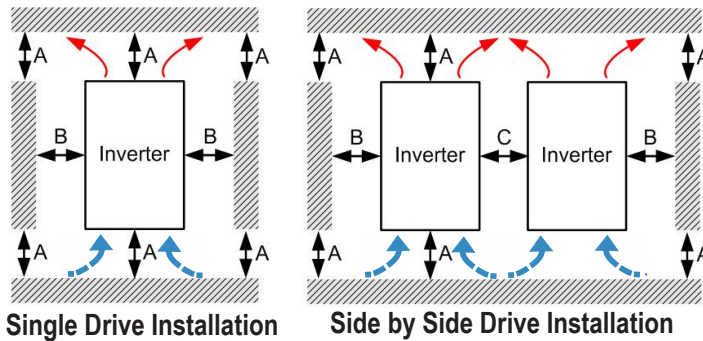
# DURAPULSE GS30 AC Drives – Environmental Specifications

## GS30 Environmental Specifications

| Environmental Conditions for GS30 AC Drives   |  |  |                              |
|---|--|--|------------------------------|
| Condition   | Operation  | Storage  | Transportation               |
| <b>Installation Location</b>  | IEC 60364-1/ IEC 60664-1 Pollution degree 2, Indoor use only.  | n/a  | n/a                          |
| <b>Ambient Temperature</b>  | IP20/UL Open Type: -20 to 50°C (-20 to 60°C w/derating)<br>[-4 to 122°F (-4 to 140°F w/derating)]  | -40 to 85°C<br>[-40 to 185°F]                          | -20 to 70°C<br>[-4 to 158°F] |
|   | Non-condensing, non-freezing   |  |                              |
| <b>Relative Humidity</b>  | 90%, no water condensation   | 95%, no water condensation                             |                              |
| <b>Air Pressure</b>   | 86–106 kPa   | 70–106 kPa   |                              |
| <b>Pollution Level</b>  | IEC 60721-3, concentrate prohibited  |  |                              |
|   | Class 3C2; Class 3S2   | Class 2C2; Class 2S2                                   | Class 1C2; Class 1S2         |
| <b>Environmental Air</b>  | No corrosive/inflammable gases permitted   |  |                              |
| <b>Altitude</b>   | <1000 m (For altitudes > 1000 m, derate to use it.)  |  |                              |
| <b>Package Drop</b>   | n/a  | ISTA procedure 1A (according to weight) IEC 60068-2-31 |                              |
| <b>Vibration</b>  | 1.0 mm, peak to peak value range from 2–13.2 Hz;<br>0.7–2.0 G range from 13.2–55 Hz;<br>2.0 G range from 55–512 Hz.<br>Compliance with IEC 60068-2-6 | 2.5 G peak, 5 Hz–2 kHz<br>0.015" maximum displacement  |                              |
| <b>Impact</b>   | 15G, 11ms<br>Compliance with IEC/EN60068-2-27  | 30G  |                              |
| <b>DO NOT expose the GS30 AC Drive to harsh environments such as dust, direct sunlight, corrosive/flammable gases, humidity, liquid, or vibrations. The salts in the air must be less than 0.01 mg/cm<sup>2</sup> every year.</b> |  |  |                              |

# DURAPULSE GS30 AC Drives Specifications – Air Flow and Power (Heat) Dissipation

## Minimum Clearances and Air Flow for GS30 Series Drives



| GS30 Minimum Mounting Clearances*    |        |        |        |                            |                |
|--------------------------------------|--------|--------|--------|----------------------------|----------------|
| Installation Method                  | A (mm) | B (mm) | C (mm) | Operation Temperature (°C) |                |
|                                      |        |        |        | Max (w/out derating)       | Max (Derating) |
| Single drive installation            | 50     | 30     | –      | 50                         | 60             |
| Side-by-side horizontal installation | 50     | 30     | 30     | 50                         | 60             |
| Zero stack installation              | 50     | 30     | 0      | 40                         | 50             |

\* Failure to follow the minimum mounting clearances may cause the fan to malfunction and cause a heat dissipation problem.

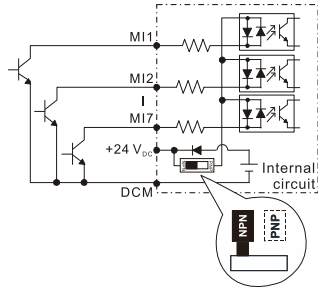
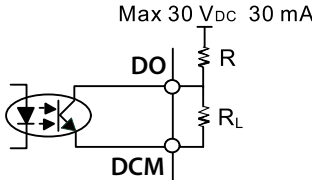
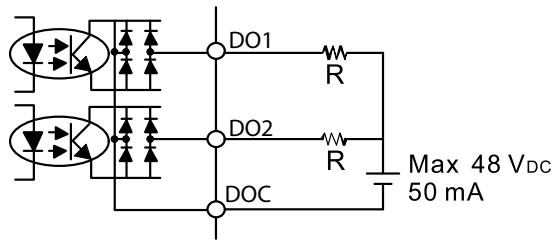
## GS30 Airflow and Power Dissipation

| Model Number              | Frame Size | Airflow Rate for Cooling |                                | Power Dissipation (Watts) |          |        |
|---------------------------|------------|--------------------------|--------------------------------|---------------------------|----------|--------|
|                           |            | Flow Rate (cfm)          | Flow Rate (m <sup>3</sup> /hr) | Loss External (Heat sink) | Internal | Total  |
| <a href="#">GS31-20P5</a> | A          | 0.0 b                    | 0.0                            | 16.3                      | 14.5     | 30.8   |
| <a href="#">GS31-21P0</a> | B          | 0.0 b                    | 0.0                            | 31.1                      | 22.5     | 53.6   |
| <a href="#">GS31-22P0</a> | C          | 16.0 b                   | 27.2                           | 46.5                      | 31.0     | 77.5   |
| <a href="#">GS31-23P0</a> | C          | 16.0 b                   | 27.2                           | 70.0                      | 35.0     | 105.0  |
| <a href="#">GS33-20P5</a> | A          | 0.0 b                    | 0.0                            | 16.5                      | 12.6     | 29.1   |
| <a href="#">GS33-21P0</a> | A          | 10.0 b                   | 17.0                           | 33.2                      | 15.0     | 48.2   |
| <a href="#">GS33-22P0</a> | B          | 10.0 b                   | 17.0                           | 50.1                      | 24.2     | 74.3   |
| <a href="#">GS33-23P0</a> | C          | 16.0 b                   | 27.2                           | 76.0                      | 30.7     | 106.7  |
| <a href="#">GS33-25P0</a> | C          | 16.0 b                   | 27.2                           | 108.2                     | 40.1     | 148.3  |
| <a href="#">GS33-27P5</a> | D          | 23.4 b                   | 39.7                           | 192.8                     | 53.3     | 246.1  |
| <a href="#">GS33-2010</a> | E          | 53.7 b                   | 91.2                           | 244.5                     | 79.6     | 324.1  |
| <a href="#">GS33-2015</a> | E          | 53.7 b                   | 91.2                           | 374.2                     | 86.2     | 460.4  |
| <a href="#">GS33-2020</a> | F          | 67.9 b                   | 115.2                          | 492.0                     | 198.2    | 690.3  |
| <a href="#">GS33-2025</a> | G          | 232.0 b                  | 394.2                          | 581.3                     | 100.0    | 681.3  |
| <a href="#">GS33-2030</a> | G          | 266.0 b                  | 451.9                          | 732.5                     | 107.0    | 839.5  |
| <a href="#">GS33-2040</a> | I          | 455.0 b                  | 773.1                          | 926.0                     | 124.0    | 1050.0 |
| <a href="#">GS33-2050</a> | I          | 493.0 b                  | 837.6                          | 1144.9                    | 132.0    | 1276.9 |
| <a href="#">GS33-40P5</a> | A          | 0.0 b                    | 0.0                            | 17.6                      | 11.1     | 28.7   |
| <a href="#">GS33-41P0</a> | A          | 10.0 b                   | 17.0                           | 32.6                      | 20.0     | 52.6   |
| <a href="#">GS33-42P0</a> | B          | 10.0 b                   | 17.0                           | 45.9                      | 21.7     | 67.6   |
| <a href="#">GS33-43P0</a> | C          | 16.0 b                   | 27.2                           | 60.6                      | 22.8     | 83.4   |
| <a href="#">GS33-45P0</a> | C          | 16.0 b                   | 27.2                           | 93.1                      | 42.0     | 135.1  |
| <a href="#">GS33-47P5</a> | D          | 23.4 b                   | 39.7                           | 132.8                     | 39.5     | 172.3  |
| <a href="#">GS33-4010</a> | D          | 23.4 b                   | 39.7                           | 164.7                     | 55.8     | 220.5  |
| <a href="#">GS33-4015</a> | E          | 53.7 b                   | 91.2                           | 234.5                     | 69.8     | 304.3  |
| <a href="#">GS33-4020</a> | E          | 53.7 b                   | 91.2                           | 319.8                     | 74.3     | 394.1  |
| <a href="#">GS33-4025</a> | F          | 67.9 b                   | 115.2                          | 423.5                     | 181.6    | 605.1  |
| <a href="#">GS33-4030</a> | F          | 67.9 b                   | 115.2                          | 501.1                     | 200.3    | 701.4  |
| <a href="#">GS33-4040</a> | G          | 266.0 b                  | 451.9                          | 655.3                     | 122.0    | 777.3  |
| <a href="#">GS33-4050</a> | H          | 322.0 b                  | 547.1                          | 896.8                     | 135.0    | 1031.8 |
| <a href="#">GS33-4060</a> | H          | 322.0 b                  | 547.1                          | 1029.0                    | 150.0    | 1179.0 |
| <a href="#">GS33-4075</a> | I          | 455.0 b                  | 773.1                          | 1219.9                    | 165.0    | 1384.9 |
| <a href="#">GS33-4100</a> | I          | 493.0 b                  | 837.6                          | 1495.0                    | 180.0    | 1675.0 |

- Published flow rates are the result of active cooling using factory installed fans.
- Flow rates of (0.0) are the result of passive cooling in drives without fans.
- The required airflow shown in the chart is for installing a single GS30 drive in a confined space.
- When installing multiple GS30 drives, the required air volume would be the required air volume for a single drive multiplied by the number of drives.
- When calculating power dissipation (Watt Loss), use the Total value. Heat dissipation shown in the chart is for installing a single GS30 drive in a confined space.
- When installing multiple drives, the volume of heat/power dissipation should be the heat/power dissipated by a single drive multiplied by the number of drives.
- Heat dissipation for each model is calculated by rated voltage, current and default carrier frequency.

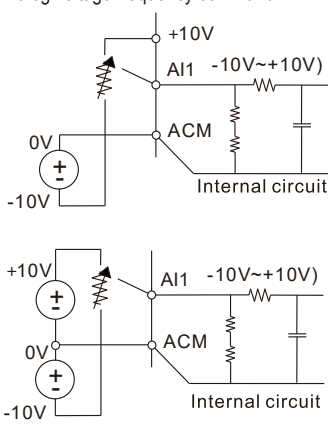
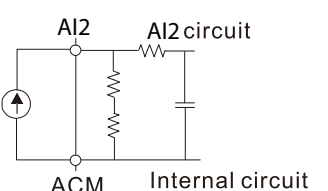
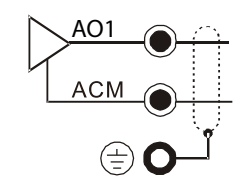
# DURAPULSE GS30 AC Drives Specifications – Terminals

## Control Circuit Terminal Names and Definitions

| Control Circuit Terminals                    |  |   |
|--|--|---|
| Terminal Symbol                              | Terminal Function  | Description   |
| <b>+24V</b>                                  | Digital control signal common (Source)   | +24V ± 10% 100mA<br><b>Note:</b> When used in parallel, if the +24V terminal is used with a feedback sensor, unequal current may occur, and there will be a risk of failure.  |
| <b>FWD (DI1)<br/>REV (DI2)<br/>DI3 - DI7</b> | Digital input 1-7<br><br>① Sink Mode with internal power (+24 V <sub>DC</sub> )<br><br><br><br>See pg.<?> for sinking/sourcing wiring examples. | <b>Source Mode:</b><br>ON: activation current 3.3 mA ≥ 11VDC<br>OFF: cut-off voltage ≤ 5VDC<br><b>Sink Mode:</b><br>ON: activation current 3.3 mA ≤ 13VDC<br>OFF: cut-off voltage ≥ 19VDC<br><br>DI7: Single pulse input, maximum input frequency=33kHz.<br><br>Digital inputs can be configured by the user for many different functions. Refer to P02.01-02.07 to program the digital inputs FWD (DI1), REV (DI2), DI3-DI7. When P02.00=0, FWD (DI1) and REV (DI2) can be programmed.<br>• When P02.00≠0, the functions of FWD (DI1) and REV (DI2) act according to P02.00 setting.<br>• When P02.07=0, DI7 is pulse input terminal.<br>• DI7 uses pulse input can be used as frequency command source or connect it to the encoder for motor closed-loop control.<br>• DI7 motor closed-loop control only supports VFB control mode. |
| <b>DO</b>                                    | Digital frequency signal output<br><br><br><br>Max 30 V <sub>DC</sub> 30 mA  | DO uses pulse voltage as an output monitoring signal;<br>Duty-cycle: 50%<br>Min. load impedance RL: 1kΩ / 100pF<br>Max. current endurance: 30 mA<br>Max. voltage: 30VDC ± 1%<br>(when 30VDC / 30mA / RL=100pF)<br>Max. output frequency: 33kHz<br>Current-limiting resistor R: ≥ 1KΩ<br>Output load impedance RL<br>Capacitive load ≤ 100pF   |
| <b>DCM</b>                                   | Digital control / Frequency signal common (Sink)   | Resistive load ≥ 1kΩ, resistance determines the output voltage value.<br>DO-DCM voltage = external voltage * ( RL / (RL+R) )  |
| <b>DO1</b>                                   | Digital Output 1 (photo coupler)   | <br>Max 48 V <sub>DC</sub> 50 mA  |
| <b>DO2</b>                                   | Digital Output 2 (photo coupler)   |   |
| <b>DOC</b>                                   | Digital Output Common (photo coupler)  |   |
| <b>R10</b>                                   | Relay Output 1 (N.O.)  | <b>Resistive Load</b><br>• 3.0 A (NO), 3.0 A (NC) @250VAC<br>• 5.0 A (NO), 3.0 A (NC) @30VDC<br><b>Inductive Load (COS 0.4)</b><br>• 1.2 A (NO), 1.2 A (NC) @250VAC<br>• 2.0 A (NO), 1.2 A (NC) @30VDC<br>To output different kinds of monitoring signals such as motor drive in operation, frequency reached, and overload indication.   |
| <b>R1C</b>                                   | Relay Output 1 (N.C.)  |   |
| <b>R1</b>                                    | Relay Output 1 Common  |   |
| <b>+10V</b>                                  | Potentiometer power supply   | Power supply for analog frequency setting: +10.5 ± 0.5 VDC / 20mA   |

# DURAPULSE GS30 AC Drives Specifications – Terminals

## Control Circuit Terminal Names and Definitions

| Control Circuit Terminals (continued) |  |   |
|---------------------------------------|--|---|
| Terminal Symbol                       | Terminal Function  | Description   |
| <b>AI1</b>                            | <p>Analog voltage frequency command</p>   | <p>Circuit Impedance: 20kΩ<br/>                     Potentiometer Rating: 5kΩ<br/>                     Range: 0–10 V / -10–10 V = 0–Maximum Operation Frequency (P01.00)<br/>                     Mode switching by setting P03.00, P03.28<br/>                     AI1 resolution=10 bits</p>  |
| <b>AI2</b>                            | <p>Analog current frequency command</p>    | <p>Impedance: Current mode=250 Ω, Voltage mode=20kΩ<br/>                     Range: 0–20 mA / 4–20 mA / 0–10 V = 0–Maximum Operation Frequency (P01.00)<br/>                     Mode switching by setting P03.01, P03.29<br/>                     Switch: The AI2 default is 0–20 mA / 4–20 mA (current mode)<br/>                     AI2 resolution = 12 bits</p>  |
| <b>AO1</b>                            | <p>Multi-function analog voltage output</p>   | <p>Switch: The AO1 default is 0–10 V (voltage mode).<br/>                     To switch to the current mode, two steps are required:<br/>                     1. A dip switch must be configured (follow the instructions on the inner side of the front cover).<br/>                     2. Change P03.31 to 1 or 2 (see Chapter 4 of the GS20(X) User Manual).<br/> <b>Voltage mode</b><br/>                     Range: 0–10 V (P03.31=0) corresponds to the maximum operating range of the control target<br/>                     Max. output current: 2mA<br/>                     Max. Load: 5kΩ<br/> <b>Current mode</b><br/>                     Range: 0–20 mA (P03.31=1) / 4–20 mA (P03.31=2) corresponds to the maximum operating range of the control target, maximum load 500Ω<br/>                     AO1 resolution=10 bits</p> |
| <b>ACM</b>                            | Analog Signal Common   | Analog signal common terminal   |
| <b>STO1, STO2, SCM</b>                | <p>Default: STO1 / STO2 short-circuited to +24V<br/>                     Rated voltage: 24VDC ± 10 %; maximum voltage: 30VDC ± 10 %<br/>                     Rated current: 6.67 mA ± 10 %<br/> <b>STO activation mode</b><br/>                     Input voltage level: 0VDC &lt; STO1-SCM or STO2-SCM &lt; 5VDC<br/>                     STO response time ≤ 20ms (STO1 / STO2 operates until the AC motor drive stops outputting current)<br/> <b>STO cut-off mode</b><br/>                     Input voltage level: 11VDC &lt; STO1-SCM and STO2-SCM &lt; 30VDC<br/>                     Power removal safety function per EN 954-1 and IEC / EN 61508<br/> <b>Note:</b> Refer to Appendix E of the GS30 User Manuals for details.</p> |   |
| <b>SG+</b>                            | Modbus RS-485  |   |
| <b>SG-</b>                            |  |   |
| <b>SGND*</b>                          |  | <b>Note:</b> Refer to GS30 User Manual Chapter 4 Descriptions of Parameter Settings, Parameter Group 09: Communication Parameters for details.  |
| <b>RJ45</b>                           | <p>PIN 1, 2, 6: Reserved<br/>                     PIN 3, 7: SGND<br/>                     PIN 4: SG-<br/>                     PIN 5: SG+<br/>                     PIN 8: +10V supply GS4-KPD (provides GS4-KPD power)</p>  | The RJ45 port provides a serial communications connection. Max Baud Rate = 115.2 kbps   |
| <b>USB</b>                            | Type B   | Port for connecting the drive to GSoft2 and GSLogic for parameter, PLC, and firmware updates.   |

\* The GS30 drive does not have a dedicated SGND terminal. To use RS-485, connect to the right-hand DCM terminal and use the DIP switch to set SGND function.

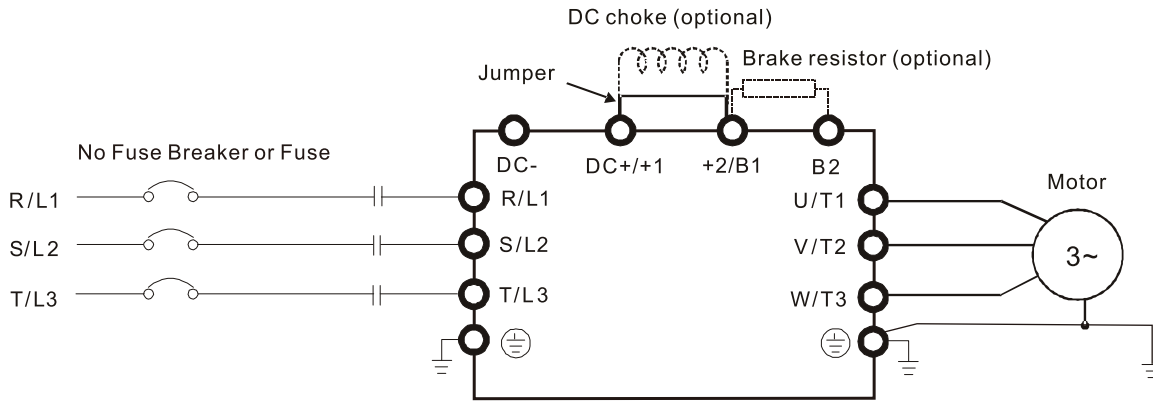
# DURAPULSE GS30 AC Drives – Basic Wiring Diagram

## Main Circuit Wiring Diagram:

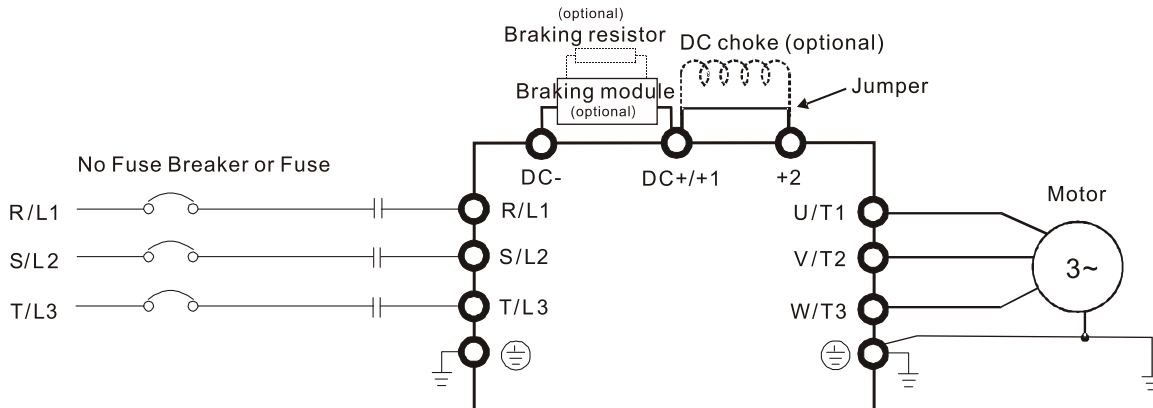
Note: Users **MUST** connect wiring according to the circuit diagram shown below. (Refer to GS30 User Manual for additional specific wiring information.)

Note: DC reactors (chokes) are specified but not stocked by AutomationDirect.

### GS30 Frame Sizes A-G



### GS30 Frame Sizes H-I



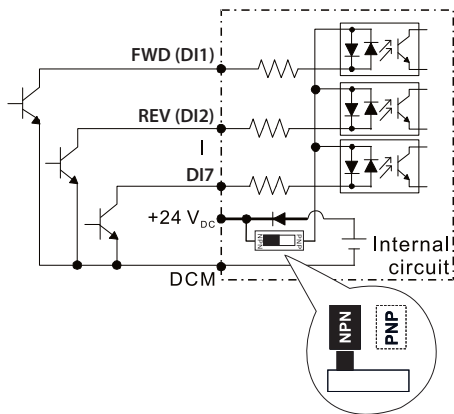
Note: For frame size H and I drives, braking resistor(s) must be connected to a dedicated braking module and cannot be connected directly to the DC-/DC+ / +1 terminals.

# DURAPULSE GS30 AC Drives – Basic Wiring Diagram

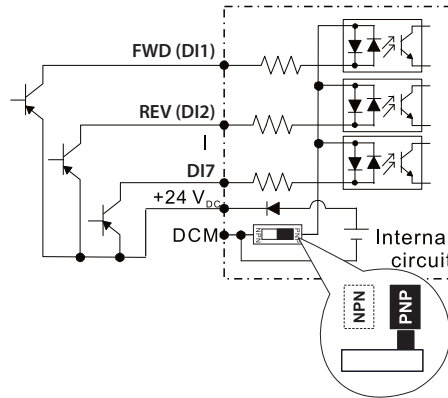
## Control Circuit Wiring Diagram: Digital Inputs - Internal Power

Note: Users **MUST** connect wiring according to the circuit diagram shown below. (Refer to GS30 User Manual for additional specific wiring information.)

① Sink Mode with internal power (+24 V<sub>DC</sub>)



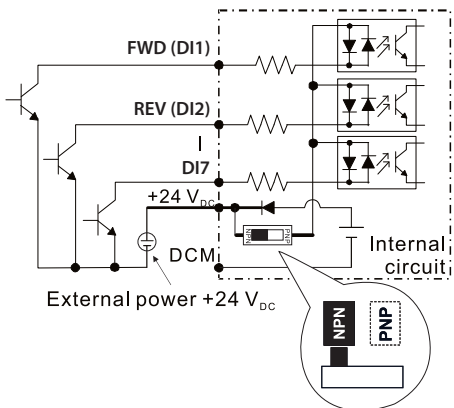
② Source Mode with internal power (+24 V<sub>DC</sub>)



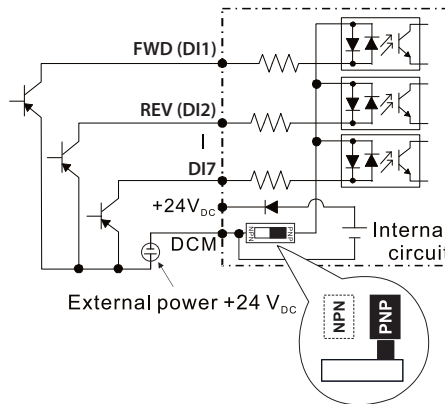
## Control Circuit Wiring Diagram: Digital Inputs - External Power

Note: Users **MUST** connect wiring according to the circuit diagram shown below. (Refer to GS30 User Manual for additional specific wiring information.)

③ Sink Mode with external power



④ Source Mode with external power

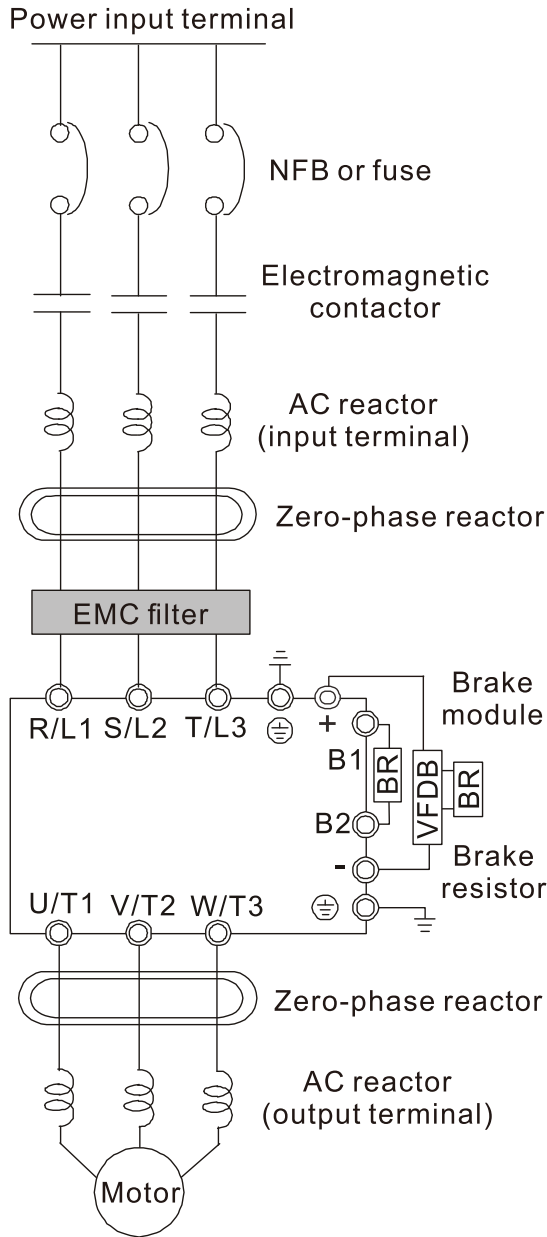




# DURAPULSE GS30 AC Drives – Basic Wiring Diagram

## System Wiring Diagram:

Note: Users **MUST** connect wiring according to the circuit diagram shown below. (Refer to user GS30 User Manual for additional specific wiring information.)

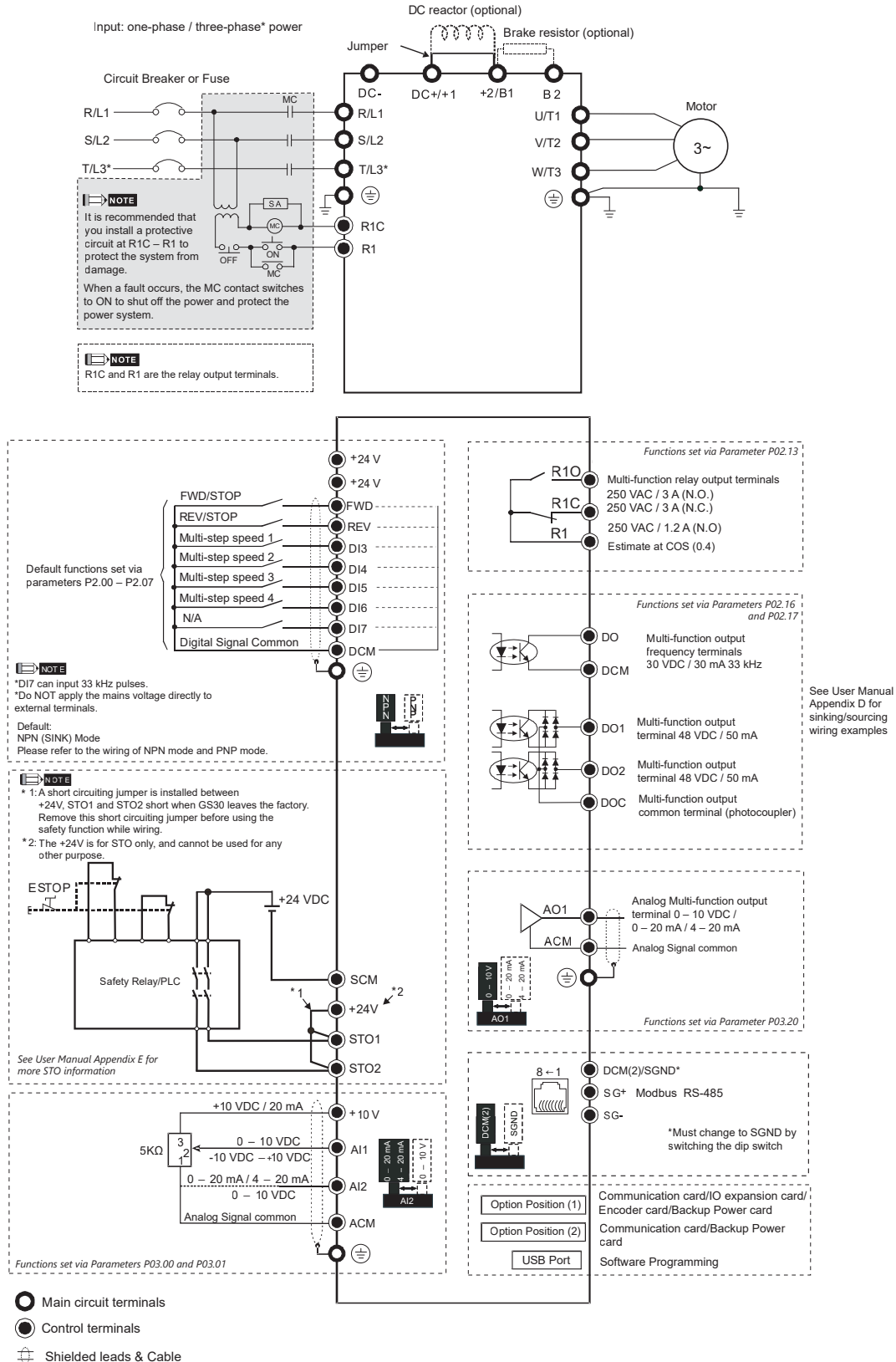


| System Wiring Components                   |  |
|--|--|
| Component                                  | Function   |
| Power input terminal                       | Supply power according to the rated power specifications indicated in the manual.  |
| NFB or fuse                                | There may be a large inrush current during power on. Select a suitable NFB (Non Fuse Breaker or Circuit Breaker) or Fuse.  |
| Electromagnetic contactor                  | Switching the power ON/OFF on the primary side of the electromagnetic contactor can turn the drive ON/OFF, but frequent switching can cause drive failure. Do not switch ON/OFF more than once an hour. Do not use the electromagnetic contactor as the power switch for the drive; doing so shortens the life of the drive.   |
| AC reactor (input terminal)                | When the main power supply capacity is greater than 500 kVA, or when it switches into a phase capacitor, the instantaneous peak voltage and current generated may destroy the internal circuit of the drive. It is recommended that you install an input side AC reactor in the drive. This also improves the power factor and reduces power harmonics. The wiring distance should be within 10 meters of the drive. |
| Zero-phase reactor                         | Used to reduce radiated interference, especially in environments with audio devices, and reduce input and output side interference. The effective range is AM band to 10 MHz.  |
| EMC filter                                 | Can be used to reduce electromagnetic interference.  |
| Brake module and Brake resistor (BR)       | Used to shorten the deceleration time of the motor.  |
| AC Reactor/Output Filter (output terminal) | The motor cable length affects the size of the reflected wave on the motor end. For motor distances greater than 100 feet, the VTF series dV/dT filter is recommended.   |

# DURAPULSE GS30 AC Drives – Basic Wiring Diagram

## Control Wiring Diagram: Frame Size A-G Full I/O

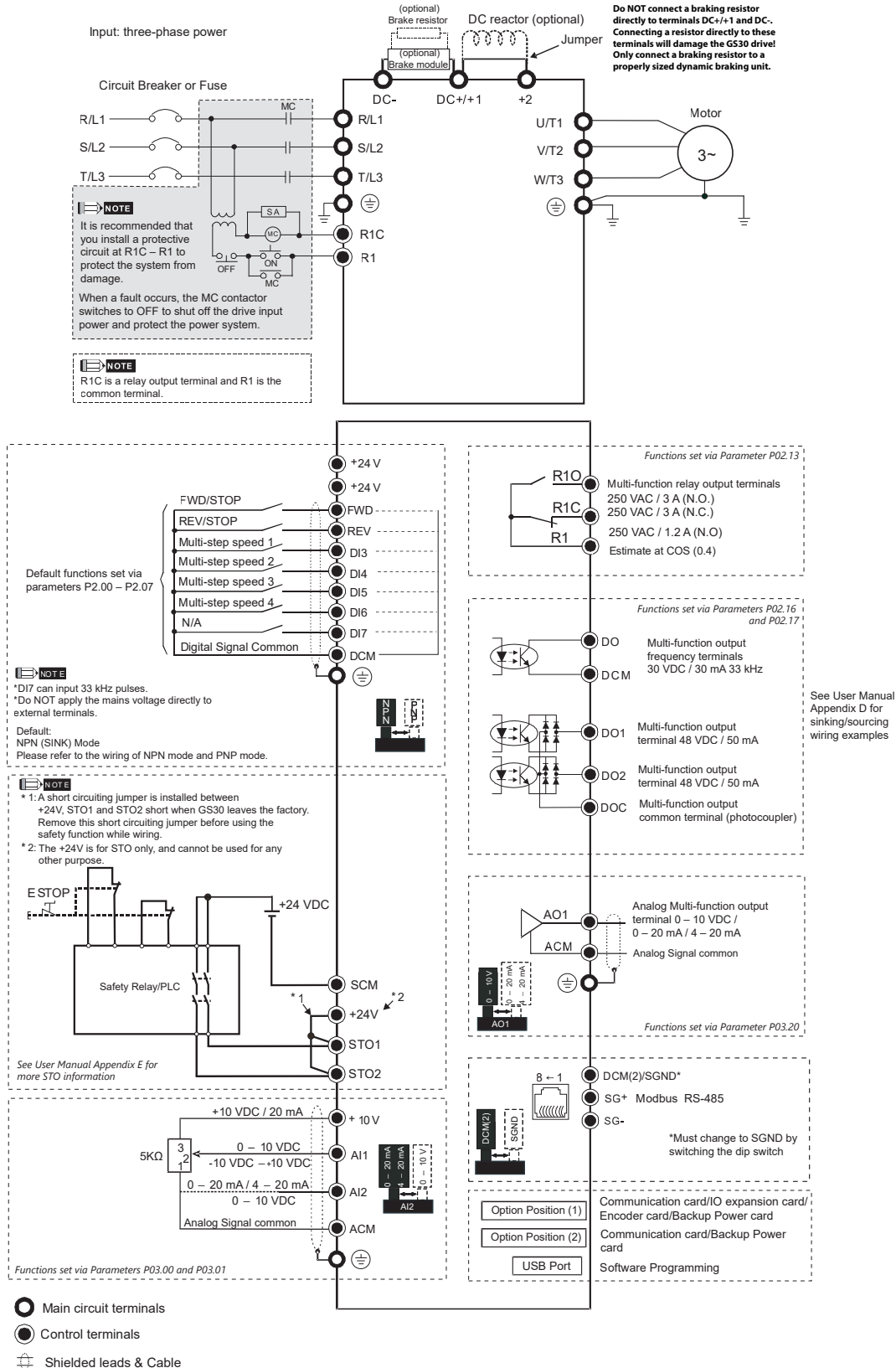
Note: Users MUST connect wiring according to the circuit diagram shown below. (Refer to the GS30 User Manual for additional specific wiring information.)



# DURAPULSE GS30 AC Drives – Basic Wiring Diagram

## Control Wiring Diagram: Frame Size H-I Full I/O

Note: Users MUST connect wiring according to the circuit diagram shown below. (Refer to the GS30 User Manual for additional specific wiring information.)



# DURAPULSE GS30 AC Drives – Optional Accessories

## Accessories Available for GS30 AC Drives

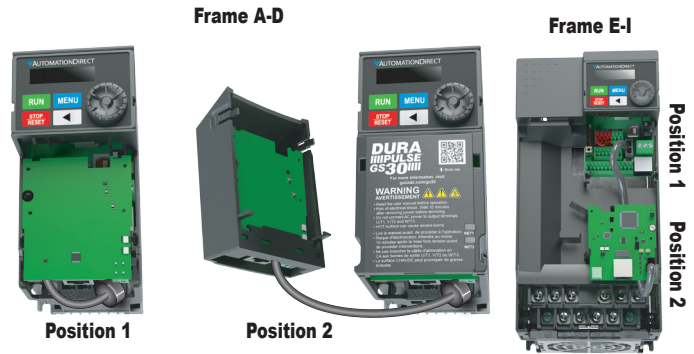
The table below lists types of accessories available for your GS30 series drive. GS30 uses many of the same accessories as the GS20(X) series drives—GS20 numbered parts that can be used with GS30 are noted in the table below. To see if your specific model can use a particular accessory, please click the reference link to go to the accessory page.

| <b>GS30 AC Drives Available Software and Accessories</b> |                       |                                    |   |
|--|-----------------------|------------------------------------|---|
| <i>Accessory</i>   | <i>GS30 Accessory</i> | <i>GS20 Accessory used by GS30</i> | <i>Reference</i>  |
| <b>GSof2 Drive Software</b>                              | ✓                     |                                    | "GSof2 Drive Configuration Software" on page tGSX-103   |
| <b>GSLogic Software</b>                                  | ✓                     |                                    | "GSLOGIC Drive Configuration Software" on page tGSX-104   |
| <b>Backup Power Supply</b>                               | ✓                     |                                    | "GS30A-BPS" on page tGSX-60   |
| <b>Braking Resistors</b>                                 | ✓                     | ✓                                  | "GS4/GS30 DURApulse Drives Accessories – Dynamic Braking Component Selection – GS30" on page tGSX-149 |
| <b>Capacitive Filter</b>                                 |                       | ✓                                  | "Capacitive Filter" on page tGSX-79   |
| <b>Communication Modules</b>                             | ✓                     |                                    | "GS30 Optional Modules" on page tGSX-60   |
| <b>Conduit Boxes</b>                                     | ✓                     |                                    | "GS30 Conduit Boxes" on page tGSX-68  |
| <b>DIN Rail Mounting (A–C frame only)</b>                |                       | ✓                                  | "DIN Rail Mounting" on page tGSX-85   |
| <b>EMC Filter</b>  | ✓                     |                                    | "GS30 Standard Footprint EMC Filter and Zero-Phase Reactor" on page tGSX-72                           |
| <b>EMC Shield Plates (A-F frame)</b>                     |                       | ✓                                  | "EMC Shield Plate" on page tGSX-79  |
| <b>EMC Shield Plates (G-I frame)</b>                     | ✓                     |                                    |   |
| <b>EMI Filters</b>                                       | ✓                     |                                    | "GS30 High Performance EMI Input Filters" on page tGSX-74   |
| <b>Encoder and PLC Modules</b>                           | ✓                     |                                    | "GS30 Optional I/O Cards" on page tGSX-62   |
| <b>Fuses/Circuit Breakers</b>                            | ✓                     |                                    | "GS30 Fuses/Circuit Breakers" on page tGSX-77   |
| <b>Line/Load Reactor/Voltage Time Filter</b>             |                       | ✓                                  | "GS30 Line Reactors/Voltage Time Filters" on page tGSX-84   |
| <b>Mounting Adapter Plate (A–C frame only)</b>           |                       | ✓                                  | "Mounting Adapter Plate" on page tGSX-86  |
| <b>Communication Card Mounting Cover</b>                 | ✓                     |                                    | "GS30A-CM-EIPKITP2" on page tGSX-61   |
| <b>Optional Advanced Keypad</b>                          |                       | ✓                                  | "Advanced Keypad" on page tGSX-105  |
| <b>Replacement Key Pad</b>                               | ✓                     |                                    | "GS30 Replacement Keypad" on page tGSX-81   |
| <b>Replacement Fan Kit (A-F frame)</b>                   |                       | ✓                                  |   |
| <b>Replacement Fan Kit (G-I frame)</b>                   | ✓                     |                                    | "Cooling Fans for GSxx Series Drives (Spare/Replacement)" on page tGSX-87                             |
| <b>RF Filter</b>   | ✓                     |                                    | "RF Filter" on page tGSX-88   |

# GS30 Optional Accessories – Expansion Cards

## GS30 Optional Modules

The GS30A-CM-EIP1 and GS30A-CM-EIP2 are communication modules that can be used for either Modbus TCP or EtherNet/IP communication. The GS30A-CM-ECAT module is used for EtherCAT communications. The GS30A-BPS is a backup power supply option card that can maintain basic drive (not motor) functionality when external power is unavailable. Note that only one communication module can be installed at a time, but the BPS card can be installed with a communication card or any of the I/O cards. Please see the GS30 User Manual for additional information and installation instructions.



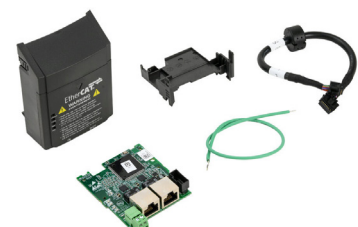
| GS30 DURAPULSE Drives I/O and Communication Cards |          |   |   |          |
|---|----------|---|---|----------|
| Part Number                                       | Price    | Description   | Features/Specifications   | Position |
| <a href="#"><u>GS30A-CM-EIP1</u></a>              | \$78.00  | DURApulse GS30 series communication module, EtherNet/IP and Modbus TCP, 1 port, (1) Ethernet (RJ45) port(s). For use with GS30 series AC drives.  | <b>Features:</b> <ul style="list-style-type: none"> <li>• Supports Modbus TCP and EtherNet/IP protocol</li> <li>• 32/32 words read/write parameters correspondence</li> <li>• User-defined corresponding parameters</li> <li>• MDI/MDI-X auto-detect</li> <li>• IP filter simple firewall function</li> </ul> <b>Specifications:</b> <ul style="list-style-type: none"> <li>• RJ45 with Auto MDI/MDIX interface</li> <li>• 1 port (EIP1) or 2 ports (EIP2)</li> <li>• IEEE 802.3, IEEE 802.3u transmission method with Cat 5e shielding 100MHz cable at 10/100 Mbps Auto-detect transmission speed</li> <li>• Network protocol: ICMP, IP, TCP, UDP, DHCP, HTTP, SMTP, Modbus over TCP/IP, EtherNet/IP, BOOTP</li> <li>• Requires 15VDC provided by AC drive</li> <li>• 500VDC insulation voltage</li> <li>• 0.8 W power consumption</li> <li>• 25g (EIP1) or 30g (EIP2) weight</li> </ul> | 1 or 2   |
| <a href="#"><u>GS30A-CM-EIP2</u></a>              | \$85.00  | DURApulse GS30 series communication module, EtherNet/IP and Modbus TCP, 2 ports, (2) Ethernet (RJ45) port(s). For use with GS30 series AC drives. | <b>Features:</b> <ul style="list-style-type: none"> <li>• Enables EtherCAT communications</li> <li>• Supports speed mode</li> <li>• Supports reading and writing parameters</li> <li>• Supports stop during disconnection</li> </ul> <b>Specifications:</b> <ul style="list-style-type: none"> <li>• RJ45 interface</li> <li>• 2 ports</li> <li>• IEEE 802.3, IEEE 802.3u transmission method with Cat 5e shielding 100MHz cable at 100 Mbps transmission speed</li> <li>• Requires 15VDC provided by AC drive</li> <li>• 500VDC insulation voltage</li> <li>• 0.8 W power consumption</li> <li>• 27g weight</li> </ul>   | 1 or 2   |
| <a href="#"><u>GS30A-CM-ECAT</u></a>              | \$112.00 | DURApulse GS30 series communication module, EtherCAT CoE protocol, 2 ports, (2) Ethernet (RJ45) port(s). For use with GS30 series AC drives.      | <b>Features:</b> <ul style="list-style-type: none"> <li>• Enables EtherCAT communications</li> <li>• Supports speed mode</li> <li>• Supports reading and writing parameters</li> <li>• Supports stop during disconnection</li> </ul> <b>Specifications:</b> <ul style="list-style-type: none"> <li>• RJ45 interface</li> <li>• 2 ports</li> <li>• IEEE 802.3, IEEE 802.3u transmission method with Cat 5e shielding 100MHz cable at 100 Mbps transmission speed</li> <li>• Requires 15VDC provided by AC drive</li> <li>• 500VDC insulation voltage</li> <li>• 0.8 W power consumption</li> <li>• 27g weight</li> </ul>   | 1 or 2   |
| <a href="#"><u>GS30A-BPS</u></a>                  | \$122.00 | DURApulse GS30 series backup power supply module, for use with GS30 series AC drives.   | Provides external power supply and supports 24VDC input. Supports parameter read/write and drive status monitoring. When providing backup power, the following functions work normally: <ul style="list-style-type: none"> <li>• Parameter reading and writing</li> <li>• Keypad display</li> <li>• Keys on the keyboard panel (except the RUN key)</li> <li>• Analog input with +10V terminal supply power</li> <li>• Multi-function inputs with +24V terminal or external power supply</li> <li>• Relay output</li> <li>• Pulse sequence frequency command</li> <li>• Testing RS485 and Ethernet communications</li> </ul>  | 1 or 2   |



[GS30A-BPS](#)



[GS30A-CM-EIPx](#)



[GS30A-CM-ECAT](#)

# GS20/GS30 Optional Accessories – Expansion Cards

## GS20/GS30 Optional Modules

The GS30A-CM-EIPKITP2 allows mounting of GS20 and GS30 series communication and expansion cards in Position 2 (on the outside of the drive) for Frames A - D. This gives the benefit of quick removal of the communication card for access to the main power and control terminals. It does add overall depth to the drive unit. The front cover of the kit must be removed to see the comm card status LEDs.

| GS20/GS30 DURApulse Drives Communication Card Mounting |         |  |  |          |
|--|---------|--|--|----------|
| Part Number  | Price   | Description  | Features/Specifications  | Position |
| <b><u>GS30A-CM-EIPKITP2</u></b>                        | \$22.00 | DURApulse GS30 mounting cover, for use with GS20 and GS30 series communication modules. Used when communication module is installed in position 2. | Mounting kit for mounting GS20/GS30 EtherNet/IP communication cards in Position 2 for frames A through D. Not needed for larger frames. GS30A-CM-ECAT comes with a mounting cover. | 2        |



GS30A-CM-EIPKITP2



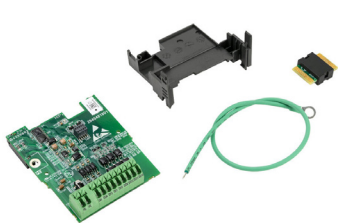
Drive with GS30A-CM-EIPKITP2 installed

# GS30 Optional Accessories – I/O Cards

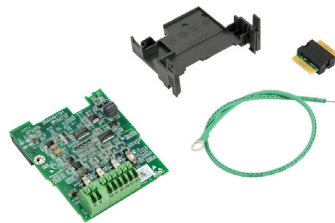
## GS30 Optional I/O Cards

GS30 series drives support a variety of optional input/output cards that can be used to provide additional connection terminals or encoder support.

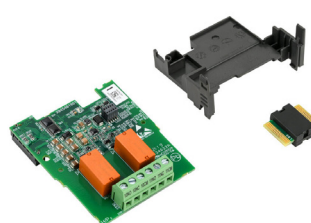
| GS30 DURApulse Drives I/O Cards |         |  |  |  |          |
|---------------------------------|---------|--|--|--|----------|
| Part Number                     | Price   | Description  | Terminals  | Descriptions   | Position |
| <b><u>GS30A-06CDD</u></b>       | \$48.00 | DURApulse GS30 series discrete combo module, Input: 3-point, 24 VDC, sinking/sourcing selectable, Output: 3-point, 48 VDC, sinking/sourcing selectable, 30mA/point, 50mA resistive output current. For use with GS30 series AC drives. | 24V, DCM   | Output power: +24VDC ±5% < 30mA  | 1        |
|                                 |         |  | DI10-DI12  | <ul style="list-style-type: none"> <li>Choose SINK (NPN) / SOURCE (PNP) by SSW1</li> <li>Internal power is supplied by terminal 24V: +24VDC ±5%</li> <li>If external power is +24VDC, the maximum voltage is 30VDC and the minimum voltage is 19VDC</li> <li>ON: activation current is 6.5 mA</li> <li>OFF: leakage current tolerance is 10µA</li> </ul> |          |
|                                 |         |  | DO10-DO12  | <ul style="list-style-type: none"> <li>The motor drive outputs various monitor signals, such as drive in operation, frequency reached and overload indication through the transistor (open collector)</li> <li>DO output signal: each DO terminal needs a pull-up resistor, the maximum external power voltage is 48VDC / 50mA</li> </ul>                |          |
|                                 |         |  | DCM  | Common for digital output terminals DO10–DO12 (photocoupler)   |          |
|                                 |         |  | PE   | Grounding terminals. To decrease noise, properly ground this terminal.   |          |
| <b><u>GS30A-2AD2DA</u></b>      | \$56.00 | DURApulse GS30 series analog combo module, Input: 2-channel, current/voltage, 0-20 mA and 4-20 mA, 0-10 VDC, Output: 2-channel, current/voltage, 0-20 mA and 4-20 mA, 0-10 VDC.  | ACM  | Common output signal and input signal terminals  | 1        |
|                                 |         |  | AI10, AI11   | Two sets of AI ports: SSW3, SSW4 switch for AI1, AI2 (default is AI1) <ul style="list-style-type: none"> <li>AI1: input 0–10 V</li> <li>AI2: input 0–20 mA</li> </ul>  |          |
|                                 |         |  | AO10–AO11  | Two sets of AO ports: SSW1, SSW2 switch for current (default) or voltage. <ul style="list-style-type: none"> <li>Voltage output: 0–10 V</li> <li>Current output: 0–20 mA</li> </ul>  |          |
|                                 |         |  | PE   | Grounding terminal. to decrease noise, properly ground this terminal.  |          |
| <b><u>GS30A-02TRC</u></b>       | \$53.00 | DURApulse GS30 series relay output module, 2-point, 240 VAC/30 VDC, (2) Form C (SPST) relays, 2 isolated common(s), 1 point(s) per common. Screw terminal blocks included.   | 10NO-10NC-10CM (DO10)<br>11NO-11NC-11CM (DO11)             | Resistive load: 5A (N.O.) / 250VAC<br>Function: outputs the monitor signals, such as drive in operation, frequency reached, or overload indication.  | 1        |
| <b><u>GS30A-03TRA</u></b>       | \$57.00 | DURApulse GS30 series relay output module, 3-point, 250 VAC/30 VDC, (3) Form B (SPDT) relays, 2 isolated common(s), 1 point(s) per common. Screw terminal blocks included.   | 10NO-10CM (DO10)<br>11NO -11CM (DO11)<br>12NO -12CM (DO12) | Resistive load: 6A (N.O.) / 250VAC<br>Function: outputs the monitor signals, such as drive in operation, frequency reached, or overload indication.  | 1        |



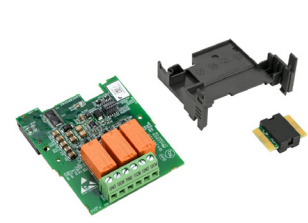
GS30A-06CDD



GS30A-2AD2DA



GS30A-02TRC

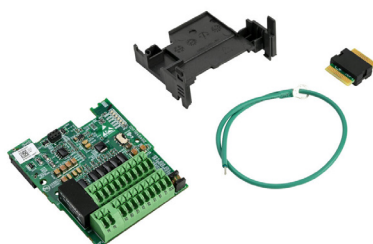


GS30A-03TRA

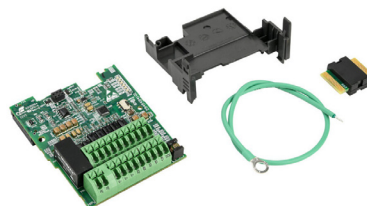
# GS30 Optional Accessories – I/O Cards

## GS30 Optional I/O Cards, *continued*

| GS30 DURAPULSE Drives I/O Cards |          |   |           |   |  |   |
|---------------------------------|----------|---|-----------|---|--|---|
| Part Number                     | Price    | Description   | Terminals | Descriptions  | Position   |   |
| <b>GS30A-FB-LD</b>              | \$104.00 | DURApulse GS30 series encoder module, line driver (differential) encoder input. For use with GS30 series AC drives. Supports 1-phase and 2-phase input and output.                | PG1       | VP  | <ul style="list-style-type: none"> <li>Power output voltage: +5V ±5% or +12V ±5%</li> <li>Maximum output current: 200mA (+5V)</li> </ul>   | 1 |
|                                 |          |   |           | DCM   | Common for power and signal  |   |
|                                 |          |   | PG2       | A1, $\overline{A1}$ ,<br>B1, $\overline{B1}$ ,<br>Z1, $\overline{Z1}$         | <ul style="list-style-type: none"> <li>Encoder input signal (applicable for line driver or open collector)</li> <li>Open collector input voltage +5–24 VDC</li> <li>Supports 1-phase and 2-phase input</li> <li>Maximum input signal: 300kHz</li> </ul>  |   |
|                                 |          |   |           | A2, $\overline{A2}$ ,<br>B2, $\overline{B2}$                                  | <ul style="list-style-type: none"> <li>Pulse input signal (applicable for line driver or open collector)</li> <li>Open collector input voltage +5–24 VDC</li> <li>Supports 1-phase and 2-phase input</li> <li>Maximum input signal: 300kHz</li> </ul>  |   |
|                                 |          |   | PG OUT    | AO, $\overline{AO}$ ,<br>BO, $\overline{BO}$ ,<br>ZO, $\overline{ZO}$ ,<br>SG | <ul style="list-style-type: none"> <li>Encoder feedback signal output, supports frequency elimination: 1–255 times</li> <li>Maximum output voltage of the line driver: 5VDC</li> <li>Maximum output current: 15mA</li> <li>Maximum output frequency: 300kHz</li> <li>SG, the referenced electric potential for encoder output signal, serves as the ground for host controller or PLC to make the output signal become the common point. Do not use common grounding with SG and DCM as it may influence the signal quality</li> </ul> |   |
| Ground                          | PE       | Grounding terminal. To decrease noise, properly ground this terminal.   |           |   |  |   |
| <b>GS30A-FB-OC</b>              | \$101.00 | DURApulse GS30 series encoder module, NPN open collector and PNP open collector encoder input. For use with GS30 series AC drives. Supports 1-phase and 2-phase input and output. | PG1       | VP  | <ul style="list-style-type: none"> <li>Power output voltage: +5V ±5% or +12V ±5% (Use SSW320 to switch +5V or +12V, the default is +5V)</li> <li>Maximum output current: 200mA (+5V)</li> </ul>  | 1 |
|                                 |          |   |           | DCM   | Common for power and signal  |   |
|                                 |          |   | PG2       | A1, $\overline{A1}$ ,<br>B1, $\overline{B1}$ ,<br>Z1, $\overline{Z1}$         | <ul style="list-style-type: none"> <li>Encoder input signal (applicable for line driver or open collector)</li> <li>Open collector input voltage +5–24 VDC</li> <li>Supports 1-phase and 2-phase input</li> <li>Maximum input signal: 300kHz</li> </ul>  |   |
|                                 |          |   |           | A2, $\overline{A2}$ ,<br>B2, $\overline{B2}$                                  | <ul style="list-style-type: none"> <li>Pulse input signal (applicable for line driver or open collector)</li> <li>Open collector input voltage +5–24 VDC</li> <li>Supports 1-phase and 2-phase input</li> <li>Maximum input signal: 300kHz</li> </ul>  |   |
|                                 |          |   | PG OUT    | V+, V+  | <ul style="list-style-type: none"> <li>Needs an external power source for the PG OUT circuit</li> <li>Input voltage: +7–24 V</li> </ul>  |   |
|                                 |          |   |           | V-,<br>$\overline{AO}$ , $\overline{BO}$ ,<br>ZO                              | <ul style="list-style-type: none"> <li>The negative side for external power supply</li> <li>PG feedback signal output: supports frequency elimination: 1–255 times</li> <li>Open collector's output signal: add a pull-up resistor on each PG out external power</li> <li>Maximum input frequency: 300kHz</li> </ul>   |   |



**GS30A-FB-LD**



**GS30A-FB-OC**



# GS30 Series Optional Accessories – Conduit Boxes

| GS30 – Conduit Selection Table                                |            |                           |         |                     |                                |
|---|------------|---------------------------|---------|---------------------|--------------------------------|
| Drive   |            | Conduit Box*              |         |                     | Description                    |
| Model   | Frame      | Part #                    | Price   | Drawing             |                                |
| GS31-20P5<br>GS33-20P5<br>GS33-21P0<br>GS33-40P5<br>GS33-41P0 | A1, A2, A3 | <a href="#">GS30A-N1A</a> | \$28.00 | <a href="#">PDF</a> | GS30 series conduit box, NEMA1 |
| GS31-21P0<br>GS33-22P0<br>GS33-42P0                           | B1, B2     | <a href="#">GS30A-N1B</a> | \$28.00 | <a href="#">PDF</a> |                                |
| GS31-22P0<br>GS33-23P0<br>GS33-25P0<br>GS33-43P0<br>GS33-45P0 | C          | <a href="#">GS30A-N1C</a> | \$29.00 | <a href="#">PDF</a> |                                |
| GS33-27P5<br>GS33-47P5<br>GS33-4010                           | D          | <a href="#">GS30A-N1D</a> | \$30.00 | <a href="#">PDF</a> |                                |
| GS33-2010<br>GS33-2015<br>GS33-4015<br>GS33-4020              | E          | <a href="#">GS30A-N1E</a> | \$31.00 | <a href="#">PDF</a> |                                |
| GS33-2020<br>GS33-4025<br>GS33-4030                           | F          | <a href="#">GS30A-N1F</a> | \$32.00 | <a href="#">PDF</a> |                                |
| GS33-2025<br>GS33-2030<br>GS33-4040                           | G          | <a href="#">GS30A-N1G</a> | \$50.00 | <a href="#">PDF</a> |                                |
| GS33-4050<br>GS33-4060  | H          | <a href="#">GS30A-N1H</a> | \$53.00 | <a href="#">PDF</a> |                                |
| GS33-2040<br>GS33-2050<br>GS33-4075<br>GS33-4100              | I          | <a href="#">GS30A-N1I</a> | \$74.00 | <a href="#">PDF</a> |                                |

\* Conduit Box Kits include mounting hardware; box base, box cover, bushings, and screws.  
Conduit box dimensions are shown below and on the following page.

## GS30 Conduit Boxes

Optional Conduit Box Kits can be ordered separately. These kits bolt onto the bottom of the applicable GS30 drive to provide a convenient connection point for conduit entry, allowing the GS30 to achieve a NEMA 1/UL type 1 environmental protection rating; especially useful for GS30 drives mounted outside of an electrical control panel.



Example GS30 Conduit Box

# GS30 Optional Accessories – EMC Filter & Zero-Phase Reactor

## GS30 Standard Footprint EMC Filter and Zero-Phase Reactor

If electromagnetic noise is harmful to your manufacturing environment, we recommend that you select an EMC filter as shown below. For some drive models, you may need to use zero-phase reactors to be compliant with EMC regulations. Refer to the table and figures below for the recommended model, setting method, and maximum motor cable length of the EMC filter and zero-phase reactor. The filter's footprint allows mounting of the drive on top of the recommended filter, saving panel space and wiring. For more information and installation instructions, please see the GS30 User Manual.

| GS30 EMC Filter and Zero-Phase Reactor, Frames A-F |                           |                   |                                 |          |                                |                             |   |   |                            |  |  |                            |   |   |
|--|---------------------------|-------------------|---------------------------------|----------|--------------------------------|-----------------------------|---|---|----------------------------|--|--|----------------------------|---|---|
| Frame  | Drive Model               | Input Current (A) | Footprint* Filter Model #       | Price    | Recommended Zero-Phase Reactor | Conducted Emission          |   |   |                            |  |  | Radiated Emission          |   |   |
|  |                           |                   |                                 |          |                                | C1-motor cable length-30m   |   |   | C2-motor cable length-100m |  |  | C2-motor cable length-100m |   |   |
|  |                           |                   |                                 |          |                                | Zero-Phase Reactor Position |   |   |                            |  |  |                            |   |   |
| 1  | 2                         | 3                 | n/a                             |          |                                | 1                           | 2 | 3 |                            |  |  |                            |   |   |
| A  | <a href="#">GS31-20P5</a> | 6.7               | <a href="#">EMF11AM21A</a>      | \$53.00  | RF008X00A                      |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-20P5</a> | 3.8               | <a href="#">EMF10AM23A</a>      | \$73.00  |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-21P0</a> | 6                 | <a href="#">EMF10AM23A</a>      | \$73.00  |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-40P5</a> | 2.5               | <a href="#">EMF6A0M43A</a>      | \$67.00  |                                |                             |   | ✓ | N/A                        |  |  |                            |   | ✓ |
|  | <a href="#">GS33-41P0</a> | 4.2               | <a href="#">EMF6A0M43A</a>      | \$67.00  |                                |                             |   | ✓ | N/A                        |  |  |                            |   | ✓ |
| B  | <a href="#">GS31-21P0</a> | 10.5              | <a href="#">EMF11AM21A</a>      | \$53.00  |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-22P0</a> | 9.6               | <a href="#">EMF10AM23A</a>      | \$73.00  |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-42P0</a> | 6.4               | <a href="#">EMF6A0M43A</a>      | \$67.00  |                                |                             |   | ✓ | N/A                        |  |  |                            |   | ✓ |
| C  | <a href="#">GS31-22P0</a> | 17.9              | <a href="#">EMF27AM21B</a>      | \$94.00  |                                |                             |   | ✓ | N/A                        |  |  |                            |   | ✓ |
|  | <a href="#">GS31-23P0</a> | 26.3              | <a href="#">EMF27AM21B</a>      | \$94.00  |                                |                             |   | ✓ | N/A                        |  |  |                            |   | ✓ |
|  | <a href="#">GS33-23P0</a> | 15                | <a href="#">EMF24AM23B</a>      | \$115.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-25P0</a> | 23.4              | <a href="#">EMF24AM23B</a>      | \$115.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-43P0</a> | 7.2               | <a href="#">EMF12AM43B</a>      | \$118.00 |                                |                             |   | ✓ | N/A                        |  |  |                            |   | ✓ |
| D  | <a href="#">GS33-45P0</a> | 11.6              | <a href="#">EMF12AM43B</a>      | \$118.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-27P5</a> | 32.4              | <a href="#">EMF33AM23B</a>      | \$167.00 |                                |                             | ✓ | ✓ | N/A                        |  |  | ✓                          | ✓ |   |
|  | <a href="#">GS33-47P5</a> | 17.3              | <a href="#">EMF23AM43B</a>      | \$161.00 |                                | ✓                           | ✓ | ✓ | N/A                        |  |  | ✓                          | ✓ | ✓ |
| E  | <a href="#">GS33-4010</a> | 22.6              | <a href="#">EMF23AM43B</a>      | \$161.00 |                                | ✓                           | ✓ | ✓ | N/A                        |  |  | ✓                          | ✓ | ✓ |
|  | <a href="#">GS33-2010</a> | 43.2              | <a href="#">B84143D0050R127</a> | \$711.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-2015</a> | 61.2              | <a href="#">B84143D0075R127</a> | \$799.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-4015</a> | 30.8              | <a href="#">B84143D0050R127</a> | \$711.00 |                                |                             |   |   | N/A                        |  |  |                            |   |   |
| F  | <a href="#">GS33-4020</a> | 39.6              | <a href="#">B84143D0050R127</a> | \$711.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-2020</a> | 82.8              | <a href="#">B84143D0090R127</a> | \$879.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-4025</a> | 45.7              | <a href="#">B84143D0050R127</a> | \$711.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-4030</a> | 53.9              | <a href="#">B84143D0075R127</a> | \$799.00 |                                |                             | ✓ | ✓ | N/A                        |  |  |                            | ✓ | ✓ |

Note: It is not necessary to add a zero-phase reactor to pass the C2 conducted emission test.

\* The B8xxx series filters are not footprint filters and must be mounted separately.

| GS30 EMC Filter and Zero-Phase Reactor, Frames G-I |                           |                   |                                 |            |                                |                             |   |   |                           |   |   |                            |  |  |                            |   |   |
|--|---------------------------|-------------------|---------------------------------|------------|--------------------------------|-----------------------------|---|---|---------------------------|---|---|----------------------------|--|--|----------------------------|---|---|
| Frame  | Drive Model               | Input Current (A) | Filter Model #                  | Price      | Recommended Zero-Phase Reactor | Conducted Emission          |   |   |                           |   |   |                            |  |  | Radiated Emission          |   |   |
|  |                           |                   |                                 |            |                                | C1-motor cable length-10m   |   |   | C2-motor cable length-20m |   |   | C3-motor cable length 100m |  |  | C2-motor cable length-100m |   |   |
|  |                           |                   |                                 |            |                                | Zero-Phase Reactor Position |   |   |                           |   |   |                            |  |  |                            |   |   |
| 1  | 2                         | 3                 | 1                               | 2          | 3                              | 1                           | 2 | 3 | 1                         | 2 | 3 |                            |  |  |                            |   |   |
| G  | <a href="#">GS33-2025</a> | 85                | <a href="#">B84143A0120R105</a> | \$695.00   | RF008X00A                      |                             | ✓ | ✓ |                           | ✓ |   |                            |  |  | ✓                          | ✓ |   |
|  | <a href="#">GS33-2030</a> | 103               | <a href="#">B84143A0120R105</a> | \$695.00   |                                |                             | ✓ | ✓ |                           | ✓ |   |                            |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-4040</a> | 72.5              | <a href="#">B84143A0120R105</a> | \$695.00   |                                |                             | ✓ | ✓ |                           | ✓ |   |                            |  |  |                            |   |   |
| H  | <a href="#">GS33-4050</a> | 77                | <a href="#">B84143D0150R127</a> | \$1,056.00 | RF002X00A                      | ✓                           |   | ✓ |                           | ✓ |   |                            |  |  | ✓                          | ✓ |   |
|  | <a href="#">GS33-4060</a> | 97                | <a href="#">B84143D0150R127</a> | \$1,056.00 |                                |                             | ✓ |   | ✓                         |   | ✓ |                            |  |  |                            | ✓ | ✓ |
| I  | <a href="#">GS33-2040</a> | 126               | <a href="#">B84143D0200R127</a> | \$1,565.00 | RF002X00A                      | ✓                           | ✓ | ✓ |                           |   |   |                            |  |  | ✓                          | ✓ |   |
|  | <a href="#">GS33-2050</a> | 151               | <a href="#">B84143D0200R127</a> | \$1,565.00 |                                |                             | ✓ | ✓ |                           |   |   |                            |  |  |                            | ✓ | ✓ |
|  | <a href="#">GS33-4075</a> | 123               | <a href="#">B84143D0200R127</a> | \$1,565.00 |                                |                             |   | ✓ |                           |   |   |                            |  |  |                            |   |   |
|  | <a href="#">GS33-4100</a> | 173               | <a href="#">B84143D0200R127</a> | \$1,565.00 |                                |                             |   | ✓ |                           |   |   |                            |  |  |                            |   |   |

Note: It is not necessary to add a zero-phase reactor to pass the C2 conducted emission test.

# GS30 Series Optional Accessories – EMI Input Filters

## GS30 High Performance EMI Input Filters

High performance EMI filters may improve drive performance for certain applications. Use the table below to select the correct filter for your drive. For additional information and installation instructions, please see your GS30 series User Manual.

| EMI Filters Selection |                 |                              |                           |
|-----------------------|-----------------|------------------------------|---------------------------|
| Model                 | Description     | EMI Filter*                  |                           |
|                       |                 | Roxburgh Filters Chassis 1ph | Roxburgh Filters C2 Rated |
| <b>GS30 Drives</b>    |                 |                              |                           |
| <b>GS31-20P5</b>      | 230V 1ph 0.5 hp | <b>RES90F10</b>              | <b>MIF10</b>              |
| <b>GS31-21P0</b>      | 230V 1ph 1.0 hp | <b>RES90F16</b>              | <b>MIF16</b>              |
| <b>GS31-22P0</b>      | 230V 1ph 2.0 hp | <b>RES90S20</b>              | <b>MIF23</b>              |
| <b>GS31-23P0</b>      | 230V 1ph 3.0 hp | <b>RES90S30</b>              | <b>MIF330B</b>            |
| <b>GS33-20P5</b>      | 230V 3ph 0.5 hp | -                            | <b>KMF306A</b>            |
| <b>GS33-21P0</b>      | 230V 3ph 1.0 hp | -                            | <b>KMF306A</b>            |
| <b>GS33-22P0</b>      | 230V 3ph 2.0 hp | -                            | <b>KMF318A</b>            |
| <b>GS33-23P0</b>      | 230V 3ph 3.0 hp | -                            | <b>KMF318A</b>            |
| <b>GS33-25P0</b>      | 230V 3ph 5.0 hp | -                            | <b>KMF325A</b>            |
| <b>GS33-27P5</b>      | 230V 3ph 7.5 hp | -                            | <b>KMF336A</b>            |
| <b>GS33-2010</b>      | 230V 3ph 10hp   | -                            | <b>KMF350A</b>            |
| <b>GS33-2015</b>      | 230V 3ph 15hp   | -                            | <b>KMF370A</b>            |
| <b>GS33-2020</b>      | 230V 3ph 20hp   | -                            | <b>KMF3100A</b>           |
| <b>GS33-2025</b>      | 230V 3ph 25hp   | -                            | <b>KMF3100A</b>           |
| <b>GS33-2030</b>      | 230V 3ph 30hp   | -                            | <b>KMF3100A</b>           |
| <b>GS33-2040</b>      | 230V 3ph 40hp   | -                            | <b>MIF3150</b>            |
| <b>GS33-2050</b>      | 230V 3ph 50hp   | -                            | <b>MIF3150</b>            |
| <b>GS33-40P5</b>      | 460V 3ph 0.5 hp | -                            | <b>KMF306A</b>            |
| <b>GS33-41P0</b>      | 460V 3ph 1.0 hp | -                            | <b>KMF306A</b>            |
| <b>GS33-42P0</b>      | 460V 3ph 2.0 hp | -                            | <b>KMF306A</b>            |
| <b>GS33-43P0</b>      | 460V 3ph 3.0 hp | -                            | <b>KMF310A</b>            |
| <b>GS33-45P0</b>      | 460V 3ph 5.0 hp | -                            | <b>KMF318A</b>            |
| <b>GS33-47P5</b>      | 460V 3ph 7.5 hp | -                            | <b>KMF318A</b>            |
| <b>GS33-4010</b>      | 460V 3ph 10hp   | -                            | <b>KMF325A</b>            |
| <b>GS33-4015</b>      | 460V 3ph 15hp   | -                            | <b>KMF336A</b>            |
| <b>GS33-4020</b>      | 460V 3ph 20hp   | -                            | <b>KMF350A</b>            |
| <b>GS33-4025</b>      | 460V 3ph 25hp   | -                            | <b>KMF350A</b>            |
| <b>GS33-4030</b>      | 460V 3ph 30hp   | -                            | <b>KMF370A</b>            |
| <b>GS33-4040</b>      | 460V 3ph 40hp   | -                            | <b>KMF370A</b>            |
| <b>GS33-4050</b>      | 460V 3ph 50hp   | -                            | <b>KMF370A</b>            |
| <b>GS33-4060</b>      | 460V 3ph 60hp   | -                            | <b>KMF3100A</b>           |
| <b>GS33-4075</b>      | 460V 3ph 75hp   | -                            | <b>MIF3150</b>            |
| <b>GS33-4100</b>      | 460V 3ph 100hp  | -                            | <b>MIF3150</b>            |

\* All specs for the EMI filters can be found at [www.automationdirect.com](http://www.automationdirect.com) or by clicking the following links: [-KMF Series Filters](#), [-MIF Series Filters](#), [-RES90 Series Filters](#)

# GS30 Series Optional Accessories – Fuses/Circuit Breakers

## GS30 Fuses/Circuit Breakers

Protection devices are essential to prevent damage to your GS30 series drive and application equipment. Please use the fuse specification chart below to select fuses that are applicable to your drive. Only use UL-certified fuses which comply with your local regulations.

| Fuse Specification Chart GS30 DURAPULSE Drives |       |             |       |                        |                        |                        |                                  |                 |                                   |
|--|-------|-------------|-------|------------------------|------------------------|------------------------|----------------------------------|-----------------|-----------------------------------|
| Drive Model                                    | HP    | Input Power |       |                        | Input Fuse             |                        |                                  | Circuit Breaker |                                   |
|  |       | Ø           | Volts | GS30 Input Amps        | Fuse Amps              | Fast Acting Class T    | Edison Class J*                  | Size            | Note                              |
| <a href="#">GS31-20P5</a>                      | 1/2   | 1           | 230   | 8.3                    | 15                     | <a href="#">TJN15</a>  | <a href="#">JHL15</a>            | 20              | <a href="#">GCB100S-3FF20LL</a>   |
| <a href="#">GS31-21P0</a>                      | 1     |             |       | 11.3                   | 20                     | <a href="#">TJN20</a>  | <a href="#">JHL20</a>            | 30              | <a href="#">GCB100S-3FF30LL</a>   |
| <a href="#">GS31-22P0</a>                      | 2     |             |       | 18.5                   | 35                     | <a href="#">TJN35</a>  | <a href="#">JHL35</a>            | 45              | <a href="#">GCB100S-3FF40LL</a>   |
| <a href="#">GS31-23P0</a>                      | 3     |             |       | 27.5                   | 50                     | <a href="#">TJN50</a>  | <a href="#">JHL50</a>            | 70              | <a href="#">GCB100S-3FF70LL</a>   |
| <a href="#">GS33-20P5</a>                      | 1/2   |             |       | 3.8                    | 15                     | <a href="#">TJN15</a>  | <a href="#">JHL15</a>            | 15              | <a href="#">GCB100S-3FF15LL</a>   |
| <a href="#">GS33-21P0</a>                      | 1     |             |       | 6                      | 20                     | <a href="#">TJN20</a>  | <a href="#">JHL20</a>            | 16              | <a href="#">GCB100S-3FF15LL</a>   |
| <a href="#">GS33-22P0</a>                      | 2     |             |       | 9.6                    | 35                     | <a href="#">TJN35</a>  | <a href="#">JHL35</a>            | 25              | <a href="#">GCB100S-3FF25LL</a>   |
| <a href="#">GS33-23P0</a>                      | 3     |             |       | 15                     | 50                     | <a href="#">TJN50</a>  | <a href="#">JHL50</a>            | 40              | <a href="#">GCB100S-3FF40LL</a>   |
| <a href="#">GS33-25P0</a>                      | 5     |             |       | 23.4                   | 80                     | <a href="#">TJN80</a>  | <a href="#">JHL80</a>            | 60              | <a href="#">GCB100S-3FF60LL</a>   |
| <a href="#">GS33-27P5</a>                      | 7 1/2 |             |       | 32.4                   | 60                     | <a href="#">TJN60</a>  | <a href="#">JHL60</a>            | 63              | <a href="#">GCB100S-3FF60LL</a>   |
| <a href="#">GS33-2010</a>                      | 10    |             |       | 43.2                   | 80                     | <a href="#">TJN80</a>  | <a href="#">JHL80</a>            | 90              | <a href="#">GCB100S-3FF90LL</a>   |
| <a href="#">GS33-2015</a>                      | 15    |             |       | 61.2                   | 110                    | <a href="#">TJN110</a> | <a href="#">JHL110</a>           | 125             | <a href="#">GCB150S-3FF125LL</a>  |
| <a href="#">GS33-2020</a>                      | 20    |             |       | 82.8                   | 150                    | <a href="#">TJN150</a> | <a href="#">JHL150</a>           | 160             | <a href="#">BW250JAGU-3P160SB</a> |
| <a href="#">GS33-2025</a>                      | 25    |             |       | 85.0                   | 170                    | <a href="#">TJN175</a> | <a href="#">JHL175</a>           | 175             | <a href="#">GCB250S-3FF175LL</a>  |
| <a href="#">GS33-2030</a>                      | 30    |             |       | 103.0                  | 206                    | <a href="#">TJN200</a> | <a href="#">JHL200</a>           | 200             | <a href="#">GCB250S-3FF200LL</a>  |
| <a href="#">GS33-2040</a>                      | 40    |             |       | 126.0                  | 252                    | <a href="#">TJN250</a> | <a href="#">JHL250</a>           | 225             | <a href="#">GCB250S-3FF225LL</a>  |
| <a href="#">GS33-2050</a>                      | 50    | 151.0       | 302   | <a href="#">TJN300</a> | <a href="#">JHL300</a> | 300                    | <a href="#">GCB400S-3FF300LL</a> |                 |                                   |
| <a href="#">GS33-40P5</a>                      | 1/2   | 3           | 460   | 2                      | 10                     | <a href="#">TJS10</a>  | <a href="#">JHL10</a>            | 15              | <a href="#">GCB100S-3FF15LL</a>   |
| <a href="#">GS33-41P0</a>                      | 1     |             |       | 3.3                    | 15                     | <a href="#">TJS15</a>  | <a href="#">JHL15</a>            | 15              | <a href="#">GCB100S-3FF15LL</a>   |
| <a href="#">GS33-42P0</a>                      | 2     |             |       | 5.1                    | 20                     | <a href="#">TJS20</a>  | <a href="#">JHL20</a>            | 15              | <a href="#">GCB100S-3FF15LL</a>   |
| <a href="#">GS33-43P0</a>                      | 3     |             |       | 7.2                    | 25                     | <a href="#">TJS25</a>  | <a href="#">JHL25</a>            | 20              | <a href="#">GCB100S-3FF20LL</a>   |
| <a href="#">GS33-45P0</a>                      | 5     |             |       | 11.6                   | 45                     | <a href="#">TJS45</a>  | <a href="#">JHL45</a>            | 30              | <a href="#">GCB100S-3FF30LL</a>   |
| <a href="#">GS33-47P5</a>                      | 7 1/2 |             |       | 17.3                   | 35                     | <a href="#">TJS35</a>  | <a href="#">JHL35</a>            | 32              | <a href="#">GCB100S-3FF30LL</a>   |
| <a href="#">GS33-4010</a>                      | 10    |             |       | 22.6                   | 45                     | <a href="#">TJS45</a>  | <a href="#">JHL45</a>            | 45              | <a href="#">GCB100S-3FF40LL</a>   |
| <a href="#">GS33-4015</a>                      | 15    |             |       | 30.8                   | 60                     | <a href="#">TJS60</a>  | <a href="#">JHL60</a>            | 60              | <a href="#">GCB100S-3FF60LL</a>   |
| <a href="#">GS33-4020</a>                      | 20    |             |       | 39.6                   | 80                     | <a href="#">TJS80</a>  | <a href="#">JHL80</a>            | 80              | <a href="#">GCB100S-3FF80LL</a>   |
| <a href="#">GS33-4025</a>                      | 25    |             |       | 45.7                   | 90                     | <a href="#">TJS90</a>  | <a href="#">JHL90</a>            | 90              | <a href="#">GCB100S-3FF90LL</a>   |
| <a href="#">GS33-4030</a>                      | 30    |             |       | 53.9                   | 110                    | <a href="#">TJS110</a> | <a href="#">JHL110</a>           | 100             | <a href="#">GCB100S-3FF100LL</a>  |
| <a href="#">GS33-4040</a>                      | 40    |             |       | 72.5                   | 150                    | <a href="#">TJN150</a> | <a href="#">JHL150</a>           | 125             | <a href="#">GCB150S-3FF125LL</a>  |
| <a href="#">GS33-4050</a>                      | 50    |             |       | 77.0                   | 160                    | <a href="#">TJN175</a> | <a href="#">JHL175</a>           | 150             | <a href="#">GCB150S-3FF150LL</a>  |
| <a href="#">GS33-4060</a>                      | 60    |             |       | 97.0                   | 200                    | <a href="#">TJN200</a> | <a href="#">JHL200</a>           | 175             | <a href="#">GCB250S-3FF175LL</a>  |
| <a href="#">GS33-4075</a>                      | 75    |             |       | 123.0                  | 250                    | <a href="#">TJN250</a> | <a href="#">JHL250</a>           | 225             | <a href="#">GCB250S-3FF225LL</a>  |
| <a href="#">GS33-4100</a>                      | 100   |             |       | 173.0                  | 350                    | <a href="#">TJN300</a> | <a href="#">JHL350</a>           | 300             | <a href="#">GCB400S-3FF300LL</a>  |

\* High-speed Class J.  
 Note: JHL fuses can be used with GS and DURAPULSE drives in non-UL applications. Fuse the drive according to NEC guidelines (NEC Article 430). For UL applications, GS, and DURAPULSE drives require Class T fuses (refer to the drive's user manual for details).

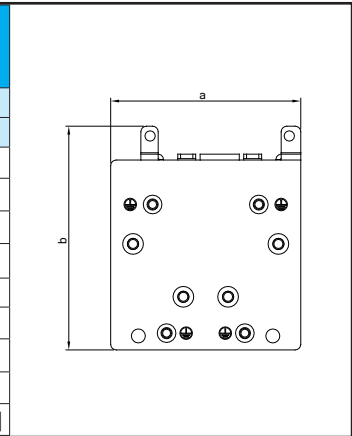
# DuraPulse Optional Accessories – General

## EMC Shield Plate

EMC Shield Plates are available for use with shielded cable and your GS10/GS20/GS30 drive. For GS20X drives, please use Earthing Plates. Each shield plate is compatible with all GS10, GS20, and GS30 drives of that frame size. For more information and installation instructions, see your GSxx series User Manual.

| EMC Shield Plate Selection |       |                             |         |
|----------------------------|-------|-----------------------------|---------|
| Drive Series               | Frame | EMC Shield Plate Model      | Price   |
| GS10/20/30                 | A     | <a href="#">GS20A-ESP-A</a> | \$25.00 |
| GS10/20/30                 | B     | <a href="#">GS20A-ESP-B</a> | \$26.00 |
| GS10/20/30                 | C     | <a href="#">GS20A-ESP-C</a> | \$26.50 |
| GS10/20/30                 | D     | <a href="#">GS20A-ESP-D</a> | \$27.50 |
| GS20/30                    | E     | <a href="#">GS20A-ESP-E</a> | \$38.50 |
| GS20/30                    | F     | <a href="#">GS20A-ESP-F</a> | \$39.00 |
| GS30                       | G     | <a href="#">GS30A-ESP-G</a> | \$42.00 |
| GS30                       | H     | <a href="#">GS30A-ESP-H</a> | \$45.00 |
| GS30                       | I     | <a href="#">GS30A-ESP-I</a> | \$49.00 |

| EMC Shield Plate Dimensions |                      |               |
|-----------------------------|----------------------|---------------|
| Model                       | Dimensions mm [inch] |               |
|                             | a                    | b             |
| <a href="#">GS20A-ESP-A</a> | 69.3 [2.73]          | 80.0 [3.15]   |
| <a href="#">GS20A-ESP-B</a> | 67.7 [2.67]          | 79.7 [3.14]   |
| <a href="#">GS20A-ESP-C</a> | 78.0 [3.07]          | 91.0 [3.58]   |
| <a href="#">GS20A-ESP-D</a> | 103.4 [4.07]         | 97.0 [3.82]   |
| <a href="#">GS20A-ESP-E</a> | 124.3 [4.89]         | 77.4 [3.05]   |
| <a href="#">GS20A-ESP-F</a> | 168.0 [6.61]         | 80.0 [3.15]   |
| <a href="#">GS30A-ESP-G</a> | 243.5 [9.59]         | 154.9 [6.10]  |
| <a href="#">GS30A-ESP-H</a> | 262.0 [10.31]        | 201.9 [7.95]  |
| <a href="#">GS30A-ESP-I</a> | 304.0 [11.97]        | 260.7 [10.26] |

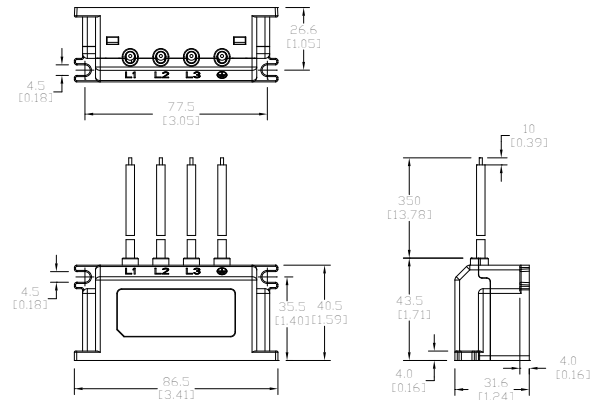


## Capacitive Filter

The GS20A-CAPF capacitive filter supports basic filtering and noise interference reduction for all GS10, GS20(X), and G30 models, 460V and below. For more information and installation instructions, please see your GSxx series User Manual.

The GS20A-CAPF cannot be used with 575V models.

| Capacitive Filter         |                            |         |                    |                   |                                  |
|---------------------------|----------------------------|---------|--------------------|-------------------|----------------------------------|
| Drive Series              | Model                      | Price   | Applicable Voltage | Temperature Range | Capacitance                      |
| GS10/<br>GS20(X)/<br>GS30 | <a href="#">GS20A-CAPF</a> | \$21.50 | 110–480 VAC        | -40–85°C          | Cx: 1uF ± 20%<br>Cy: 0.1uF ± 20% |



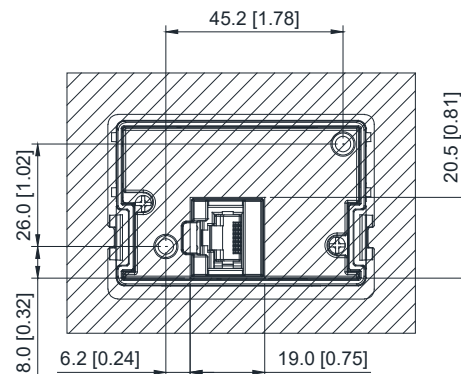
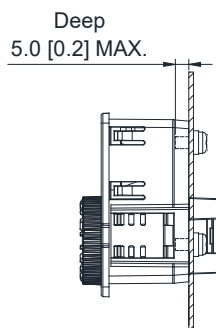
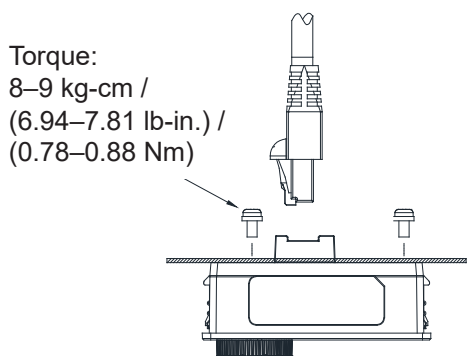
# GS30 Optional Accessories – Keypad

## GS30 Replacement Keypad

The GS30A-KPD can be used to replace the keypad that comes with each GS30 drive. The replacement keypad can be plugged directly into the drive (no screws needed) or mounted remotely using M3 screws and a standard Cat5E ethernet cable.

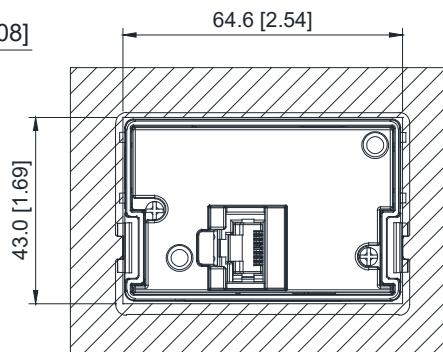
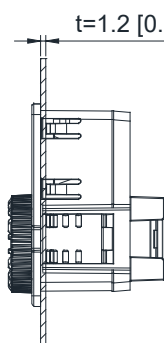
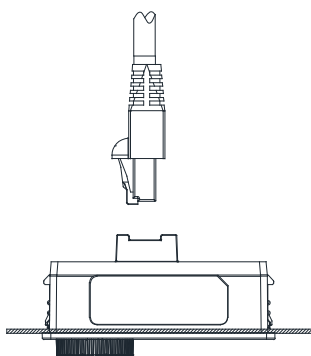


| GS30A-KPD Replacement Keypad |         |       |   |
|------------------------------|---------|-------|---|
| Part                         | Price   | Screw | Torque  |
| GS30A-KPD                    | \$57.00 | M3    | 8–9 kg·cm<br>(6.947.81 lb-in.)<br>[0.78–0.88 N·m] |



Direct Mounting on Plate

Unit: mm [inch]



Embedded Mounting in Plate

# GS30 Series Optional Accessories – Line Reactors/ VTF Filters

## GS30 Line Reactors/Voltage Time Filters

Installing an AC Line Reactor on the input side of an AC motor drive can increase line impedance, improve the power factor, reduce input current, increase system capacity, and reduce interference generated from the motor drive.

Installing a load reactor or voltage time filter on the drive's output side can increase the high-frequency impedance to reduce the dV/dT and terminal voltage to protect the motor. Use output filters if the motor cable length exceeds 100ft.

| GS30 Line/Load Reactor and AC Output Filter Selections |                     |                       |          |                              |                          |                             |
|--|---------------------|-----------------------|----------|------------------------------|--------------------------|-----------------------------|
| GS10 Model   | CT Input Amps (rms) | Saturation Amps (rms) | Motor HP | Line Reactor (LR2)*          | Load Reactor (LR2)*      | AC Output Filter (VTF)*     |
| <a href="#">GS31-20P5</a>                              | 2.8                 | 5.6                   | 1/2      | <a href="#">LR2-20P5-1PH</a> | <a href="#">LR2-20P5</a> | <a href="#">VTF-246-CFG</a> |
| <a href="#">GS31-21P0</a>                              | 4.8                 | 9.6                   | 1        | <a href="#">LR-23P0</a>      | <a href="#">LR2-21P0</a> | <a href="#">VTF-24-FH</a>   |
| <a href="#">GS31-22P0</a>                              | 7.5                 | 15                    | 2        | <a href="#">LR2-22P0-1PH</a> | <a href="#">LR-22P0</a>  | <a href="#">VTF-246-HKL</a> |
| <a href="#">GS31-23P0</a>                              | 11                  | 22                    | 3        | <a href="#">LR-27P5</a>      | <a href="#">LR-25P0</a>  | <a href="#">VTF-24-JL</a>   |
| <a href="#">GS33-20P5</a>                              | 2.8                 | 5.6                   | 1/2      | <a href="#">LR2-20P5</a>     | <a href="#">LR2-20P5</a> | <a href="#">VTF-246-DGH</a> |
| <a href="#">GS33-21P0</a>                              | 4.8                 | 9.6                   | 1        | <a href="#">LR2-20P7</a>     | <a href="#">LR2-20P7</a> | <a href="#">VTF-24-FH</a>   |
| <a href="#">GS33-22P0</a>                              | 7.5                 | 15                    | 2        | <a href="#">LR-22P0</a>      | <a href="#">LR-22P0</a>  | <a href="#">VTF-246-HKL</a> |
| <a href="#">GS33-23P0</a>                              | 11                  | 22                    | 3        | <a href="#">LR-25P0</a>      | <a href="#">LR-25P0</a>  | <a href="#">VTF-24-JL</a>   |
| <a href="#">GS33-25P0</a>                              | 17                  | 34                    | 5        | <a href="#">LR-27P5</a>      | <a href="#">LR-25P0</a>  | <a href="#">VTF-46-LM</a>   |
| <a href="#">GS33-27P5</a>                              | 25                  | 50                    | 7 1/2    | <a href="#">LR-2010</a>      | <a href="#">LR-2010</a>  | <a href="#">VTF-46-NP</a>   |
| <a href="#">GS33-2010</a>                              | 33                  | 66                    | 10       | <a href="#">LR-2015</a>      | <a href="#">LR-2010</a>  | <a href="#">VTF-246-LPQ</a> |
| <a href="#">GS33-2015</a>                              | 46                  | 92                    | 15       | <a href="#">LR-2020</a>      | <a href="#">LR-2015</a>  | <a href="#">VTF-246-NRS</a> |
| <a href="#">GS33-2020</a>                              | 65                  | 130                   | 20       | <a href="#">LR-2030</a>      | <a href="#">LR-2020</a>  | <a href="#">VTF-246-PSU</a> |
| <a href="#">GS33-2025</a>                              | 75                  | 140                   | 25       | <a href="#">LR-2030</a>      | <a href="#">LR-2025</a>  | <a href="#">VTF-246-PSU</a> |
| <a href="#">GS33-2030</a>                              | 90                  | 180                   | 30       | <a href="#">LR-2030</a>      | <a href="#">LR-2030</a>  | <a href="#">VTF-246-RUV</a> |
| <a href="#">GS33-2040</a>                              | 120                 | 240                   | 40       | <a href="#">LR-2040</a>      | <a href="#">LR-2040</a>  | <a href="#">VTF-246-RUV</a> |
| <a href="#">GS33-2050</a>                              | 146                 | 292                   | 50       | <a href="#">LR-2050</a>      | <a href="#">LR-2050</a>  | <a href="#">VTF-246-SVW</a> |
| <a href="#">GS33-40P5</a>                              | 1.5                 | 3                     | 1/2      | <a href="#">LR2-40P5</a>     | <a href="#">LR2-40P5</a> | <a href="#">VTF-46-DE</a>   |
| <a href="#">GS33-41P0</a>                              | 2.7                 | 5.4                   | 1        | <a href="#">LR2-41P0</a>     | <a href="#">LR2-41P0</a> | <a href="#">VTF-246-CFG</a> |
| <a href="#">GS33-42P0</a>                              | 4.2                 | 8.4                   | 2        | <a href="#">LR2-43P0</a>     | <a href="#">LR2-42P0</a> | <a href="#">VTF-24-FH</a>   |
| <a href="#">GS33-43P0</a>                              | 5.5                 | 11                    | 3        | <a href="#">LR2-45P0</a>     | <a href="#">LR2-43P0</a> | <a href="#">VTF-24-FH</a>   |
| <a href="#">GS33-45P0</a>                              | 9                   | 18                    | 5        | <a href="#">LR2-47P5</a>     | <a href="#">LR2-45P0</a> | <a href="#">VTF-246-HKL</a> |
| <a href="#">GS33-47P5</a>                              | 13                  | 26                    | 7 1/2    | <a href="#">LR-4010</a>      | <a href="#">LR2-47P5</a> | <a href="#">VTF-24-JL</a>   |
| <a href="#">GS33-4010</a>                              | 17                  | 34                    | 10       | <a href="#">LR-4015</a>      | <a href="#">LR-4010</a>  | <a href="#">VTF-24-JL</a>   |
| <a href="#">GS33-4015</a>                              | 25                  | 50                    | 15       | <a href="#">LR-4015</a>      | <a href="#">LR-4015</a>  | <a href="#">VTF-246-LPQ</a> |
| <a href="#">GS33-4020</a>                              | 32                  | 64                    | 20       | <a href="#">LR-4020</a>      | <a href="#">LR-4020</a>  | <a href="#">VTF-246-LPQ</a> |
| <a href="#">GS33-4025</a>                              | 38                  | 76                    | 25       | <a href="#">LR-4030</a>      | <a href="#">LR-4025</a>  | <a href="#">VTF-246-MQR</a> |
| <a href="#">GS33-4030</a>                              | 45                  | 90                    | 30       | <a href="#">LR-4040</a>      | <a href="#">LR-4030</a>  | <a href="#">VTF-246-NRS</a> |
| <a href="#">GS33-4040</a>                              | 60                  | 120                   | 40       | <a href="#">LR-4050</a>      | <a href="#">LR-4040</a>  | <a href="#">VTF-246-NRS</a> |
| <a href="#">GS33-4050</a>                              | 75                  | 150                   | 50       | <a href="#">LR-4050</a>      | <a href="#">LR-4050</a>  | <a href="#">VTF-246-PSU</a> |
| <a href="#">GS33-4060</a>                              | 91                  | 182                   | 60       | <a href="#">LR-4060</a>      | <a href="#">LR-4060</a>  | <a href="#">VTF-246-PSU</a> |
| <a href="#">GS33-4075</a>                              | 112                 | 224                   | 75       | <a href="#">LR-4100</a>      | <a href="#">LR-4075</a>  | <a href="#">VTF-246-RUV</a> |
| <a href="#">GS33-4100</a>                              | 150                 | 300                   | 100      | <a href="#">LR-4100</a>      | <a href="#">LR-4100</a>  | <a href="#">VTF-246-SVW</a> |

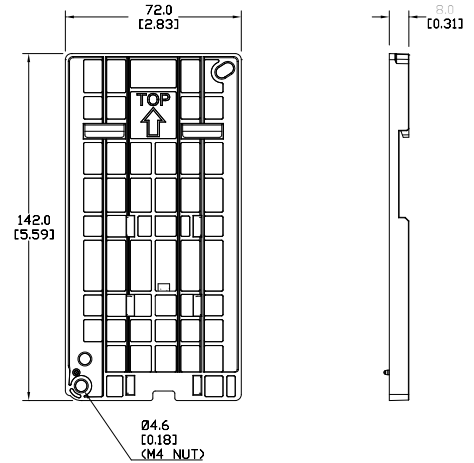
\* All specs for the LR2 and VTF can be found at [www.automationdirect.com](http://www.automationdirect.com)

# DuraPulse Optional Accessories – Mounting Kits

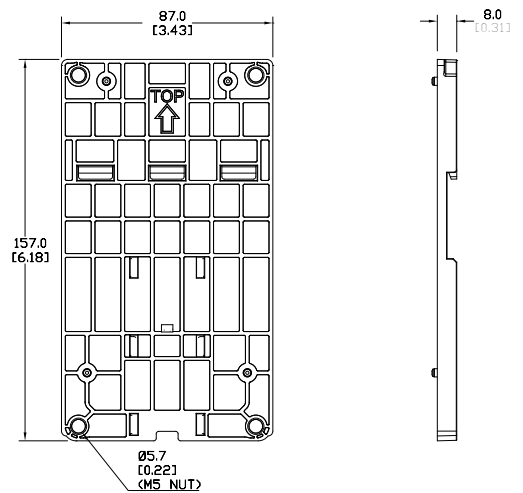
## DIN Rail Mounting

Frame A, B, and C GS10, GS20, and GS30 drives can be DIN rail mounted using a DIN rail mounting kit. One kit is used for A and B frame drives, while a second kit is used for C frame drives. Please see the GSxx series User Manual for additional information and installation instructions.

| GSxx DIN Rail Mounting Compatibility |                           |                           |       |              |        |
|--------------------------------------|---------------------------|---------------------------|-------|--------------|--------|
| Drive Model                          |                           |                           | Frame | DIN Rail Kit | Price  |
| GS10 Series                          | GS20 Series               | GS30 Series               |       |              |        |
| <a href="#">GS11N-10P2</a>           | <a href="#">GS21-10P2</a> | –                         | A1    | GS20A-DR-AB  | \$5.25 |
| <a href="#">GS11N-20P2</a>           | <a href="#">GS21-20P2</a> | –                         | A1    |              |        |
| <a href="#">GS13N-20P2</a>           | <a href="#">GS23-20P2</a> | –                         | A1    |              |        |
| <a href="#">GS13N-20P5</a>           | <a href="#">GS23-20P5</a> | <a href="#">GS31-20P5</a> | A2    |              |        |
| –                                    | –                         | <a href="#">GS33-20P5</a> | A2    |              |        |
| –                                    | –                         | <a href="#">GS33-40P5</a> | A2    |              |        |
| <a href="#">GS11N-10P5</a>           | <a href="#">GS21-10P5</a> | <a href="#">GS33-21P0</a> | A3    |              |        |
| <a href="#">GS11N-20P5</a>           | <a href="#">GS21-20P5</a> | <a href="#">GS33-41P0</a> | A3    |              |        |
| <a href="#">GS13N-40P5</a>           | <a href="#">GS23-40P5</a> | –                         | A4    |              |        |
| <a href="#">GS13N-21P0</a>           | <a href="#">GS23-21P0</a> | –                         | A5    |              |        |
| –                                    | <a href="#">GS23-41P0</a> | –                         | A5    |              |        |
| –                                    | <a href="#">GS23-51P0</a> | –                         | A5    |              |        |
| <a href="#">GS13N-41P0</a>           | –                         | –                         | A6    |              |        |
| <a href="#">GS13N-22P0</a>           | <a href="#">GS23-22P0</a> | <a href="#">GS33-22P0</a> | B1    |              |        |
| <a href="#">GS13N-42P0</a>           | <a href="#">GS23-42P0</a> | <a href="#">GS33-42P0</a> | B1    |              |        |
| –                                    | <a href="#">GS23-52P0</a> | –                         | B1    |              |        |
| <a href="#">GS11N-21P0</a>           | <a href="#">GS21-21P0</a> | <a href="#">GS31-21P0</a> | B2    |              |        |
| <a href="#">GS11N-22P0</a>           | <a href="#">GS21-11P0</a> | <a href="#">GS31-22P0</a> | C1    |              |        |
| <a href="#">GS11N-23P0</a>           | <a href="#">GS21-22P0</a> | <a href="#">GS33-23P0</a> | C1    |              |        |
| <a href="#">GS13N-23P0</a>           | <a href="#">GS21-23P0</a> | <a href="#">GS33-25P0</a> | C1    |              |        |
| <a href="#">GS13N-25P0</a>           | <a href="#">GS23-23P0</a> | <a href="#">GS33-43P0</a> | C1    |              |        |
| <a href="#">GS11N-11P0</a>           | <a href="#">GS23-25P0</a> | <a href="#">GS33-45P0</a> | C1    |              |        |
| <a href="#">GS13N-43P0</a>           | <a href="#">GS23-43P0</a> | –                         | C1    |              |        |
| <a href="#">GS13N-45P0</a>           | <a href="#">GS23-45P0</a> | –                         | C1    |              |        |
| –                                    | <a href="#">GS23-53P0</a> | –                         | C1    |              |        |
| –                                    | <a href="#">GS23-55P0</a> | –                         | C1    |              |        |



**GS20A-DR-AB**



**GS20A-DR-C**

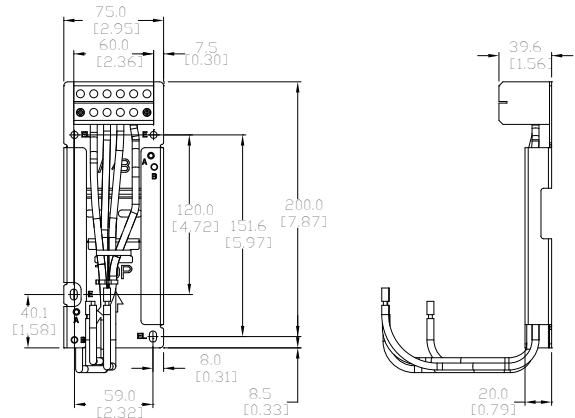


# DuraPulse Optional Accessories – Mounting Kits

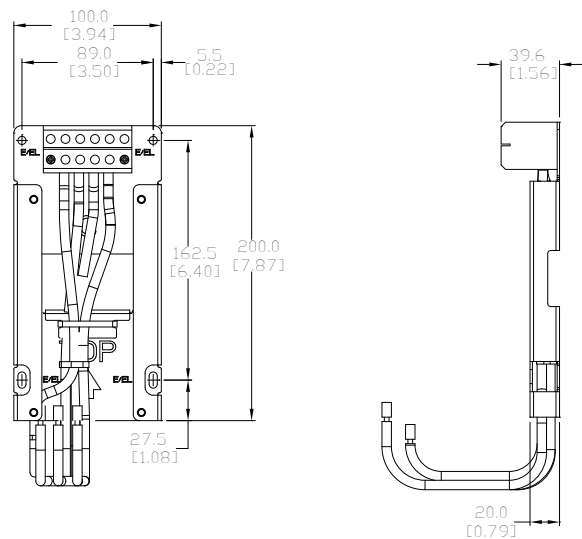
## Mounting Adapter Plate

The mounting adapter plate can be used to change the wiring orientation for the GS10, GS20, and GS30 series and provides flexibility for installation. This accessory changes the wiring method from the “bottom-mains input/ bottom-motor output” to the “top-mains input/bottom-motor output” for GS10/GS20/GS30. Use the table below to select the correct mounting plate for your drive. Please see your GSxx series User Manual for additional information and installation instructions.

| GSxx Mounting Adapter Compatibility |                           |                           |       |                |         |
|-------------------------------------|---------------------------|---------------------------|-------|----------------|---------|
| Drive Model                         |                           |                           | Frame | Mounting Plate | Price   |
| GS10 Series                         | GS20 Series               | GS30 Series               |       |                |         |
| <a href="#">GS11N-10P2</a>          | <a href="#">GS21-10P2</a> | -                         | A1    | GS20A-MP-AB    | \$46.00 |
| <a href="#">GS11N-20P2</a>          | <a href="#">GS21-20P2</a> | -                         | A1    |                |         |
| <a href="#">GS13N-20P2</a>          | <a href="#">GS23-20P2</a> | -                         | A1    |                |         |
| <a href="#">GS13N-20P5</a>          | <a href="#">GS23-20P5</a> | <a href="#">GS31-20P5</a> | A2    |                |         |
| -                                   | -                         | <a href="#">GS33-20P5</a> | A2    |                |         |
| -                                   | -                         | <a href="#">GS33-40P5</a> | A2    |                |         |
| <a href="#">GS11N-10P5</a>          | <a href="#">GS21-10P5</a> | <a href="#">GS33-21P0</a> | A3    |                |         |
| <a href="#">GS11N-20P5</a>          | <a href="#">GS21-20P5</a> | <a href="#">GS33-41P0</a> | A3    |                |         |
| <a href="#">GS13N-40P5</a>          | <a href="#">GS23-40P5</a> | -                         | A4    |                |         |
| <a href="#">GS13N-21P0</a>          | <a href="#">GS23-21P0</a> | -                         | A5    |                |         |
| -                                   | <a href="#">GS23-41P0</a> | -                         | A5    |                |         |
| -                                   | <a href="#">GS23-51P0</a> | -                         | A5    |                |         |
| <a href="#">GS13N-41P0</a>          | -                         | -                         | A6    |                |         |
| <a href="#">GS13N-22P0</a>          | <a href="#">GS23-22P0</a> | <a href="#">GS33-22P0</a> | B1    |                |         |
| <a href="#">GS13N-42P0</a>          | <a href="#">GS23-42P0</a> | <a href="#">GS33-42P0</a> | B1    |                |         |
| -                                   | <a href="#">GS23-52P0</a> | -                         | B1    |                |         |
| <a href="#">GS11N-21P0</a>          | <a href="#">GS21-21P0</a> | <a href="#">GS31-21P0</a> | B2    |                |         |
| <a href="#">GS11N-22P0</a>          | <a href="#">GS21-11P0</a> | <a href="#">GS31-22P0</a> | C1    |                |         |
| <a href="#">GS11N-23P0</a>          | <a href="#">GS21-22P0</a> | <a href="#">GS33-23P0</a> | C1    |                |         |
| <a href="#">GS13N-23P0</a>          | <a href="#">GS21-23P0</a> | <a href="#">GS33-25P0</a> | C1    |                |         |
| <a href="#">GS13N-25P0</a>          | <a href="#">GS23-23P0</a> | <a href="#">GS33-43P0</a> | C1    |                |         |
| <a href="#">GS11N-11P0</a>          | <a href="#">GS23-25P0</a> | <a href="#">GS33-45P0</a> | C1    |                |         |
| <a href="#">GS13N-43P0</a>          | <a href="#">GS23-43P0</a> | -                         | C1    |                |         |
| <a href="#">GS13N-45P0</a>          | <a href="#">GS23-45P0</a> | -                         | C1    |                |         |
| -                                   | <a href="#">GS23-53P0</a> | -                         | C1    |                |         |
| -                                   | <a href="#">GS23-55P0</a> | -                         | C1    |                |         |



GS20A-MP-AB



GS20A-MP-C

# DuraPulse Optional Accessories – Replacement Cooling Fans

## Cooling Fans for GSxx Series Drives (Spare/Replacement)

**NOTE:** The fans described below are included with the applicable GS10, GS20(X), and GS30 AC Drive, and are also available for purchase separately as spare/replacement components.

| GS10, GS20(X), GS30 – Fan Selection Table  |   |  |                              |          |  |               |         |
|--|---|--|------------------------------|----------|--|---------------|---------|
| Drive Model  |   |  | Fan Model *                  |          | Description                                | Size          | Voltage |
| GS10 Series  | GS20(X) Series  | GS30 Series  | Part #                       | Price    |  |               |         |
| GS13N-22P0<br>GS13N-42P0   | GS23-22P0<br>GS23-42P0<br>GS23-52P0   | <a href="#">GS31-21P0</a><br><a href="#">GS33-22P0</a><br><a href="#">GS33-42P0</a>  | <a href="#">GS20A-FAN-B</a>  | \$21.50  | GS20 series main cooling fan, replacement. | 40x40x15 mm   | 12VDC   |
| -  | GS21X-23P0<br>GS23X-23P0<br>GS23X-25P0<br>GS23X-45P0  | -  | <a href="#">GS20XA-FAN-B</a> | \$51.00  | GS20X series main cooling fan, replacement | 60x60x25 mm   |         |
| GS11N-11P0<br>GS11N-23P0<br>GS13N-23P0<br>GS13N-25P0<br>GS13N-43P0<br>GS13N-45P0 | GS21-11P0<br>GS21-22P0<br>GS21-23P0<br>GS23-23P0<br>GS23-25P0<br>GS23-43P0<br>GS23-45P0<br>GS23-53P0<br>GS23-55P0 | <a href="#">GS31-22P0</a><br><a href="#">GS31-23P0</a><br><a href="#">GS33-23P0</a><br><a href="#">GS33-25P0</a><br><a href="#">GS33-43P0</a><br><a href="#">GS33-45P0</a> | <a href="#">GS20A-FAN-C</a>  | \$23.50  | GS20 series main cooling fan, replacement. | 50x50x20 mm   |         |
| -  | GS23X-27P5<br>GS23X-47P5<br>GS23X-4010  | -  | <a href="#">GS20XA-FAN-C</a> | \$52.00  | GS20X series main cooling fan, replacement | 60x60x25 mm   |         |
| GS13N-27P5<br>GS13N-47P5<br>GS13N-4010   | GS23-27P5<br>GS23-47P5<br>GS23-4010<br>GS23-57P5<br>GS23-5010   | <a href="#">GS33-27P5</a><br><a href="#">GS33-47P5</a><br><a href="#">GS33-4010</a>  | <a href="#">GS20A-FAN-D</a>  | \$27.00  | GS20 series main cooling fan, replacement. | 60x60x25 mm   |         |
| -  | GS23-2010<br>GS23-2015<br>GS23-4015<br>GS23-4020  | <a href="#">GS33-2010</a><br><a href="#">GS33-2015</a><br><a href="#">GS33-4020</a>  | <a href="#">GS20A-FAN-E</a>  | \$37.50  | GS20 series main cooling fan, replacement. | 92x92x28 mm   |         |
| -  | GS23-2020<br>GS23-4025<br>GS23-4030   | <a href="#">GS33-2020</a><br><a href="#">GS33-4025</a><br><a href="#">GS33-4030</a>  | <a href="#">GS20A-FAN-F</a>  | \$41.00  | GS20 series main cooling fan, replacement. | 92x92x38 mm   |         |
| -  | -   | <a href="#">GS33-2025</a><br><a href="#">GS33-2030</a><br><a href="#">GS33-4040</a>  | <a href="#">GS30A-FAN-G</a>  | \$47.00  | GS30 series main cooling fan, replacement  | 204x87x50 mm  |         |
| -  | -   | <a href="#">GS33-4050</a><br><a href="#">GS33-4060</a>   | <a href="#">GS30A-FAN-H</a>  | \$89.00  | GS30 series main cooling fan, replacement  | 206x95x50 mm  |         |
| -  | -   | <a href="#">GS33-2040</a><br><a href="#">GS33-2050</a><br><a href="#">GS33-4075</a><br><a href="#">GS33-4100</a>   | <a href="#">GS30A-FAN-I</a>  | \$137.00 | GS30 series main cooling fan, replacement  | 260x121x50 mm |         |

\* These fans are included with the GSx series drive, and also available separately as spare or replacement components. Electrical connectors are included.



Example GS20A replacement Fan

# DuraPulse Optional Accessories – RF Filter

## RF Filter

Zero phase reactors, (aka RF noise filters) help reduce radiated noise from the inverter wiring. The wiring must go through the opening to reduce the RF component of the electrical noise. Loop the wires three times (four turns) to attain the full RF filtering effect. For larger wire sizes, place multiple zero-phase reactors (up to four) side by side for a greater filtering effect. These are effective for noise reduction on both the input and output sides of the inverter. Attenuation quality is good in a wide range from 500kHz to 10MHz.

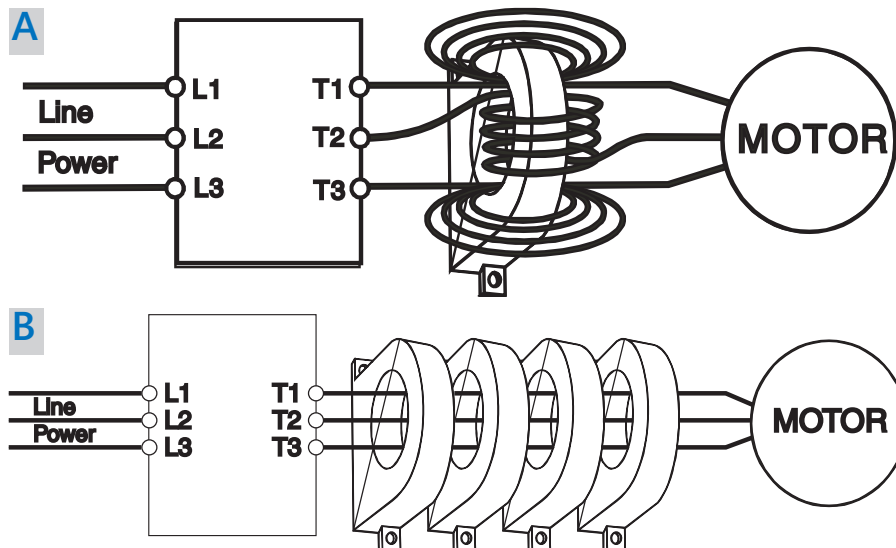


## Wiring Method

Wind each wire four times around the core, as shown in diagram A to the right. The reactor must be put at inverter side as closely as possible.

If you are unable to wire as above due to wire size or another aspect of your application, put all wires through four cores in series without winding, as in diagram B to the right.

| RF Filter Selection   |              |         |          |
|-----------------------|--------------|---------|----------|
| Drive Series          | Filter Model | Drawing | Price    |
| GS10 / GS20(X) / GS30 | RF008X00A    | PDF     | \$32.00  |
| GS30                  | RF004X00A    | PDF     | \$42.00  |
| GS30 (Frame H-I)      | RF002X00A    | PDF     | \$213.00 |



# DuraPulse Accessories – Software

## GSoft2 Drive Configuration Software

### GSoft2 Drive Configuration Software

Available for *FREE* Download

| DURAPULSE Drives GSOFT2 Drive Configuration Software  |         |   |  |
|---|---------|---|--|
| Part Number   | Price*  | Description   | For GS Drive   |
| <b>GSOFT2</b>   | \$10.50 | GSOFT2 Windows configuration software, USB or free download. For use with DURApulse GS4, GS10, GS20, GS20X and GS30 series AC drives. Requires PC serial port or USB-485M serial adapter. | GS4 – all<br>GS10 – all<br>GS20(X) – all<br>GS30 – all       |
| <b>USB-485M</b>   | \$60.00 | PC adapter, USB A to RS-485 (RJ45/RJ12).  | GS4/GS10   |
| <b>USB-CBL-AB3</b>  | \$12.00 | Programming cable, USB A to USB B, 3ft cable length.  | GS4 – all (for Drive FW only)<br>GS20(X) – all<br>GS30 – all |
| * GSOFT2 can be downloaded for <u>free</u> or purchased on USB from AutomationDirect.com (search for GSOFT2). |         |   |  |

### GSOFT2 Drive Configuration Software

GSoft2 is the configuration software for the Automation DuraPulse family of drives. It is designed to allow you to connect a personal computer to the drive, and perform a variety of functions.

GSoft2 includes an integral help file with software instructions. GSoft2 can be downloaded for free or purchased on USB from AutomationDirect.com (search for GSoft2).

### Functions

- Create new drive configurations
- Upload/download drive configurations
- Edit drive configurations
- Archive/store multiple drive configurations on your PC
- Trend drive operation parameters (not available with GS10)
- Tune the drive PID loop
- View real time key operating parameters
- Real-time trending
- Start/Stop drive and switch directions, provided drive is set up for remote operation
- View drive faults

### Computer System Requirements

GSoft2 will run on Windows PCs that meet the following requirements:

- Windows OS: **8**: 32 & 64 bit, **8.1**: 32 & 64 bit, **10**: 64 bit, 11
- Edge or Chrome (for HTML help support)
- 32 Mb of available memory
- 10 Mb hard drive space
- Available USB port
- USB to RS485 adapter needed for GS4 and GS10 models



# GS4/GS20(X)/GS30 Accessories – Software GSLogic PLC Programming Software

Optional Accessory Software Applicable Only to AC Drive Series:

- GS4
- GS20(X)
- GS30

## GSLOGIC Drive Configuration Software

Available for *FREE* Download

| GS4/GS20(X)/GS30 DURAPULSE Drives GSLogic PLC Programming Software  |         |  |  |
|---|---------|--|--|
| Part Number   | Price*  | Description  | For GS Drive                             |
| <b>GSLOGIC</b>  | \$10.50 | GSLOGIC Windows logic software, USB or free download. For use with DURApulse GS4, GS20, GS20X and GS30 series AC drives. Requires PC serial port or USB-485M serial adapter. | GS4 - all<br>GS20(X) – all<br>GS30 – all |
| <b>USB-485M</b>   | \$60.00 | PC adapter, USB A to RS-485 (RJ45/RJ12).   | GS4 – all                                |
| <b>USB-CBL-AB3</b>  | \$12.00 | Programming cable, USB A to USB B, 3ft cable length.   | GS20(X) – all<br>GS30 – all              |
| * GSLOGIC can be downloaded for <u>free</u> or purchased on USB from AutomationDirect.com (search for GSLOGIC). |         |  |  |

## PLC Summary

The GS4, GS20(X), and GS30 drives include a built-in PLC. Programmed in ladder logic, the PLC provides a comprehensive set of instructions and 2,000 (GS20(X)), 5,000 (GS30), or 10,000 (GS4) steps of programming capacity. GSLogic PLC software includes a Help File which contains the detailed information needed to use the PLC.

The PLC functionality is included with every GS4, GS20(X), and GS30 drive, and can be accessed over communications by external PLCs (via serial Modbus), or by the drive itself (using built-in PLC instructions). The PLC is perfectly suited for applications where digital and analog I/O requirements are small. For applications with complex PLC programming or large I/O requirements, please consider Click, Productivity, or Do-More/BRX. All of these PLCs can be easily integrated with the GS drive family or PLC. The GS4-KPD keypad is capable of storing multiple PLC programs.

There are two methods for communicating from the PLC to the drive. The first method is to use the WPR and RPR instructions available in the PLC's library. These two instructions can read from or write to any AC drive parameter in the same physical drive. The second method is to use Modbus RTU. The PLC is a Serial Modbus slave only. A Modbus RTU master can communicate with the PLC via serial only; optional communication cards cannot address the PLC. If communication cards (EtherNet/IP or Modbus TCP) are the desired method of communication, the drive includes PLC Buffers parameters that can be used. Simply write the needed information from the PLC into the drive's PLC buffer parameters using the WPR instruction. The Modbus TCP or EtherNet/IP cards can then read the VFD parameters.

## GSLogic Introduction

GSLogic is the drive PLC programming software for the AutomationDirect GS4, GS20(X), and GS30 family of drives. It is designed to enable you to perform a variety of drive PLC programming functions. Windows editing functions like cut, copy, paste, multiple windows, etc., are supported. GSLogic also provides for register editing, settings, file reading, saving, online monitoring settings, and other convenience functions, such as:

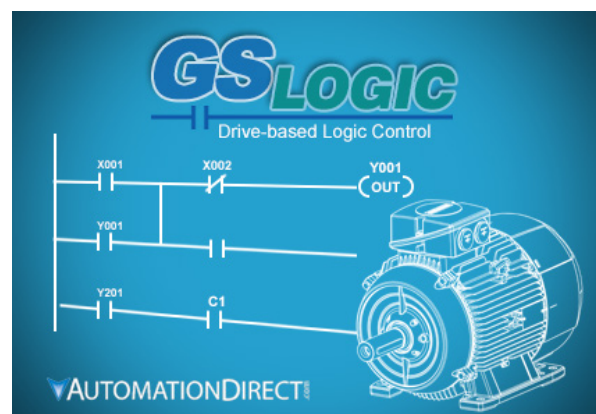
- Upload/download drive PLC program files to the onboard PLC
- Create new drive PLC programs
- Edit drive PLC programs
- Archive/store multiple drive PLC programs on your PC or the GS4-KPD drive keypad
- Control drive PID loops (FPID instructions)
- View in real time all drive PLC registers
- Print drive PLC program files

GSLogic includes an integral help file that includes software instructions, how to use GSLogic, and how to use the GS drive PLC.

## GSLogic System Requirements

GSLogic is a Windows-based programming software environment. Please check the following requirements when choosing your PC configuration:

- Windows OS: **8**: 32 & 64 bit, **8.1**: 32 & 64 bit, **10**: 64 bit, **11**
- 300MB free hard-disk space
- USB Port required for project transfer to drive
- USB-485M serial adapter required for GS4 models



# DuraPulse Optional Accessories – Advanced LCD Keypad

## Advanced Keypad

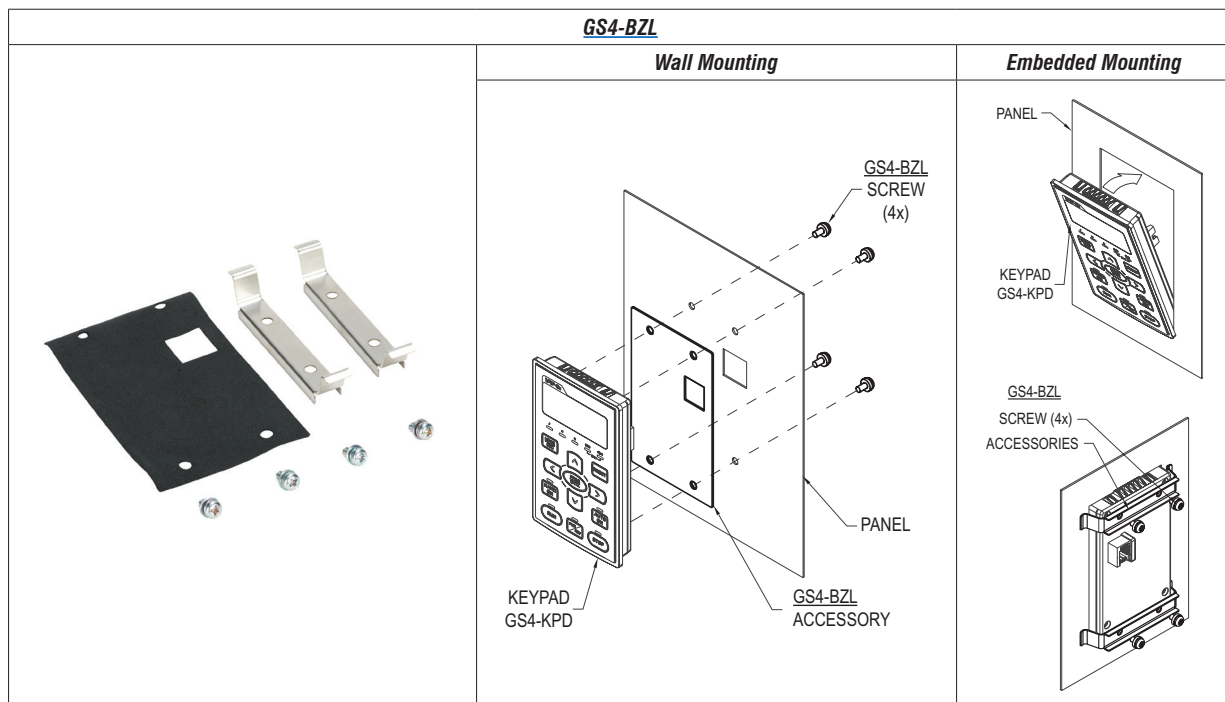
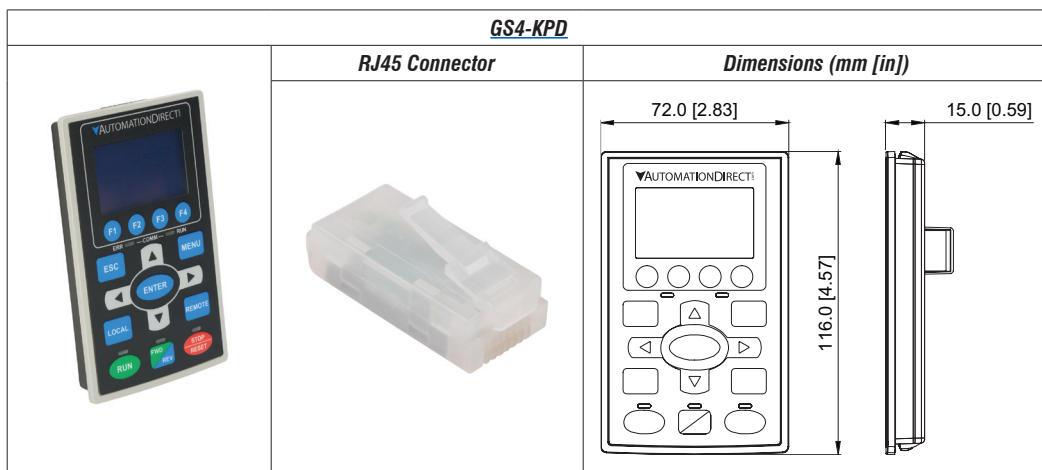
NOTE: The keypad described below is included with the GS4 AC Drive, and is also available for purchase separately as a spare/replacement component for GS4, or an optional upgrade for GS10/GS20(X)/GS30.

## Keypad Panel-Mounting Kit

NOTE: The keypad panel-mounting kit described below is an optional accessory that is NOT included with the GS10/GS20(X)/GS30 AC drive.

| GSx Series DURAPULSE Drives Keypad and Keypad Panel-Mounting Kit |          |  |  |
|--|----------|--|--|
| Part Number  | Price    | Description  | For GS Drive   |
| <b>GS4-KPD*</b>  | \$107.00 | Spare or replacement keypad for GS4 AC drives; optional advanced keypad for GS20(X) drives; includes RJ45 connector; great for maintenance or back-up programs.  | GS4 – all<br>GS10 – all<br>GS20(X) – all<br>GS30 – all |
| <b>GS4-BZL**</b>   | \$29.50  | Keypad Panel-Mounting Kit for remote surface mounting or embedded mounting of the AC drive removable keypad; hardware included. Use a standard Cat5e RJ45 patch cable (not included) to connect a remote-mounted keypad to the drive. Max cable length for remote-mounted keypad = 5m. | GS4 – all<br>GS10 – all<br>GS20(X) – all<br>GS30 – all |

\* A keypad is included with each GS4 AC Drive; additional keypads are available for spare/replacement components.  
 \*\* The keypad mounting kit is an optional accessory that is NOT included with the GS4 AC drive; for mounting the keypad remotely from the drive.  
 Note: Keypad firmware can only be upgraded when connected to a GS4 drive.



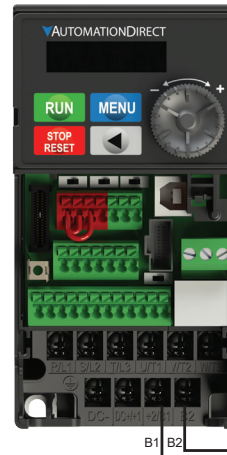
# GS30 DURAPULSE Drives Accessories – Dynamic Braking Component Selection

## Dynamic Braking Components

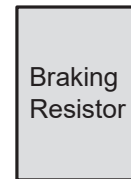
Use the table below to find the appropriate braking resistor and braking unit (if applicable) for your GS30 series AC drive. For more information and installation instructions, please see the GS30 User Manual. All listed resistors are available for purchase at [www.automationdirect.com](http://www.automationdirect.com).



For drive models GS33-2040, GS33-2050, GS33-4050, GS33-4060, GS33-4075, and GS33-4100, a dynamic braking unit must be used in conjunction with the braking resistor, as shown in the GS30 AC Drive Braking Component Selection table.



**GS30 braking resistor connection;**  
Refer to user **Dynamic Braking user manual GS-DB UMP for DURAPULSE resistor connection information.**



| GS30 AC Drive Braking Component Selection |                           |                           |                                   |                               |              |        |                                       |                                |                |                     |                                     |                                     |                               |                |                         |                                |
|---|---------------------------|---------------------------|-----------------------------------|-------------------------------|--------------|--------|---------------------------------------|--------------------------------|----------------|---------------------|-------------------------------------|-------------------------------------|-------------------------------|----------------|-------------------------|--------------------------------|
| Drive Voltage                             | Motor Power (hp)          | Drive Model               | Drive Brake Capacity - Max Torque |                               | Braking Unit |        | 125% Braking Torque @ 10% Duty Cycle* |                                |                |                     |                                     | NEMA1 Resistors with Thermal Switch |                               |                |                         |                                |
|   |                           |                           | Min Resistor Value (Ω)            | Max Total Brake Current (A)   | Qty.         | Part # | Open Type Braking Resistor            |                                |                |                     | NEMA1 Resistors with Thermal Switch |                                     |                               |                |                         |                                |
|   |                           |                           |                                   |                               |              |        | Part #                                | Qty.**                         | Wiring Diagram | Brake Torque (kg-m) | Total Brake Current (A)             | Part #                              | Qty.                          | Wiring Diagram | Total Brake Current (A) |                                |
| 230V                                      | 1/2                       | <a href="#">GS31-20P5</a> | 95.0                              | 4                             | -            | n/a    | <a href="#">GS-BR-080W200</a>         | 1                              | A              | 0.3                 | 1.9                                 | <a href="#">BR-N1-240W150</a>       | 1                             | A              | 2.6                     |                                |
|   | 1                         | <a href="#">GS31-21P0</a> | 63.3                              | 6                             |              |        | <a href="#">GS-BR-200W091</a>         | 1                              |                | 0.5                 |                                     | <a href="#">BR-N1-280W50</a>        | 1                             |                |                         |                                |
|   | 2                         | <a href="#">GS31-22P0</a> | 47.5                              | 8                             |              |        | <a href="#">GS-BR-300W070</a>         | 1                              |                | 1                   | 4.2                                 | <a href="#">BR-N1-240W150</a>       | 1                             |                | 7.8                     |                                |
|   | 3                         | <a href="#">GS31-23P0</a> | 38.0                              | 10                            |              |        | <a href="#">GS-BR-080W200</a>         | 1                              |                | 1.5                 | 5.4                                 | <a href="#">BR-N1-280W50</a>        | 1                             |                |                         |                                |
|   | 1/2                       | <a href="#">GS33-20P5</a> | 95.0                              | 4                             |              |        | <a href="#">GS-BR-200W091</a>         | 1                              |                | 0.3                 | 1.9                                 | <a href="#">BR-N1-800W25</a>        | 1                             |                | 15.6                    |                                |
|   | 1                         | <a href="#">GS33-21P0</a> | 63.3                              | 6                             |              |        | <a href="#">GS-BR-300W070</a>         | 1                              |                | 0.5                 |                                     | <a href="#">BR-N1-800W18P0</a>      | 1                             |                |                         | 21.7                           |
|   | 2                         | <a href="#">GS33-22P0</a> | 47.5                              | 8                             |              |        | <a href="#">GS-BR-400W040</a>         | 1                              |                | 1                   | 4.2                                 | <a href="#">BR-N1-1K1W15P0</a>      | 1                             |                | 26.0                    |                                |
|   | 3                         | <a href="#">GS33-23P0</a> | 38.0                              | 10                            |              |        | <a href="#">GS-BR-1K0W020</a>         | 1                              |                | 1.5                 | 5.4                                 | <a href="#">BR-N1-1K5W14P0</a>      | 1                             |                |                         | 27.9                           |
|   | 5                         | <a href="#">GS33-25P0</a> | 19.0                              | 20                            |              |        | <a href="#">GS-BR-1K5W013</a>         | 1                              |                | 2.5                 | 9.5                                 | <a href="#">BR-N1-2K2W08P6</a>      | 1                             |                | 45.3                    |                                |
|   | 7 1/2                     | <a href="#">GS33-27P5</a> | 16.5                              | 23                            |              |        | <a href="#">GS-BR-1K0W016</a>         | 2S                             |                | 3.7                 | 19                                  | <a href="#">BR-N1-3K0W05P8</a>      | 1                             |                |                         | 67.2                           |
|   | 10                        | <a href="#">GS33-2010</a> | 14.6                              | 26                            |              |        | <a href="#">GS-BR-1K0W016</a>         | 2P                             |                | 5.1                 |                                     | <a href="#">BR-N1-1K6W10P0</a>      | 2 (1/DBU)                     |                | E                       |                                |
|   | 15                        | <a href="#">GS33-2015</a> | 12.6                              | 29                            |              |        | <a href="#">GS-BR-1K5W3P3</a>         | 2S                             |                | 7.4                 | 29                                  | <a href="#">BR-N1-2K2W06P8</a>      | 2 (1/DBU)                     |                |                         | 57.4                           |
|   | 20                        | <a href="#">GS33-2020</a> | 8.3                               | 46                            |              |        | Not offered                           |                                |                |                     | <a href="#">BR-N1-250W400</a>       | 1                                   | A                             |                | 2.0                     |                                |
|   | 25                        | <a href="#">GS33-2025</a> | 8.3                               | 46                            |              |        | <a href="#">GS-BR-080W750</a>         | 1                              |                | 0.3                 | 1                                   | <a href="#">BR-N1-240W200</a>       |                               |                |                         | 1                              |
|   | 30                        | <a href="#">GS33-2030</a> | 5.8                               | 66                            |              |        | <a href="#">GS-BR-200W360</a>         | 1                              |                | 0.5                 |                                     | 2.1                                 | <a href="#">BR-N1-240W150</a> |                | 1                       | 5.2                            |
| 40  | <a href="#">GS33-2040</a> | 4.8                       | 79                                | <a href="#">GS-BR-300W250</a> | 1            | 1      | 3                                     | <a href="#">BR-N1-500W200</a>  | 1              | 3.9                 |                                     |                                     |                               |                |                         |                                |
| 50  | <a href="#">GS33-2050</a> | 3.2                       | 119                               | <a href="#">GS-BR-400W150</a> | 1            | 1.5    | 5.1                                   | <a href="#">BR-N1-500W130</a>  | 1              |                     | 6.0                                 |                                     |                               |                |                         |                                |
| 460V                                      | 1/2                       | <a href="#">GS33-40P5</a> | 380.0                             | 2                             | -            | n/a    | <a href="#">GS-BR-1K0W075</a>         | 1                              | A              | 3.7                 |                                     | 10.2                                | <a href="#">BR-N1-720W85</a>  | 1              | A                       | 9.2                            |
|   | 1                         | <a href="#">GS33-41P0</a> | 190.0                             | 4                             |              |        | <a href="#">GS-BR-1K5W043</a>         | 1                              |                | 5.1                 | <a href="#">BR-N1-1K2W50</a>        |                                     | 1                             | 15.6           |                         |                                |
|   | 2                         | <a href="#">GS33-42P0</a> | 126.7                             | 6                             |              |        | <a href="#">GS-BR-1K0W016</a>         | 2S                             |                | 7.4                 | 17.6                                | <a href="#">BR-N1-1K5W40</a>        | 1                             |                |                         | 19.5                           |
|   | 3                         | <a href="#">GS33-43P0</a> | 108.6                             | 7                             |              |        | <a href="#">GS-BR-1K0W016</a>         | 2S                             |                | 10.2                | 24                                  | <a href="#">BR-N1-1K7W30</a>        | 1                             | 26.0           |                         |                                |
|   | 5                         | <a href="#">GS33-45P0</a> | 84.4                              | 9                             |              |        | <a href="#">GS-BR-1K5W013</a>         | 2S                             |                | 12.2                |                                     | 29                                  | <a href="#">BR-N1-2K3W26</a>  |                |                         | 1                              |
|   | 7 1/2                     | <a href="#">GS33-47P5</a> | 50.7                              | 15                            |              |        | <a href="#">GS-BR-1K5W040</a>         | 2P                             |                | 14.9                | 38.0                                | <a href="#">BR-N1-2K8W25</a>        | 1                             | 31.2           |                         |                                |
|   | 10                        | <a href="#">GS33-4010</a> | 40.0                              | 19                            |              |        | Not offered                           |                                |                |                     |                                     | <a href="#">BR-N1-4K0W16P0</a>      | 1                             |                |                         | 48.8                           |
|   | 15                        | <a href="#">GS33-4015</a> | 33.0                              | 23                            |              |        | <a href="#">BR-N1-4K7W14P7</a>        | 1                              |                | E                   | 53.1                                | <a href="#">BR-N1-6K9W13P6</a>      | 1                             | 57.4           |                         |                                |
|   | 20                        | <a href="#">GS33-4020</a> | 26.2                              | 29                            |              |        | <a href="#">BR-N1-3K6W20</a>          | 2 (1/DBU)                      |                |                     |                                     | F                                   | 39.0                          |                |                         | <a href="#">BR-N1-4K7W14P7</a> |
|   | 25                        | <a href="#">GS33-4025</a> | 26.2                              | 29                            |              |        | Not offered                           |                                |                |                     | <a href="#">BR-N1-4K7W14P7</a>      |                                     |                               | 2 (1/DBU)      |                         |                                |
| 30  | <a href="#">GS33-4030</a> | 23.0                      | 33                                | Not offered                   |              |        |                                       | <a href="#">BR-N1-4K7W14P7</a> | 2 (1/DBU)      |                     |                                     |                                     |                               |                |                         |                                |
| 40  | <a href="#">GS33-4040</a> | 15.2                      | 50                                | Not offered                   |              |        |                                       | <a href="#">BR-N1-4K7W14P7</a> | 2 (1/DBU)      |                     |                                     |                                     |                               |                |                         |                                |
| 50  | <a href="#">GS33-4050</a> | 12.7                      | 60                                | Not offered                   |              |        |                                       | <a href="#">BR-N1-4K7W14P7</a> | 2 (1/DBU)      |                     |                                     |                                     |                               |                |                         |                                |
| 60  | <a href="#">GS33-4060</a> | 12.7                      | 60                                | Not offered                   |              |        |                                       | <a href="#">BR-N1-4K7W14P7</a> | 2 (1/DBU)      |                     |                                     |                                     |                               |                |                         |                                |
| 75  | <a href="#">GS33-4075</a> | 9.5                       | 80                                | Not offered                   |              |        |                                       | <a href="#">BR-N1-4K7W14P7</a> | 2 (1/DBU)      |                     |                                     |                                     |                               |                |                         |                                |
| 100                                       | <a href="#">GS33-4100</a> | 6.3                       | 121                               | Not offered                   |              |        |                                       | <a href="#">BR-N1-4K7W14P7</a> | 2 (1/DBU)      |                     |                                     |                                     |                               |                |                         |                                |

\* 10% Duty Cycle with maximum ON (braking) time for 10 seconds.

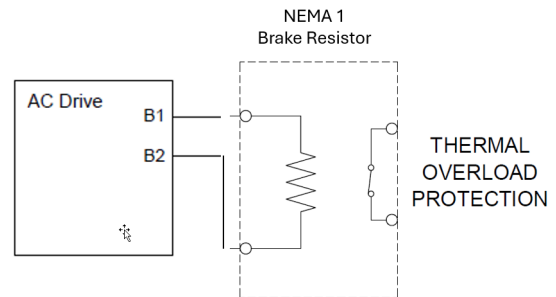
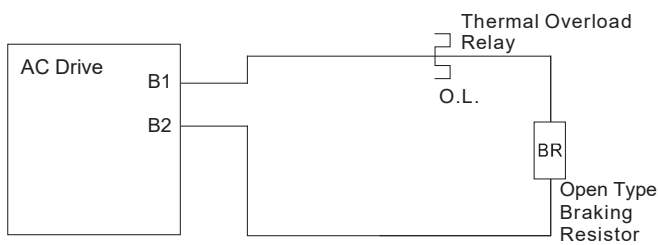
\*\* S= series wiring, P= parallel wiring.

# GSxx DURAPULSE Drives Accessories – Dynamic Braking Component Selection

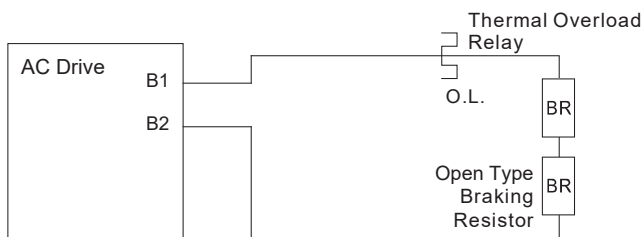
## Brake Wiring

Use your drive's Braking Component Selection table to determine the appropriate brake resistor model and configuration for your drive. Refer to the diagrams below for examples on how to wire each possible configuration

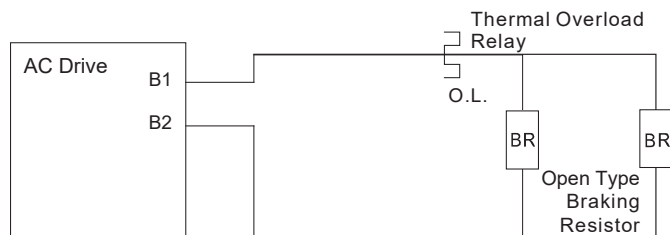
**Diagram A (Drive + 1 Resistor or NEMA1 Resistor):**



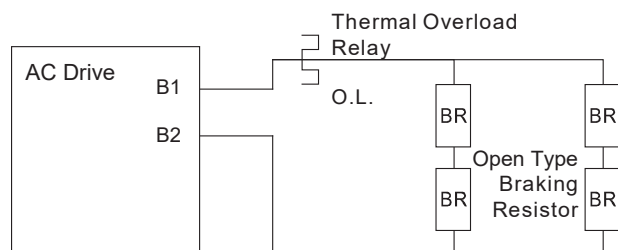
**Diagram B (Drive + 2 Series Resistors):**



**Diagram C (Drive + 2 Parallel Resistors):**



**Diagram D (drive + 2 Series and 2 Parallel Resistors):**

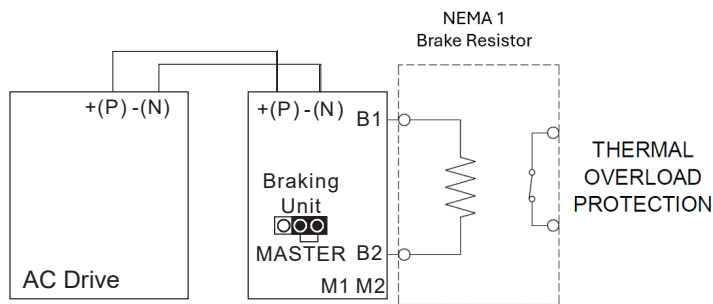




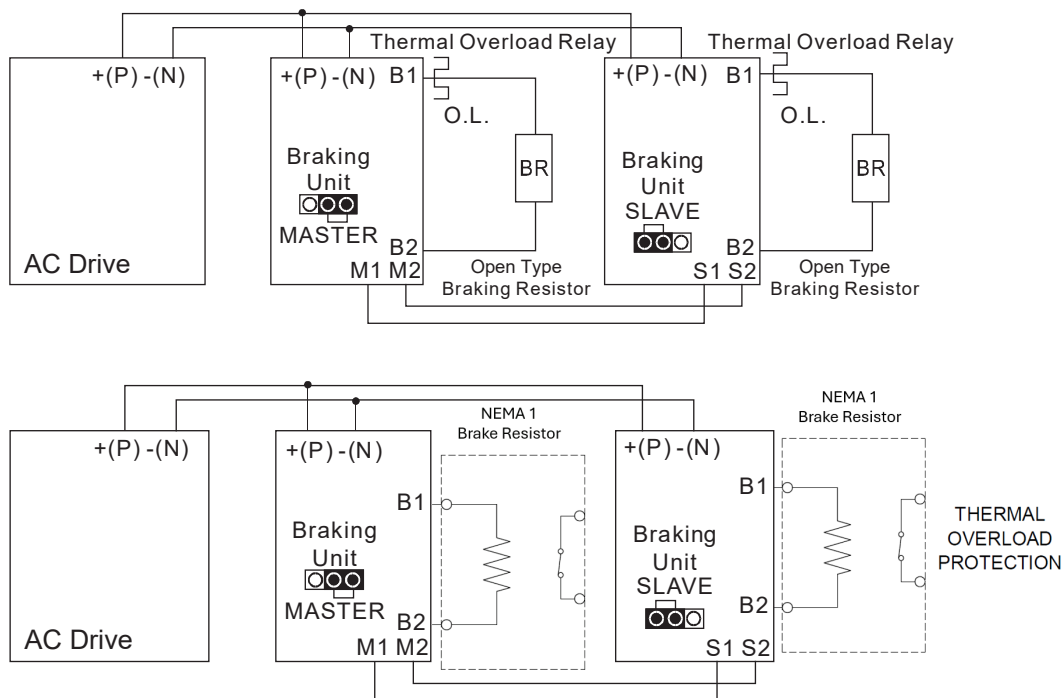
# GSxx DURAPULSE Drives Accessories – Dynamic Braking Component Selection

## Brake Wiring, *continued*

**Diagram E (Drive + 1 DBU with 1 NEMA1 Resistor):**



**Diagram F (Drive + DBUs with 1 Resistor or NEMA1 Resistor per DBU):**



# GS/DURAPULSE Drives Accessories – Braking Unit Specifications for GS4 & GS30 DURAPULSE AC Drives

## Braking Units for DURApulse AC Drives

### Overview

Braking units are applied to absorb the motor regeneration energy when the three-phase induction motor stops by deceleration.

GS-xDBU braking units, used with GS series braking resistors, provide optimum braking performance.



Note: Braking units are available ONLY for DURApulse drives.



**WARNING: TO AVOID INJURY OR MECHANICAL DAMAGE, PLEASE REFER TO USER MANUAL GS-DB\_UMP BEFORE WIRING.**



| Dynamic Braking Unit Specifications – for GS4 & GS30 DURAPULSE AC Drives |  |   |            |                                 |  |                                 |              |
|--|--|---|------------|---------------------------------|--|---------------------------------|--------------|
| Braking Unit Part Number   | GS-1DBU  | GS-2DBU   | GS-3DBU    | GS-4DBU                         | GS-5DBU  | GS-6DBU                         | GS-7DBU      |
| Price  | \$269.00                                       | \$269.00  | \$364.00   | \$364.00                        | \$1,517.00   | \$1,578.00                      | \$1,732.00   |
| Nominal Voltage (VAC)  | 230  |   |            | 460                             |  |                                 |              |
| Max Motor Capacity (hp/[kW])   | 20<br>[15]                                     | 30<br>[22]  | 40<br>[30] | 60<br>[45]                      | 150<br>[110]   | 200<br>[160]                    | 250<br>[185] |
| Output Rating  | Max Discharge Current (A)<br>@ 10% Duty Cycle* | 40  | 60         | 40                              | 60   | 126                             | 225          |
|  | Continuous Discharge Current (A)               | 15  | 20         | 15                              | 18   | 45                              | 100          |
|  | Braking Startup Voltage (VDC)                  | 330/345/360/<br>380/400/415 ±3V   |            | 600/690/720/<br>760/800/830 ±6V |  | 618/642/667/690/<br>725/750 ±6V |              |
|  | Maximum On-Time (s)                            | 10  |            |                                 |  |                                 |              |
|  | Input DC Voltage (VDC)                         | 200–400   |            | 400–800                         |  | 400–750                         |              |
| Min Equivalent Resistor for Each Braking Unit (Ω)                        | 10   | 6.8   | 20         | 13.6                            | 6  | 4                               | 3.4          |
| Protection   | Power CHARGE Lamp/LED                          | Comes ON until DC bus voltage (+P – -N) drops below 50VDC                   |            |                                 | Comes ON when DC bus voltage (DC+ – DC-) rises above 300VDC.<br>Goes OFF when DC bus voltage (DC+ – DC-) drops below 100VDC. |                                 |              |
|  | Braking ACT Lamp/LED                           | ON during braking   |            |                                 |  |                                 |              |
|  | Fault ERR Lamp                                 | ON if a fault has occurred  |            |                                 |  | n/a                             |              |
|  | Overcurrent Level LED (A)                      | n/a   |            |                                 | 190  | 290                             | 340          |
|  | Overheat LED                                   | n/a   |            |                                 | Comes ON > 176°F [80°C];<br>Goes OFF < 149°F [65°C]  |                                 |              |
|  | Heat Sink Overheat Temperature                 | 203°F [95°C]  |            |                                 | n/a  |                                 |              |
| Alarm Output Relay Contact   | 5A @ 120VAC/28VDC (RA,RB,RC)                   |   |            |                                 | 3A @ 250VAC/28VDC (RA,RC)  |                                 |              |
| Environment  | Installation Location                          | indoor (no corrosive gases; no metallic dust)                               |            |                                 |  |                                 |              |
|  | Operating Temperature                          | 14°F to 122 °F [-10 to +50 °C]  |            |                                 |  |                                 |              |
|  | Storage Temperature                            | -4 to +140 °F [-20 to +60 °C]   |            |                                 |  |                                 |              |
|  | Humidity                                       | less than 90% RH, non-condensing  |            |                                 |  |                                 |              |
|  | Vibration                                      | 9.8 m/s <sup>2</sup> [1G] under 20Hz ; 2m/s <sup>2</sup> [0.2G] at 20–50 Hz |            |                                 |  |                                 |              |
| Mechanical Configuration   | IP50 wall-mount enclosed                       |   |            |                                 | IP10 wall-mount enclosed   |                                 |              |

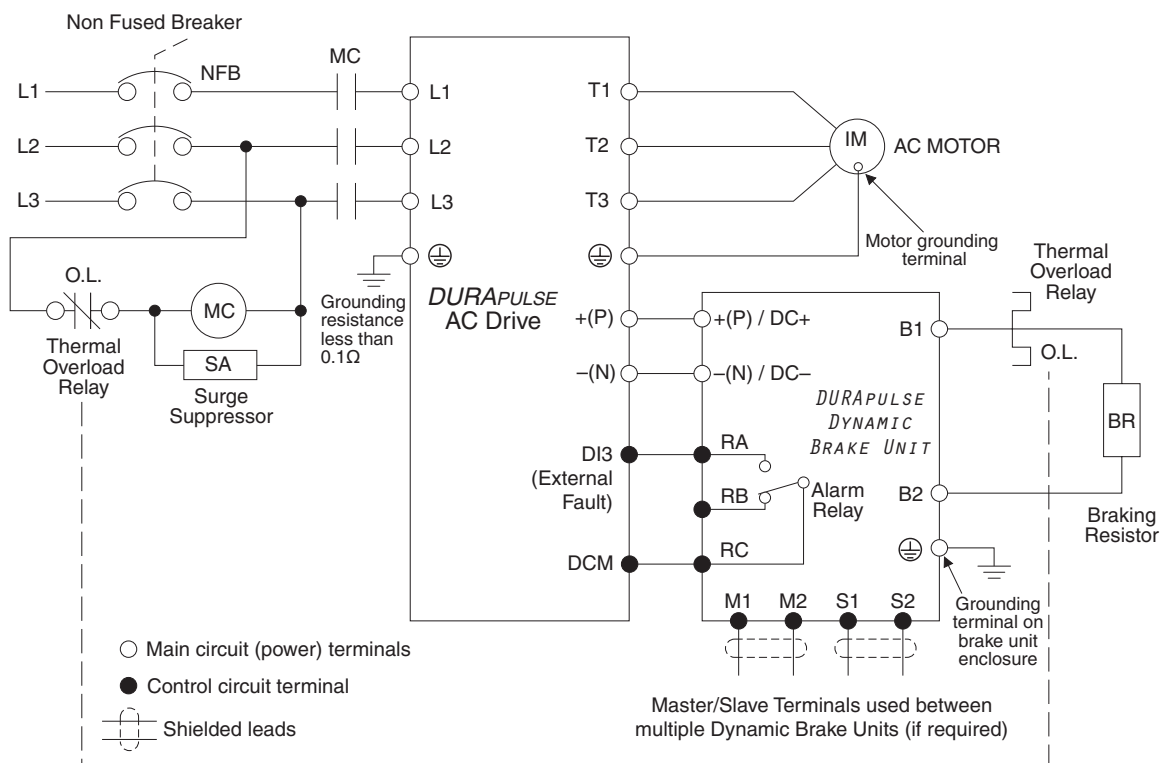
\* 10% Duty Cycle with maximum ON (braking) time of 10 seconds

# GS/DURAPULSE Drives Accessories – Braking Unit Basic Wiring for GS4 & GS30 DURAPULSE AC Drives

## Basic Dynamic Braking Wiring Diagram for GS4 & GS30 DURAPULSE AC Drives



Note: Smaller-capacity DURApulse AC Drives can connect directly to braking resistors, and do not require Dynamic Braking Units for braking. Other applications require multiple Resistors and/or multiple Dynamic Braking Units. Refer to “Dynamic Braking Component Selection” to determine which braking components are required for your application(s), and to the DURApulse Drives Dynamic Braking User Manual for complete wiring diagrams.

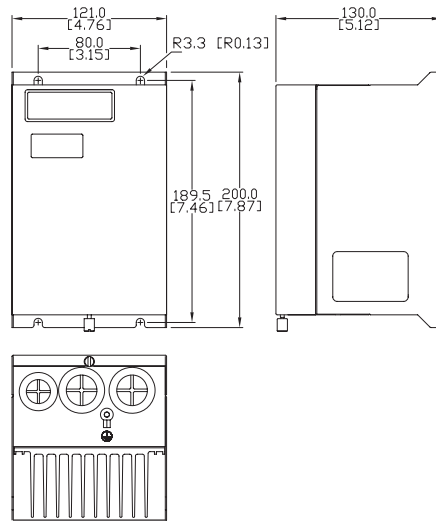


# GS/DURAPULSE Drives Accessories – Braking Unit Dimensions for GS4 & GS30 DURAPULSE AC Drives

## Braking Unit Dimensions ( Dimensions = mm [in] )

See our website: [www.AutomationDirect.com](http://www.AutomationDirect.com) for complete engineering drawings.

### A) DBU ≤ 100hp (GS-1DBU, GS-2DBU, GS-3DBU, GS-4DBU)



### B) DBU > 100hp (GS-5DBU, GS-6DBU, GS-7DBU)

