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Find the *Parker / Compumotor Gemini GT6-L8 / GT6-L8-NK* at our website: *Click HERE*



The Gemini GT Digital Stepper Drive

The Gemini GT is the digital stepper drive member of the Gemini Family. The Gemini GT is easily configurable and programmable via RS232/485 using Compumotor's Motion Planner™ on a PC or Pocket Motion Planner™ on a Window's CE™-based palm PC. The Gemini GT is an alternative to a digital servo drive. With breakthrough techniques such as Encoderless Stall Detect™ and ABS damping™ (patented), the Gemini GT provides servo like performance with the lower motor price of a stepper system. With the same connectivity, configurations, and family feature set as the Gemini GV, the Gemini GT allows for an easy upgrade path to the Gemini GV digital servo drive.

Active Damping™, Electronic Viscosity™ and ABS Damping™

The Gemini GT follows in the footsteps of Compumotor's ZETA drive family and offers Active Damping™ (patented) and Electronic Viscosity™ (patented). The Gemini GT goes one step further with ABS Damping™ (patented). This damping feature is for speed ranges from 0 to 0.1 revs/sec. This "no-fuss" feature requires no user set up and dramatically reduces settling time.

Encoderless Stall Detect™

Encoderless Stall Detect™ allows detection of a motor stall without adding an encoder to an application. Stall conditions result from inequality of commanded velocity to actual velocity at the motor shaft, regardless of physical reason. The user will be alerted to a stall condition via LED, digital output, or via query over the communication port. Stall sensitivity can be adjusted with a single parameter.

Features

Performance

- Two power ranges for up to 8 Amps of continuous current
- Step and direction, CW/CCW, +/- 10 VDC analog, and encoder tracking modes available
- Active Damping™, Electronic Viscocity™, and ABS Damping™
- Encoderless Stall Detect™
- Simplified configuration
- Variable resolution up to 128,000 steps/rev

Protection

- Short circuit protection – phase-to-phase and phase-to-ground
- Brownout protection – if AC drops below 85 VAC
- Over temperature – shutdown occurs at ambient 131°F (55°C)

Physical

- A wide selection of stepper motors are available from Compumotor including the OS, TS, VS and ES Series
- 120V input power
- Diagnostic LEDs for drive status, firmware download, and optional keep alive mode

Gemini Family Features

- 24V Keep Alive (not required) – keeps logic alive if AC power is removed
- Error Log – records 10 most recent errors with time stamp
- Approvals: UL Recognition, cUL, CE (LVD), and CE (EMC)
- Configurable via RS232/485 using Compumotor's Motion Planner™ on a PC or Pocket Motion Planner™ on a Windows CE™-based Palm PC

When do I need to use servo motor technology? Applications with . . .

- ✓ Speeds over 50 revs/sec
- ✓ Dynamic load conditions
- ✓ Very high accelerations
- ✓ Mechanical resonance
- ✓ Immediate feedback requirements

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The Gemini GT6 Digital Stepper Drive with Basic Controller and Fieldbus Options

The Gemini GT6 is a standalone, compact, digital stepper drive and basic motion controller in one complete package. The Gemini GT6 incorporates all of the GT digital stepper drive features such as Encoderless Stall Detect™ and ABS Damping™ (patented) with the flexibility of a simple, yet powerful motion controller.

The Gemini GT6 is easily configurable and programmable via RS232/485 using Compumotor's Motion Planner™ on a PC or Pocket Motion Planner™ on a Window's CE™-based palm PC. The Gemini GT6 also offers connectivity to several field buses including Profibus and DeviceNet.

Similar to the digital stepper drive, the Gemini GT6 provides servo performance for the package price of a stepper system. It also allows the flexibility of an upgrade path to the Gemini GV6, due to its equivalent connectivity, programmability, and family feature set. For applications requiring stepper motor controls and basic motion control functionality, the Gemini GT6 is today's industry technology leader.

Features

Performance

- Provides 5 or 8 Amps of continuous current
- Active Damping™, Electronic Viscocity™, and ABS Damping™
- Encoderless Stall Detect™
- Simplified configuration
- Variable resolution up to 128,000 steps/rev
- Standalone controller and drive in one small package
- Full ASCII connection capability
- Program Storage: 32 programs or 190 lines of program code
- Control features such as registration, motion profiles, S-curve velocity profiling and conditional statements

Performance, continued

- Daisy chain up to 99 units
- 8 programmable inputs and 6 programmable outputs

Protection

- Short-circuit protection – phase-to-phase and phase-to-ground
- Brownout protection – if AC drops below 85 VAC
- Over temperature – shutdown occurs at 131°F (55°C)

Physical

- A wide selection of stepper motors are available from Compumotor including the OS, RS, TS, VS and ES Series
- 120V input power
- Diagnostic LEDs for drive status, firmware download, and optional keep alive mode

Connectivity

- RS232/485 serial connectivity (ASCII)
- Profibus DP (optional)
- DeviceNet (optional)

Gemini Family Features

- 24V Keep Alive (not required) – keeps logic alive if AC power is removed
- Error Log – records 10 most recent errors with time stamp
- Approvals: UL Recognition, cUL, CE (LVD), and CE (EMC)
- Configurable/Programmable via RS232/485 using Compumotor's Motion Planner™ on a PC or pocket Motion Planner™ on a Windows CE™-based Palm PC

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Gemini GT6K



The Gemini GT6K Digital Stepper Drive with Full-Feature Controller

Compumotor's new premier microstepping drive/controller, the Gemini GT6K is the most powerful addition to the Gemini stepper family lineup. This full-feature, standalone drive/controller offers a complete motion control solution in one economical, compact package. The GT6K comes complete with the same features, connectivity and front-end software tools as the Gemini GT and Gemini GT6. In addition to offering many of the drive features of the Gemini GT and control features of the Gemini GT6, the GT6K incorporates the flexibility and control functionality of Compumotor's 6K Controller to allow highly advanced motion control and sequencing capabilities for unrivaled flexibility in many distributed-control applications. The GT6K is easily configured/programmed via RS232/485 using Compumotor's Windows-based Motion Planner™ software package. The GT6K also offers connectivity to any ASCII-based serial device, including HMI panels and PLC ASCII modules. Products such as OPTO 22™ SNAP I/O, DVT™ Vision Systems and AB™ SLC 5/05 PLC platforms can also be used for data chaining using the GT6K's Ethernet Client feature.

Features

Performance

- Combines the powerful features of the 6K Controller with the Gemini GT digital microstepper drive for a complete standalone stepper solution in one small package
- Full ASCII communication capability and Ethernet communication
- Control features such as following, registration, multitasking, PLC scan, electronic cam profiling, S-curve profiling, scaling, high-level math functionality and more
- Program storage: 300KB standard (battery backed)
- Daisy chaining of up to 99 units
- Simplified configuration and tuning
- 8 programmable inputs and 6 programmable outputs (expandable up to 256 I/O points)

Protection

- Short-circuit protection – phase-to-phase and phase-to-ground
- Brownout protection – if AC drops below 85 VAC
- Over temperature – shutdown occurs at ambient 131°F (55°C)

Physical

- A wide selection of stepper motors are available from Compumotor including the OS, TS, VS and ES Series
- 120V input power
- Diagnostic LEDs for drive status, firmware download and 24VDC control power active

Connectivity

- Two serial communications ports: one RS232 port (3-wire), one RS232/RS485 port (2- or 4-wire)
- Ethernet communication port (TCP/IP, 10 Mbps twisted pair
- Embedded Ethernet Client for use with AB™ PLCs, OPTO 22™ SNAP I/O, DVT™ Vision Systems, etc.
- Master Encoder port for reading external encoder input signals
- Expandable I/O (up to 256 discrete I/O points and/or 192 Ethernet I/O points)

Gemini Family Features

- 24V Keep Alive (24VDC supply required) – keeps logic alive if AC power is removed
- Error Log—records 10 most recent errors with time stamp
- Approvals: UL Recognition, cUL, CE (LVD), and CE (EMC)
- Configurable/Programmable via RS232/485 using Compumotor's Motion Planner™

See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

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Software and Standard Control Features

- Complied motion
- Floating point, integer and binary variables with high-level math functionality
- Comprehensive program monitoring
- 300KB memory storage, battery backed
- Full-feature 6K Language command set
- Complete position-based following and electronic cam profiling
- PLC Scan Mode
- Multitasking (up to 10 individual programs simultaneously)
- Full scaling functionality
- Compatible with platforms such as VisualBasic™, Visual C++™ and NI LabVIEW™

I/O Capabilities

- Onboard I/O: 8 digital inputs (3 programmable limits, 5 programmable), 6 digital outputs, 1 analog input, 2 D/A monitor outputs, 1 relay output
- Software selectable onboard input/output functionality
- Expandable I/O of up to 256 additional discrete digital I/O points, 64 analog I/O points or a combination of both digital and analog points
- Expandable Ethernet I/O of up to 192 additional digital or analog I/O points using Ethernet Client with OPTO 22™ SNAP modules
- Registration input capability
- Software selectable I/O high/low active level
- 5-24VDC selectable input reference voltage
- Inputs: selectable as sinking or sourcing; outputs: open collector (sinking)

Gemini Family Summary

GEMINI FAMILY FEATURES	Servo			Stepper		
	GV	GV6	GV6K	GT	GT6	GT6K
CE, UL Recognition	●	●	●	●	●	●
RS232/485	●	●	●	●	●	●
Encoderless Stall Detect				●	●	●
Ethernet			●			●
Profibus		●			●	
DeviceNet		●			●	
±10V Command Input	●			●		
Step/Direction, CW/CCW Command Input	●			●		
Encoder Signal Input	●		●	●		●
Onboard I/O	○	●	●	○	●	●
Expandable I/O			●			●
Registration		●	●		●	●
System Status & Diagnostics	●	●	●	●	●	●
Scaling			●			●
Variables		○	●		○	●
Following	○		●	○		●
Multitasking			●			●
Compiled Motion		○	●		○	●

● Full Functionality
○ Limited Functionality

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GT/GT6 Common Specifications

Specifications	GT(GT6)-L5	GT(GT6)-L8
Input Power		
Voltage	95-132 VAC	95-132 VAC
Phase	1Ø	1Ø
Frequency	50/60 Hz	50/60 Hz
24V Keep Alive (Optional)	24 VDC +/- 20%	24 VDC +/- 20%
Output Power		
Bus Voltage	170 VDC	170 VDC
Switching Frequency	20kHz	20kHz
Current (Apk)	5 Amps	8 Amps
Performance		
Accuracy	+/-5 arc min (0.0833°) unloaded bi-directional with Compumotor motors +/- 1 arc min (0.0167°) loaded in addition to unloaded accuracy	
Repeatability	+/- 5 arc sec (0.0014°), typical unloaded	
Hysteresis	Less than 2 arc min (0.0334°) unloaded	
Resolution	User defined integer value between 200 and 128,000 steps	
Waveform	User defined, pure sine, -20% to 10%, continuously variable 3rd harmonic	
Command Inputs - GT		
Position Mode	Step and Direction/CW & CCW/Encoder Tracking	
Velocity Mode	12 bit, +/- 10 input voltage	
Inputs – GT		
Enable, Reset, User Fault	5-24VDC Selectable, 1/3 1/3 1/3 voltage switching threshold	
Neg/Pos Limits	5-24VDC Selectable, 1/3 1/3 1/3 voltage switching threshold	
Inputs – GT6		
8 Program., Enable, Reset	5-24VDC Selectable, 1/3 1/3 1/3 voltage switching threshold	
1 Analog	12 bit, +/- 10 VDC input voltage (1 ms update)	
Outputs – GT		
Fault, At Limit, Stall	Open collector, 300mA sink capability	
Analog Monitors	+/- 10 V scalable, 8 bit (not to be used as control functions)	
Step & Direction	Programmable up to 128,000 counts/rev	
Relay	Normally open, dry contact	
Outputs – GT6		
6 Programmable	Open collector, 300mA sink capability	
Analog Monitors	+/- 10 V scalable, 8 bit (not to be used as control functions)	
Step & Direction	Programmable up to 128,000 counts/rev	
Relay	Normally open, dry contact	
Communications		
Type	RS232/RS485 (4-wire), ASCII or 8-bit binary protocol	
Baud Rate	Fixed at 9600	
Daisy Chain – GT6	Up to 99	
Fieldbus - GT6	Profibus (optional), DeviceNet (optional)	
Environmental		
Temperature	Still air: 113°F(45°C), moving air: 122°F (50°C)	
Humidity	0-95%, non-condensing	
Shock/Vibration	Shock:15G half-sine @ 11 msec/ vibration: 2G, 10-2000 Hz	
Protection		
Short Circuit	Phase-to-phase, phase-to-ground	
Brownout	AC drops below 85 VAC	
Over Temperature	Shutdown fault at 131°F (55°C)	
Standards	UL, cUL, CE (LVD), CE (EMC)	
Physical		
Compumotor motors	OS, TS, VS and ES Series motors	
Non-Compumotor motors	4,6,or 8-lead, 2-phase hybrid permanent magnet motor, 1.8°	
Inductance	0.5mH minimum; 5 to 50 mH recommended, 100mH max	
Connectors		
Serial	9-pin D-shell (male)	
Motor and power	Barrier screw terminal	
Command and I/O	50-pin High density Amp Champ - .050 Series II (with screw attachment)	
+24VDC/Relay	4-pin removable terminal block	

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GT6K Common Specifications

Specifications	GT6K-L5	GT6K-L8
Input Power		
Voltage	95-132 VAC	95-132 VAC
Phase	1Ø	1Ø
Frequency	50/60 Hz	50/60 Hz
24V Keep Alive (Required)	24 VDC +/- 20%	24 VDC +/- 20%
Output Power		
Bus Voltage	170 VDC	170 VDC
Switching Frequency	20kHz	20kHz
Current (Apk)	5 Amps	8 Amps
Performance		
Accuracy	+/- 5 arc min (0.0833°) unloaded bi-directional with Compumotor motors +/- 1 arc min (0.0167°) loaded in addition to unloaded accuracy	
Repeatability	+/- 5 arc sec (0.0014°), typical unloaded	
Hysteresis	Less than 2 arc min (0.0334°) unloaded	
Resolution	User defined integer value between 200 and 128,000 steps	
Waveform	User defined, pure sine, -20% to 10%, continuously variable 3rd harmonic	
Inputs – Onboard		
8 Program., Enable, Reset	5-24VDC Selectable, 1/3 1/3 1/3 voltage switching threshold	
1 Analog	12 bit, +/- 10VDC input voltage (2 ms update)	
Inputs – Expansion (optional)	Serial:Up to 256 digital inputs (2 ms update) Up to 64 analog inputs (+/- 10VDC input voltage) Ethernet: Up to 192 digital or analog Ethernet inputs via Ethernet Client with OPTO 22™ SNAP I/O module	
Outputs – Onboard		
6 Programmable	Open collector, 300mA sink capability	
Analog Monitors	+/- 10 V scalable, 8 bit (not to be used as control functions)	
Step & Direction	Programmable up to 128,000 counts/rev	
Relay	Normally open, dry contact	
Outputs – Expansion (optional)	Serial:Up to 256 digital outputs (2 ms update) Up to 64 12-bit analog outputs (+/- 10VDC input voltage) Ethernet: Up to 192 digital or analog Ethernet outputs via Ethernet Client or OPTO 22™ SNAP I/O module	
Communications		
Serial	RS232/RS485 (4-wire), ASCII	
Baud Rate	Selectable up to 115200	
Daisy Chain – GT6	Up to 99	
Ethernet	Type: 10BaseT (10 Mbps twisted pair)	
Protocols Supported	TCP/IP and UDP, Modbus/TCP, AB Ethernet and ASCII over Ethernet	
Environmental		
Temperature	Still air: 113°F(45°C), moving air: 122°F (50°C)	
Humidity	0-95%, non-condensing	
Shock/Vibration	Shock:15G half-sine @ 11 msec/ vibration: 2G, 10-2000 Hz	
Protection		
Short Circuit	Phase-to-phase, phase-to-ground	
Brownout	AC drops below 85 VAC	
Over Temperature	Shutdown fault at 131°F (55°C)	
Standards	UL, cUL, CE (LVD), CE (EMC)	
Physical		
Compumotor motors	OS, TS, VS and ES Series motors	
Non-Compumotor motors	4,6,or 8-lead, 2-phase hybrid permanent magnet motor, 1.8°	
Inductance	0.5mH minimum; 5 to 50 mH recommended, 100mH max	
Connectors		
Serial (Com1/Com2)	9-pin D-shell (male)	
Ethernet	RJ45 connector for 10 Base-T	
Motor and Power	Barrier screw terminal	
Command, Onboard I/O	50-pin High density Amp Champ - .050 Series II (with screw attachment)	
Feedback	26-pin High density Amp Champ - .050 Series II (with screw attachment)	
Master Encoder	9-pin D shell (female)	
Expandable I/O	15-pin D shell (female)	
+24VDC/Relay	4-pin removable terminal block	

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Gemini GT and GT6 Connections and LEDs

RS232/485

RS-485 Connections
Rx+ (RD B) Tx+ (TD B) Gnd
Rx- (RD A) Tx- (TD A)

RS-232 Connections
Rx Tx Gnd

Male Pins

LEDs



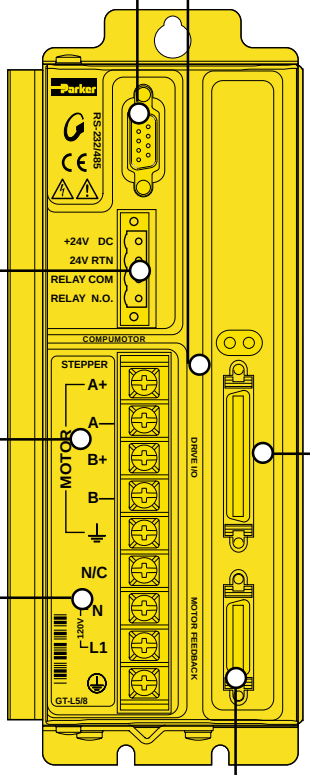
LED Color: Left	Right	Indicated State*
Off	Yellow	Initialization
Red (flash)	Off	Awaiting flash download
Green (flash)	Yellow (flash)	Programming flash memory
Red	Grn	Keep alive mode
Green	Grn (flash)	Incoming steps (variable rate)
Green	Yellow/Green (flash)	Autorun mode
Red	Off	Drive not enabled Drive faulted
Green	Off	Drive ready

See Servo Section

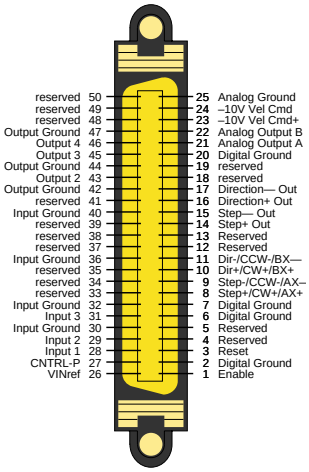
24VDC/Relay (not required)

- + 24VDC - provides logic keep alive to the drive
- Relay – 5A at 24 VDC or 120 VAC
- Relay opens when drive is disabled/faulted

+24V DC
24V RTN
RELAY COM
RELAY N.O.



Gemini GT



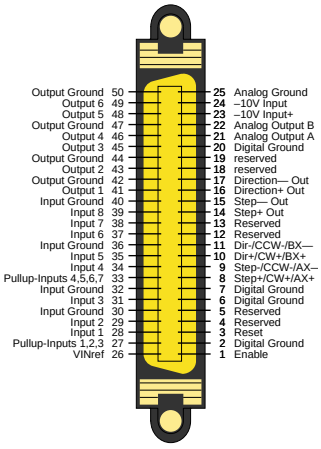
Motor Output Connections

- Terminals: #8 (M4)
- Mating Terminals: spade fork, 0.325” max width

For Gemini GT6 I/O information, please refer to Gemini GT6 Hardware Installation Guide

Motor Feedback Connector

Gemini GT6



Not available in the Gemini GT or GT6

AC Input Connections

- Terminals: #8 (M4)
- Mating Terminals: spade fork, 0.325” max width

For Gemini GT6 I/O information, please refer to Gemini GT6 Hardware Installation Guide

See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

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Gemini GT6 with Profibus Option

Profibus LED Indicators

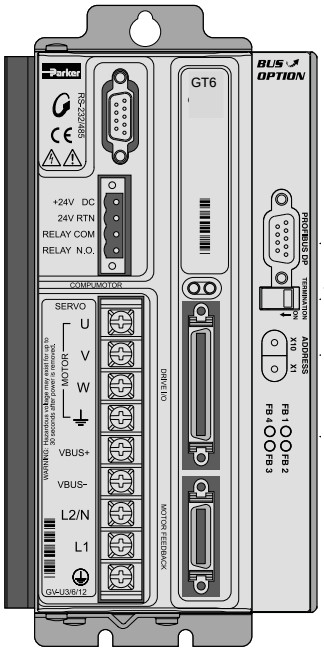
LED	Steady	Flash	Function	Status
FB1	--	--	Not used	--
FB2	Off		Module is not online	FBS bit #4= 0
	Green		Module is online	FBS bit #4= 1
FB3	Off		Module is not offline	FBS bit #4= 1
	Red		Module is offline	FBS bit #4= 0
FB4	Off		No diagnostics present	--
		Red	1 flash/second - FBSIZE setting does not match network configuration	--
		Red	4 flashes/second - hardware failure	--

Profibus Connector Pin Out

Pin	Name	Function
Housing	Shield	Protective earth
1	Not connected	--
2	Not connected	--
3	B-Line	Positive Rx/TxD
4	RTS	Request to send*
5	GND BUS	Isolated GND*
6	+5V BUS	Isolated +5V*
7	Not connected	--
8	A-Line	Negative Rx/TxD
9	Not connected	--

Profibus Baud Rate

The GT6 will automatically detect the baud rate of the Profibus network. For a complete list of supported baud rates, see the CMTRØ9ØE.GSD file, which accompanies the Gemini product.



Gemini GT6 with DeviceNet Option

DeviceNet LED Indicators

LED	Steady	Flash	Function	Status
FB1	--	--	Not used	--
FB2	Off		Not powered/not online	--
	Green		Network link is OK	FBS bit #4= 1
	Red		Network critical link failure	FBS bit #5= 1
		Green	1 flash/second - network link not connected	FBS bit #6= 1
		Red	1 flash/second - network connection timeout	FBS bit #7= 1
FB3	Off		No power	--
	Green		Module device operational	FBS bit #8= 1
	Red		Unrecoverable fault	FBS bit #9= 1
		Green	1 flash/second - module in standby	FBS bit #10= 1
		Red	1 flash/second - module minor fault	FBS bit #11= 1
FB4	--	--	Not used	--

DeviceNet Connector Pin Out

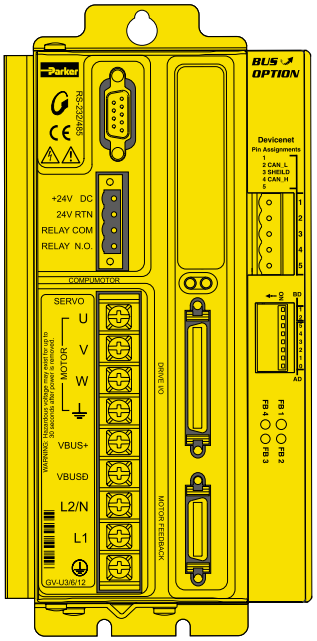
Pin	Name	Function
1	V-	DC Return
2	CAN_L	CANBUS LOW
3	SHIELD	Protective earth
4	CAN_H	CANBUS HIGH
5	V+	+24 VDC Power*

* 30mA in standby and 100mA in rush

DeviceNet Baud Rate

To configure baud rate via hardware, dip switches are provided to set a baud rate of 125, 250 or 500kb. Setting the dip switches to 0xFF (all ON) enables software configuration of baud rate.

Baud rate (Bit/sec)	BD1	BD2
125k	OFF	OFF
250k	OFF	ON
500k	ON	OFF
Reserved	ON	ON

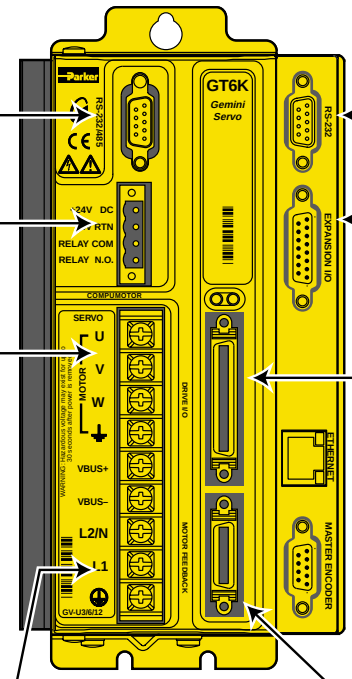


See Also:

The Profibus or DeviceNet User Guide for complete specifications

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GT6K
Digital Controller/Drive



RS-232/485 Connector – COM1

To configure drive parameters, connect a PC to this port.
Use Motion Planner for drive configuration.
Enabling Ethernet will disable the COM1 port.

RS-485 Connections
Rx+ (RD B) Tx+ (TD B) Gnd
Rx- (RD A) Tx- (TD A)

RS-232 Connections
Rx Tx Gnd
Male Pins

RS-232 Connector – COM2

Connect an RP240, or use this port for RS-232.
Download OS through this port only.
Ethernet and COM2 can both be active at the same time.

RS-232 Connections
Rx Tx Gnd
+5VDC
Male Pins

+24VDC/Relay Connector

Required +24VDC input.
19.2 — 28.8 VDC,
500 mA maximum.

When drive is enabled, it holds relay closed.

Relay rating: 5A at 24VDC or 120VAC.

If drive is faulted or disabled, relay will open. (Typical use: control of motor brake.)

+24V DC
24V RTN
RELAY COM
RELAY N.O.

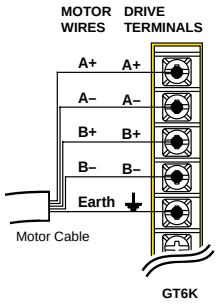
Expansion I/O Connector

Connect as many as eight EVM32-II I/O modules in series, for up to 256 additional I/O points.

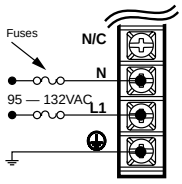
50 Pin DRIVE I/O Connector

Output Ground	50	25	Analog Ground
Output 6	49	24	Analog Input—
Output 5	48	23	Analog Input+
Output Ground	47	22	Analog Output B
Output 4	46	21	Analog Output A
Output 3	45	20	Digital Ground
Output Ground	44	19	Reserved
Output 2	43	18	Reserved
Output Ground	42	17	Dir— Out
Output 1	41	16	Dir+ Out
Input/Limit Ground	40	15	Step— Out
Input 3	39	14	Step+ Out
(Trig B) Input 2	38	13	Reserved
(Trig A) Input 1	37	12	Reserved
Input/Limit Ground	36	11	Reserved
(Master Trig) Input 5	35	10	Reserved
Input 4	34	9	Reserved
CNTRL-P: Inputs 1 — 5	33	8	Reserved
Input/Limit Ground	32	7	Digital Ground
(Home) Limit 3	31	6	Digital Ground
Input/Limit Ground	30	5	Reserved
(Neg) Limit 2	29	4	Reserved
(Pos) Limit 1	28	3	Reset
CNTRL-P: Lim 1 — 3	27	2	Digital Ground
VINref	26	1	Enable

Motor Output Connections



AC Input Connections



GT6K-L5/L8
at 120VAC

26 Pin MOTOR FEEDBACK Connector

Reserved	26	13	Reserved
Reserved	25	12	Reserved
Reserved	24	11	Reserved
Reserved	23	10	Encoder Z—
Reserved	22	9	Encoder Z+
Reserved	21	8	Encoder B—
Reserved	20	7	Encoder B+
Reserved	19	6	Encoder A—
Reserved	18	5	Encoder A+
Reserved	17	4	Encoder Ground
Reserved	16	3	Encoder Ground
Reserved	15	2	Encoder +5V
Reserved	14	1	Encoder +5V

Protective Circuits

Short Circuit Protection
Inrush Current Protection
Drive Overtemperature Protection
Motor Overtemperature Protection
Undervoltage Protection
Overvoltage Protection
Current Foldback
Regeneration Protection

LEDs

Green/Red Yellow/Green

LED Color:

Left	Right	Indicated State
Red	Grn	+24VDC only
Red	Yel	AC only
Grn	Grn (flash)	Motion in progress
Grn	Yel/Grn (flash)	Autorun mode
Red	Off	Drive not enabled; or Drive faulted
Off	Yel	Initializing
Grn	Off	Drive ready

Environmental Specifications

Operating Temperature	Still Air: 45¡C (113¡F) Moving Air: 50¡C (122¡F)
Storage Temperature:	-40¡C — 85¡C(-40¡F — 185¡F)
Humidity:	0 — 95%, non-condensing

Ethernet Connector

RJ-45 connector for 10Base-T (10Mbps twisted pair) TCP/IP protocol. Default address is 192.168.10.30. Green LED on = Connection OK; Yellow LED on = Transmitting

Master Encoder Connector

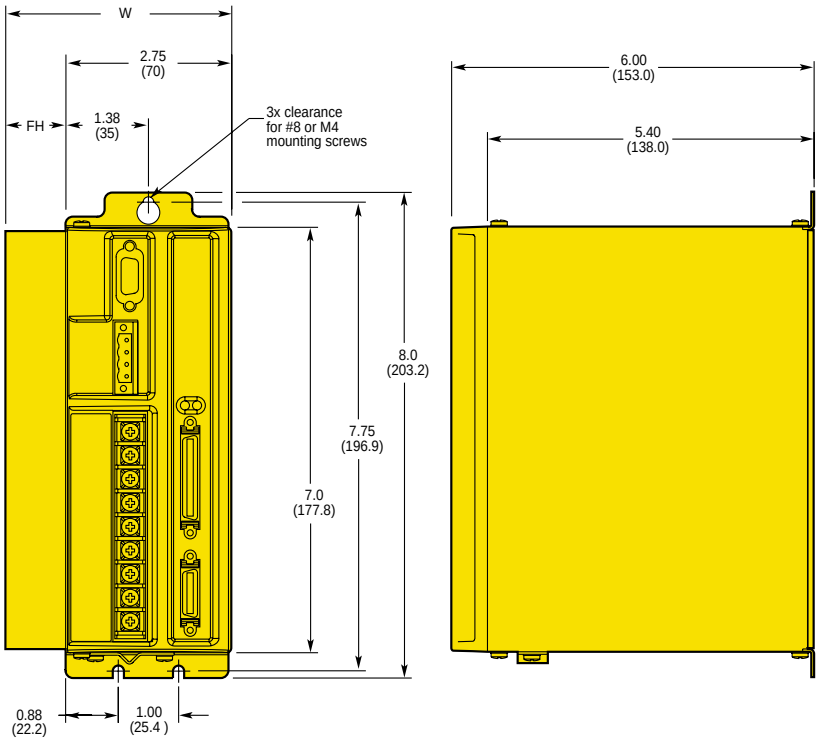
Connect an encoder for Following. Not for servo feedback or stepper stall detect.

See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

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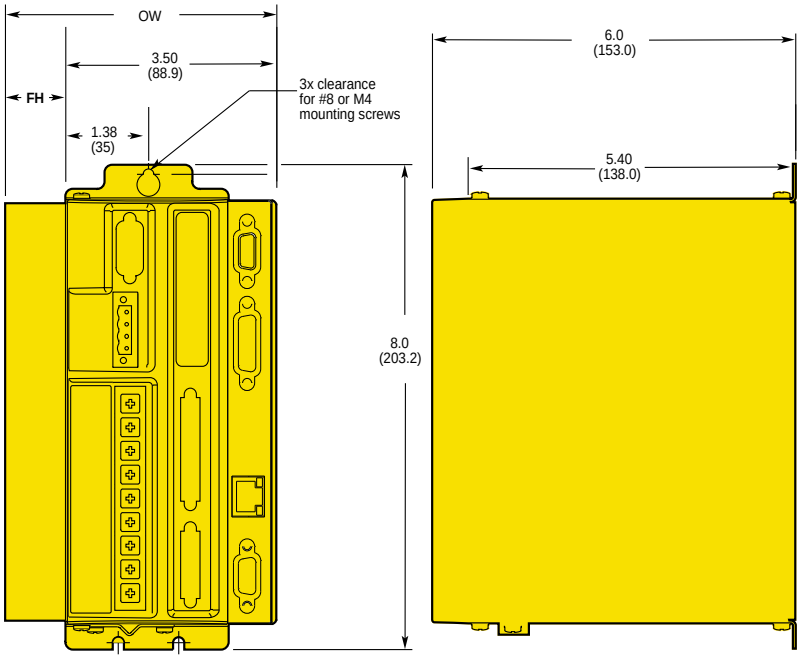
Gemini Dimensional Drawings

GT/GT6 Dimensions in inches (mm)



Product	W Width IN (mm)	FH FIN Height IN (mm)
L5	3.13 (79.4)	0.38 (9.5)
L8	3.75 (95.3)	1.00 (25.4)

GT6K/GT6-PB/GT6-DN Dimensions in inches (mm)



Product	OW Overall Width IN (mm)	FH Fin Height IN (mm)
L5	4.50 (114.3)	0.38 (9.5)
L8	1.00 (25.4)	0.38 (9.5)

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Gemini Ordering Nomenclature

GT [ ] - [ ] - [ ] (Example: GT6-L5-PB)

Control Level:
(blank) - drive only
6 - basic drive/controller
6K - full-feature drive/controller

Option:
PB (Profibus - GT6 only)
DN (DeviceNet - GT6 only)
(blank) no fieldbus

		Input Voltage (VAC)	Bus Voltage (VDC)	Continuous Current (Apk)
Stepper Power Levels	L5	120	170	5
	L8	120	170	8

Compatible Stepper Motors

- VS Series (in NEMA 17, 23 and 34 frame sizes)
- OS Series (in NEMA 23 frame sizes)
- ES Series (in NEMA 23 and 34 frame sizes)
- TS Series (in NEMA 34 and 42 frame sizes)

Motor Cabling Options

- Flying lead option
- 10' cable option
- 10' CE(EMC&LVD) cable option (on selected motors)
- NPS pipe thread option (on selected motors)

See Also:

The Gemini Family of Digital Servo Drive Products in the Servo Section

See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

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Cables and Accessories

Gemini to 6K Controller (GT only)

Part Number	Product Description
71-016966-10	Gemini to 6K Step & Direction command cable, 10', CE(LVD&EMC) (position mode)
71-016987-10	Gemini to 6K Analog command cable, 10', CE(LVD&EMC) (velocity mode)
71-018183-10	Gemini to 6K Step & Dir or Analog command cable, 10', CE(LVD&EMC) (all modes)
71-019862-04	Gemini to 6K Step & Direction command cable, 4', (non-CE) (position mode)
71-019863-04	Gemini to 6K Step & Dir or Analog command cable, 4', (non-CE) (all modes)

50-Pin High Density (Entire Family)

Part Number	Product Description
GEM-VM50	Gemini 50-pin screw terminal breakout board with 3' cable
71-016943-10	10' cable, 50-pin high density to flying leads, CE(LVD&EMC)
71-019861-04	4' cable, Gemini 50-pin high density to flying leads (non-CE)
71-019861-10	10' cable, Gemini 50-pin high density to flying leads (non-CE)
GC-50	50-pin Gemini test connector with terminal strips
GC-SDA	Gemini connector with 11-pin terminal strips (drive commands only)

26-Pin HighDensity (GT6K only)

Part Number	Product Description
GC-26	26-pin Gemini test connector with terminal strips
GFB-KIT	26-pin Gemini connector kit

Additional Accessories (Entire Family)

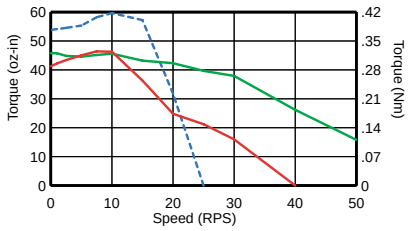
Part Number	Product Description
71-016939-10	10' cable, RS232/485 null modem, CE(LVD&EMC)

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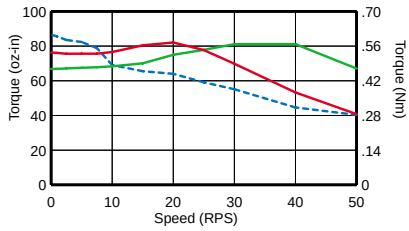
Stepper Speed-Torque Performance Curves

Gemini with VS motors – 17, 23 and 34 frame

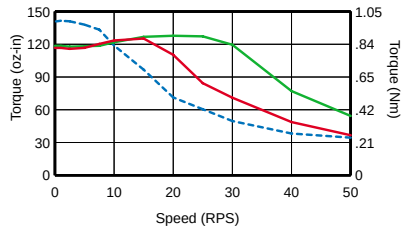
VS13B/Gemini



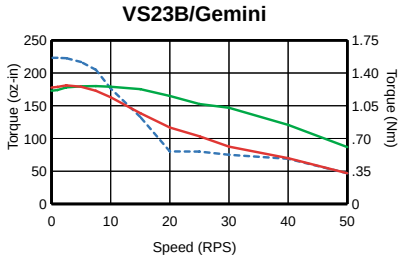
VS21B/Gemini



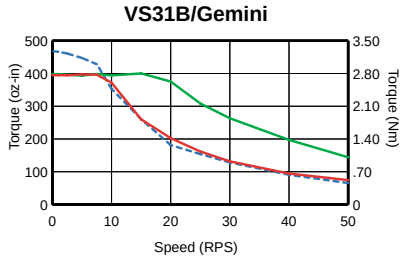
VS22B/Gemini



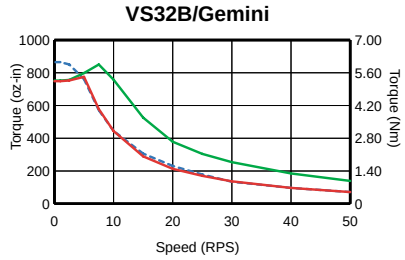
VS23B/Gemini

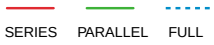


VS31B/Gemini



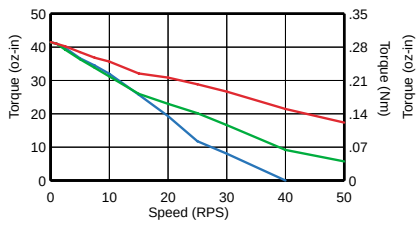
VS32B/Gemini



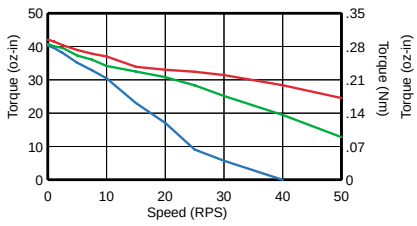


Gemini with OS motors – 23 frame

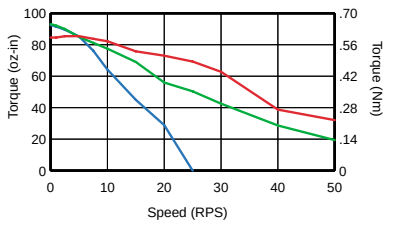
OS2HA/OEM750 (Series)



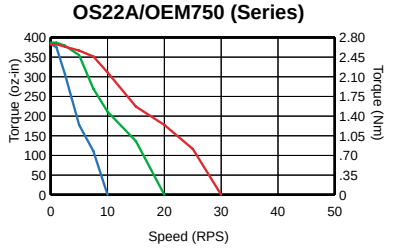
OS2HA/OEM750 (Parallel)

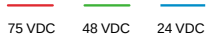


OS21A/OEM750 (Series)

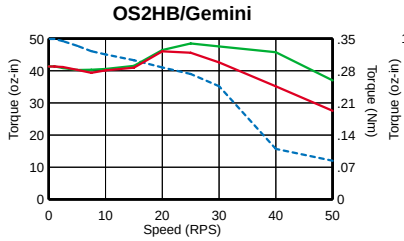


OS22A/OEM750 (Series)

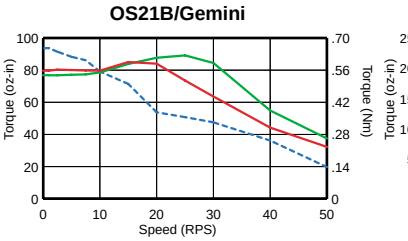




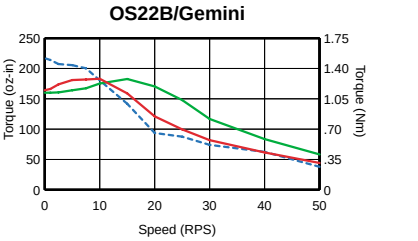
OS2HB/Gemini



OS21B/Gemini



OS22B/Gemini





See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

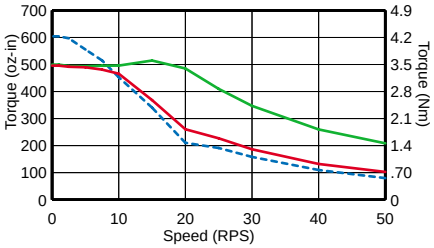
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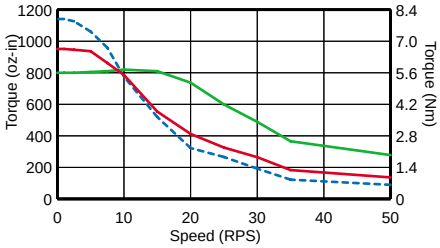
Stepper Speed-Torque Performance Curves

Gemini with TS motors, 34 frame

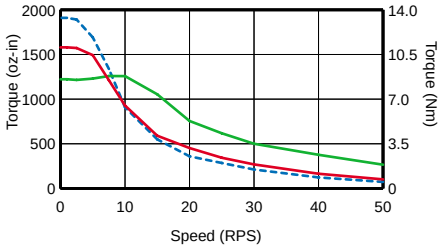
TS31B/Gemini



TS32B/Gemini

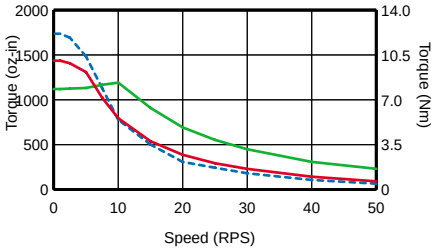


TS33B/Gemini

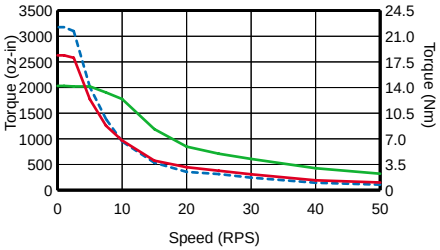


Gemini with TS motors, size 42 frame

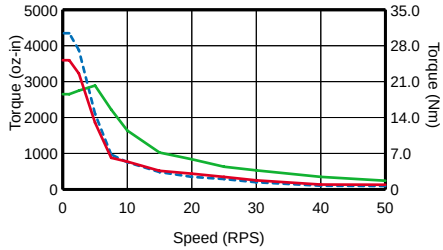
TS41B/Gemini



TS42B/Gemini

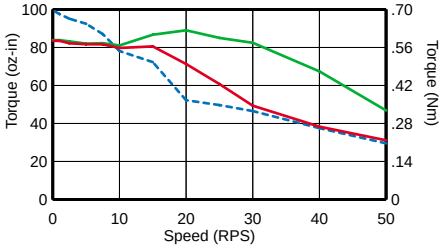


TS43B/Gemini

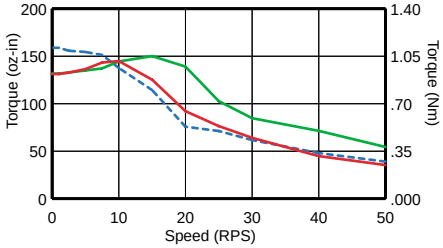


Gemini with ES motors (previously ZETA and S Series motors), 23 frame

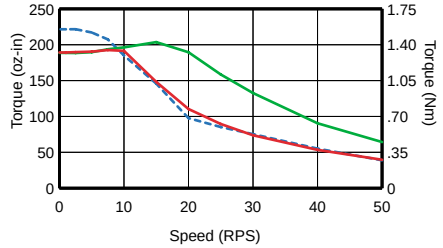
ES21B/Gemini



ES22B/Gemini

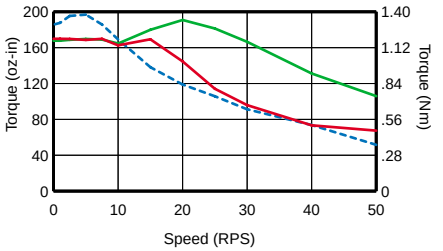


ES23B/Gemini

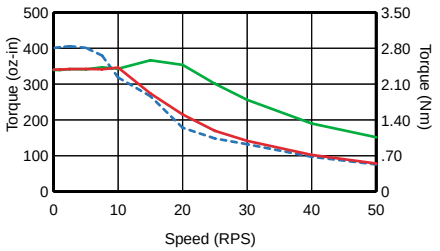


Gemini with ES motors (previously ZETA and S Series motors), 34 frame

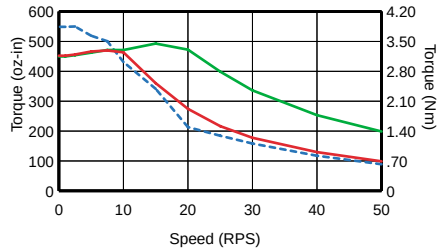
ES31B/Gemini



ES32B/Gemini



ES33B/Gemini



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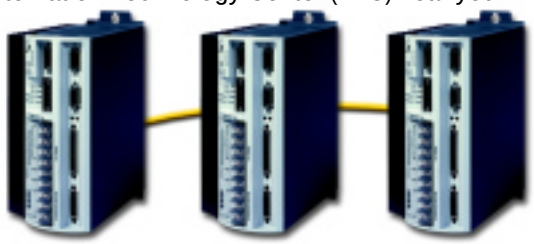
OS & VS Series Stepper Motor Specifications Size 17, 23 & 34 Frame Sizes

Parameters		Size 23 Frame OS2HB	OS21B	OS22B	Size 23 Frame VS21B	VS22B	VS23B	Size 34 Frame VS31B	VS32B
Static torque	oz-in	61	127	235	99	170	267.5	559	1211
	(Nm)	(0.4)	(0.9)	(1.7)	(0.7)	(1.2)	(1.9)	(3.9)	(8.6)
Rotor inertia	oz-in^2	0.39	0.66	1.39	0.66	1.64	2.62	7.65	14.8
	(kg-cm^2)	(0.07)	(0.12)	(0.25)	(0.12)	(0.3)	(0.48)	(1.4)	(2.7)
Drive Current (Apk)(Arms)	Series	1.7 (1.2)	1.8 (1.3)	2.4 (1.7)	1.8 (1.3)	1.7 (1.2)	1.4 (1.0)	3.0 (2.1)	3.0 (2.1)
	Parallel	3.4 (2.4)	3.6 (2.6)	4.8 (3.4)	3.6 (2.6)	3.4 (2.4)	2.8 (2.0)	6.0 (4.2)	6.0 (4.2)
Phase Inductance (mH)	Series	8.6	12	16.6	5	12.0	15.4	15.8	25.0
	Parallel	2.2	3	4.2	(1.25)	(3.0)	(3.85)	3.95	6.25
Drive Bus Voltage	(VDC)	170	170	170	170	170	170	170	170
Detent Torque	oz-in	2.5	4.0	7.0	2.7	3.3	6.0	14.0	28.0
	(N-m)	(0.02)	(0.03)	(0.05)	(0.02)	(0.02)	(0.04)	(0.1)	(0.2)
Bearings Information Thrust Load	lb	13	13	13	17.6	17.6	17.6	35.3	35.3
	(kg)	(5.9)	(5.9)	(5.9)	(8)	(8)	(8)	(16)	(16)
Radial Load	lb	20	20	20	15.0	15.0	15.0	30.9	30.9
	(kg)	(9.1)	(9.1)	(9.1)	(6.8)	(6.8)	(6.8)	(14)	(14)
End Play	in	0.001	0.001	0.001	0.003	0.003	0.003	0.0032	0.0032
	(mm)	(0.025)	(0.025)	(0.025)	(0.075)	(0.075)	(0.075)	(0.080)	(0.080)
Radial Play (Per 0.5 lb load)	in	0.0008	0.0008	0.0008	0.001	0.001	0.001	0.0008	0.0008
	(mm)	(0.02)	(0.02)	(0.02)	(0.025)	(0.025)	(0.025)	(0.020)	(0.020)
Motor Weight	lb	1	1.5	2.5	1.03	1.54	2.2	3.86	6.18
	(kg)	(0.5)	(0.7)	(1.1)	(0.47)	(0.7)	(1.0)	(1.75)	(2.8)
Certifications	UL recognized	Pending	Pending	Pending	No	No	No	No	No
	CE (LVD)	Yes	Yes	Yes	No	No	No	No	No
	CE (EMC & LVD)*	No	No	No	No	No	No	No	No

* *To comply with EMC and low-noise (CISPR22/EN55022 Class A or FCC Class A emissions) standards, the following items are required:*

- *Gemini GT or GT6 Drives*
- *CE(LVD) motor for LVD, Compumotor recommends a terminal board (NPS) motor construction for easier EMC installation*
- *C10(CH10) motor accessory (LVD/EMC cable kit)*
- *Mains filter as indicated in the User Guide*

Discover how easily Gemini fits into your next motion control application by calling 1-800-358-9070. Or visit us on the Web at www.compumotor.com to find a local factory authorized Automation Technology Center (ATC) near you.



See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

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T Series Stepper Motor Specifications (Size 34 Frame & 42 Frame)

		Size 34 Frame			Size 42 Frame		
		TS31B	**TS32B**	**TS33B**	**TS41B**	**TS42B**	**TS43B**
Static torque**	oz-in (N-m)	455 (3.19)	647 (4.53)	1525 (10.68)	1332 (9.32)	2515 (17.61)	3479 (24.35)
Rotor inertia	oz-in^2 (kg-cm^2)	7.80 (1.43)	14.67 (2.68)	21.89 (4.01)	30.22 (5.53)	59.68 (10.92)	88.51 (16.20)
Drive Current (Apk)(Arms)**	Series	3.3 (2.3)	3.1 (2.2)	5.6 (4.0)	6.4 (4.5)	6.7 (4.7)	6.9 (4.9)
	Parallel	6.7 (4.7)	6.2 (4.4)	12.0 (8.5)	12.0 (8.5)	12.0 (8.5)	12.0 (8.5)
Drive Bus Voltage	(VDC)	170	170	170	170	170	170
Phase Inductance (mH)***	Series	10.3	10.3	13.6	15.8	22.0	30.7
	Parallel	2.6	2.6	3.4	3.9	5.5	7.7
Detent Torque	oz-in (Nm)	18 (0.13)	36 (0.25)	54 (0.38)	42 (0.30)	84 (0.59)	106 (0.75)
Bearings Information							
Thrust Load	lb (kg)	305 (139)	305 (139)	305 (139)	404 (184)	404 (184)	404 (184)
Radial Load	lb (kg)	65 (30)	65 (30)	110 (50)	125 (57)	110 (50)	110 (50)
End Play (Reversing load equals 1 lb)	in (mm)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)
Radial Play (Per 0.5 lb load)	in (mm)	0.0008 (0.020)	0.0008 (0.020)	0.0008 (0.020)	0.0008 (0.020)	0.0008 (0.020)	0.0008 (0.020)
Motor Weight	lb (kg)	5.0 (2.3)	8.4 (3.8)	11.9 (5.4)	11.0 (5.0)	18.4 (8.4)	25.7 (11.7)
Certifications	UL recognized	Yes	Yes	Yes	Yes	Yes	Yes
	CE (LVD)	Yes	Yes	Yes	Yes	Yes	Yes
	CE (EMC & LVD)*	*	*	*	*	*	*

* *To comply with EMC and low-noise (CISPR22/EN55022 Class A or FCC Class A emissions) standards, the following items are required:*
- *Gemini GT or GT6 Drive*
- *CE(LVD) motor for LVD. Compumotor recommends a terminal board (NPS) motor construction for easier EMC installation*
- *C10(CH10) motor accessory (LVD/EMC cable kit)*
- *Mains Filter as indicated in the User Guide*

** *Values shown in speed-torque curves*
*** *Small signal values*

E Series Stepper Motor Specifications (Size 23 Frame & 34 Frame)

		Size 23 Frame			Size 34 Frame		
		ES21B (ZETA57-51)	**ES22B (ZETA57-83)**	**ES23B (ZETA57-102)**	**ES31B (ZETA83-62)**	**ES32B (ZETA83-93)**	**ES33B (ZETA83-135)**
Static torque	oz-in (N-m)	65 (0.46)	125 (0.71)	145 (0.89)	145 (1.14)	300 (2.14)	380 (2.80)
Rotor inertia	oz-in^2 (kg-cm^2)	0.546 (9.998)	1.1 (20.1)	1.69 (30.9)	3.47 (63.4)	6.76 (124)	10.47 (191)
Phase Inductance							
Series	mH (small signal*)	17.37	18.5	17	10	10.5	9.2
Parallel	mH (small signal*)	4.34	4.62	4.25	2.5	2.62	2.3
Bearings Information							
Thrust Load	lb (kg)	25 (11.3)	25 (11.3)	25 (11.3)	50 (22.6)	50 (22.6)	50 (22.6)
Radial Load	lb (kg)	15 (6.8)	15 (6.8)	15 (6.8)	25 (11.3)	25 (11.3)	25 (11.3)
(Reverse load equal to 1 lb)							
End Play	in (mm)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)
Radial Play (Per 0.5 lb load)	in (cm)	0.0008 (0.020)	0.0008 (0.020)	0.0008 (0.020)	0.0008 (0.020)	0.0008 (0.020)	0.0008 (0.020)
Net Weight							
Motor + Cable + Connector	lb (kg)	1.6 (0.7)	2.4 (1.1)	3.2 (1.5)	3.8 (1.7)	5.1 (2.3)	8.3 (3.8)
Motor Cable**							
Wire Size	AWG (mm^2)	24 (0.25)	24 (0.25)	24 (0.25)	22 (0.34)	22 (0.34)	22 (0.34)

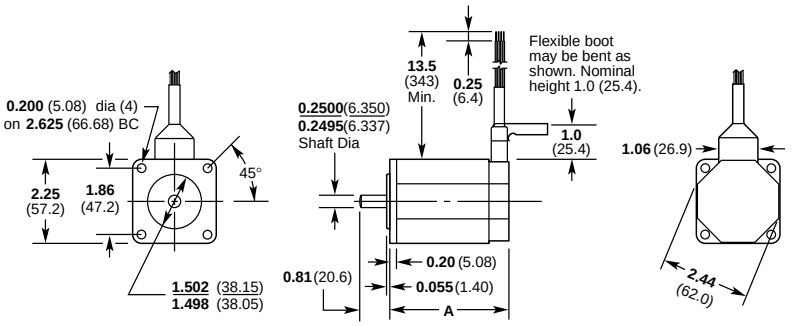
* *Small Signal Inductance is found by using an inductance bridge or meter.*
** *All Motors Cable length = 10 feet (3m).*

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Stepper Motor Dimensions

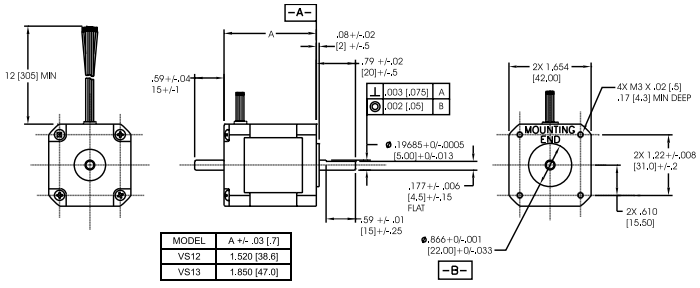
Size 23 Frame, O Series

Dimensions in inches (mm)

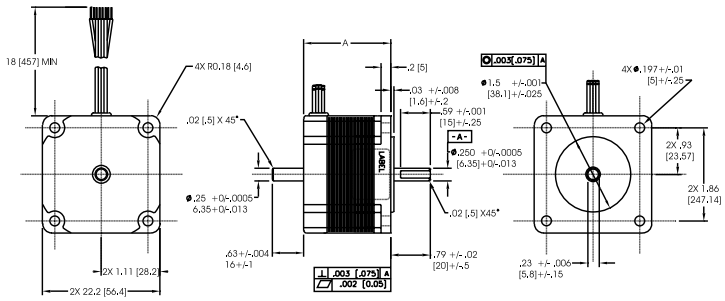


Frame Size 23 Dimensions in inches (millimeters)

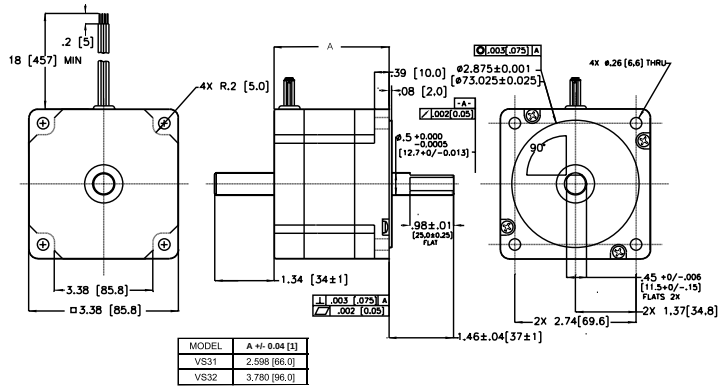
Model		A
OS2HA	(OEM57-40)	**1.60** (40.6)
OS21A	(OEM57-51)	**2.06** (52.3)
OS22A	(OEM57-83)	**3.10** (78.7)



MODEL	A +/- .03 [.7]
VS12	1.520 [38.6]
VS13	1.850 [47.0]



MODEL	A +/- .03 [.7]
VS21	1.732 [44.0]
VS22	2.165 [55.0]
VS23	3.051 [77.5]



MODEL	A +/- 0.04 [1]
VS31	2.598 [66.0]
VS32	3.780 [96.0]

For servo motor information, please turn to that section of the catalog.

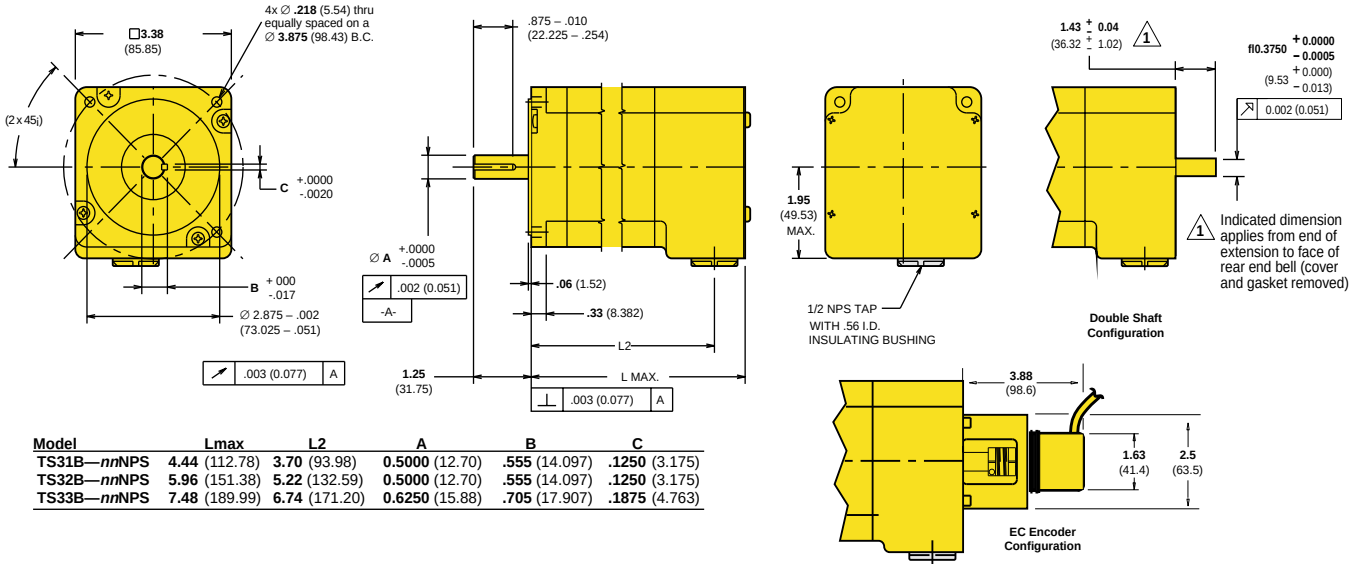
See Servo Drive section for the full line of Gemini servo drives and drive/controllers.

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Stepper Motor Dimensional Drawings

Size 34 Frame, T Series

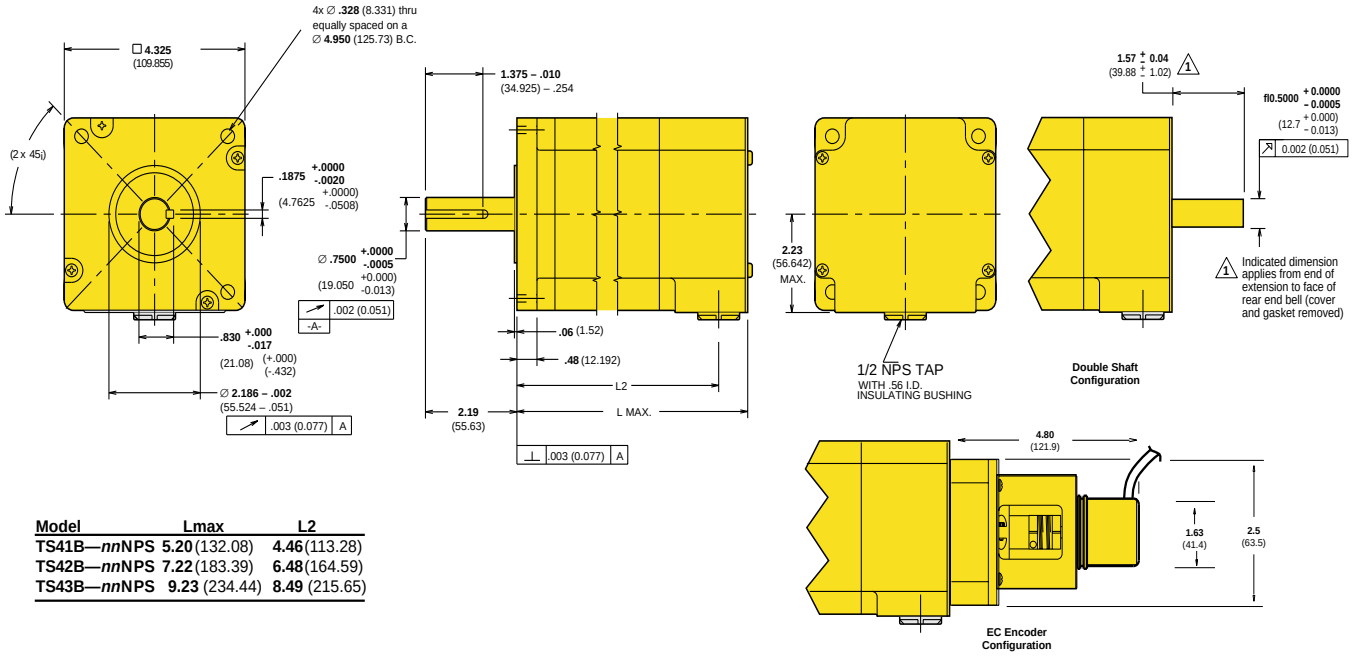
Dimensions in inches (mm)



Model	Lmax	L2	A	B	C
TS31B—*nn*NPS	**4.44** (112.78)	**3.70** (93.98)	**0.5000** (12.70)	**.555** (14.097)	**.1250** (3.175)
TS32B—*nn*NPS	**5.96** (151.38)	**5.22** (132.59)	**0.5000** (12.70)	**.555** (14.097)	**.1250** (3.175)
TS33B—*nn*NPS	**7.48** (189.99)	**6.74** (171.20)	**0.6250** (15.88)	**.705** (17.907)	**.1875** (4.763)

Size 42 Frame, T Series

Dimensions in inches (mm)



Model	Lmax	L2
TS41B—*nn*NPS	**5.20** (132.08)	**4.46** (113.28)
TS42B—*nn*NPS	**7.22** (183.39)	**6.48** (164.59)
TS43B—*nn*NPS	**9.23** (234.44)	**8.49** (215.65)

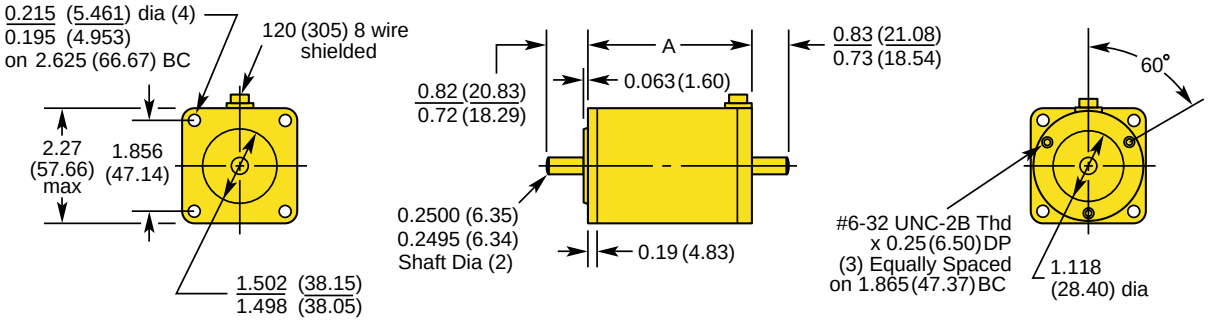
For servo motor information, please turn to that section of the catalog.

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Stepper Motor Dimensional Drawings

Size 23 Frame, E Series (also known as ZETA Series)

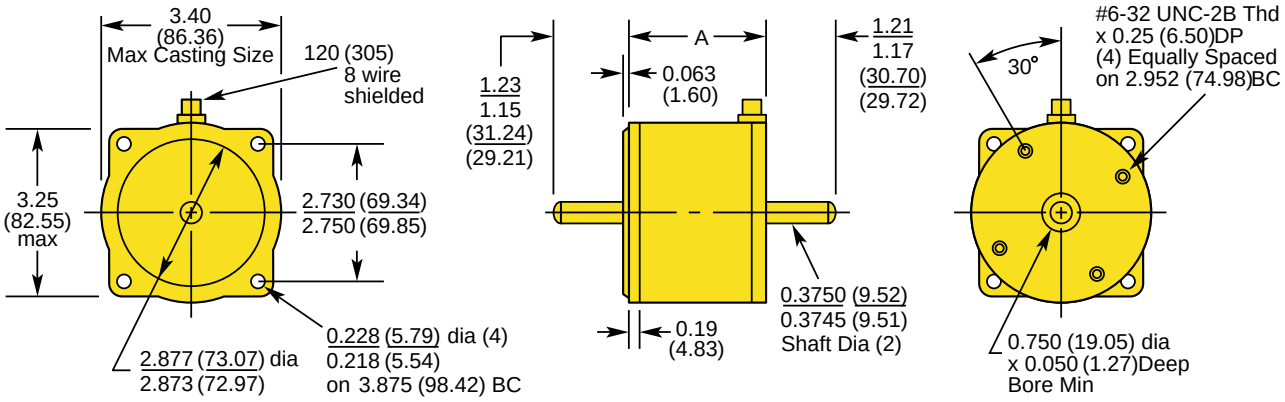
Dimensions in inches (mm)



Model	A
ES21B (ZETA 57-51)	2.0 (50.23)
ES22B (ZETA 57-83)	3.1 (75.23)
ES23B (ZETA 57-102)	4.0 (101.6)

Size 34 Frame, E Series (also known as ZETA Series)

Dimensions in inches (mm)



Model	A
ES31B (ZETA 83-62)	2.5 (62.0)
ES32B (ZETA 83-93)	3.7 (93.98)
ES33B (ZETA 83-135)	5.2 (129.0)

For servo motor information, please turn to that section of the catalog.

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