GS30 AC DRIVES INSTALLATION INSTRUCTIONS

SENSORLESS VECTOR CONTROL VARIABLE FREQUENCY MICRO-DRIVE

- Please read this instruction sheet thoroughly before installation and retain fo later reference.
- To ensure the safety of operators and equipment, only qualified personnel familiar with AC drives should install, wire, program, and operate the GS30

drive. Always read this instruction sheet thoroughly before using the GS30 drive, especially the WARNING, DANGER and CAUTION notes. If you have any questions, please contact AutomationDirect.

PLEASE READ PRIOR TO INSTALLATION FOR SAFETY

D ANGER	 The ground terminal of the GS30 drive must be grounded correctly. The grounding method must comply with the laws of the country where the GS30 drive is to be installed. After power has been turned off, the capacitors in the GS30 drive may retain a charge for several minutes. To prevent personal injury, visually verify that the "CHARGE" LED has turned off. Then measure to confirm that the DC bus voltage level between terminals (+1) and (-) is less than 25VDC before touching any terminals. (Capacitor discharge will take at least 5 minutes for most GS30 models) The CMOS ICs on the internal circuit boards of the GS30 drive are sensitive to static electricity. Please DO NOT touch the circuit boards with your bare hands before taking anti-static measures. Never disassemble the internal components or circuits. If wiring changes must be made, turn off power to the GS30 drive before making those changes. Allow the internal DC bus capacitors in the GS30 drive sufficient time to discharge prior to making changes in power or control wiring. Failure to do so may result in short circuit and fire. To ensure personal safety, allow DC bus voltage to discharge to a safe level before making wiring changes to the GS30 drive. DO NOT install the GS30 drive in locations subject to high temperature, direct sunlight, or flammable materials.
WARNING	 Never apply power to the output terminals U/T1, V/T2, W/T3 of the GS30 drive. If a fault occurs during operation of the GS30 drive, refer to the fault code descriptions and corrective actions to reset the fault before attempting to operate the GS30 drive. DO NOT use Hi-pot test for internal components. The semi-conductors in the GS30 drive are easily damaged by high voltage.
CAUTION	 Long motor lead lengths may result in reflective wave due to impedance mismatch between the motor cable and the motor. Reflective wave may damage the insulation of the motor. To avoid the possibility of reflective wave damage, use an inverter-rated motor with an insulation rating of 1600 volts. A load reactor or output filter installed between the GS30 drive and motor will help to mitigate reflective wave. Nominal supply voltage to the GS30 drive should be less than or equal to 240/480 volts AC depending on GS30 model. Nominal supply current capacity should be less than or equal to 100kA for Frame A–F models. For Frames G, H, and I, ratings vary from 5kA to 10kA – please see drive spec sheets. The GS30 drive must be installed in a clean, well-ventilated and dry location, free from corrosive gases or liquids. The GS30 drive must be stored within an ambient temperature range from –40°C to +85°C, and relative humidity range of 0% to 90% without condensation. Do not apply AC power to the GS30 drive with the front cover removed. Following a fault of the GS30 drive, wait 5 seconds before pressing the RESET key. To improve power factor, install a line reactor ahead of the GS30 drive. Do not install power correction capacitors in the main AC supply circuit to the GS30 drive to prevent drive faults due to over-current.

MINIMUM WIRING

• For 3-phase models, AC input power to R/L1, S/L2, and T/L3. For 1-phase models AC input power to R/L and S/ L2. (For applicability of 1-phase input power, please refer to Chapter 1 of the DURApulse GS30 AC Drives User Manual at AutomationDirect.com.)

- Ground from the power supply
- Drive power to the motor (U, V, W on T1, T2, T3) (For use with 3-phase motors only!)
- Ground to the motor
- STO1 and STO2 (both must be wired through appropriate N.C. safety-rated contacts to DCM or the factory-installed jumpers must be left in place)

With this minimal wiring, the drive can be operated via the keypad to test the motor and drive installation. See the "Parameter Set Up" (page 4) section to configure the drive for keypad operation.

RECOMMENDED SAFETY WIRING

We strongly recommend that customers use the STO safety feature.

The Safe Torque Off (STO) function turns off the power supplied to the motor through the hardware, so that the motor cannot produce torque. This method of removing power from the motor is considered an emergency stop, also known as "coast to stop."

To use this feature, disconnect the appropriate factory-installed jumpers and wire a safety relay or safety PLC as shown. The E-Stop pushbutton should be wired through a Safety Relay or PLC to meet Category 3 safety requirements. See User Manual Appendix E for wiring the GS30 with STO.



WIRING DIAGRAMS

RFI JUMPER REMOVAL

If the power distribution system supplying the GS30 AC drive is a floating (IT) or an asymmetric ground system, the RFI jumper must be removed. *Removing the RFI jumper uncouples the internal RFI capacitor (filter capacitor)* between the GS30 drive frame and circuitry to avoid damaging those circuits and (according to IEC 61800-3) to reduce ground leakage current.

GS30 Frame A through G

GS30 Frame H





Loosen the screw and remove the RFI jumper as shown, then re-fasten the screw.

GS30 Frame I





2) Remove the RFI jumper RFI-2

MAIN WIRING (POWER CIRCUIT)

For main (power) wiring terminal specifications, Please refer to "Specifications for Wiring Terminals -Main-Circuit Terminals" (page 2).

GS30 FRAMES A THROUGH G:

*Note that 1-phase drives do not have a T/L3 terminal.

Input: single-phase / three-phase power DC choke (optional) Brake resistor (optional) an Jumpe Ô No circuit breaker or fuse DC-DC+/+1 +2/B1 Β2 Motor **O** R/L1 R/I 1 U/T1 **O** S/L2 S/L2 V/T2 3~ **Ó** T/L3 W/T3 T/L3 -**Ò** 🕀 O NOTE W MC t is reco hat you install a protective circuit at R1-R1C to protect the -<u>8</u>-0-🛈 R1C OFF Lare system from damage When a fault occurs, the contact switches to ON to shut off the power and protect the power system NOTE: R1 and R1C are the multi-function relay output terminals.

GS30 FRAMES H AND I:

Input: three-phase power



GS30 CONTROL TERMINAL WIRING (ALL FRAME SIZES)

(See page 2 for Start/Stop wiring options)

	Multi-funct	ion Inputs
	/	FWD/STOP
		REV/STOP
		Multi-step 1
	Default functions	Multi-step 2
	set via Parameters (Multi-step 3
	1 02.00 - 1 02.07	Multi-step 4
		NA
	(No Functio
	NOTE:	
	*DI6 & DI7 can input 33kHz pulse *Do NOT apply the mains voltage external terminals.	s. directly to
	Factory setting: NPN (SINK) Mode Refer to Figure 2 for wiring of NP	N mode and P
	NOTE	
	*1: Factory installed jumper conn	ects +24V, S1
	Remove the jumper before wi *2: Red +24V terminal is for STO	ring the safety
	use as general control power.	salety use on
	_	
	E	
	Safety PLC	<u>11</u>
	outory + 20	<u></u>
		ļĻ
	See User Manual Appendix E for more information	
-		
ï		+10V
i		
1	55.0	³
1		<u>1</u> 2 -10V₀₀
i		0~20m/
i		Applog Sig
i		Analog Sig
i	Punctions set via Parameters P03.00 and P03.01	
L		
	Main circuit terminais	•
	Control terminals	
	🚊 Shielded leads & Cal	ole









WIRING PRECAUTIONS

- 1) The factory default condition is +24 V/STO1/STO2 shorted by jumper, as shown in the block 1 of the figure above. Refer to the wiring chapter of the User Manual for more details.
- 2) The +24 V power supply for safety function is only for STO use and cannot be used for other purposes.

3) The RELAY terminal uses the PCB terminal block:

- Tighten the wiring with a 2.5 mm (wide) x 0.4 mm (thick) slotted screwdriver.
- The ideal length of stripped wire at the connection side is 6–7 mm.
- When wiring bare wires, make sure they are perfectly arranged to go through the wiring holes.
- 4) The control circuit terminal uses a spring clamp terminal block:
- Tighten the wiring with a 2.5 mm (wide) x 0.4 mm (thick) slotted screwdriver. • The ideal length of stripped wire at the connection side is 9 mm.



RECOMMENDED MODELS OR DIMENSIONS FOR FERRULE TERMINALS

Wire Gauge	Manufacturer	Model Name	A (MAX)	B (MAX)	D (MAX)	W (MAX)
0.25 mm2 [24 AWG]	PHOENIX CONTACT	AI 0,25- 8 YE	12.5	8	2.6	1.1
0.34 mm2 [22 AWG]	PHOENIX CONTACT	AI 0,34- 8 TQ	12.5	8	3.3	1.3
0.5 mm2 [20.4)4/Cl	PHOENIX CONTACT	AI 0,5 - 8 WH	14	8	3.5	1.4
0.5 mm2 [20 AWG]	Z+F	V30AE000006	14	8	2.6	1.15

SPECIFICATIONS FOR WIRING TERMINALS – MAIN-CIRCUIT TERMINALS Notes:

If you install at Ta 50°C above environment (all frames) or 40°C (Frame H, I, with conduit box), please use copper wire with a 600V voltage rating and temperature resistance of 90°C or higher.

For UL compliant installation, you must:

Drive Models

GS31-20P5

GS33-21P0 GS33-20P5

GS33-40P5

GS33-41P0

GS31-21P0

GS33-22P0

GS33-42P0

le B

- 1) Use 75°C temperature resistant copper wire or better. Do not reduce wire gauge when using higher temperature wire.
- 2) Use the specific ring lug part listed in the table below.
- 3) Use crimp tool KST2000D-1322 or IZUMI 5N18 for 22-8 AWG wire, or IZUMI 9H-60 for 6-4 AWG wire.







			90. 0 -	-		
Max Wire Gauge	Min Wire Gauge	Screw Size	Torque (±10%)	Ring Lug D	imensior	ns (mm)
	14AWG			Dimension	Value	Min/Max
	[2.5 mm ²]			A	9.8	Max
	16AWG			В	3.2	Max
	[1.5 mm ²]		0.1	С	4.8	Min
14AWG [2.5 mm ²]		M2 5	9 kg-cm	D	4.1	Max
	18AWG [0.75 mm ²]	1013.5	[0.88 N·m]	d2	3.7	Min
				E	13.0	Min
				F	4.2	Min
				w	6.6	Max
				t	0.8	Max
			Dimension	Value	Min/Max	
	12AWG [4 mm ²]		15 kg-cm	A	12.1	Max
				В	3.6	Max
				C	6.1	Min
12AWG				D	5.6	Max
[4 mm ²]		11/14	[147 N·m]	d2	4.3	Min
				E	13.0	Min
	14AWG			F	4.5	Min
	[2.5 mm ²]			W	7.2	Max
				t	1	Max

D	rive Models	Max Wire Gauge	Min Wire Gauge	Screw Size	Torque (±10%)	Ring Lug Di	imensior	ns (mm)
	G\$31-22P0					Dimension	Value	Min/Max
	CC21 2200		8AWG			A	17.8	Max
	GS31-23P0		[10 mm ²]			B	5.0	Max
e C	G\$33-25P0	84WG			20 kg-cm		6.1 7.2	Min
ram		[10 mm ²]	10AWG	M4	[17,4 lb-in.] [1 96 N·m]	d2	4.3	Min
E.	G\$33-23P0		[6 mm ²]	-	[1.50 [11]]	E	13.0	Min
	GS33-45P0		12AWG [4 mm ²]			F	5.5	Min
	66222 (200		14AWG			t	1.2	Max
	GS33-43P0		[2.5 mm ²]					
	G\$33-27P5					Dimension	Value	Min/Max
			8AWG [10 mm ²]			B	5.0	Max
٩	GS33-4010		[10 11111]		201	C	6.1	Min
me		8AWG		I М4	20 kg-cm [17.4 lb-in.]	D	7.2	Max
Frai		[10 mm ²]			[1.96 N·m]	d2	4.3	Min
	G\$33-47P5		10AWG			F	5.5	Min
	0000 1110		[6 mm²]			W	10.5	Max
						t	1.2	Max
		4AWG	4AWG			Dimension	Value	Min/May
	GS33-2015	[25 mm ²]	[25 mm ²]			A	27.1	Max
				1		В	6.1	Max
Ē	G\$33-2010				25 ka-cm	C	10.5	Min
ame				M5	[21,7 lb-in.]	d2	53	Max
Fre	G\$33-4015	6AWG	6AWG		[2.45 N·m]	E	13.0	Min
		[16 mm²]	[16 mm²]			F	6.5	Min
						W	12.6	Max
	G\$33-4020					t	1.7	Max
						Dimension	Value	Min/May
	GS33-2020					A	35.0	Max
			2AWG			В	9.0	Max
L.			[35 mm ²]	M6	40 kg-cm [34,7 lb-in.]	С	13.3	Min
ame	G\$33-4030 2AWG	2AWG				D	14.0	Max
Fre		[35 mm-]			[3.92 N·m]	E UZ	13.0	Min
				1		F	10	Min
	6522-4025		4AWG			W	19.5	Max
	0333-4023		[25 mm ²]			t	1.8	Max
	CC22 2025	4AWG				Dimension	Value	Min/Max
	G\$33-2025 [25 mm ²]	[25 mm ²]				A	35.0	Max
						B	9.0	Max
e G			6AWG		80 kg-cm		13.3	Max
ram	GS33-2030		[16 mm ²]	M8	[69.4 lb-in.]	d2	6.2	Min
E.		2AWG			[7.041411]	E	13.0	Min
		[35 mm ²]				F	10	Min
	GS33-4040					W +	19.5	Max
						L	1.0	IVIdX
						Dimension	Value	Min/Max
	GS33-4050		4AWG			A	35.0	Max
			[25 mm ²]			B	9.0	Max
еH		0 AWG		80 kg-cm	C	13.3	Min May	
am,		[95 mm ²]		M8	[69.4 lb-in.]	d2	6.2	Min
F			1/0 414/0		[1.04 [N*[1]]	E	13.0	Min
	G\$33-4060		[50 mm ²]			F	10	Min
			[1	W	19.5	Max

SPE	SPECIFICATIONS FOR WIRING TERMINALS – MAIN-CIRCUIT TERMINALS (CONTINUED)							
D	orive Models	Max Wire Gauge	Min Wire Gauge	Screw Size	Torque (±10%)	Ring Lug D	imensior	ns (mm)
	G\$33-2040		3/0 4\//G			Dimension	Value	Min/Max
	G\$33-2050	1	[95 mm ²	M8	80 kg-cm [69.4 lb-in.] [7.84 N·m]	A	35.0	Max
		300 MCM				В	9.0	Max
-						С	13.3	Min
me						D	14.0	Max
^r ra		[150 mm ²]		1410		d2	6.2	Min
	C 5 3 2 407E		2/0 AWG [70 mm ²]			E	13.0	Min
	0333-4075					F	10	Min
						W	19.5	Max
						t	1.8	Max
	GS33-4100		3/0 AWG [95 mm ²					

	Descriptions of LED Functions
RUN	Steady ON: Drive is running. Blinking: Drive is stopping or in base block. Steady OFF: Drive is not running.
FWD	Steady ON: Drive is operating in Forward mode. Blinking: Drive is changing direction. Steady OFF: Drive is operating in Reverse mode.
REV	Steady ON: Drive is operating in Reverse mode. Blinking: Drive is changing direction. Steady OFF: Drive is operating in Forward mode.
STOP	Steady ON: Drive is stopped or in the process of stopping. Blinking: Drive is in standby (run but does not output). Steady OFF: Drive is not currently executing an operational (STOP) command. NOTE: The ability to STOP the drive from the keypad is effective ONLY if the drive is configured to RUN and/or STOP from the keypad. Keypad STOP can be disabled by parameter 00.32, Digital Keypad STOP Function.
PLC	Steady ON: PLC STOP (PLC 2) initiated. Blinking: PLC Run (PLC1) initiated. Steady OFF: No PLC functions implemented (PLC 0).

DIGITAL KEYPAD FUNCTIONS AND **INDICATIONS**

Description of the functions of the keys and indicators of the GS30 AC Drive Keypad.

NOTE: Drive default is Remote (AUTO) mode. There is no indication on the keypad of the mode. Local mode can be set by changing Parameter P00.21 via the keypad, GS4-KPD software.



	Descriptions of Keypad Functions
RUN	 RUN Key Valid only when the source of operation command is from the keypad. RUN can be pressed even when drive is in process of stopping. When in "LOCAL" mode, RUN is valid only when the source of operation command is from the keypad (drive default is Auto mode). Local mode can be set by changing P00.21 via the keypad, GS4-KPD, or software.
STOP RESET	 STOP/RESET Key This key has the highest processing priority in any situation. When the drive receives a STOP command, whether or not the drive is in operation or stop status, the drive will execute a "STOP" command. The RESET key can be used to reset the drive after a fault occurs. For those faults that can't be reset by the RESET key, see the fault records after pressing MENU key for details. MOTE: The ability to STOP the drive from the keypad is effective ONLY if the drive is configured to RUN and/or STOP from the keypad. Keypad STOP can be disabled by parameter 00.32, Digital Keypad STOP Function.
IENU	MENU Key Press MENU to return to the Main screen or cycle through the available menu options.
	Left Shift Key • Changes values and parameters
9	Digital Dial The Digital Dial acts as both a potentiometer and a button. • Rotate to select parameters or adjust values • Press to confirm selections (acts as ENTER key) The Digital Dial can also be set as the main frequency input. Set P00.20 or P00.30 to "0: Digital Keypad".

Instruction	Press Key		Display Will Show
First screen to display after power up.	n/a	Displays the present frequency setting of the drive	RUN CONTRACTOR STOP
Press MENU once from startup.	MENU	Displays the actual output frequency of the drive	RUN I STOP FWD REV
Press MENU twice from startup.	MENU	Displays user defined output	RUN TOP FWD REV
Press MENU three times from startup.	MENU	Displays output current	RUN TI TITISTOP FWD PLC REV
Press MENU four times from startup. Displays Frd if the drive is currently configured for Forward operation Scroll	MENU,	Displays the Forward command if configured for Forward operation.	RUN FWD REV
with the dial to change to Reverse. Press ENTER to confirm the change.	ENTER	Displays the Reverse command if configured for Reverse operation.	RUN STOP FWD FUC REV FLV PLC
Press MENU five times from startup. Displays the current PLC setting. Scroll with the dial to change the PLC setting, then press ENTER to confirm.	MENU, ENTER	Displays the current PLC setting.	RUN TIL TT STOF FWD LL LL PLC REV
Press MENU six times from startup. Used to Read/Write parameters between the drive and the local keypad. Scroll with the dial to select READ or WRITE, FILE Number and Save	MENU, ENTER	Parameter Read/ Write function	RUN III III STOI FWD PLC REV IIIII
From the Frequency setting, Actual Frequency, User, Amps, or Frd/Rev screen, press ENTER to bring up the parameter number (Format XX.YY). Scroll with the dial to change the parameter number as needed, then press ENTER to alter the parameter value.	ENTER ENTER	Displays the parameter number	RUN TIT TIT STOP FWD REV IIIII PLC
From the parameter number screen, press ENTER to bring up the current value of the selected parameter. Scroll with the dial to adjust the value. Press ENTER again to confirm the choice.	ENTER ENTER	Displays the value of the selected parameter	RUN FWD REV
Once a desired parameter value has been set using the Dial, press ENTER to save the choice and display End message.	ENTER	End message. Displays when data has been accepted and stored	RUN STOP FWD PLC REV III
Displays when an external fault is detected.	n/a	External fault message	RUN FWD REV
Displays when data is not accepted or the value exceeded	n/a	Error message.	RUN STOP FWD PLC REV

GS30 FAULT CODES

see Chapter 6 of the User Manual for more details.

0: N	o Error
1: 0	vercurrent during Accel (ocA)
2: O	vercurrent during Decel (ocd)
3: O	vercurrent during constant sp
4: G	round Fault (GFF)
6: O	vercurrent during Stop (ocS)
7: O	vervoltage during Accel (ovA)
8: O	vervoltage during Decel (ovd)
9: O	vervoltage during constant sp
10: 0	Overvoltage during Stop (ovS
11: L	ow voltage during Accel (LvA
12:1	ow voltage during Decel (Lvd
13: L	ow voltage during constant s
14:1	ow voltage during Stop (LvS)
15:1	nput phase loss (OrP)
16 [.] I	GBT Overheat 1 (oH1)
17.1	nternal Key Parts Overheating
18: 1	Thermistor 1 open (tH1o)
19. (Capacitor hardware error (tH2
21.1	Drive over-load (ol.)
22.1	Electronics thermal relay prote
23: F	Electronics thermal relay prote
24· I	Notor Overheat-PTC (oH3)
26· (Over Torque 1 (ot1)
27· (Over Torque 2 (ot2)
28.1	Inder current (uc)
29.1	imit error (LiT)
31:1	Memory read-out error (cF2)
33.1	I phase current sensor detect
34.1	/ phase current sensor detect
35.1	N phase current sensor detec
36.0	Tamp current detection error
37.0	Over-current detection error (
40.1	Auto tuning error (AuE)
40.7 41·1	PID Feedback loss (AFF)
12· [DG feedback error (PGE1)
-+∠. I ⊿२· I	G feedback loss (PGF2)
-+ J. I /////	DPC foodback stall (PCE2)
44.1 15.1	no recuback stall (PGF3)
43.1	Analog current input loss (ACI
40.7	Analog current input ioss (ACI

Fault	Codes
	49: External Fault input (EF)
	50: Emergency Stop (EF1)
	51: External Base Block (bb)
eed (ocn)	52: Password Error (Pcod)
	54: Communication Error (CE1)
	55: Communication Error (CE2)
)	56: Communication Error (CE3)
)	57: Communication Error (CE4)
peed (ovn)	58: PC Communication Time Out (CE10)
)	61: Y-Delta connection Error (ydc)
()	62: Decel Energy Backup Error (dEb)
d)	63: Slip Error (oSL)
speed (Lvn)	72: STO loss 1 (STL1)
	76: Safety Torque Off (STO)
	77: STO loss 2 (STL2))
	78: STO loss 3 (STL3)
g (oH2)	79: U Phase over current before run (Aoc)
	80: V Phase over current before run (boc)
0)	81: W Phase over current before run (coc)
	82: U Phase output phase loss (oPL1)
ection 1 (EoL1)	83: V Phase output phase loss (oPL2)
ection 2 (EoL2)	84: W Phase output phase loss (oPL3)
	87: Drive overload in low frequency (oL3)
	89: Initial rotor position detection error (roPd)
	111: InrCOM time-out error (InerCOM)
	121: Internal communication error (CP20)
	123: Internal communication error (CP22)
	124: Internal communication error (CP30)
tion error (cd1)	126: Internal communication error (CP32)
ion error (cd2)	127: Internal communication error (CP33)
tion error (cd3)	128: Over-torque 3 (ot3)
· (Hd0)	129: Over-torque 4 (ot4)
Hd1)	134: Electronics thermal relay 3 protection (EoL3)
	135: Electronics thermal relay 4 protection (EoL4)
	140: GFF detected when power on (Hd6)
	141: GFF occurs before run (b4GFF)
	142: Auto tuning error 1 (AUE1)
	143: Auto tuning error 2 (AUE2)
	144: Auto tuning error 3 (AUE3)
E)	

INTRODUCTION – HOW TO GET STARTED

Automationdirect.com would like to thank you for your purchase of the Durapulse GS30 AC drive. The GS30 drive is a state-of-the-art, full-featured AC drive. The Quick-Start Guide below will introduce you to many of the GS30 drive features and help you configure the GS30 drive in a minimum amount of time.

STO (Safe Torque Off) / Emergency Stop

The GS30 drive offers Safe Torque Off (STO) functionality, instead of a standard Emergency Stop circuit. STO provides the ability to immediately turn off the output of the GS30 drive in the event of an emergency, without the need for an emergency stop contactor between the drive and motor.

Please see the Control-Circuit Wiring diagrams (page 1) for how to wire the STO circuit. From the factory, the GS30 STO terminals are jumpered and the STO circuitry of the drive is bypassed. STO is recommended for personnel safety.

After wiring the drive (but before applying power), the first thing you should do is press the E-stop button (or otherwise break the safety circuit) and verify that the circuit between the STO1/STO2 terminals and the STO +24V terminal is not connected. If these circuits are open, the STO feature will stop all power from going to the motor and there will be no danger of unexpected movement when you power up the drive.

Powering Up the GS30 Drive

Apply AC line power to the GS30 drive, but don't engage the safety circuit yet (keep the E-stop PB pushed in). Starting, Stopping, and Controlling the Speed of the GS30 Drive

Out of the box GS30 drives are set to use the keypad buttons to RUN and STOP the drive and vary the drive speed. The drive can also be configured to run from potentiometers, external pushbuttons, Ethernet communication. etc.

Do not attempt to run the motor yet. Certain parameters (especially the motor protection parameters) must be set first.

Configure the Drive

The tables below list those parameters typically used in most applications. You can navigate to any of these parameters through the keypad. (Refer to page 3 for information and instructions for using the Digital Keypad.)

All applications need to configure the parameters in the "Quick Configuration" table. At minimum, you MUST configure these motor parameters before operating the drive:

• 01.00 Motor1 Max Output Frequency (this will typically be 50Hz or 60Hz)

• 01.02 Motor1 Max Output Voltage (this will typically be either 230V or 460V)

• 05.01 Motor1 Rated Amps (depends on the motor)

The main configuration parameters required to get your drive up and running are included in this guide. For more advanced configuration options, please see the User Manual. Your application will dictate which parameters need to be configured. It is NOT necessary to configure every parameter listed in the tables in the User Manual, use only those you need.

Parameter Groups

Group Number	Group Category
00	Drive Config
01	Basic Config
02	Digital I/O Config
03	Analog I/O Config
04	Multi-Step Speed Config
05	Motor Config
06	Protection Config
07	Special Parameters
08	PID Config
09	Communications Config
10	Speed Control Config
11	Advanced Config
12	Tension Config
13	Macro Config
14	Protection (2) Config

After configuring the minimum settings, you can now engage the safety circuit. The RUN and STOP/RESET buttons should Start and Stop the drive. To adjust the output frequency, press the MENU button repeatedly until the "F xx" appears for "Frequency Setpoint". Use the Digital Dial to adjust the frequency.

Para	MET	<u>ER SET UP</u>						DURAPULSE GS30 Parame	ter Settings – Quick Configuration (continued)		
DURA	PULS	GS30 AC Drives offer parameter s	setup from the keypad for some of the most com	nmon drive	es	Param	eter	Description	Settings	Default	User
applic	atior	ns. Choose parameters from the t	able below, then set the applicable parameters	for that					0=No function		
applic	atior	as shown.							1=2-wire mode 1, power on for operation		
Το Coi	nfiau	re Parameters:							2=2-wire mode 2 power on for operation		
From:	-ho n								control (M1: RUN/STOP, M2 REV/FWD)		
From	the p	ower up screen:							3=3-wire, power on for operation control		
1) Pre	ss M	ENU until you see H 0.00 (this is th	e actual drive frequency) and press ENTER.						(M1: RUN, M2: REV/FWD, M3: STOP)		
2) Us	e the	Dial to select the parameter group	p you want and press ENTER.						(M1: FWD/STOP, M2: REV/STOP)		
3) Us	e the	Dial to select the parameter num	ber you want within that aroup and press ENTER	2					5=2-wire mode 2, fast start up		
1) Ch		the value of the parameter using t	the Dial and proce ENTED			02	00	2-wire / 3-wire Control	(M1: RUN/STOP, M2: REV/FWD)	1	
4) CII	inge		ne Dial ana press ENTER.						6=3-wire, fast start up		
5) Pre	ss M	ENU to exit back to the main menu	1.						Note:		
6) Re	peat	as needed until all required param	neters are configured.						In fast start up mode, the drive skips detecting IGBT		
(*****									signal and will run immediately. When using fast start		
		Please refer to the user mar	nual if you need more detailed informati	ion abou	t the				Terminal output stays in ready status and drive		
	-	parameters.							responds to commands immediately.		
									The output terminal will have higher voltage		
		DURAPULSE G\$30 P	arameter Settings – Quick Configuration*						when running up		
Paran	neter					02	01	DI1 Assignment Select 1 (FWD/DI1)	······································	0	
Group	#	Description	Range	Default	User	02	02	DI2 Assignment Select 2 (REV/DI2)		0	
00	7		Read Only	n/a		02	03	DI3 Assignment Select 3 (DI3)		1	
	01	Displays AC drive rated current		n/a		02	04	DI4 Assignment Select 4 (DI4)	See "Multi-function Input Selections" on page 5	2	
	101	Displays AC unvertiled current		11/ d		02	05	DIS Assignment Select 5 (DIS)		3	
			1=Parameter write protect			02	06	DI6 Assignment Select 6 (DI6)		4	
			5=Reset kWH display to 0			02	07	DI7 Assignment Select 7 (DI7)		0	
			6=Reset PLC			02	13	Relay 1 Function Select (R1)		11	
00	02	Restore to default**	/=reserved 8=Keypad doesn't respond	0		02	16	DO1 Assignment Select 2 (DO1)	See "Multi-function Output Selections" on page 5	0	
			9=Reset 50Hz defaults			02	17	DO2 Assignment Select 3 (DO2)		0	
			10=Reset 60Hz defaults				1		0: Disable	Ť	
			11=Reset 50Hz defaults (keep user config)			02	35	Auto-run on Power-up (includes after	1: Drive Runs on Run Command after Fault Reset or	0	
	06	Firmware Version	I2=Reset 60Hz defaults (keep user conlig)					a Fault reset)	Power Up		
	106			n/a		03	00	Analog Input Selection (AI1)	See "AI Multi-function Input Selections" on page 5	1	
00	10	Control Method	2=Torque mode	0		03	01	Analog Input Selection (AI2)	See Ar Martin function input selections on page 5	0	
	+		0=VE Open Ctrl	+		03	20	Multi-function Output (AO1)	See "AO1 Multi-function Output Selections" on page	0	
			1=VF Enc Close Ctrl				1-0	main function output (10 1)	5	ļ ĭ	ļ
			2=SVC Sensorless			03	28	All terminal input selection	0=0-10 V	0	
00	11	Velocity Mode	3=IM FOC Enc Ctrl	0					0-4.20 mA		
			5=FOC Sensorless			03	29	Al2 terminal input selection	1=0-10 V	0	
			6=Reserved						2=0-20 mA		
			7=IPM Sensorless				1		0=No function	1	1
00	16	Duty Selection	0=Variable Torque	1					1=IM rotary tuning		
			1=Constant Torque			0.5		Auto-tuning selection	2=IM static tuning		
		Master Frequency Command Source	0: Digital keypad 1: RS-485 communication input 2: Analog input (Refer to P03.00) 3: External UP / DOWN terminal			05		Auto-tuning selection	5=Permanent magnet rotary tuning	0	
									12=SVC inertia estimation		
									13=Permanent magnet static tuning		
00	20	(AUTO, REMOTE)	4: Pulse Command (PG2) Reference w/o Direction	0		05	01	Motor 1 Full Load Amps (FLA)	10-120% of drive rated current	#.##	
			5: Pulse Command (PG2) Reference with Direction			05	02	Motor 1 Rated Power	0.00–655.35 kW	Based on	
			9: PID controller							model	ļ
			(See User Manual Chapter 4 for additional details)			05	03	Motor 1 Rated RPM	0-65535	1/10	
			0=Digital keypad			05	04	Motor 1 Number of poles	2-20	4	
00	21	Operation Command Source	1=External terminals	0					U=DISable		
			5=Communication card						during constant speed operation		
<u> </u>	+		0=Ramp to stop	+		06	06	Over-torque Detection Selection	2=Stop after over-torque detection during constant	0	
00	22	Stop Method	1=Coast to stop	0				(Motor 1)	speed operation	Ĭ	
	1		0=Enable forward/reverse	Í					during RUN		
00	23	Motor Direction Control	1=Disable reverse	0					4=Stop after over-torque detection during RUN		
	0.00		2=Disable forward		┝──┤	0.6	07	Over-torque Detection Lovel (Motor 1)	10-250%	120	
01	00	Motor 1 Max Frequency	0.00-599.00 Hz	60	┝──┤		<u> </u>		(100% corresponds to the rated current of the drive)	120	<u> </u>
	101	INIDITOR I Base Frequency	U.UU-599.UU HZ	60	┝──┤	06	08	Over-torque Detection Time (Motor 1)	0.1–60.0 seconds	0.1	ļ
01	02	Motor 1 Rated Voltage	110V/230V: 0.0~255.0, 460V: 0.0~510.0V	220.0					0=Inverter motor (with external forced cooling)		
01	١٩	Startup Frequency	0 00-599 0 Hz	0.5		06	12	Motor 1 Electronic Thermal Overload	2=Disabled	1	
	10	Output Frequency Upper Limit	0.00-599.0 Hz	599.0				Relay	Note: A value of 0 or 1 is recommended to protect	'	
	11	Output Frequency Lower Limit	0.00-599.0 Hz	0.00					the motor in most applications.	ļ	
				10.00		06	14	Motor 1 Electronic Thermal Relay Time	30.0-600.0	60	
01	12	Acceleration Time 1		10.00					0=Carrier Freq Derate		
-	12	Deceleration Time 1	1	10.00		06	55	Drive Derating Method	1=Current Derate	0	
01	13	Deceleration Time 1	P01.45=0: 0.00-600.0 sec	10.00		<u> </u>	1		La carrier Freq Derate W.O Constant Current	I	L
01	20	log Acceleration Time	P01.45=1: 0.00-6000.0 sec	10.00					table continuea next page)		
	20		_	10.00							
01	21	Jog Deceleration Time		10.00							
	1.00			10.00	┝──┤						
	22	Jog Frequency	U.UU-599.0 Hz	0.5							
** Roh	nes d	erault V/Hz mode with no teedback. To ive after resetting defaults	change control modes see complete parameter listing in	i User manua	ат.						
Note:	Drive	default is Auto mode and cannot he char	nged from the keypad. For Local/Hand. use Discrete input	configuration	n settinos						
(P02.0	0-P02	0.07) and P00.29–P00.31.	o								
<u> </u>		(†	able continued next column)								

Grammer Description Range Default U 07 10 Restart after fault action 0=Stop operation 0=Stop operation 0 07 11 Number of times to attempt autor 0=10 0 0 0 07 11 Number of times to attempt autor 0=10 0 0 0 07 19 Fan cooling control* 0=Fan is always ON 0 0 0 07 19 Fan cooling control* 0=Fan is always ON 0 0 0 08 00 PID Feedback top single of the contor drive stops for one minute 0 0=Disabled 1 1 Negative PID feedback top single-phase pulse input (DIZ), when the AC motor drive stops input (DIZ), 00 2=Negative PID feedback top single-phase pulse input (DIZ), 00 2=Negative PID feedback top single-phase pulse input (DIZ), 00 2=Negative PID feedback top single-phase pulse input (DIZ), 00 0	Param	eter			1	
07 10 Restart after fault action 0 = 50ped instance 0 07 10 Restart after fault 0 = 10 0 07 11 Number of times to attempt autor restart after fault 0 = 10 0 07 19 Fan cooling control* 0 = 15 al kays ON 0 0 19 Fan cooling control* 2 = 5 ans (D) when the AC motor drive stops for one minute 2 = 5 ans (D) when the AC motor drive stops for one minute 3 2 = Fan is ON when the AC motor drive stops 3 = 5 an turns ON when the AC motor drive stops 3 08 00 PID Feedback torwinal selection 0 = Disabled 1 = Negative PID feedback to y analog input (P03.00) 2 = Negative PID feedback to y analog input (P03.00) 3 = Negative PID feedback to y analog input (P03.00) 4 = Positive PID feedback to y analog input (P03.00) 5 = Positive PID feedback to y analog input (P03.00) 5 = Positive PID feedback to y analog input (P03.00) 5 = Positive PID feedback to y analog input (P03.00) 5 = Positive PID feedback to y analog input (P03.00) 6 = Positive PID feedback to y analog input (P03.00) 7 = Negative PID feedback to y analog input (P03.00) 7 = Negative PID feedback to y analog input (P03.00) 7 = Negative PID feedback to y communication protocol 8 = Positive PID feedback to y communicating protocol	Group	#	Description	Range	Default	User
07 11 Number of times to attempt auto- restart after fault 0-10 0 07 19 Fan cooling control* 0=Fan is always ON 1=Fan is OFF after the AC motor drive stops for one minute 0 07 19 Fan cooling control* 0=Fan is oW when the AC motor drive stops approximately 60°C. 3 08 00 PID Feedback terminal selection 0=Disabled 1=Negative PID feedback by single-phase pulse input (DI7), without direction (PI0.02) 3=Negative PID feedback by communication protocol 0 08 00 PID Feedback terminal selection 2=Positive PID feedback by communication protocol 0 08 01 Proportional gain (P) 0.0-1000.0 (When P08.23 bit 1=0) 1.00 08 01 Proportional gain (P) 0.0-100.0 (When P08.23 bit 1=1) 1.00 08 03 Differential time (D) 0.00-100.0 (When P08.23 bit 1=1) 1.00 08 04 Upper limit of integral control 0.0-100.0 (When P08.23 bit 1=1) 1.00 08 05 PID delay time 0.0-25. sec. 0.00 0 08 05 PID delay time 0.0-25. sec.	07	10	Restart after fault action	0=Stop operation 1=Speed tracking by current speed 2=Speed tracking by minimum output frequency	0	
07 19 Fan cooling control* 0 = Fan is always ON I= Fan is ON when the AC motor drive stops for one minute 3 08 00 PID Feedback terminal selection 0 = Disabled 3 08 00 PID Feedback terminal selection 0 = Disabled 0 08 01 Proportional gain (P) 0.0-100.20 0 08 01 Proportional gain (P) 0.0-100.00 sec. 0.00 08 01 Proportional gain (P) 0.0-100.00 sec. 0.00 08 01 Proportional gain (P) 0.0-100.00 when P08.23 bit 1=0) 1.00 08 03 Differential time (D) 0.00-100.00 when P08.23 bit 1=0) 1.00 08 01 Proportional gain (P) 0.0-100.00 When P08.23 bit 1=0) 1.00 08 02 Integral time (D) 0.00-100.00 When P08.23 bit 1=0) 1.00 08 03 Differential time (D) 0.00-100.00 When P08.23 bit 1=0) 1.00 09 Feedback value by communication protocol -200.00-200.00% 0.00 0.00 08 Feedback	07	11	Number of times to attempt auto- restart after fault	0-10	0	
08 00 PID Feedback terminal selection 0-Disabled 1-Negative PID feedback: by single-phase pulse input (DI7), with direction (P10.02) 3-Negative PID feedback: by single-phase pulse input (DI7), with out direction (P10.02) 4-Positive PID feedback: by single-phase pulse input (DI7), with direction (P10.02) 6-Positive PID feedback: by communication protocol 8-Positive PID feedback: by communication protocol 9-Filmini) 1.00 08 04 Upper limit of integral control 9-0-10.0% 0.00 0 08 05 PID feedback value by communication protocol 9-2-5 sec. 0.0 0 08 07 PID delay time 9-2-5 sec. 0.0 0 0 08 09 Feedback signal fault treatment 9-2-5 sec. 0.0 0 0 18	07	19	Fan cooling control*	0=Fan is always ON 1=Fan is OFF after the AC motor drive stops for one minute 2=Fan is ON when the AC motor drive runs, fan is OFF when the AC motor drive stops 3=Fan turns ON when temperature (IGBT) reaches approximately 60°C	3	
08 01 Proportional gain (P) 0.0-100.00 (When P08.23 bit 1=0) 1.00 08 02 Integral time (I) 0.00-100.00 sec. 1.00 08 03 Differential time (D) 0.00-100.00 sec. 0.00 08 03 Differential time (D) 0.00-100.0% 100.0 08 04 Upper limit of integral control 0.0-100.0% 100.0 08 05 PID output command limit (positive limit) 0.0-110.0% 100.0 08 06 PID feedback value by communication protocol -200.00-200.00% 0.00 08 06 PID delay time 0.0-25 sec. 0.0 0 08 07 PID delay time 0.0-25 sec. 0.0 0 08 08 Feedback signal fault treatment 0=Warn and Keep Run 1=Fault and Ramp Stop 0 2=Fault and Coast Stop 0 3=Analog Input 6=Comm Card 0 0 0 0 3=Fan	08	00	PID Feedback terminal selection	0=Disabled 1=Negative PID feedback: by analog input (P03.00) 2=Negative PID feedback: by single-phase pulse input (DI7), without direction (P10.02) 3=Negative PID feedback: by single -phase pulse input (DI7), with direction (P10.02) 4=Positive PID feedback: by analog input (P03.00) 5=Positive PID feedback: by single -phase pulse input (DI7), without direction (P10.02) 6=Positive PID feedback: by single -phase pulse input (DI7), with direction (P10.02) 7=Negative PID feedback: by communication protocol 8=Positive PID feedback: by communication protocol	0	
08 02 Integral time (I) 0.00-100.00 sec. 1.00 08 03 Differential time (D) 0.00-1.00 sec. 0.00 08 04 Upper limit of integral control 0.0-100.0% 100.0 08 05 PID output command limit (positive limit) 0.0-110.0% 100.0 08 05 PID feedback value by communication protocol -200.00-200.00% 0.00 08 07 PID delay time 0.0-2.5 sec. 0.0 08 08 Feedback signal detection time 0.0-3600.0 sec. 0.0 08 09 Feedback signal fault treatment 1=Fault and Ramp Stop 2=Fault and Coast Stop 3=Warn and Keep Freq 0 08 65 PID target value source 2=Freq Cmd 1=From Pr08-66 2=R5485 Comm 0 13 00 Application Selection 0=Disabled 01=User parameter 02=Compressor 03=Fan 04=Pump 05=Conveyor 0 13 00 Application Selection 0 0 14 00 Application Selection 0 0 04=Pump 05=Conveyor 0 <	08	01	Proportional gain (P)	0.0–1000.0 (When P08.23 bit 1=0) 0.00–100.00 (When P08.23 bit 1=1)	1.00	
08 03 Differential time (D) 0.00–1.00 sec. 0.00 08 04 Upper limit of integral control 0.0–100.0% 100.0 08 05 PID output command limit (positive limit) 0.0–110.0% 100.0 08 06 PID feedback value by communication protocol -200.00–200.00% 0.00 08 07 PID delay time 0.0–2.5 sec. 0.0 08 08 Feedback signal detection time 0.0–3600.0 sec. 0.0 08 09 Feedback signal fault treatment 0=Warn and Keep Run 1=Fault and Coast Stop 3=Warn and Keep Freq 0 08 65 PID target value source 0=Freq Cmd 1=from Pt08-66 2=RS485 Comm 3=Analog Input 6=Comm Card 0 13 00 Application Selection 00=Disabled 01=User parameter 02=Compresor 03=Fan 04=Pump 05=Conveyor 0 13 00 Application Selection 0 08=Textiles 10=Logistics 11=Tension PID function 12=Tension PID master/aux frequency function 0 * Note, not all drives come standard with fans 12=Tension PID master/aux frequency function	08	02	Integral time (I)	0.00–100.00 sec.	1.00	
08 04 Upper limit of integral control 0.0–100.0% 100.0 08 05 PID output command limit (positive limit) 0.0–110.0% 100.0 08 06 PID feedback value by communication protocol 0.0–110.0% 0.00 08 06 PID feedback value by communication protocol 0.0–25. sec. 0.0 08 07 PID delay time 0.0–2.5 sec. 0.0 08 08 Feedback signal detection time 0.9–3600.0 sec. 0.0 08 09 Feedback signal fault treatment 1=Fault and Ramp Stop 2=Fault and Coast Stop 3=Warn and Keep Freq 0 08 65 PID target value source 2=R5485 Comm 3=Analog Input 6=Comm Card 0 13 00 Application Selection 00=Disabled 01=User parameter 02=Compersor 03=Fan 04=Pump 05=Conveyor 06=Machine tool 07=Packing 08=Textiles 10=Logistics 11=Tension PID function 12=Tension PID function 12=Tension PID function 12=Tension PID function 12=Tension PID function 12=Tension PID function 0 * Note, not all drives come standard with fans Multi-function Input Selections 0	08	03	Differential time (D)	0.00–1.00 sec.	0.00	
08 05 PID output command limit (positive limit) 0.0–110.0% 100.0 08 06 PID feedback value by communication protocol -200.00–200.00% 0.00 08 07 PID delay time 0.0–2.5 sec. 0.0 08 08 Feedback signal detection time 0.0–3600.0 sec. 0.0 08 09 Feedback signal fault treatment 1=Fault and Ramp Stop 2=Fault and Coast Stop 3=Warn and Keep Freq 0 08 65 PID target value source 0=Freq Cmd 1=From Pr08-66 0 2=RS4485 Comm 3=Analog Input 6=Comm Card 0 0 0 13 00 Application Selection 0=Conveyor 06=Machine tool 07=Packing 08=Textiles 10=Logistics 11=Tension PID function 12=Tension PID function 12=Tension PID function 0	08	04	Upper limit of integral control	0.0–100.0%	100.0	
08 06 PID feedback value by communication protocol -200.00-200.00% 0.00 08 07 PID delay time 0.0-2.5 sec. 0.0 08 08 Feedback signal detection time 0.0-3600.0 sec. 0.0 08 09 Feedback signal detection time 0.0-3600.0 sec. 0.0 08 09 Feedback signal fault treatment 1=Fault and Ramp Stop 2=Fault and Coast Stop 3=Warn and Keep Freq 0 08 65 PID target value source 0=Freq Cmd 1=From Pr08-66 0 2=RS485 Comm 3=Analog Input 6=Comm Card 0 0 0 13 00 Application Selection 0=Disabled 01=User parameter 02=Compressor 03=Fan 04=Pump 05=Conveyor 06=Machine tool 07=Packing 08=Textiles 10=Logistics 11=Tension PID master/aux frequency function 12=Tension PID master/aux frequency function 0 * Note, not all drives come standard with fans Multi-function Input Selections 0	08	05	PID output command limit (positive limit)	0.0–110.0%	100.0	
08 07 PID delay time 0.0-2.5 sec. 0.0 08 08 Feedback signal detection time 0.0-3600.0 sec. 0.0 08 09 Feedback signal fault treatment 0=Warn and Keep Run 1=Fault and Cast Stop 0 2=Fault and Coast Stop 0 3=Warn and Keep Freq 0 0 08 65 PID target value source 2=RS485 Comm 0 0 1=From Pr08-66 2=RS485 Comm Card 0 0 0 08 65 PID target value source 2=RS485 Comm Card 0 13 00 Application Selection 00=Disabled 0 0 13 00 Application Selection 05=Conveyor 0 0 14 Feesion PID function 12=Tension PID function 0 0 15 Note, not all drives come standard with fans 11=Tension PID function 12=Tension PID master/aux frequency function	08	06	PID feedback value by communication protocol	-200.00–200.00%	0.00	
08 08 Feedback signal detection time 0.0-3600.0 sec. 0.0 08 09 Feedback signal fault treatment 0=Warn and Keep Run 1=Fault and Ramp Stop 2=Fault and Coast Stop 3=Warn and Keep Freq 0 08 65 PID target value source 0=Freq Cmd 1=From Pr08-66 2=RS485 Comm 3=Analog Input 6=Comm Card 0 13 00 Application Selection 00=Disabled 01=User parameter 02=Compresor 03=Fan 04=Pump 05=Conveyor 06=Machine tool 07=Packing 08=Textiles 10=Logistics 11=Tension PID function 12=Tension PID function 0 * Note, not all drives come standard with fans Multi-function Input Selections 0	08	07	PID delay time	0.0–2.5 sec.	0.0	
08 09 Feedback signal fault treatment 0=Warn and Keep Run 1=Fault and Ramp Stop 2=Fault and Coast Stop 3=Warn and Keep Freq 0 08 65 PID target value source 0=Freq Cmd 1=From Pr08-66 2=RS485 Comm 0 08 65 PID target value source 0=Greq Cmd 1=From Pr08-66 0 13 00 Application Selection 00=Disabled 01=User parameter 02=Compressor 03=Fan 04=Pump 05=Conveyor 06=Machine tool 07=Packing 08=Textiles 10=Logistics 11=Tension PID function 12=Tension PID function 12=Tension PID master/aux frequency function 0	08	08	Feedback signal detection time	0.0–3600.0 sec.	0.0	
08 65 PID target value source 0=Freq Cmd 1=From Pr08-66 0 2=RS485 Comm 3=Analog Input 6=Comm Card 0 00=Disabled 01=User parameter 02=Compressor 03=Fan 04=Pump 05=Conveyor 06=Machine tool 07=Packing 08=Textiles 10=Logistics 11=Tension PID function 12=Tension PID function 0 * Note, not all drives come standard with fans	08	09	Feedback signal fault treatment	0=Warn and Keep Run 1=Fault and Ramp Stop 2=Fault and Coast Stop 3=Warn and Keep Freq	0	
13 00 Application Selection 00=Disabled 01=User parameter 02=Compressor 03=Fan 04=Pump 05=Conveyor 06=Machine tool 07=Packing 08=Textiles 10=Logistics 11=Tension PID function 12=Tension PID function 12=Tension PID master/aux frequency function 0 * Note, not all drives come standard with fans Multi-function Input Selections	08	65	PID target value source	0=Freq Cmd 1=From Pr08-66 2=RS485 Comm 3=Analog Input 6=Comm Card	0	
* Note, not all drives come standard with fans Multi-function Input Selections	13	00	Application Selection	00=Disabled 01=User parameter 02=Compressor 03=Fan 04=Pump 05=Conveyor 06=Machine tool 07=Packing 08=Textiles 10=Logistics 11=Tension PID function 12=Tension PID master/aux frequency function	0	
Multi-function Input Selections	* Note,	not	all drives come standard with fans			
Multi-function input Selections				function Innut Colochian-		
	0.11	6	Multi			

	Multi-function Input Selections		Pa
0=No function	23=Counter input (DI6)	52=Selection for PLC mode bit 1	Ku
1=Multi-step speed command 1	24=FWD JOG command	56=Local / Remote selection	Air
2=Multi-step speed command 2	25=REV JOG command	70=Force auxiliary frequency return to 0	AII
3=Multi-step speed command 3	26=TRQ / Field Oriented Control (FOC)	71=Disable PID function, force PID	
4=Multi-step speed command 4	mode selection	output return to 0	
5=Reset	27=ASR1 / ASR2 selection	72=Disable PID function, retain the	Po
6=JOG [by external control or GS4-KPD	28=Emergency stop (EF1)	output value before disabled	
(optional)]	29=Signal confirmation for	73=Force PID integral gain return to 0,	
7=Acceleration / deceleration speed	Y-connection	disable integral	
inhibit	30=Signal confirmation for	74=Reverse PID feedback	Alt
8=1st and 2nd acceleration /	∆-connection	78=Multi-step position confirmation	
deceleration time selection	31=High torque bias (P11.30)	79=Position/speed mode switching (0=	Pa
9=3rd and 4th acceleration /	32=Middle torque bias (P11.31)	Speed mode, 1=Position mode)	Dr
deceleration time selection	33=Low torque bias (P11.32)	80=Location command source switching	
10=External Fault (EF) Input (P07.20)	38=Disable writing EEPROM function	(increase) (0=Internal register,	
11=Base Block (B.B.) input from external	39=Torque command direction	1=External pulse input)	Vil
source	40=Force coasting to stop	83=Multi-motor (IM) selection bit 0	
12=Output stop	41=HAND switch	84=Multi-motor (IM) selection bit 1	
13=Cancel the setting of auto-	42=AUTO switch	86=Enable initial reel diameter	Im
acceleration / auto-deceleration time	43=Enable resolution selection (P02.48)	87=Initial reel diameter 1	1
15=Frequency command from AI1	44=Negative limit switch (NL)	88=Initial reel diameter 2	
16=Frequency command from AI2	45=Positive limit switch (PL)	89=PID integration reset	Pr
18=Forced to stop (P07.20)	46=Homing (ORG)	90=Stop calculating the reel diameter	
19=Frequency up command	48=Mechanical gear ratio switch	91=Winding mode selection	
20=Frequency down command	49=Enable drive	92=Enable tension control	100
21=PID function disabled	50=Slave dEb action to execute	93=Pause tension PID function	/=
22=Clear the counter	51=Selection for PLC mode bit 0	94=Enable to auto switch the reel	4

er	0=No	function		19=External interrupt B.B.	input (Base	42=Crane fund	tion	4=	http://www.gutomatic	ndiract c	m (static)	manuala	inday html	iy time.
-	1=Ind 2=Op	dication during RUN peration speed reach	ned	20=Warning output		43=Motor spe 44=Low curren	ed detection at output (use with			mair ect.co	JIII/Static/I	manuais/	muex.mm.	
	3=Des	sired frequency rea	ched 1 (P02.22)	21=Over-voltage 22=Over-current stall prev	vention	P06.71-06.7	73)	MINIM	IUM MOUNTING CLEAR	ANCES				
	4=Des	sired frequency read	ched 2 (P02.24)	23=Over-voltage stall prev	vention	45=UVW outp	ut electromagnetic valve	When in	istalling your GS30 drive, pl	ease keep t	he following	g in mind:		
	6=Zer	ro speed including S	STOP	24=Operation mode		46=Master dEl	b output	Prever	nt fiber particles, scraps of p	oaper, shred	ded wood, s	aw dust, me	etal particles, etc., fron	n adhering to the
\neg	(Fre	equency command)) _06.08)	26=Reverse command		51=Analog ou	tput control for RS-485	heat si	ink.					
	8=Ove	er-torque 2 (P06.09	-06.11)	29=Output when frequence	$cy \ge P02.34$	52=Output cor	ntrol for communication	 Install 	the AC motor drive in a met	tal cabinet. I	Nhen install	ing one driv	e below another one, i	use a metal
	9=Driv	ive is ready	(1.) (DOC 00)	31=Y-connection for the n	notor coil	cards		separa	ation between the AC motor	drives to pr	event mutua	ıl heating aı	nd to prevent the risk o	f accidental fire.
	10=L0	lalfunction indicatio	(LV) (P06.00) m	$32=\Delta$ -connection for the n	notor coil	67=Analog inp	out level reached	 Install 	the AC motor drive in Pollu	tion Degree	2 environme	ents only: no	ormally only noncondu	ctive pollution
	13=O	verheat warning (P0	06.15)	33=Zero speed (actual out frequency)	tput	68=SO output	logic B	occurs	and temporary conductivit	y caused by	condensatio	on is expecte	ed.	
\neg	14=Sc (P0	oftware brake signa)7 00)	lindicator	34=Zero speed including S	STOP (actual	69=Maximum 70=Empty reel	reel diameter reached	In Poll	lution Degree 2 environmen	ts, install dr	ives in an IP5	54 cabinet o	r in a pollution-contro	lled environment.
	15=PI	ID feedback error (P	P08.13, P08.14)	output frequency)	1 (P06 23)	71=Broken bel	It detection	Polluti	ion Degree 2 defines an envi	ronment in	which dew c	an form cau	ising temporary electr	ical conduction.
	16=Sli	lip error (oSL)	does not	36=Error output selection	2 (P06.24)	72=Tension PII	D feedback error	Electri	cal equipment in the contro	i panei ana	inermostati	c chamber o	only causes non-conau	cuve pollution.
	ret	turn to 0 (P02.20)		37=Error output selection	3 (P06.25) 4 (P06.26)	74=Over-torqu	ue 4							
	18=Co	ount value reached,	return to 0	39=Position reached (P10.	.19)	75=Forward RI	UN status	🔶 🤶 (BLU	e Arrow) Inflow	((RED ARRO	w) OUTFLO	<i>w</i>	
	(10	52.13)		40=Speed reached (includ	ling STOP)		site status	Single o	drive Independent installation	n. Side	-by-side hori	zontal instal	lation:	
								11/1			///////////////////////////////////////			//
				AI Multi-function Inpu	ıt Selections	;] 🏹	Λ 🔨 🖡 🗡 🗍				× ×	
	0=No	function		7-Positive torque limit		14=Tension PII	D feedback signal					▼^(
\neg	1=Fre	equency command	aug limit under	8=Negative torque limit		15=Line speed	l							
	spe	eed mode)	que innic under	9=Regenerative torque lim	nit aug limit	17=Tension PII	D target value		в в		// в		сі в	
	3=Tor	rque compensation	command	11=PT100 thermistor input	it value	18=Tension set	tting value		Inverter		lr	nverter 🔫	► Inverter	
	5=PID	D feedback signal		12=Auxiliary frequency inp	put	20=Tension tap	per							
-	6=The	ermistor (PTC) input	value	15=PID compensation valu	ue	21=VFSM V so	ource							
								▲		A	A 👌		\rightarrow	A
			A	AO1 Multi-function Out	put Selection	ns								1
_	0=Out	Itput frequency (Hz)				10.14		////			'//////////////////////////////////////	///////////////////////////////////////		11
-	1=Fre	equency command ((Hz)	9=Al1 percent		16=Vq-axis vol 17=Vd-axis vol	Itage command Itage command							
\neg	2=Mo 3=Out	otor speed (Hz)		10=Al2 percent		18=Torque cor	mmand	GS30 F	RAMES A-F					
	4=Out	itput voltage		12=Iq current command 13=Iq feedback value		19=PG2 (DI7) 1 21=RS-485 and	frequency command alog output		1				On exertion Te	
	5=DC 6=Pov	bus voltage		14=Id current command		22=Communic	cation card analog output		nstallation Mothod	Α	В	с	Operation rel	Maar
\neg	7=Pov	wer		15=Id feedback value		23=Constant v	oltage output (P03.32)		installation method	(mm)	(mm)	(mm)	мах	мах
				1						()	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	()	(w/out derating)	(Deratina)
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	ENVIR DO NO gases, I the yea	CONMENT FOR T expose the GS3 high humidity, liv ar.	OPERATION 30 drive to env quids, or high	, STORAGE, AND TRA vironments that contain vibration. The salt in th	ANSPORTATI a dust, direct s ne air must be	TON sunlight, corre e less than 0.0	osive/inflammable 11 mg/cm ² throughout	Single c Side-by Zero sta	drive installation side horizontal installation ack installation	50 50 50	30 30 30 30	- 30 0	(w/out derating) 50 50 40	(Derating) 60 60 50
	ENVIR DO NO gases, I the yea	CONMENT FOR T expose the GS3 high humidity, li ar.	OPERATION 30 drive to env quids, or high IEC60364-1/I	, STORAGE, AND TRA vironments that contain vibration. The salt in th	ANSPORTATI a dust, direct s ne air must be ree 2, Indoor u	TION sunlight, corre e less than 0.0 use only	osive/inflammable 11 mg/cm ² throughout	Single of Side-by Zero sta	drive installation side horizontal installation ack installation RAMES G-I	50 50 50	30 30 30	- 30 0	(w/out derating) 50 50 40	(Derating) 60 60 50
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Multi-function Output Selections

These installation instructions may be revised without prior notice. The most recent



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