



GSHD Series Servo Drive

Overview

The hardware and software of GSHD series high performance servo drive adopt innovative design. It can implement high performance control to all mainstream permanent magnet motors. It is compact, easy to adjust and debug, and is versatile. GSHD drive can operate in multiple control modes (position control mode, velocity control mode, and current (torque) control mode). Users can switch among current (torque) mode, velocity mode and position mode. GSHD drive supports analog command input, pulse command input and gLink-II command input (Gigabit Ethernet Protocol of Googoltech's intellectual property). Users can implement drive parameter setting and test via the simple debugging software. Graphical software interface makes drive parameter setting easier.

GSHD series high performance servo drive is widely used in laser, semiconductor, industrial robot, CNC processing center, automation production line, 3C equipment and other industrial automation control fields.



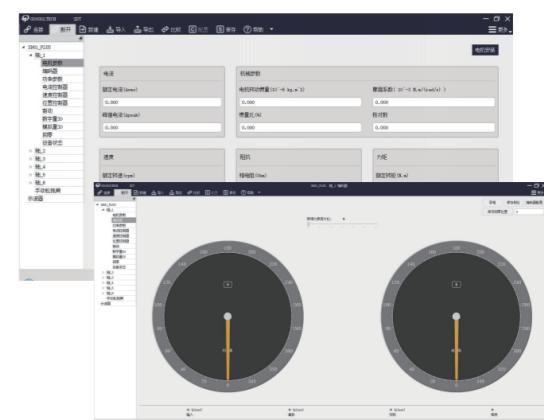
Main Features

- Can drive AC rotary servo motor, AC linear servo motor, brushless DC motor and DD motor.
- Supports analog input, pulse input and gLink-II Gigabit Ethernet Protocol.
- Supports photoelectric encoder, Hall sensor, resolver, sine encoder, SSI encoder, and other motor feedback.
- Advanced current loop control algorithm to minimize position error and system adjustment time.
- Current loop refresh cycle: 31.25us, speed refresh cycle: 125us, position refresh cycle: up to 125us so that motor will have very high control precision.
- Power range can satisfy requirements of most industrial occasion.

SDT Debugging Software

Operating Environment Requirements

- CPU 2GHz.
- Memory RAM 2GB.
- Storage 1GB.
- Equipped with network cable interface.
- Support for Windows 7 and Windows 10 OS.
- NIC speed: 1000M Ethernet.
- Recommended screen resolution 1280x800, minimum resolution not less than 1024X768.



GOOGOL TECHNOLOGY

Control & network factories of the future

GOOGOLTECH

GOOGOL TECHNOLOGY (HK) LIMITED
Unit 1008-09, 10/F C-Bons International Center, 108
Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Tel.: +(852) 2358-1033
Fax: +(852) 2719-8399
E-mail: hkgogol@gmail.com / sales@gogoltech.com
Web: http://www.gogoltech.com

GOOGOL TECHNOLOGY (SZ) LIMITED
Room W211, IER Building (PKU-HKUST High-
tech Industrial Park, Nanshan District, Shenzhen,
PRC (Postal Code: 518057)
Tel.: +(86) 755-26970817, 755-26970824,
Fax: +(86) 755-26970821
E-mail: gogol@gogoltech.com
Web: www.gogoltech.com.cn

GOOGOL TECHNOLOGY (TWN) LIMITED
7F-3, No.97, Sec. 3, Taichung Port Road, Xitun
Dist., Taichung City 40755, Taiwan.
Tel.: +886-4-2358-8245
Fax: +886-4-2358-6495
E-mail: twinfo@gogoltech.com



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SDT Debugging Software

Features

- A variety of debugging options are available:
 - Advanced parameter auto-tuning function;
 - The quick guide function performs basic parameter debugging;
 - Setting nearly 800 debugging parameters and variables for advanced electromechanical systems.
- More flexible IO configuration, providing up to 25 types of Input functions and 25 types of Output functions, supporting 62.5us sampling period, enabling simultaneous debugging of 255 drives.
- Built-in oscilloscope function, which makes debugging more intuitive by observing waveforms during debugging.
- The debugging interface uses the schematic diagram, making it easier for customers to set parameters.
- Self-setting current foldback parameters to improve the safety level of the drive and motor.

Selection Guide

GSHD - 006 - 2A - AP - 2 - LM

Power Spec:	
120/240VAC	
Continuous Current/Peak Current	
003	3A/9A
4D5	4.5A/18A
006	6A/18A
008	8A/28A
010	10A/28A
013	13A/28A
020	20A/48A
024	24A/48A
120/240VAC	
Continuous Current/Peak Current	
003	3A/9A
006	6A/18A
012	12A/24A
024	24A/72A
030	30A/90A

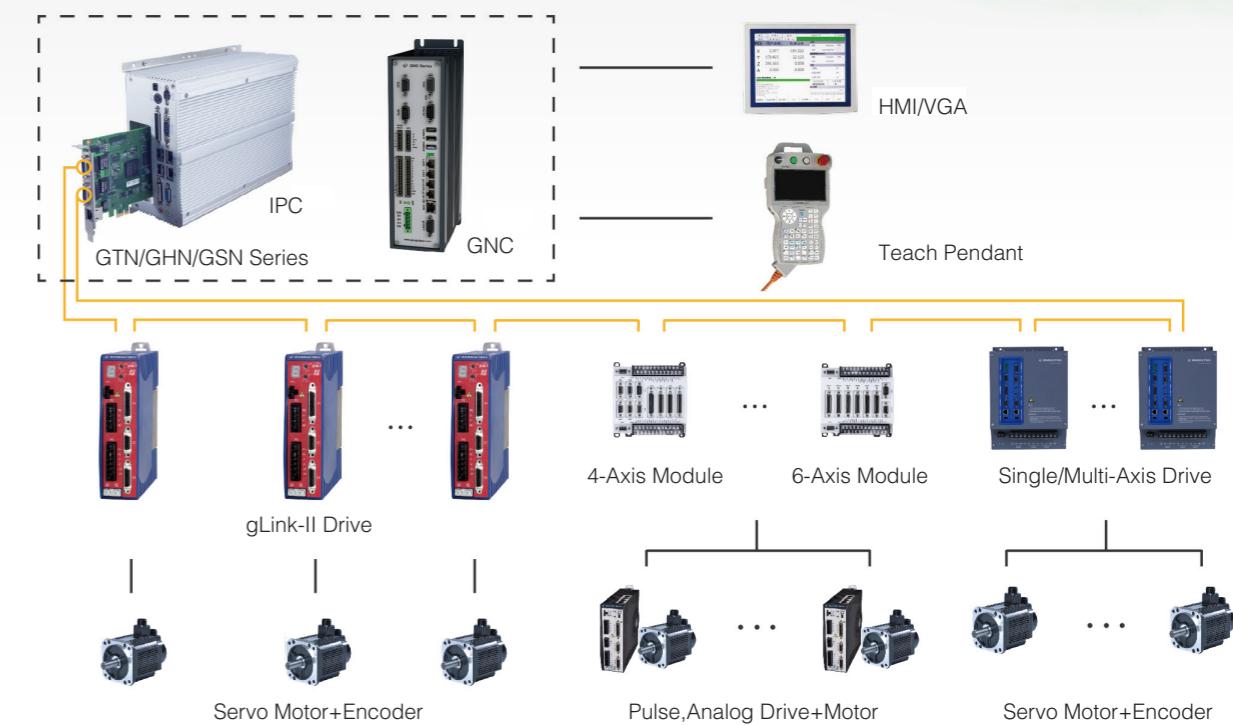
Power and Control Power:	
2A:	Single-phase input voltage 120L-L VAC+10%-15% 50/60Hz
	Single-phase input voltage 240L-L VAC+10%-15% 50/60Hz
	Three-phase input voltage 120-240L-L VAC+10%-15% 50/60Hz
4D:	Three-phase input voltage 400L-L VAC+10%-15% 50/60Hz
	Three-phase input voltage 480L-L VAC+10%-15% 50/60Hz
	Control power supply 24VDC

Analog Input:	
1:	One analog input port, 14 bits
2:	Two analog input ports, 14 bits

Interface Option:	
GL:	Analog voltage, pulse command, gLink-II
AP:	Analog voltage, pulse command, RS232

Motor Type:	
NA: Only rotary motors are supported	

System Structure



Specifications

Control Specification		
Motor	AC rotary servo motor, AC linear servo motor, brushless DC motor and DD motor.	
Operating Mode	Auto-configuration	Automatically configure motor phase and phase settings.
	Selectable mode	Current (torque) control, speed control, position control.
	Input/output command	Current command/three-phase PWM command.
	Performance	Refresh cycle 31.25us (32kHz), output sine wave.
Current (Torque) Control	Step response time	The actual current reaches the current command value is two cycles, 62.5us (up to 3kHz).
	Control method	DQ, PI and feedforward.
	Reference instruction	Analog voltage ±10 VDC, gLink-II.
	Automatic adjustment	Automatic adjustment of current loop parameters.
Speed Control	Input/output command	Speed/current command.
	Performance	Refresh cycle 125us (8kHz).
	Optional speed control method	PI, IP
	Wave filter	First order low pass filter, Second order low-pass filter, notch filter, high-pass filter, band-pass filter or several filter cascades.
	Reference instruction	Analog voltage ±10 VDC, gLink-II.
Position Control	Input/output command	Position/speed command.
	Performance	Refresh cycle 125us (8kHz).
	Control method	PID and feedforward.
	Reference instruction	Pulse & direction with electronic gear, gLink-II.

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Specifications

Control Specification		
Brake	Method	Controlled stop: dynamic braking, dynamic prohibition.
Status Indication	Form	7-Segment LED (green), showing drive status.
Electronic Gear	Method	User defined gear ratio.
GUI	User Interface	SDT software based on Windows.
	Function	Setting connection, drive information, power information, motor, feedback, I/O selection/configuration, motion setting/adjustment, fault history/status display, installation wizard, expert interface, etc.
IO		
First Analog Input Channel		Analog ±10 VDC differential, resolution 14 bits.
Second Analog Input Channel		Analog ±10 VDC differential, resolution 14 bits.
Pulse & Direction		Maximum input frequency 4MHz.
Equivalent Encoder Output		AB orthogonal signal/zero differential signal, maximum output frequency 4MHz.
Digital Input(8 Channels)		24V, Optical isolation, low-level inputs.
Fast Digital Input(3 Channels)		24V, Optical isolation, low-level inputs.
Digital Output(4 Channels)		24V, Open collector, with optical isolation, low-level outputs, maximum current 40mA.
Fast Digital Output(2 Channels)		24V, Open collector, with optical isolation, low-level outputs, maximum current 10mA.
Analog Output		±10V, Resolution 8 bits.
Second Encoder		AB orthogonal signal/zero differential signal, maximum output frequency 4MHz.
Fault Output Relay		24V, Maximum current 1A, configurable dry contact.
Communication		
Daisy Chain		Maximum 8 axes, use two rotary switches to set the drive address, range 0-99, maximum wire length 10m.
gLink-II		CiA 301 application layer and CiA 402 device sub-protocol for driver and motion control, Gigabit Ethernet.
Motor Feedback Signal		
Drive		Main power supply: 5 VDC (7 VDC optional)
Incremental Encoder		AB orthogonal signal with/without Hall sensor, RS422/485, maximum input frequency 4MHz.
Hall Sensor		Single-ended open collector (optional differential signal).
Resolver		Sine/Cosine differential signal, conversion ratio 0.45-1.6
Sine Encoder		Sine/Cosine differential signal with/without Hall sensors, 1 Vpp@2.5v, EnDat®2.1, Hiperface®
SSI Encoder		Serial encoder supporting differential data and clock signals, EnDat®2.2, Nikon®, Tamagawa®, YASKAWA, SANKYO
Motor Temperature Sensor		Thermistor PTC or NTC, user-defined threshold.
Protection Function/Environmental Requirements		
Protective Function		Alarm content: undervoltage and overvoltage, overcurrent, over temperature of drive and motor, motor foldback, drive foldback, feedback missing, the second encoder is missing, the STO signal is not connected, not configured, the circuit is faulty, the motor phase loss, etc.
Standards Compliant		RoHS, REACH: ECRegulation1907/2006
Environment		Ambient temperature: operation -20-55°C, storage 0-70°C; humidity: 10-90%; vibration: 1.0g Altitude: < 2000m
Protection/Pollution Level		Protection level: IP20, pollution level: 2 Don't use in the following places: corrosive or combustible gases, chemicals or oil, dust containing iron and salt.

Ordering Guide

Rated Voltage (V)	Type	Ordering Number	Rated Current (A)	Recommended Motor or Applicable Motor Power (W)
Medium Pressure 120/240VAC	gLink-II	GSHD-003-2AGL2	3	GSKL-T3S05A6N040G, GSKL-T3S05A6B040G
		GSHD-003-2AGL2-LM		GSKL-T3S10A6N040G, GSKL-T3S10A6B040G
		GSHD-4D5-2AGL2	4.5	GSKL-T3S20A6N060G, GSKL-T3S20A6B060G
		GSHD-4D5-2AGL2-LM		GSKL-T3S40A6N060G, GSKL-T3S40A6B060G
		GSHD-006-2AGL2	6	GSKL-T3M10A6N080G, GSKL-T3M10A6B080G
		GSHD-006-2AGL2-LM		GSKL-T3M10A6N080G, GSKL-T3M10A6B080G
		GSHD-008-2AGL2	8	GSKL-T2M10A6N130G, GSKL-T2M10A6B130G
		GSHD-008-2AGL2-LM		GSKL-T2M10A6N130G, GSKL-T2M10A6B130G
		GSHD-010-2AGL2	10	GSKL-T2M15A6N130G, GSKL-T2M15A6B130G
		GSHD-010-2AGL2-LM		GSKL-T2M15A6N130G, GSKL-T2M15A6B130G
		GSHD-013-2AGL2	13	GSKL-T2M20A6N130G, GSKL-T2M20A6B130G
		GSHD-013-2AGL2-LM		GSKL-T2M30A6N130G, GSKL-T2M30A6B130G
Medium Pressure 120/240VAC	Standard	GSHD-020-2AGL2	20	2900/3000/3500/4400
		GSHD-020-2AGL2-LM		2900/3000/3500/4400
		GSHD-024-2AGL2	24	4400/5500/7300
		GSHD-024-2AGL2-LM		4400/5500/7300
		GSHD-003-2AAP1	3	GSKL-T3S05A6N040G, GSKL-T3S05A6B040G
		GSHD-003-2AAP1-LM		GSKL-T3S10A6N040G, GSKL-T3S10A6B040G
		GSHD-4D5-2AAP1	4.5	GSKL-T3S20A6N060G, GSKL-T3S20A6B060G
		GSHD-4D5-2AAP1-LM		GSKL-T3S40A6N060G, GSKL-T3S40A6B060G
		GSHD-006-2AAP1	6	GSKL-T3M10A6N080G, GSKL-T3M10A6B080G
		GSHD-006-2AAP1-LM		GSKL-T3M10A6N080G, GSKL-T3M10A6B080G
		GSHD-008-2AAP1	8	GSKL-T2M10A6N130G, GSKL-T2M10A6B130G
		GSHD-008-2AAP1-LM		GSKL-T2M10A6N130G, GSKL-T2M10A6B130G
Medium Pressure 120/240VAC	gLink-II	GSHD-010-2AAP1	10	GSKL-T2M15A6N130G, GSKL-T2M15A6B130G
		GSHD-010-2AAP1-LM		GSKL-T2M15A6N130G, GSKL-T2M15A6B130G
		GSHD-013-2AAP1	13	GSKL-T2M20A6N130G, GSKL-T2M20A6B130G
		GSHD-013-2AAP1-LM		GSKL-T2M30A6N130G, GSKL-T2M30A6B130G
		GSHD-020-2AAP1	20	2900/3000/3500/4000
		GSHD-020-2AAP1-LM		2900/3000/3500/4000
		GSHD-024-2AAP1	24	4400/5500/7300
		GSHD-024-2AAP1-LM		4400/5500/7300
		GSHD-003-4DGL2	3	Below 1500
		GSHD-003-4DGL2-LM		Below 1500
High Pressure* 400/480VAC	gLink-II	GSHD-006-4DGL2	6	Below 3000
		GSHD-006-4DGL2-LM		Below 3000
		GSHD-012-4DGL2	12	Below 6300
		GSHD-012-4DGL2-LM		Below 6300
		GSHD-024-4DGL2	24	Below 12kw
		GSHD-024-4DGL2-LM		Below 12kw
		GSHD-030-4DGL2	30	Below 15kw
		GSHD-030-4DGL2-LM		Below 15kw



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Ordering Guide

Rated Voltage (V)	Type	Ordering Number	Rated Current (A)	Recommended Motor or Applicable Motor Power (W)
High Pressure* 400/480VAC	Standard	GSHD-003-4DAP1	3	Below 1500
		GSHD-003-4DAP1-LM		
		GSHD-006-4DAP1	6	Below 3000
		GSHD-006-4DAP1-LM		
		GSHD-012-4DAP1	12	Below 6300
		GSHD-012-4DAP1-LM		
		GSHD-024-4DAP1	24	Below 12kw
		GSHD-024-4DAP1-LM		
		GSHD-030-4DAP1	30	Below 15kw
		GSHD-030-4DAP1-LM		

Dimension

