

# GS2 TO GS20 CONVERSION

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## APPENDIX

# G

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## REPLACEMENT OF GS2 DRIVES WITH GS20

The GS20 drive series can be used to replace any GS2 model drive. This appendix will detail the hardware and software changes that need to be considered before converting an existing GS2 drive application to a GS20 drive application. The GS20 drive provides many additional features and functions over the GS2 drive. However, the GS20 drive can be converted to "GS2 mode" which will convert the parameter set to be virtually identical to a GS2 drive.

The following sections will guide you through the process of converting to GS20:

- 1) Choosing a compatible GS20 model
- 2) Reviewing the mounting dimension differences
- 3) Reviewing the fusing guidelines
- 4) Reviewing the Main wiring specifications
- 5) Reviewing the Control wiring specifications
- 6) Reviewing GS2 accessories
- 7) Converting Parameter structure and GS2 mode (optional)
- 8) Converting your GS2 GSoft parameter file to a GS20 GSoft2 file



GS2



GS20

**STEP 1: CHOOSING A COMPATIBLE GS20 MODEL**

Use the following reference chart to identify the appropriate GS20 model that should be used to replace an existing GS2 model. Compatible models provide equivalent or higher output amp ratings for variable torque modes.



**NOTE:** GS2-20P5, GS2-21P0, GS2-22P0, and GS2-23P0 single-phase applications **MUST** use the applicable GS21 model to ensure adequate rated output current. A 3-phase GS23-2xxx drive is only rated for approximately 50% of the rated 3-phase output current when used with a single phase input.

GS2 to GS20 Compatibility				
GS2 Model		GS2 Output VT Amp Rating	Compatible GS20 Model	GS20 Output VT Amp Rating
GS2-10P2		1.6	GS21-10P2	1.8
GS2-10P5		2.5	GS21-10P5	2.7
GS2-11P0		4.2	GS21-11P0	5.5
GS2-20P5	Single Phase	2.5	GS21-20P5	3.2
	Three Phase	2.5	GS23-20P5	3.2
GS2-21P0	Single Phase	5.0	GS21-21P0	5.0
	Three Phase	5.0	GS23-21P0	5.0
GS2-22P0	Single Phase	7.0	GS21-22P0	8.5
	Three Phase	7.0	GS23-22P0	8.5
GS2-23P0	Single Phase	10.0	GS21-23P0	12.5
	Three Phase	10.0	GS23-23P0	12.5
GS2-25P0		17.0	GS23-25P0	19.5
GS2-27P5		25.0	GS23-27P5	27.0
GS2-41P0		3.0	GS23-41P0	3.0
GS2-42P0		4.0	GS23-42P0	4.6
GS2-43P0		5.0	GS23-43P0	6.5
GS2-45P0		8.2	GS23-45P0	10.5
GS2-47P5		13.0	GS23-47P5	15.7
GS2-4010		18.0	GS23-4010	20.5
GS2-51P0		1.7	GS23-51P0	2.1
GS2-52P0		3.0	GS23-52P0	3.6
GS2-53P0		4.2	GS23-53P0	5.0
GS2-55P0		6.6	GS23-55P0	8.0
GS2-57P5		9.9	GS23-57P5	11.5
GS2-5010		12.2	GS23-5010	15.0

**STEP 2: REVIEWING THE MOUNTING DIMENSION DIFFERENCES**

Compatible GS20 frame sizes are different from the equivalent GS2 drive. All GS20 models are smaller in height and width than the equivalent GS2 model, however some GS20 models may be up to 12mm deeper.

If your existing GS2 drive is panel mounted, new mounting holes will need to be installed for GS20 as the footprints are not the same. Refer to the GS20 dimension drawings in Chapter 2 for exact dimensions of mounting holes. GS20 also offers a mounting plate for top entry/exit and a mounting kit for dinrail. See Appendix A: Accessories for details.

Use the following chart to quickly identify the dimension differences in the comparable models.



**NOTE:** Ensure the depth of the compatible GS20 model will fit in the existing location for replacement. Models noted with an asterisk (\*) in the table below are deeper than their GS2 counterparts.

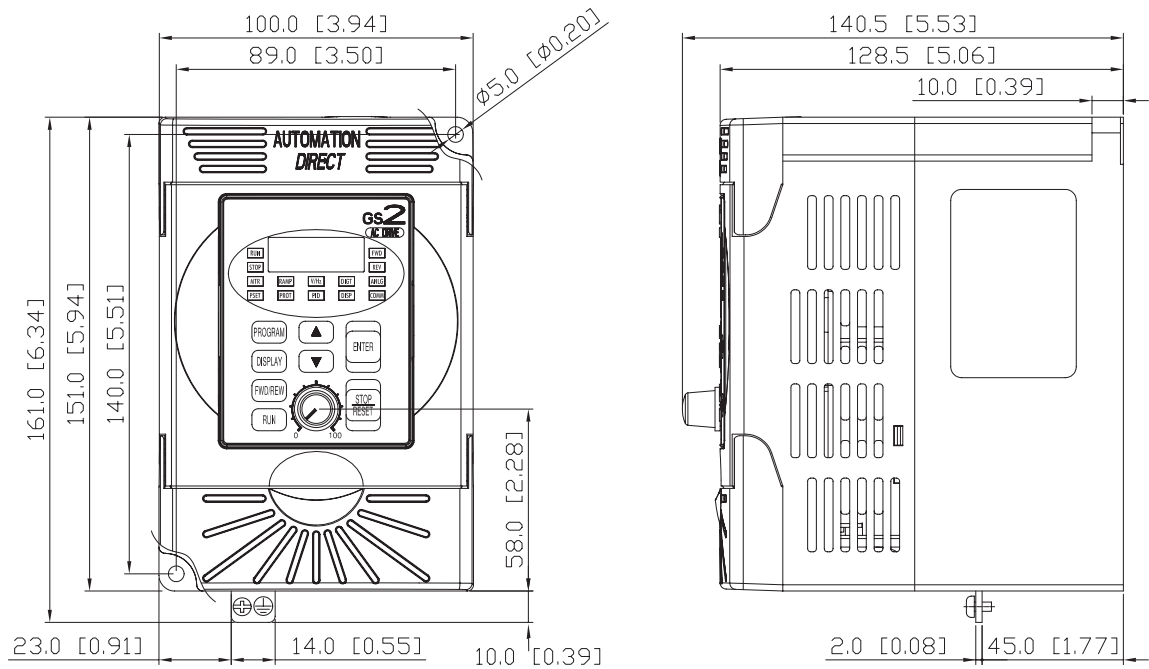
GS2 to GS20 Dimensions Comparison (Units = mm)								
GS2 Model		GS2 Height	GS2 Width	GS2 Depth	GS20 Model	GS20 Height	GS20 Width	GS20 Depth
GS2-10P2		161	100	140.5	GS21-10P2	128	68	96
GS2-10P5		161	100	140.5	GS21-10P5	128	68	125
GS2-11P0		161	100	140.5	GS21-11P0*	157	87	152
GS2-20P5	Single Phase	161	100	140.5	GS21-20P5	128	68	125
	Three Phase	161	100	140.5	GS23-20P5	128	68	110
GS2-21P0	Single Phase	161	100	140.5	GS21-21P0*	142	72	143
	Three Phase	161	100	140.5	GS23-21P0*	128	68	143
GS2-22P0	Single Phase	161	100	140.5	GS21-22P0*	157	87	152
	Three Phase	161	100	140.5	GS23-22P0	142	72	143
GS2-23P0	Single Phase	235	125	189.5	GS21-23P0	157	87	152
	Three Phase	235	125	189.5	GS23-23P0	157	87	152
GS2-25P0		235	125	189.5	GS23-25P0	157	87	152
GS2-27P5		235	125	189.5	GS23-27P5	207	109	154
GS2-41P0		161	100	140.5	GS23-41P0*	128	68	143
GS2-42P0		161	100	140.5	GS23-42P0*	142	72	143
GS2-43P0		161	100	140.5	GS23-43P0*	157	87	152
GS2-45P0		235	125	189.5	GS23-45P0	157	87	152
GS2-47P5		235	125	189.5	GS23-47P5	207	109	154
GS2-4010		235	125	189.5	GS23-4010	207	109	154
GS2-51P0		161	100	140.5	GS23-51P0*	128	68	143
GS2-52P0		161	100	140.5	GS23-52P0*	142	72	143
GS2-53P0		161	100	140.5	GS23-53P0*	157	87	152
GS2-55P0		235	125	189.5	GS23-55P0	157	87	152
GS2-57P5		235	125	189.5	GS23-57P5	207	109	154
GS2-5010		235	125	189.5	GS23-5010	207	109	154

\* These models are deeper than their GS2 counterparts.

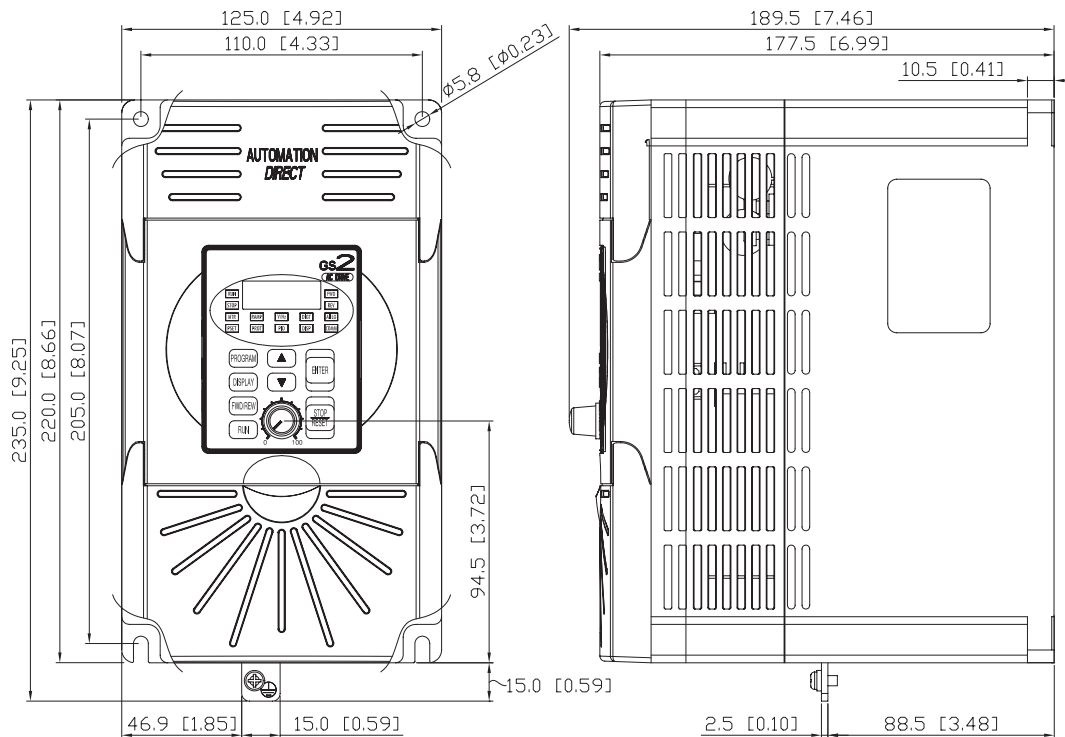
**GS2 DIMENSION DRAWINGS**

Units = mm [inch]

**GS2-10P2, 10P5, 11P0, 20P5, 21P0, 22P0, 41P0, 42P0, 43P0, 51P0, 52P0, 53P0**



**GS2-23P0, 25P0, 27P5, 45P0, 47P5, 4010, 55P0, 57P5, 5010**



**STEP 3: REVIEWING THE FUSING GUIDELINES**

Fusing for the GS20 drives is significantly different than the equivalent GS2 model. Fuse changes are required to adequately protect the semiconductor components of the GS20 drive or to prevent nuisance faults.

Review the following chart to identify required Class T or High Speed J fusing changes before replacing a GS2 drive.



**NOTE:** These fuse ratings are to protect the semiconductor devices of the drive. Branch fuse circuitry is still required to protect the motor load.

GS2 to GS20 Fusing Guideline							
GS2 Model		GS2 Input Amp Rating	GS2 Fuse Rating	GS20 Model	GS20 Input Amp Rating	GS20 Fuse Rating	High-Speed Class J Fuses
GS2-10P2		6.0	20	GS21-10P2	6.8	10	JHL10
GS2-10P5		9.0	20	GS21-10P5	10.1	10	JHL10
GS2-11P0		16.0	20	GS21-11P0	20.6	25	JHL25
GS2-20P5	Single Phase	6.3	20	GS21-20P5	8.3	15	JHL15
	Three Phase	3.2	10	GS23-20P5	3.8	15	JHL15
GS2-21P0	Single Phase	11.5	30	GS21-21P0	11.3	20	JHL20
	Three Phase	6.3	20	GS23-21P0	6.0	20	JHL20
GS2-22P0	Single Phase	15.7	45	GS21-22P0	18.5	35	JHL35
	Three Phase	9.0	25	GS23-22P0	9.6	35	JHL35
GS2-23P0	Single Phase	27.0	60	GS21-23P0	27.5	50	JHL50
	Three Phase	12.5	40	GS23-23P0	15.0	50	JHL50
GS2-25P0		19.6	60	GS23-25P0	23.4	80	JHL80
GS2-27P5		28.0	100	GS23-27P5	32.4	60	JHL60
GS2-41P0		4.2	10	GS23-41P0	3.3	15	JHL15
GS2-42P0		5.7	15	GS23-42P0	5.1	20	JHL20
GS2-43P0		6.0	20	GS23-43P0	7.2	25	JHL25
GS2-45P0		8.5	30	GS23-45P0	11.6	45	JHL45
GS2-47P5		14.0	50	GS23-47P5	17.3	35	JHL35
GS2-4010		23.0	70	GS23-4010	22.6	45	JHL45
GS2-51P0		2.4	6	GS23-51P0	2.4	6	JHL6
GS2-52P0		4.2	10	GS23-52P0	4.2	10	JHL10
GS2-53P0		5.9	15	GS23-53P0	5.8	10	JHL10
GS2-55P0		7.0	15	GS23-55P0	9.3	20	JHL20
GS2-57P5		10.5	20	GS23-57P5	13.4	25	JHL25
GS2-5010		12.9	30	GS23-5010	17.5	30	JHL30

**STEP 4: REVIEWING THE MAIN POWER WIRING SPECIFICATIONS**

**MAIN POWER WIRE SIZING**

Review the following wire size charts to ensure the existing main power wiring on a GS2 drive is compatible with the GS20 model. In some cases, larger wiring may not fit in the GS20 main power wiring terminals and could require intermediate terminal blocks

GS20 Main power terminals are designed for ring lugs. See GS20 wiring specifications in Chapter 2 for more details.

<b>GS2 to GS20 Wiring Comparison</b>				
<b>GS2 Model</b>		<b>GS2 Main Power Terminals Wiring Size</b>	<b>GS20 Model</b>	<b>GS20 Main Power Terminals Maximum Wiring Size</b>
GS2-10P2		12-14	GS21-10P2	14
GS2-10P5		12-14	GS21-10P5	14
GS2-11P0		12	GS21-11P0	8
GS2-20P5	Single Phase	12-14	GS21-20P5	14
	Three Phase	12-14	GS23-20P5	14
GS2-21P0	Single Phase	12-14	GS21-21P0	12
	Three Phase	12-14	GS23-21P0	14
GS2-22P0	Single Phase	12	GS21-22P0	8
	Three Phase	12-14	GS23-22P0	12
GS2-23P0	Single Phase	8	GS21-23P0	8
	Three Phase	8-12	GS23-23P0	8
GS2-25P0		8-10	GS23-25P0	8
GS2-27P5		8	GS23-27P5	8
GS2-41P0		12-14	GS23-41P0	14
GS2-42P0		12-14	GS23-42P0	12
GS2-43P0		12-14	GS23-43P0	8
GS2-45P0		8-14	GS23-45P0	8
GS2-47P5		8-12	GS23-47P5	8
GS2-4010		8-10	GS23-4010	8
GS2-51P0		12-14	GS23-51P0	14
GS2-52P0		12-14	GS23-52P0	12
GS2-53P0		12-14	GS23-53P0	8
GS2-55P0		8-14	GS23-55P0	8
GS2-57P5		8-14	GS23-57P5	8
GS2-5010		8-14	GS23-5010	8

**MAIN POWER WIRE ROUTING**

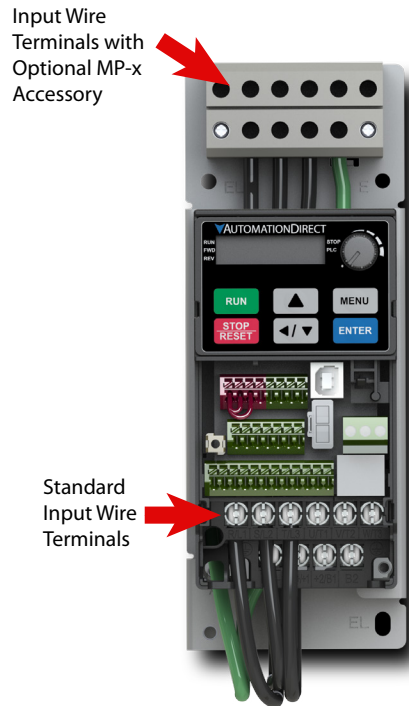
GS2 drives are designed for TOP ENTRY input power wiring. GS20 Drives are designed for BOTTOM entry power wiring. Ensure the input cable length can accommodate this change. The Mounting plate accessories (GS20A-MP-AB or GS20A-MP-C in Appendix A) can be used to allow TOP ENTRY power wiring for the GS20. Please note, this accessory will require a longer height dimension and add to the depth dimension.



**GS2 Input Wiring Routing**



**GS20 Wiring Routing with Optional Mounting Plate**



**GS20 Drive with Optional Mounting Plate**



**STEP 5: REVIEWING THE CONTROL WIRING SPECIFICATIONS**

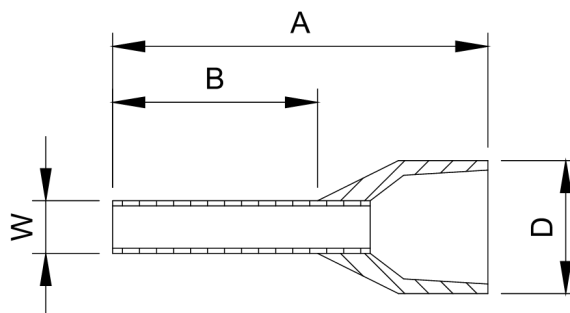
**CONTROL WIRE SIZING**

For control wiring, the GS2 drive uses screw terminals that accommodate a large range of control wiring sizes. GS20 drive control wiring terminals are screwless “Spring-type” and designed for a MAXIMUM of 18awg wire or 20awg wire with ferrules. Ensure the existing GS2 application control wiring is not larger than 18awg and has enough length to add ferrule connectors (if desired).

Wiring Specifications					
Terminal	Wiring Type	Stripping Length (mm)	Maximum Wire Gauge	Minimum Wire Gauge	Tightening Torque (kg-cm [lb-in])
Relay	Solid	6-7	1.31 mm <sup>2</sup> (16 AWG)	0.21 mm <sup>2</sup> (24 AWG)	5 kg-cm (4.3 lb-in)
	Strand				
Control	Solid	9	0.82 mm <sup>2</sup> (18 AWG)	0.21 mm <sup>2</sup> (24 AWG)	n/a (spring terminals)
	Strand		0.5 mm <sup>2</sup> (20 AWG)		
	Stranded with ferrules with plastic sleeves				

**RECOMMENDED MODELS OR DIMENSIONS FOR FERRULE TERMINALS**

Wire Gauge	Manufacturer	Model Name	A (MAX)	B (MAX)	D (MAX)	W (MAX)
0.25 mm <sup>2</sup> [24 AWG]	PHOENIX CONTACT	AI 0,25- 8 YE	12.5	8	2.6	1.1
0.34 mm <sup>2</sup> [22 AWG]	PHOENIX CONTACT	AI 0,34- 8 TQ	12.5	8	3.3	1.3
0.5 mm <sup>2</sup> [20 AWG]	PHOENIX CONTACT	AI 0,5 - 8 WH	14	8	3.5	1.4
	Z+F	V30AE000006	14	8	2.6	1.15



**CONTROL I/O TERMINALS**

GS20 includes compatible I/O to accommodate existing GS2 drive I/O. However, the I/O specifications differ slightly.

- GS20 digital inputs are configured to NPN sourcing by default and can be wired in a source configuration. This criteria should match the configuration of an existing GS2 drive digital input wiring.
- GS20 has only 1 relay type digital output compared with 2 relay outputs (R1/R2) on the GS2 drive. GS20 digital outputs DO1 or DO2 can be used in place of R2, but you must ensure the field device does not exceed the voltage/current limits of these outputs (DC only). If limits are exceeded, use an intermediate relay. If using GS2 mode, Relay2 output configuration is tied to D01. D02 can not be used.
- GS20 analog input AI2 is identical to GS2 Analog input AI. A dip switch and parameter change is necessary to convert between voltage and current mode.

Review the following chart to ensure I/O field devices do not exceed the GS20 I/O ratings. Check field I/O devices carefully to ensure compatibility with GS20 I/O. Ensure existing field devices wired to GS2 are compatible with GS20 specifications.

GS2 to GS20 I/O Terminal Comparisons						
I/O Type	GS2 I/O #	GS2 I/O Terminals	I/O Specifications	GS20 I/O #	GS20 I/O Terminals	I/O Specifications
Discrete Outputs-Relay type	2	R1/R1C/R1O R2/R2C/R2O	120VAC/24VDC @5A or 230VAC @2.5A	1	R1/R1C/ R1O	Resistive Load; 3A (N.O.) / 3A (N.C.) 250VAC 5A (N.O.) / 3A (N.C.) 30VDC
Discrete Outputs-Photo Coupler Type	0	N/A	N/A	2	DO1/DO2 DOC	Max 48VDC 50mA
Discrete Inputs	6	DI1-DI6 DCM	Input Voltage Range: 4-12V Min ON Current: 22mA max Max OFF Current: 1.1 mA	7	DI1-DI7 DCM	+24V +/- 10%, 100mA ON: Activation current 3.3 mA ≥ 11VDC OFF: Cut-off voltage ≤ 5VDC
Analog Inputs	1	AI +10V	0-10V or 0-20mA or 4-20mA +10VDC (10mA max load)	2	AI1 AI2 +10V	0-10V or -10V-10V 0-10V or 0-20mA or 4-20 mA +10.5 +/- 0.5 VDC/20mA
Analog Output	1	A0 ACM	0 to +10V Output (2mA max load)	1	A01 ACM	Max output current: 2mA Max load: 5k $\Omega$

For further information on GS20 I/O (including additional functionality), see Control Circuit Wiring Terminals in Chapter 2.

**WIRING LOCATIONS**

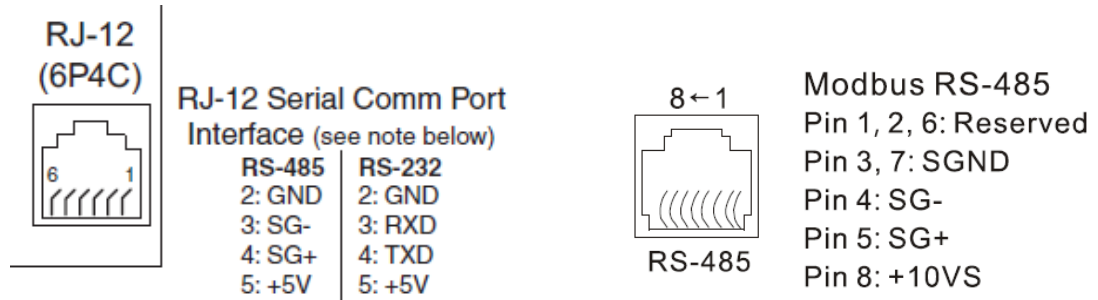
Use the following chart to determine where to land GS2 I/O wiring on the GS20 drive.

GS2 I/O Wiring to GS20		
I/O Type	GS2 I/O Terminal	Equivalent GS20 I/O Terminal
Discrete Outputs	R10	R10
	R1C	R1C
	R1	R1
	R20	DO1*
	R2C	DO1*
	R2	DO1*
Discrete Inputs	DI1	FWD
	DI2	REV
	DI3	DI3
	DI4	DI4
	DI5	DI5
	DI6	DI6
	DCM	DCM
Analog Input	AI	AI2
	+10V	+10V
Analog Output	A0	A01
	ACM	ACM

\* If using GS20 outputs DO1 or DO2 to replace the GS2 R2 output, ensure the field devices do not exceed the limits of the output. If limits are exceeded, use DO1/DO2 to activate an intermediate relay. If using GS2 mode, Relay2 output configuration is tied to DO1. DO2 can not be used.

**COMMUNICATIONS**

GS20 contains an onboard RJ45 port that is compatible with the GS2 RJ12 port. No changes are required with the physical cable connection. Ensure the communication settings in the GS20 drive are configured as needed for an existing RS485 network. A separate Type B USB port is available on the GS20 drive to connect to GSoft2 for parameter and firmware changes.



**GS2 Communications Port**

**GS20 Communications Port**

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**STEP 6: REVIEW GS2 ACCESSORIES**

***BRAKING RESISTORS, REACTORS, AND FILTERS***

Depending on the GS2 model, optional accessories may not be compatible with GS20 drives. Check any existing braking resistor, RF filter, line reactor, or EMI filter specifications to ensure they match the recommended specifications for the GS20 drive that is being used. If the accessory ratings do not match, the accessories must be replaced.

See Appendix A: Accessories to view the GS20 accessory ratings.

***GS-EDRV100***

The GS-EDRV100 ethernet interface module is used with GS2 drives to connect to an ethernet network. This module is compatible with GS20 drives when the drive is in GS2 mode **ONLY**.

To use GS20 default mode with ethernet, the GS20A-CM-ENETIP/EIP2 communication card is needed.

**STEP 7: CONVERTING PARAMETER STRUCTURE AND GS2 MODE (OPTIONAL)**

The GS20 drive has an enhanced feature set (~ 630 Parameters) compared to the GS2 drive (~130 parameters). Use the full GS20 parameter set to gain the most functionality and performance from the drive. Parameter excel spreadsheet comparison tables can be accessed on the GS20 support page (<https://support.automationdirect.com/products/g20.html>).

If you prefer the GS2 parameter set, the GS20 drive can be configured to run in “GS2 mode”- See Option 2 below. This converts the drive to use an identical parameter set to GS2. In GS2 mode, the following options are not supported:

- GS20 accessory communication cards (GS20A-BPS, GS20A-CM-ENETIP/EIP2).
- I/O points DI7, DO, DO2,AI1

**OPTION 1 – CONFIGURE GS20 DEFAULT PARAMETERS FROM AN EXISTING G2 PARAMETER SET:**

This option will keep the default GS20 parameter set and configure it with the values from an existing GS2 drive.

The following table shows the existing GS20 parameter set and the equivalent GS2 parameters, noting differences in operation where applicable.

Configure each of the applicable GS20 parameters to match the same value in the equivalent GS2 parameter. Leave the remaining GS20 parameters at default.

This process can be done via the drive keypad or via GSoft2 software. After this is done once, the configuration can be saved and downloaded on all subsequent drives via GSoft2 or via the optional GS4-KPD keypad.



**NOTE:** A downloadable Gsoft2 GS20 configuration set to a GS2-10P5 defaults can be accessed on the GS20 support page (<https://support.automationdirect.com/products/g20.html>).

**GS20 TO GS2 PARAMETER TABLE**

DuraPulse GS20 Parameter Summary				GS2 Equivalent Parameters		
GS20 Param.	Parameter Description	R/W	GS20 Default	GS2 Param.	GS2 Parameter Description	Note
P00.00	GS20 Model ID-Identity Code	Read	~	P9.42	Manufacturer Model Information	
P00.02	Restore to Default	R/W	0	P9.07 P9.08	Parameter Lock Restore to Default	GS20 P00.02 = 1 for Parameter lock GS20 P00.02 = 9,10,11, or 12 to Restore to Default
P00.04	User Display	◆R/W	3	P8.00	User Defined Display Function	
P00.05	Coefficient Gain in Actual Output Frequency Display (H Page scale)	◆R/W	1.00	P8.01	Frequency Scale Factor	
P00.06	Firmware version	Read	~	P9.39	Firmware Version	
P00.11	Speed (Velocity) Control mode	R/W	0	P2.00	Volts/Hertz Settings	In addition, See GS20 Parameters P01.43 and P13.00
P00.17	Carrier frequency	R/W	4	P2.08	PWM Carrier Frequency	
P00.20	Master frequency command source (AUTO, REMOTE)	◆R/W	0	P4.00	Source of Frequency Command	Selections function differently. Keypad Stop is covered in GS20 P00.32
P00.22	Stop method	◆R/W	0	P1.00	Stop Methods	

DuraPulse GS20 Parameter Summary				GS2 Equivalent Parameters		
GS20 Param.	Parameter Description	R/W	GS20 Default	GS2 Param.	GS2 Parameter Description	Note
P00.32	Digital keypad STOP function	◆R/W	0	P3.00	Source of Operation Command	Keypad stop is separate parameter from Operation command.
P01.00	Maximum operation frequency	R/W	60.00 / 50.00	P0.04	Motor Maximum RPM	Use this parameter to set max operation of drive, not RPM
P01.01	Motor 1 Fbase	R/W	60.00 / 50.00	P0.02	Motor Base Frequency	
P01.02	Motor 1, Rated Voltage (Nameplate)	R/W	220.0 440.0 575.0	P0.00	Motor Nameplate Voltage	
P01.03	Motor 1, Mid-point frequency 1	R/W	3.00	P2.04	Mid-point Frequency	
P01.04	Motor 1, Mid-point voltage 1	◆R/W	11.0 22.0 40.0	P2.05	Mid-point Voltage	
P01.07	Motor 1, Minimum output frequency	R/W	0.50	P2.06	Min. Output Frequency	
P01.08	Motor 1, Minimum output voltage	◆R/W	1.0 2.0 16.7	P2.07	Min. Output Voltage	
P01.10	Output frequency upper limit	◆R/W	599.00	P6.15	Upper Bound of Output Frequency	
P01.11	Output frequency lower limit	◆R/W	0.00	P6.16	Lower Bound of Output Frequency	
P01.12	Acceleration time 1	◆R/W	10.00 10.0	P1.01	Acceleration Time 1	
P01.13	Deceleration time 1	◆R/W	10.00 10.0	P1.02	Deceleration Time 1	
P01.14	Acceleration time 2	◆R/W	10.00 10.0	P1.05	Acceleration Time 2	
P01.15	Deceleration time 2	◆R/W	10.00 10.0	P1.06	Deceleration Time 2	
P01.18	Acceleration time 4	◆R/W	10.00 10.0	P1.08	Accel 1 to Accel 2 frequency transition	Set Accel 4 the same as Accel time 2 to function same as GS2 P1.08/09
P01.19	Deceleration time 4	◆R/W	10.00 10.0	P1.08	Accel 1 to Accel 2 frequency transition	Set Decel 4 the same as Decel time 2 to function same as GS2 P1.08/09
P01.22	JOG frequency	◆R/W	6.00	P5.00	Jog	
P01.23	TRANS ACC/DEC1-4 Switch frequency between first and fourth Accel./Decel.	◆R/W	0.00	P1.08 P1.09	Accel 1 to Accel 2 frequency transition Decel 2 to Decel 1 frequency transition.	Switch frequency must be same for Accel and Decel. There is no equivalent GS2 P1.09. The freq switch is between Accel/Decel 1 and 4.
P01.24	S-curve for acceleration begin time 1	◆R/W	0.20 0.2	P1.03	Accel S-curve	
P01.25	S-curve for acceleration arrival time 2	◆R/W	0.20 0.2	P1.03	Accel S-curve	
P01.26	S-curve for deceleration begin time 1	◆R/W	0.20 0.2	P1.04	Decel S-curve	

DuraPulse GS20 Parameter Summary				GS2 Equivalent Parameters		
GS20 Param.	Parameter Description	R/W	GS20 Default	GS2 Param.	GS2 Parameter Description	Note
P01.27	S-curve for deceleration arrival time 2	◆R/W	0.20 0.2	P1.04	Decel S-curve	
P01.28	Skip frequency 1 (upper limit)	R/W	0.00	P1.10	Skip Frequency 1	GS2 P1.17 Skip Band Freq-not needed due to upper/lower limits
P01.29	Skip frequency 1 (lower limit)	R/W	0.00	P1.10	Skip Frequency 1	GS2 P1.17 Skip Band Freq-not needed due to upper/lower limits
P01.30	Skip frequency 2 (upper limit)	R/W	0.00	P1.11	Skip Frequency 2	GS2 P1.17 Skip Band Freq-not needed due to upper/lower limits
P01.31	Skip frequency 2 (lower limit)	R/W	0.00	P1.11	Skip Frequency 2	GS2 P1.17 Skip Band Freq-not needed due to upper/lower limits
P01.32	Skip frequency 3 (upper limit)	R/W	0.00	P1.12	Skip Frequency 3	GS2 P1.17 Skip Band Freq-not needed due to upper/lower limits
P01.33	Skip frequency 3 (lower limit)	R/W	0.00	P1.12	Skip Frequency 3	GS2 P1.17 Skip Band Freq-not needed due to upper/lower limits
P01.43	V/F curve selection	R/W	0	P2.00	Volts/Hertz Settings	In addition, See GS20 Parameters P00.11 and P13.00
P01.44	Auto-acceleration and auto-deceleration setting	◆R/W	0	P6.06	Auto Adjustable Accel/Decel	
P02.03	Multi-function input command 3 (DI3)	R/W	1	P3.02	Multi-function Input (DI3)	
P02.04	Multi-function input command 4 (DI4)	R/W	2	P3.03	Multi-function Input (DI4)	
P02.05	Multi-function input command 5 (DI5)	R/W	3	P3.04	Multi-function Input (DI5)	
P02.06	Multi-function input command 6 (DI6)	R/W	4	P3.05	Multi-function Input (DI6)	
P02.13	Multi-function output 1 (R1)	◆R/W	11	P3.11	Multi-Function Output Terminal 1	
P02.17	Multi-function output 3 (DO2)	◆R/W	0	P3.12	Multi-Function Output Terminal 2	GS20 DO2 is a transistor output, not a relay output. Ensure DO2 is adequate to supply enough current for field device
P02.22	Desired frequency reached 1	◆R/W	60.00 / 50.00	P3.16	Desired Frequency	
P02.35	External operation control selection after fault reset and reboot	◆R/W	0	P6.30	Line Start Lockout	
P03.01	Analog input selection (AI2)	◆R/W	0	P4.00	Source of Frequency Command	
P03.04	Analog input bias (AI2)	◆R/W	0	P4.02	Analog Input Offset	GS20 Bias/Gain calculations do not match GS2. Different settings may be needed. See GS20 P03 Parameter details for more info

DuraPulse GS20 Parameter Summary				GS2 Equivalent Parameters		
GS20 Param.	Parameter Description	R/W	GS20 Default	GS2 Param.	GS2 Parameter Description	Note
P03.08	Positive / negative bias mode (AI2)	◆R/W	0	P4.01	Analog Input Offset Polarity	GS20 Bias/Gain calculations do not match GS2. Different settings may be needed. See GS20 P03 Parameter details for more info
P03.10	Reverse setting when analog signal input is negative frequency	◆R/W	0	P4.04	Analog Input Reverse Motion Enable	
P03.12	Analog input gain (AI2)	◆R/W	100.0	P4.03	Analog Input Gain	GS20 Bias/Gain calculations do not match GS2. Different settings may be needed. See GS20 P03 Parameter details for more info
P03.19	Signal loss selection for analog input 4-20 mA	◆R/W	0	P4.05	Loss of ACI Signal (4-20mA)	
P03.20	Multi-function output (A01)	◆R/W	0	P4.11	Analog Output Signal	
P03.21	Analog output gain (A01)	◆R/W	100.0	P4.12	Analog Output Gain	
P04.00	1st step speed frequency	◆R/W	0.00	P5.01	Multi-Speed 1	
P04.01	2nd step speed frequency	◆R/W	0.00	P5.02	Multi-Speed 2	
P04.02	3rd step speed frequency	◆R/W	0.00	P5.03	Multi-Speed 3	
P04.03	4th step speed frequency	◆R/W	0.00	P5.04	Multi-Speed 4	
P04.04	5th step speed frequency	◆R/W	0.00	P5.05	Multi-Speed 5	
P04.05	6th step speed frequency	◆R/W	0.00	P5.06	Multi-Speed 6	
P04.06	7th step speed frequency	◆R/W	0.00	P5.07	Multi-Speed 7	
P05.01	Induction Motor 1, Full-load amps	R/W	Model dependent	P0.01	Motor Nameplate Amps	
P05.03	Induction Motor 1, Rated speed (rpm)	◆R/W	1710	P0.03	Motor Base RPM	
P06.01	Over-voltage stall prevention	◆R/W	380.0 760.0 975.0	P6.05	Over-Voltage Stall Prevention	
P06.03	Over-current stall prevention during acceleration (OCA)	◆R/W	180	P6.10	Over-Current Stall Prevention during Acceleration	
P06.04	Over-current stall prevention during operation (OCN)	◆R/W	180	P6.11	Over-Current Stall Prevention during Operation	
P06.06	Over-torque detection selection (motor 1)	◆R/W	0	P6.07	Over-Torque Detection Mode	
P06.07	Over-torque detection level (motor 1)	◆R/W	120	P6.08	Over-Torque Detection Level	



DuraPulse GS20 Parameter Summary				GS2 Equivalent Parameters		
GS20 Param.	Parameter Description	R/W	GS20 Default	GS2 Param.	GS2 Parameter Description	Note
P06.08	Over-torque detection time (motor 1)	◆R/W	0.1	P6.09	Over-Torque Detection Time	
P06.13	Electronic thermal relay selection 1 (motor 1)	◆R/W	2	P6.00	Electronic Thermal Overload Relay	
P06.17	Fault record 1	Read	0	P6.31	Present Fault Record	
P06.18	Fault record 2	Read	0	P6.32	Second Most Recent Fault Record	
P06.19	Fault record 3	Read	0	P6.33	Third Most Recent Fault Record	
P06.20	Fault record 4	Read	0	P6.34	Fourth Most Recent Fault Record	
P06.21	Fault record 5	Read	0	P6.35	Fifth Most Recent Fault Record	
P06.22	Fault record 6	Read	0	P6.36	Sixth Most Recent Fault Record	
P07.01	DC brake current level	◆R/W	0	P1.18	DC Injection Current Level	
P07.02	DC brake time at start-up	◆R/W	0.0	P1.20	DC Injection during Start-up	
P07.03	DC brake time at STOP	◆R/W	0.0	P1.21	DC Injection during Stopping	
P07.04	DC brake frequency at STOP	◆R/W	0.00	P1.22	Start-point for DC Injection	
P07.06	Restart after momentary power loss	◆R/W	0	P6.02	Momentary Power Loss	
P07.07	Allowed power loss duration	◆R/W	2.0	P6.12	Maximum Allowable Power Loss Time	
P07.08	Base Block time	◆R/W	0.5	P6.13	Base-Block Time for Speed Search	
P07.09	Current limit of speed tracking	◆R/W	100	P6.14	Maximum Speed Search Current Level	
P07.11	Number of times of restart after fault	◆R/W	0	P6.01	Auto Restart after Fault	
P07.23	Automatic voltage regulation (AVR) function	◆R/W	0	P6.04	Auto Voltage Regulation	
P07.26	Torque compensation gain (V/F and SVC control mode)	◆R/W	1	P2.02	Auto-torque Boost	
P07.27	Slip compensation gain (V/F and SVC control mode)	◆R/W	0.00 (Default value is 1.00 in SVC mode)	P2.01	Slip Compensation	
P08.00	Terminal selection of PID feedback	◆R/W	0	P7.00	Input Terminal for PID Feedback	
P08.01	Proportional gain (P)	◆R/W	1.00	P7.20	Proportional Control	
P08.02	Integral time (I)	◆R/W	1.00	P7.21	Integral Control	
P08.03	Differential time (D)	◆R/W	0.00	P7.22	Derivative Control	
P08.04	Upper limit of integral control	◆R/W	100.0	P7.23	Upper Bound for Integral Control	

DuraPulse GS20 Parameter Summary				GS2 Equivalent Parameters		
GS20 Param.	Parameter Description	R/W	GS20 Default	GS2 Param.	GS2 Parameter Description	Note
P08.05	PID output command limit (positive limit)	◆R/W	100.0	P7.25	PID Output Frequency Limit	
P08.07	PID delay time	◆R/W	0.0	P7.24	Derivative Filter Time Constant	
P08.08	Feedback signal detection time	◆R/W	0.0	P7.26	Feedback Signal Detection Time	
P08.09	Feedback signal fault treatment	◆R/W	0	P7.27	PID Feedback Loss	
P08.13	PID feedback signal error deviation level	◆R/W	10.0	P3.18	PID Deviation Level	
P08.14	PID feedback signal error deviation detection time	◆R/W	5.0	P3.19	PID Deviation Time	
P08.65	PID target value source	◆R/W	0	P7.02	PID Setpoint Source	
P09.00	Communication address	◆R/W	1	P9.00	Communication Address	
P09.01	COM1 transmission speed	◆R/W	9.6	P9.01	Transmission Speed	
P09.02	COM1 transmission fault treatment	◆R/W	3	P9.03	Transmission Fault Treatment	
P09.03	COM1 time-out detection	◆R/W	0.0	P9.04 P9.05	Time Out Detection Time Out Duration	Set GS20 P09.03 equal to 0 for equivalent of GS P9.04 Disable
P09.04	COM1 communication protocol	◆R/W	15	P9.02	Communication Protocol	
P09.09	Communication response delay time	◆R/W	2.0	P9.05*	Time Out Duration	New paramter not included in GS2. Ensure this timeout setting is adjusted if needed
P09.11	Block transfer 1	◆R/W	0	P9.11	Block Transfer Parameter 1	
P09.12	Block transfer 2	◆R/W	0	P9.12	Block Transfer Parameter 2	
P09.13	Block transfer 3	◆R/W	0	P9.13	Block Transfer Parameter 3	
P09.14	Block transfer 4	◆R/W	0	P9.14	Block Transfer Parameter 4	
P09.15	Block transfer 5	◆R/W	0	P9.15	Block Transfer Parameter 5	
P09.16	Block transfer 6	◆R/W	0	P9.16	Block Transfer Parameter 6	
P09.17	Block transfer 7	◆R/W	0	P9.17	Block Transfer Parameter 7	
P09.18	Block transfer 8	◆R/W	0	P9.18	Block Transfer Parameter 8	
P09.19	Block transfer 9	◆R/W	0	P9.19	Block Transfer Parameter 9	
P09.20	Block transfer 10	◆R/W	0	P9.20	Block Transfer Parameter 10	
P09.21	Block transfer 11	◆R/W	0	P9.21	Block Transfer Parameter 11	
P09.22	Block transfer 12	◆R/W	0	P9.22	Block Transfer Parameter 12	

DuraPulse GS20 Parameter Summary				GS2 Equivalent Parameters		
GS20 Param.	Parameter Description	R/W	GS20 Default	GS2 Param.	GS2 Parameter Description	Note
P09.23	Block transfer 13	◆R/W	0	P9.23	Block Transfer Parameter 13	
P09.24	Block transfer 14	◆R/W	0	P9.24	Block Transfer Parameter 14	
P09.25	Block transfer 15	◆R/W	0	P9.25	Block Transfer Parameter 15	
P13.00	Industry-specific parameter application	R/W	00	P2.00	Volts/Hertz Settings	In addition, See GS20 Parameters P00.11 and P01.43
n/a				P1.09	Decel 2 to Decel 1 frequency transition	No equivalent parameter. See GS20 P01.23
n/a				P1.17	Skip Frequency Band	No equivalent parameter. GS20 has upper/lower parameters for skip frequency settings. Band not needed
n/a				P3.17	Desired Current	No equivalent parameter. Use Onboard PLC to set a desired current and set an output
n/a				P7.01	PV 100% Value	No equivalent parameter.
n/a				P7.10	Keypad PID Setpoint	No equivalent parameter.
n/a				P7.11	PID Multi-setpoint 1	No equivalent parameter. Use Onboard PLC to set a PID setpoint based on a given input signal
n/a				P7.12	PID Multi-setpoint 2	No equivalent parameter. Use Onboard PLC to set a PID setpoint based on a given input signal
n/a				P7.13	PID Multi-setpoint 3	No equivalent parameter. Use Onboard PLC to set a PID setpoint based on a given input signal
n/a				P7.14	PID Multi-setpoint 4	No equivalent parameter. Use Onboard PLC to set a PID setpoint based on a given input signal
n/a				P7.15	PID Multi-setpoint 5	No equivalent parameter. Use Onboard PLC to set a PID setpoint based on a given input signal
n/a				P7.16	PID Multi-setpoint 6	No equivalent parameter. Use Onboard PLC to set a PID setpoint based on a given input signal
n/a				P7.17	PID Multi-setpoint 7	No equivalent parameter. Use Onboard PLC to set a PID setpoint based on a given input signal
n/a				P9.26	Serial Comm Speed Reference	Use Command Write Word 2001H (see GS20 P09.04 Parameter details for bit)
n/a				P9.27	Serial Comm RUN Command	Use Command Write Word 2000H (see GS20 P09.04 Parameter details for bit)

DuraPulse GS20 Parameter Summary				GS2 Equivalent Parameters		
GS20 Param.	Parameter Description	R/W	GS20 Default	GS2 Param.	GS2 Parameter Description	Note
n/a				P9.28	Serial Comm Direction Command	Use Command Write Word 2000H (see GS20 P09.04 Parameter details for bit)
n/a				P9.29	Serial Comm External Fault	Use Command Write Word 2002H (see GS20 P09.04 Parameter details for bit)
n/a				P9.30	Serial Comm Fault Reset	Use Command Write Word 2002H (see GS20 P09.04 Parameter details for bit)
n/a				P9.31	Serial Comm JOG Command	Use Command Write Word 2000H (see GS20 P09.04 Parameter details for bit)
n/a				P9.41	GS Series Number	No equivalent parameter.

### OPTION 2- GS2 MODE:

This option describes using GS2 mode and the associated parameter details.

#### ENTERING AND EXITING “GS2” MODE

GS20 drives that have an equivalent GS2 model (same power and HP rating) have the option of being operated in “GS2 Mode”. This allows you to use the new drive in exactly the same role as an older GS2 drive that needs to be replaced, or in conjunction with existing GS2 drives.

Note that all drives will come factory standard with GS20 mode as the default setting.

#### Enter GS2 Mode



**NOTE:** To enter GS2 mode, parameters cannot be locked or set to read only, and the PLC must be disabled. If any of these requirements are not met, you will be unable to set P00.02 to 20.



**NOTE:** Switching to GS2 Mode or back to GS20 Mode will reset all parameters to factory default.

- 1) Set parameter P00.02=2, to reset to GS2 mode (1st parameter) and press ENTER.
- 2) Set parameter P00.02=20 to reset to GS2 mode (2nd parameter) and press ENTER.
- 3) Reboot the drive by cycling power.
- 4) Configure GS2 parameters per the table on the following pages.

#### Exit GS2 Mode

- 1) Set parameter P09.08=20 to reset to GS20 mode (parameters will reset). Press ENTER.
- 2) Reboot the drive by cycling power.
- 3) Configure GS20 parameters per the table on the previous pages and in the GS20 User Manual.

#### Advanced Keypad

The optional accessory GS4-KPD advanced keypad can be used in GS20-GS2 mode. See Appendix A for more information on the GS4-KPD.

The communication protocol for GS4-KPD is RTU 19200, 8, N, 2. Therefore, you must set GS20-GS2 mode communication parameters so as to connect with the digital keypad GS4-KPD. The setting steps are as follows:

- 1) P09.01 = 2 (19.2kBaud)
- 2) P09.02 = 3 (8,N,2 RTU)

To control the drive with the GS4-KPD keypad in G20-GS2mode, the following settings are required:

- 1) P03.00 = 3: Operation determined by RS-485 interface.
- 2) P04.00 = 5 Frequency determined by RS-485 comm interface



**NOTE:** The parameter ranges and default values may differ slightly and between GS20 in GS2 mode and actual G2 drives. Verify all parameters.

**GS20-GS2 MODE TO GS20 PARAMETER TABLE**

GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
<b>Motor Parameters</b>					
P0.00	Motor Nameplate Voltage	115V/230V: 200/208/220/230/240 460V: 380/400/415/440/460/480 575V: 380 to 637	240 480 575	P01.02	Motor 1, Rated Voltage (Nameplate)
P0.01	Motor Nameplate Amps	Drive Rated Amps X .3 to 1.0	Drive Rated Amps x 1.0	P05.01	Induction Motor 1, Full-load amps
P0.02	Motor Base Frequency	50/60/400	60	P01.01	Motor 1 Fbase
P0.03	Motor Base RPM	375 to 9999 RPM	1750	P05.03	Induction Motor 1, Rated speed (rpm)
P0.04	Motor Maximum RPM	P0.03 to 9999 RPM	P0.03	P01.00	Maximum operation frequency
<b>Ramp Parameters</b>					
P1.00	Stop Methods	00: Ramp to Stop 01: Coast to Stop	00	P00.22	Stop method
◆ P1.01	Acceleration Time 1	0.1 to 600.0 sec	10.0	P01.12	Acceleration time 1
◆ P1.02	Deceleration Time 1	0.1 to 600.0 sec	30.0	P01.13	Deceleration time 1
P1.03	Accel S-curve	0 to 7	00	P01.24	S-curve for acceleration begin time 1
				P01.25	S-curve for acceleration arrival time 2
P1.04	Decel S-curve	0 to 7	00	P01.26	S-curve for deceleration begin time 1
				P01.27	S-curve for deceleration arrival time 2
◆ P1.05	Acceleration Time 2	0.1 to 600.0 sec	10.0	P01.14	Acceleration time 2
◆ P1.06	Deceleration Time 2	0.1 to 600.0 sec	30.0	P01.15	Deceleration time 2
P1.07	Select method to use 2nd Accel/Decel	00: RMP2 from DI terminal 01: Transition Frequencies P1.08 & P1.09	00	P2.01–P02.07	Multifunction Input Input Command - 8:
P1.08	Accel 1 to Accel 2 frequency transition	0.0 to 400.0 Hz	00	P01.23	Switch Frequency between First and Fourth Accel./Decel.
				P01.18	Acceleration Time 4
				P01.19	Deceleration Time 4

GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
P1.09	Decel 2 to Decel 1 frequency transition	0.0 to 400.0 Hz	00	n/a	*accel and decel must be at same frequency and configured between 1st and 4th accel/decel only. No equivalent P01.09 parameter
P1.10	Skip Frequency 1	0.0 to 400.0 Hz	0.0	P01.28	Skip Frequency 1 (Upper Limit)
				P01.29	Skip Frequency 1 (Lower Limit)
P1.11	Skip Frequency 2	0.0 to 400.0 Hz	0.0	P01.30	Skip Frequency 2 (Upper Limit)
				P01.31	Skip Frequency 2 (Lower Limit)
P1.12	Skip Frequency 3	0.0 to 400.0 Hz	0.0	P01.32	Skip Frequency 3 (Upper Limit)
				P01.33	Skip Frequency 3 (Lower Limit)
P1.17	Skip Frequency Band	0.0 to 20.0 Hz	0.0	n/a	
P1.18	DC Injection Current Level	00 to 100 %	00	P07.01	DC brake current level
P1.20	DC Injection during Start-up	0.0 to 5.0 sec	0.0	P07.02	DC brake time at start-up
P1.21	DC Injection during Stopping	0.0 to 25.0 sec	0.0	P07.03	DC brake time at STOP
P1.22	Start-point for DC Injection	0.0 to 60.0 Hz	0.0	P07.04	DC brake frequency at STOP
<b>Volts/Hertz Parameters</b>					
P2.00	Volts/Hertz Settings	00: General Purpose 01: High Starting Torque 02: Fans and Pumps 03: Custom	00	P01.43	V/F curve selection
◆ P2.01	Slip Compensation	0.0 to 10.0	0.0	P07.27	Slip Compensation Gain
◆ P2.02	Auto-torque Boost	00 to 10	00	P07.26	Torque compensation gain (V/F and SVC control mode)
P2.04	Mid-point Frequency	0.1 to 400 Hz	1.5	P01.03	Motor 1, Mid-point frequency 1
P2.05	Mid-point Voltage	115V/230V: 2.0 to 240V 460V: 2.0 to 510V 575V: 2.0 to 637V	10.0 20.0 24.0	P01.04	Motor 1, Mid-point voltage 1
P2.06	Min. Output Frequency	0.1 to 20.0 Hz	1.50	P01.07	Motor 1, Minimum output frequency
P2.07	Min. Output Voltage	115V/230V: 2.0 to 50.0 V 460V: 2.0 to 100.0 V 575V: 2.0 to 130.6 V	10.0 20.0 24.0	P01.08	Motor 1, Minimum output voltage
P2.08	PWM Carrier Frequency	115V/230V/460V: 01 to 15 kHz 575V: 01 to 10 kHz	12 6	P00.17	Carrier frequency:
<b>Digital Parameters</b>					

GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
P3.00	Source of Operation Command	00: Operation determined by digital keypad 01: Operation determined by external control terminals, keypad STOP is enabled 02: Operation determined by external control terminals, keypad STOP is disabled 03: Operation determined by RS-485 interface, keypad STOP is enabled 04: Operation determined by RS-485 interface, keypad STOP is disabled	00	P02.00	Two-wire / three-wire operation control
P3.01	Multi-function Input Terminals (DI1 - DI2)	00: DI1 - FWD / STOP, DI2 - REV / STOP 01: DI1 - RUN / STOP, DI2- REV / FWD 02: DI1 - RUN momentary (N.O.) DI2 - REV / FWD DI3 - STOP momentary (N.C.)	00	P02.01	Multi-function input command 1 (FWD/DI1)- only use if P02.00 = 0
				P02.02	Multi-function input command 2 (REV/DI2) only use if P02.00 = 0
P3.02	Multi-function Input (DI3)	00: External Fault (N.O.) 01: External Fault (N.C.) 02: External Reset 03: Multi-Speed/PID SP Bit 1 04: Multi-Speed/PID SP Bit 2 05: Multi-Speed/PID SP Bit 3 06: Reserved 07: Reserved 08: Reserved 09: Jog 10: External Base Block (N.O.) 11: External Base Block (N.C.) 12: Second Accel/Decel Time 13: Speed Hold 14: Increase Speed 15: Decrease Speed 16: Reset Speed to Zero 17: PID Disable (N.O.) 18: PID Disable (N.C.) 99: Input Disable	00	P02.03	Multi-function input command 3 (DI3)
P3.03	Multi-function Input (DI4)		03	P02.04	Multi-function input command 4 (DI4)
P3.04	Multi-function Input (DI5)		04	P02.05	Multi-function input command 4 (DI5)
P3.05	Multi-function Input (DI6)		05	P02.06	Multi-function input command 4 (DI6)
P3.11	Multi-Function Output Terminal 1	00: AC Drive Running 01: AC Drive Fault 02: At Speed 03: Zero Speed 04: Above Desired Frequency 05: Below Desired Frequency 06: At Maximum Speed 07: Over torque detected 08: Above Desired Current 09: Below Desired Current 10: PID Deviation Alarm	00	P02.13	Multi-function output 1 (R1)
P3.12	Multi-Function Output Terminal 2		01	P02.16	Multi-function output 2 (DO1)- Transistor output, not relay output..ensure adequate current for field device
◆ P3.16	Desired Frequency	0.0 to 400.0 Hz	0.0	P02.22	Desired frequency reached 1
◆ P3.17	Desired Current	0.0 to <Drive Rated Amps>	0.0	n/a	
◆ P3.18	PID Deviation Level	1.0 to 50.0 %	10.0	P08.13	PID feedback signal error deviation level
◆ P3.19	PID Deviation Time	0.1 to 300.0 sec	5.0	P08.14	PID feedback signal error deviation time

GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
<b>Analog Parameters</b>					
P4.00	Source of Frequency Command	00: Frequency determined by keypad potentiometer 01: Frequency determined by digital keypad up/down 02: Frequency determined by 0 to +10V input on AI terminal with jumpers 03: Frequency determined by 4 to 20mA input on AI terminal with jumpers 04: Frequency determined by 0 to 20mA input on AI terminal with jumpers 05: Frequency determined by RS-232C/RS-485 communication interface	00	P00.20	Master frequency command source (AUTO, REMOTE)
				P03.01	Analog input selection (AI2)
P4.01	Analog Input Offset Polarity	00: No Offset 01: Positive Offset 02: Negative Offset	00	P03.07	Positive / negative bias mode (AI1)
◆ P4.02	Analog Input Offset	0.0 to 100.0%	0.0	P03.04	Analog input bias (AI2)
◆ P4.03	Analog Input Gain	0.0 to 300.0%	100.0	P03.12	Analog input gain (AI2)
P4.04	Analog Input Reverse Motion Enable	00: Forward Motion Only 01: Reverse Motion Enable	00	P03.10	Reverse setting when analog signal input is negative frequency
P4.05	Loss of ACI Signal (4-20mA)	00: Decelerate to 0Hz 01: Stop immediately and display error code "EF" 02: Continue operation by the last frequency command	00	P03.19	Signal loss selection for analog input 4-20 mA
◆ P4.11	Analog Output Signal	00: frequency Hz 01: Current A 02: PV	00	P03.20	Multi-function output (A01)
◆ P4.12	Analog Output Gain	00 to 200%	100	P03.21	Analog output gain (A01)
<b>Presets</b>					
◆ P5.00	Jog	0.0 to 400.0 Hz	6.0	P01.22	JOG frequency
◆ P5.01	Multi-Speed 1	0.0 to 400.0 Hz	0.0	P04.00	1st step speed frequency
◆ P5.02	Multi-Speed 2	0.0 to 400.0 Hz	0.0	P04.01	2nd step speed frequency
◆ P5.03	Multi-Speed 3	0.0 to 400.0 Hz	0.0	P04.02	3rd step speed frequency
◆ P5.04	Multi-Speed 4	0.0 to 400.0 Hz	0.0	P04.03	4th step speed frequency
◆ P5.05	Multi-Speed 5	0.0 to 400.0 Hz	0.0	P04.04	5th step speed frequency
◆ P5.06	Multi-Speed 6	0.0 to 400.0 Hz	0.0	P04.05	6th step speed frequency
◆ P5.07	Multi-Speed 7	0.0 to 400.0 Hz	0.0	P04.06	7th step speed frequency
<b>Protection Parameters</b>					



GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
P6.00	Electronic Thermal Overload Relay		00	P06.13	Electronic thermal relay selection 1 (motor 1)
P6.01	Auto Restart after Fault		00	P07.11	Number of times of restart after fault
P6.02	Momentary Power Loss		00	P07.06	Restart after momentary power loss
P6.03	Reverse Operation Inhibit		00	P00.23	Motor direction control
P6.04	Auto Voltage Regulation		00	P07.23	Auto Voltage Regulation
P6.05	Over-Voltage Stall Prevention		00	P06.01	Over-voltage stall prevention
P6.06	Auto Adjustable Accel/Decel		00	P01.44	Auto-acceleration and auto-deceleration setting
P6.07	Over-Torque Detection Mode		00	P06.06	Over-torque detection selection (motor 1)
P6.08	Over-Torque Detection Level		150	P06.07	Over-torque detection level (motor 1)
P6.09	Over-Torque Detection Time		0.1	P06.08	Over-torque detection time (motor 1)
P6.10	Over-Current Stall Prevention during Acceleration	20 to 200%	150	P06.03	Over-current stall prevention during acceleration (OCA)
P6.11	Over-Current Stall Prevention during Operation	20 to 200%	150	P06.04	Over-current stall prevention during operation (OCN)
P6.12	Maximum Allowable Power Loss Time		2.0	P07.07	Allowed power loss duration
P6.13	Base-Block Time for Speed Search		0.5	P07.08	Base Block time
P6.14	Maximum Speed Search Current Level		150	P07.09	Current limit of speed tracking
P6.15	Upper Bound of Output Frequency		400	P01.10	Output frequency upper limit
P6.16	Lower Bound of Output Frequency	0.0 to 400Hz	0.0	P01.11	Output frequency lower limit
P6.30	Line Start Lockout	00: Enable Line Start Lockout 01: Disable Line Start Lockout	00	P02.35	External operation control selection after fault reset and reboot

GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
P6.31	Present Fault Record	0: No fault record 1: Over-current during acceleration (ocA) 2: Over-current during deceleration (ocd) 3: Over-current during steady operation (ocn) 4: Ground fault (GFF) 6: Over-current at stop (ocS) 7: Over-voltage during acceleration (ovA)	00	P06.17	Fault record 1
P6.32	Second Most Recent Fault Record	8: Over-voltage during deceleration (ovd) 9: Over-voltage during constant speed (ovn) 10: Over-voltage at stop (ovS) 11: Low-voltage during acceleration (LvA) 12: Low-voltage during deceleration (Lvd) 13: Low-voltage during constant speed (Lvn)	00	P06.18	Fault record 2
P6.33	Third Most Recent Fault Record	14: Low-voltage at stop (LvS) 15: Phase loss protection (orP) 16: IGBT overheating (oH1) 18: IGBT temperature detection failure (tH1o) 21: Over load (oL) 22: Electronic thermal relay 1 protection (EoL1)	00	P06.19	Fault record 3
P6.34	Fourth Most Recent Fault Record	23: Electronic thermal relay 2 protection (EoL2) 24: Motor PTC overheating (oH3) 26: Over torque 1 (ot1) 27: Over torque 2 (ot2) 28: Under current (uC) 31: EEPROM read error (cF2) 33: U-phase error (cd1) 34: V-phase error (cd2) 35: W-phase error (cd3)	00	P06.20	Fault record 4
P6.35	Fifth Most Recent Fault Record	36: cc (current clamp) hardware error (Hd0) 37: oc (over-current) hardware error (Hd1) 40: Auto-tuning error (AUE) 41: PID loss AI2 (AFE) 43: PG feedback loss (PGF2) 48: AI2 loss (ACE) 49: External fault (EF) 50: Emergency stop (EF1)	00	P06.21	Fault record 5
P6.36	Sixth Most Recent Fault Record	51: External Base Block (bb) 52: Password is locked (Pcod) 54: Illegal command (CE1) 55: Illegal data address (CE2) 56: Illegal data value (CE3) 57: Data is written to read-only address (CE4) 58: Modbus transmission time-out (CE10) 97: Ethernet Card Timeout (CD10)	00	P06.22	Fault record 6

GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
<b>PID Parameters</b>					
P7.00	Input Terminal for PID Feedback	00: Inhibit PID operation 01: Forward-acting (heating loop) PID feedback, PV from AVI (0 to + 10V) 02: Forward-acting (heating loop) PID feedback, PV from ACI (4 to 20mA) 03: Reverse-acting (cooling loop) PID feedback, PV from AVI (0 to +10V). 04: Reverse-acting (cooling loop) PID feedback, PV from ACI (4 to 20mA).	00	P08.00	Terminal selection of PID feedback
P7.01	PV 100% Value	0.0 to 999	100.0	n/a	
P7.02	PID Setpoint Source	00: Keypad 01: Serial Communications	00	P08.65	PID target value source
◆ P7.10	Keypad PID Setpoint	0.0 to 999	0.0	n/a	Use onBoard PLC to move desired PID value when input signal is present
◆ P7.11	PID Multi-setpoint 1	0.0 to 999	0.0	n/a	Use onBoard PLC to move desired PID value when input signal is present
◆ P7.12	PID Multi-setpoint 2	0.0 to 999	0.0	n/a	Use onBoard PLC to move desired PID value when input signal is present
◆ P7.13	PID Multi-setpoint 3	0.0 to 999	0.0	n/a	Use onBoard PLC to move desired PID value when input signal is present
◆ P7.14	PID Multi-setpoint 4	0.0 to 999	0.0	n/a	Use onBoard PLC to move desired PID value when input signal is present
◆ P7.15	PID Multi-setpoint 5	0.0 to 999	0.0	n/a	Use onBoard PLC to move desired PID value when input signal is present
◆ P7.16	PID Multi-setpoint 6	0.0 to 999	0.0	n/a	Use onBoard PLC to move desired PID value when input signal is present
◆ P7.17	PID Multi-setpoint 7	0.0 to 999	0.0	n/a	Use onBoard PLC to move desired PID value when input signal is present
◆ P7.20	Proportional Control	0.0 to 10.0	1.0	P08.01	Proportional gain (P)
◆ P7.21	Integral Control	0.00 to 100.0 sec	1.00	P08.02	Integral time (I)
◆ P7.22	Derivative Control	0.00 to 1.00 sec	0.00	P08.03	Differential time (D)
P7.23	Upper Bound for Integral Control	00 to 100%	100	P08.04	Upper limit of integral control
P7.24	Derivative Filter Time Constant	0.0 to 2.5 sec	0.0	P08.07	PID delay time

GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
P7.25	PID Output Frequency Limit	00 to 110%	100	P08.05	PID output command limit (positive limit)
P7.26	Feedback Signal Detection Time	0.0 to 3600 sec.	60	P08.08	Feedback signal detection time
P7.27	PID Feedback Loss	00: Warn and AC Drive Stop 01: Warn and Continue Operation	00	P08.09	Feedback signal fault treatment
<b>Display Parameters</b>					
◆ P8.00	User Defined Display Function	00: Output Frequency (Hz) 01: Motor Speed (RPM) 02: Output Freq. X P8.01 03: Output Current (A) 04: Motor Output Current (%) 05: Output Voltage (V) 06: DC Bus Voltage (V) 07: PID Setpoint 08: PID Feedback Signal (PV) 09: Frequency Setpoint	00	P00.04	User Display
◆ P8.01	Frequency Scale Factor	0.01 to 160.0	1.0	P00.05	Coefficient Gain in Actual Output Frequency Display (H Page scale)
<b>Communications Parameters</b>					
P9.00	Communication Address	01 to 254	01	P09.00	Communication address
P9.01	Transmission Speed	00: 4800 baud 01: 9600 baud 02: 19200 baud 03: 38400 baud	01	P09.01	COM1 transmission speed
P9.02	Communication Protocol	00: Modbus ASCII mode 7 data bits, no parity, 2 stop bits 01: Modbus ASCII mode 7 data bits, even parity, 1 stop bit 02: Modbus ASCII mode 7 data bits, odd parity, 1 stop bit 03: Modbus RTU mode 8 data bits, no parity, 2 stop bits 04: Modbus RTU mode 8 data bits, even parity, 1 stop bit 05: Modbus RTU mode 8 data bits, odd parity, 1 stop bit	00	P09.04	COM1 communication protocol
P9.03	Transmission Fault Treatment	00: Display fault and continue operating 01: Display fault and RAMP to stop 02: Display fault and COAST to stop 03: No fault displayed and continue operating	00	P09.02	COM1 transmission fault treatment
P9.04	Time Out Detection	00: Disable 01: Enable	00	P09.03	COM1 time-out detection (0 = disable)
P9.05	Time Out Duration	0.1 to 60.0 seconds	0.5	P09.09	Communication response delay time
◆ P9.07	Parameter Lock	00: All parameters can be set and read 01: All parameters are read-only	00	P00.02	Restore to Default = 1 keypad lock
P9.08	Restore to Default	99: Restores all parameters to factory defaults 20: Restores to GS20 mode	00	P00.02	Restore to Default = 9, 10, 11, or 12
◆ P9.11	Block Transfer Parameter 1	P0.00 to P8.01, P9.99	P9.99	P09.11	Block transfer 1

GS20-GS2 Mode Parameters				GS20 Equivalent Parameters	
GS20-GS2 Mode Param.	GS20-GS2 Mode Parameter Description	Range	GS20-GS2 Mode Default	GS20 Param.	GS20 Parameter Description
◆ P9.12	Block Transfer Parameter 2	P0.00 to P8.01, P9.99	P9.99	P09.12	Block transfer 2
◆ P9.13	Block Transfer Parameter 3	P0.00 to P8.01, P9.99	P9.99	P09.13	Block transfer 3
◆ P9.14	Block Transfer Parameter 4	P0.00 to P8.01, P9.99	P9.99	P09.14	Block transfer 4
◆ P9.15	Block Transfer Parameter 5	P0.00 to P8.01, P9.99	P9.99	P09.15	Block transfer 5
◆ P9.16	Block Transfer Parameter 6	P0.00 to P8.01, P9.99	P9.99	P09.16	Block transfer 6
◆ P9.17	Block Transfer Parameter 7	P0.00 to P8.01, P9.99	P9.99	P09.17	Block transfer 7
◆ P9.18	Block Transfer Parameter 8	P0.00 to P8.01, P9.99	P9.99	P09.18	Block transfer 8
◆ P9.19	Block Transfer Parameter 9	P0.00 to P8.01, P9.99	P9.99	P09.19	Block transfer 9
◆ P9.20	Block Transfer Parameter 10	P0.00 to P8.01, P9.99	P9.99	P09.20	Block transfer 10
◆ P9.21	Block Transfer Parameter 11	P0.00 to P8.01, P9.99	P9.99	P09.21	Block transfer 11
◆ P9.22	Block Transfer Parameter 12	P0.00 to P8.01, P9.99	P9.99	P09.22	Block transfer 12
◆ P9.23	Block Transfer Parameter 13		P9.99	P09.23	Block transfer 13
◆ P9.24	Block Transfer Parameter 14		P9.99	P09.24	Block transfer 14
◆ P9.25	Block Transfer Parameter 15		P9.99	P09.25	Block transfer 15
◆ P9.26	Serial Comm Speed Reference		60.0	n/a	Use Command Write Word 2001H
◆ P9.27	Serial Comm RUN Command		00	n/a	Use Command Write Word 2000H
◆ P9.28	Serial Comm Direction Command		00	n/a	Use Command Write Word 2000H
◆ P9.29	Serial Comm External Fault		00	n/a	Use Command Write Word 2000H
◆ P9.30	Serial Comm Fault Reset		00	n/a	Use Command Write Word 2000H
◆ P9.31	Serial Comm JOG Command		00	n/a	Use Command Write Word 2000H
P9.38	GS20 Firmware Version		###		
P9.39	Firmware Version		1.07	P00.06	GS20 Firmware Version
P9.41	GS Series Number		##	n/a	
P9.42	Manufacturer Model Information		##	P00.00	GS20 Model ID-Identity Code

For detailed parameter descriptions, refer to Chapter 4 in the GS2 User Manual at [www.automationdirect.com](http://www.automationdirect.com)

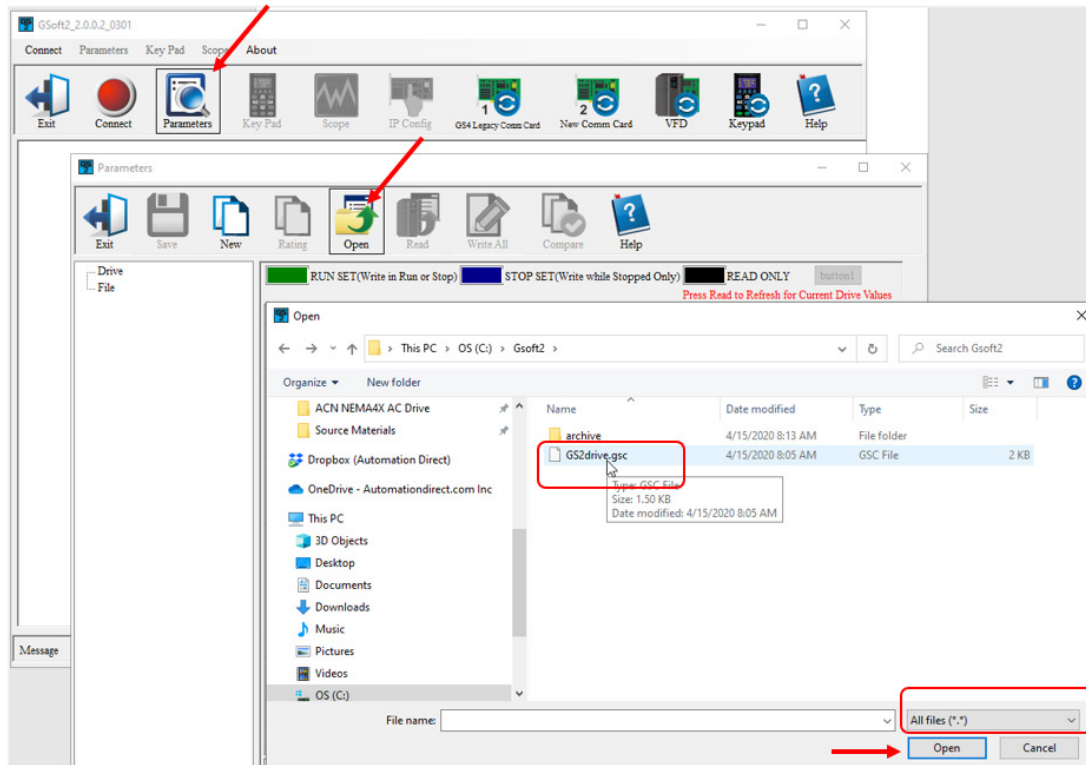
**STEP 8: CONVERTING YOUR GS2 GSOFT PARAMETER FILE TO A GS20 GSOFT2 FILE**

If a GS20 drive is configured to GS2 mode, GSoft2 software can utilize an existing GS2 GSoft parameter file. Use the following steps to load a GS2 parameter file into the GS20 drive in GS2 mode



**NOTE:** See Chapter 7 for instructions on loading free GSoft2 software.

- 1) Before removing the GS2 drive, use the GSoft software to backup the latest parameter configuration. Save the “\*.gsc” file to a local drive. Ensure that the drive version is saved to V1.07. This is required to prevent errors when downloading to the drive from Gsoft2.
- 2) Open Gsoft2 software. Click Parameter. Click Open. Navigate to the GS2 drive parameter file (\*.gsc extension). Note- you may need to select “All Files” from the window for the .GSC files to show up. Click Open.



- 3) Gsoft2 will convert the file parameters to a GS20 compatible format and display them in the parameters window. Check the parameter values to ensure they match.
- 4) Connect Gsoft2 to the GS20 drive in GS2 mode, and click “Write All” in the parameter window. See the “Writing Parameters” section of the GSoft2 Help file for more detail.
- 5) The GS20 drive in GS2 mode will now have the same parameters as your existing GS2 drive.



**NOTE:** All GS20 in GS2 mode functions may not perform EXACTLY as the GS2 drive. Complete testing for your specific application to confirm drive functionality is the same.