



https://www.hp-vanguard.com/

ST-SEPVO

Features

High Revolution Speed and High Torque

The functionality of the motor has been maximized thanks to the new development of the smart algorithm which achieves high revolution speed and high torque.

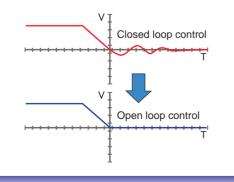
Highly Precise Positioning

The ST-Servo is equipped with a 16,000ppr high resolution encoder for highly precise positioning.



Shortened Takt Time

The user can toggle between closed loop control and open loop control modes. The settling time can be reduced which in turn shortens the takt time.



Low Heat Generation and Energy Saving

The ST-Servo operates at a high efficiency due to the optimized current controls which change depending on the load.

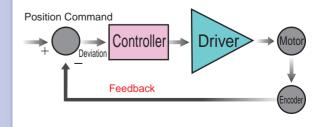
Four Different Control Functions in One Unit

The unit features positioning control, speed control, forcing control and torque control. Control modes can be changed in an instant for the optimal control for your unit.



Highly Reliable System

This is a step-out-less closed loop system equipped with an optical encoder.



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Quick Response

The ST-Servo is able to output 150% of its rated torque in an instant which is perfect for nimble starting and stopping.

Assorted Lineup

Selectable command input feature either Pulse string input or RS485 serial communication.

Optimal Control with Three Operation Modes

An optimal mode for a specific application can be chosen from three operation modes: full time closed, dual and full time open.

Operation Mode	Control Method	Features
Full time closed	Optimal current control according to the load	Low vibration Step-out-less Low heat generation
Dual	Switch from open to closed or vise versa at a revolution speed for stopping	Step-out-less No hunting Shortening of positioning and settling times Low heat generation
Full time open	Ordinary micro step control	No hunting Quick response time



ST-Servo

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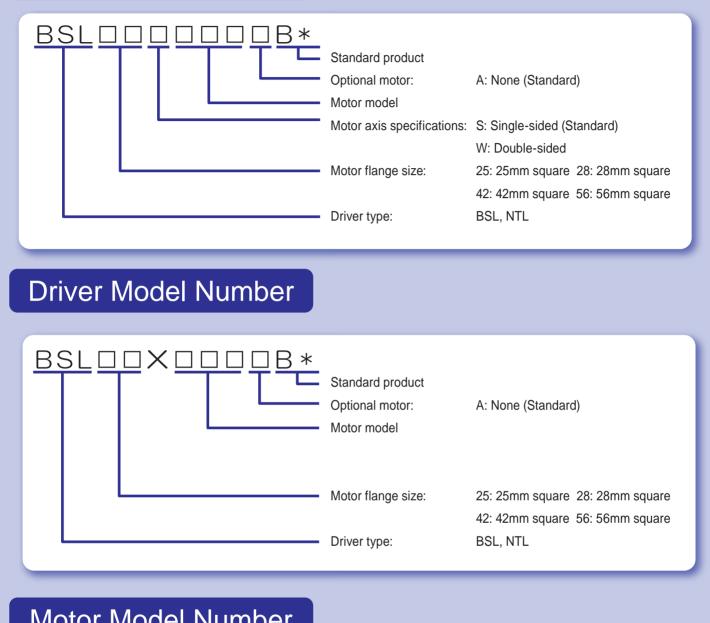




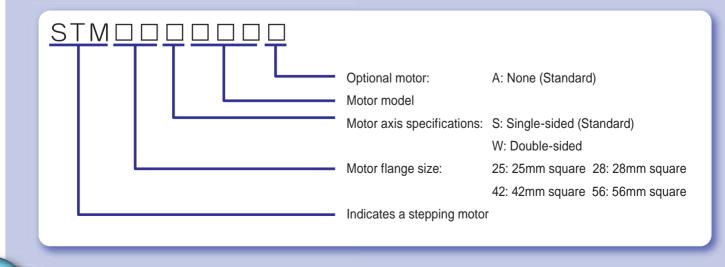
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How to Read the Model Number

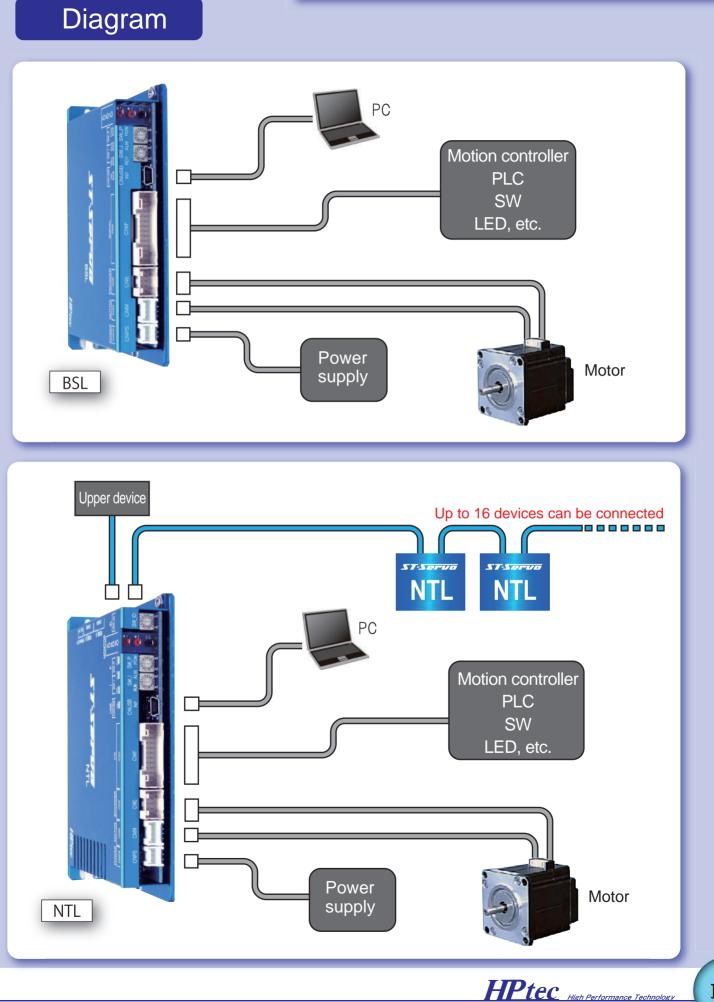
Set Model Number



Motor Model Number



System Configuration



Driver - Rated Specifications

	lt e ve	DOI		
Incut	Item Power Supply Voltage	BSL	NTL NTL	
inpu		DC24V,		
	Control Modes	Positioning, Speed, Torque and Forcing		
	ated Output Current	2.0A		
		3.0A		
Supp	orted Motor Sizes (mm)	25mm square, 28mm square,		
	Encoder Pulses	6,400ppr, 9,600ppr, 16,000ppr (D		
	Seneral Input Signal	6	8	
	eneral Output Signal	4	8	
Me	chanical Input Signal	None	3(+LM,-LM,ORG)	
	Pulse String (1/2/AB)	Yes	—	
Control	Parameters	Yes	Yes	
	Internal Program	Yes (32 steps)	Yes (64 steps)	
Command		Yes	Yes	
Method	RS485	_	Yes	
	Analog Signal	Yes	—	
	JSB Communication	USB 2.0 (Windows Virtual COM Port)		
R	S485 Communication	– Modbus ASCII/RTU		
		Power LE	D (Green)	
	Display	Alarm LE		
Display		Servo Ready (Green)		
		In Position	n (Green)	
		Loop	Error	
		Full C	Count	
		Over S	Speed	
	Alarm Types	Gain Adjustment Fault		
		Excess	Voltage	
		EERO	M Error	
Operating	g Temperature and Humidity	0 to 50°C, 85%RH or l	ess (No condensation)	
Storage	Temperature and Humidity	-20 to 85°C, 85% or le		
	Dimensions	W117 x D73 x H23 mm	W127 × D78.5 × H23.5 mm	
	Weight	150g	170g	

General Motor Specifications

Size (mm)	25mm square x 50.5	28mm square x 50.5	42mm square x 48.0
Motor Model		STM28S100A (Single-sided) STM28W100A (Double-sided)	STM42S100A (Single-sided) STM42W100A (Double-sided)
Set Model	BSL25S100AB* (Single-sided) BSL25W100AB* (Double-sided)	BSL28S100AB* (Single-sided) BSL28W100AB* (Double-sided)	BSL42S100AB* (Single-sided) BSL42W100AB* (Double-sided)
Driver Model	BSL25X100AB*	BSL28X100AB*	BSL42X100AB*
Input Power Supply Voltage		DC24V/DC48V ±10%	
Continuous Rating Torque (mN•m)	106	106	300
Rotor Inertia (g·cm ²)	4	4	50
Encoder Resolution	9,600	9,600	16,000
Weight (g)	120	120	270

Size (mm)	42mm square x 58.0	56mm square x 60.0
Motor Model	STM42S101A (Single-sided)	STM56S100A (Single-sided)
	STM42W101A (Double-sided)	STM56W100A (Double-sided)
Set Model	BSL42S101AB* (Single-sided)	BSL56S100AB* (Single-sided)
Set Model	BSL42W101AB* (Double-sided)	BSL56W100AB* (Double-sided)
Driver Model	BSL42X101AB*	BSL56X100AB*
Input Power Supply Voltage	DC24V/D	0C48V ±10%
Continuous Rating Torque (mN•m)	434	706
Rotor Inertia (g·cm ²)	75	180
Encoder Resolution	16,000	16,000
Weight (g)	370	620

Note: As for the NTL set model and driver model, "BSL" in the table above is replaced with "NTL".

List of Cables

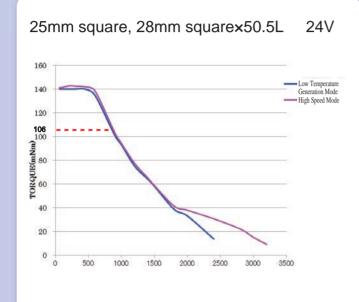
Product Name	Model	Cable Length (meters)
25mm or 28mm square Motor - Motor Cable	C004039- □.0	Standard: 1 Optional: 3, 5, 10, 20
42mm square Motor - Motor Cable	C004035-□.0	Standard: 1 Optional: 3, 5, 10, 20
56mm square Motor - Motor Cable	C004036- □.0	Standard: 1 Optional: 3, 5, 10, 20
25mm or 28mm square Motor - Encoder Cable	C008025-□.0	Standard: 1 Optional: 3, 5, 10, 20
42mm or 56mm square Motor - Encoder Cable	C008024- □.0	Standard: 1 Optional: 3, 5, 10, 20
Power supply Cable	C003036- 🗆	Optional: 1, 2, 3
I/F Cable	C028001- 🗆	Optional: 1, 2, 3

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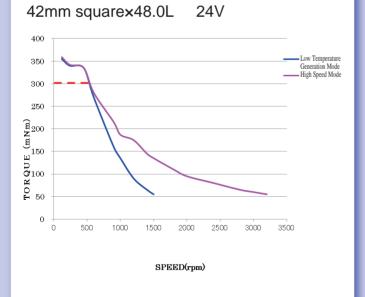
Revolution Speed - Torque Curve

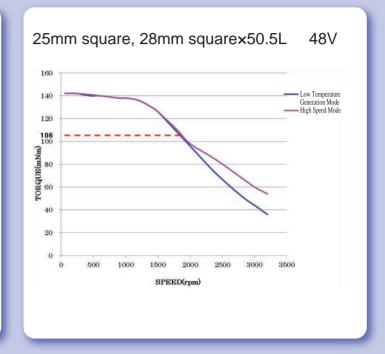
25mm square, 28mm square

Low Temperature Generation Mode: Blue Line High Speed Mode: Red Line



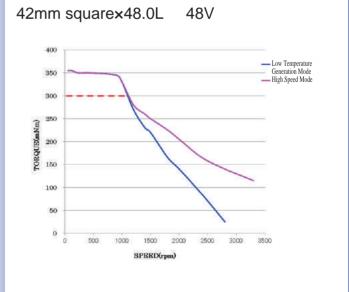
42mm square





Note) The instantaneous torque is the amount of torque which exceeds the continuous rating torque. The maximum torque during the torque control and forcing control is the continuous rating torque.

----- Continuous Rating Torque

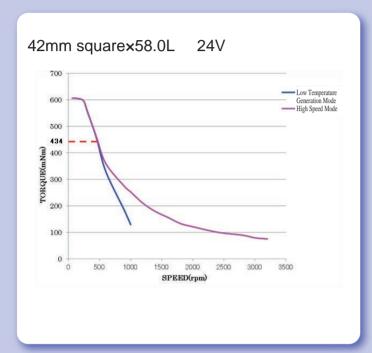


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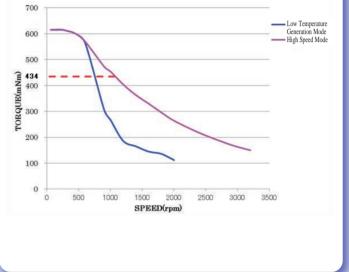
Revolution Speed - Torque Curve

42mm square

Low Temperature Generation Mode: Blue Line High Speed Mode: Red Line



42mm square×58.0L 48V

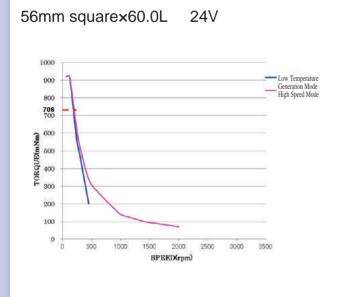


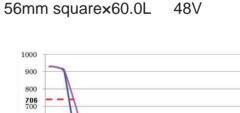
Note) The instantaneous torque is the amount of torque which exceeds the continuous rating torque. The maximum torque during the torque control and forcing control is the continuous rating torque.

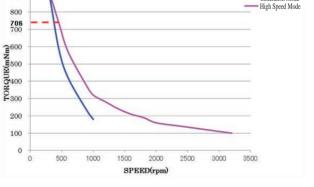
----- Continuous Rating Torque

 Low Temperature Generation Mode

56mm square



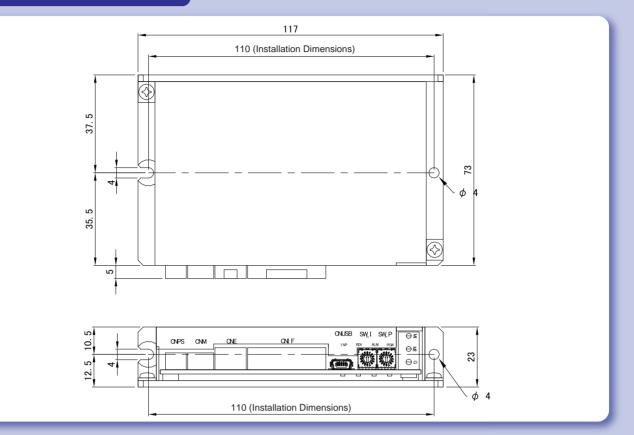




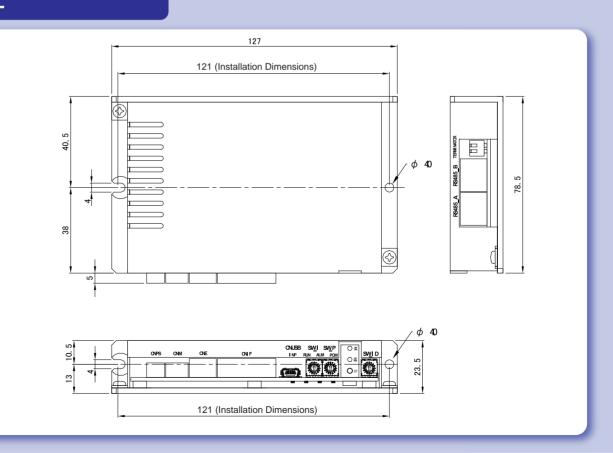
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Outline Drawing

BSL V2

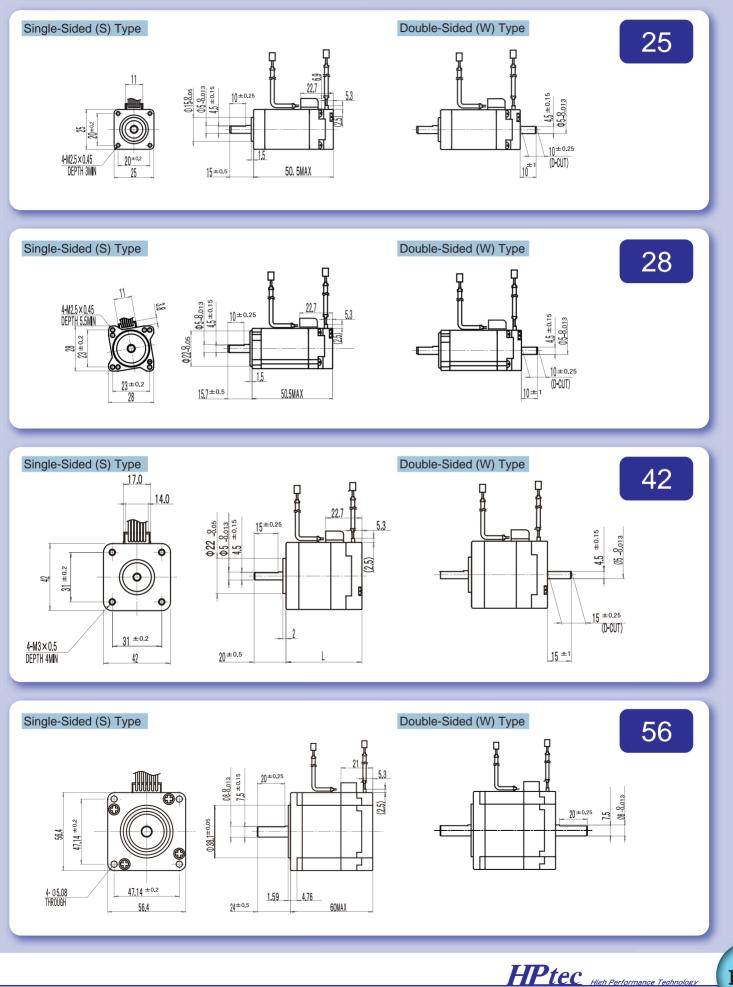


NTL



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Outline Drawing - Motor



p11

Interface

BSL, NTL







•General Components

Monitor terminal (5V Standard)

Terminal	Details (Select according to the parameters)
M1	Command speed, motor speed, command torque
M2	Motor speed, torque, position deviation, in position
G	GND

CNM (For Motor)

No.	Signal Name	Details
1	A	Motor A phase
2	/A	Motor / A phase
3	В	Motor B phase
4	/B	Motor / B phase

CNUSB (For USB)

No.	Signal Name	IN/OUT	Details
1	+5V	IN	Bus power from PC
2	D-	IN/OUT	Data line -
3	D+	IN/OUT	Data line +
4			
5	GND	IN	Signal ground

CNPS (For Power Supply)

No.	Signal Name	Details	Remarks
1	+24V or +48V		+24V ±10% +48V ±10%
2	0V	0V main power supply	
3	FG	Frame ground	Be sure to wire the frame ground

CNE (For Encoder)

No.	Signal Name	IN/OUT	Details
1	+5V	OUT	+5V power supply for encoder
2	GND	OUT	Power supply GND for encoder
3	A+	IN	A phase +
4	A-	IN	A phase -
5	B+	IN	B phase +
6	B-	IN	B phase -
7	Z+	IN	Z phase +
8	Z-	IN	Z phase -
9	NC		
10	FG		Shield (Note)

Note) The cable included with the driver is not shielded. If using a cable that is longer than 1 meter, be sure to use a shielded cable.

Gain Switch

SW	Details	Remarks
	Proportional gain of speed loop	Match the load inertia with 0-F.
SW_I	Integral time constant of speed loop	Match the load rigidity with 0-F.

LED Nomo	Features	
LED Name		LED
POW	 Indicates that the power is ON. Blinks when a parameter which requires the power to be turned ON again has been overwritten. 	Green
ALM	 Indicates that the driver is faulty. The type of alarm can be identified by the number of times it blinks. Refer to the alarm details for the alarm features. Lights up when a parameter which requires the power to be turned ON again has been overwritten. 	Red
RDY	 Indicates that the initialization process for the driver is complete after turning on the power. Blinks when the operation for the power factor detection has been set using the command input. 	Green
INP	 Indicates that it is in the in-position zone during position control. Indicates that the target speed has been reached during speed control. Indicates that the torque limit has been reached during forcing control. 	Green

Interface

•BSL CNIF (For I/F)

•NTL CNIF (For I/F)

CIVII	- (1	UI	1/1

1 P1+ Command Oulse or B phase 3 P2+ Command CW pulse or command direction or A phase 4 P2- or command CW pulse or command direction or A phase 5 COM+ +24V power supply for I/O IN 6 COM+ +24V power supply for I/O IN Power plus for insulation (+24V ± 10%) 6 COM+ +24V power supply for I/O IN Power supply OV for insulation (+24V ± 10%) 7 IN1 Digital input 1 IN Servo on when shipped 8 IN2 Digital input 2 IN The alarm is reset when shipped 10 IN4 Digital input 3 IN Start/Stop for Speed or Torque control when shipped 11 IN5 Digital input 5 IN Mode(Mode/Mode/I) for Control mode switch when shipped 12 IN6 Digital input 6 IN Ration direction (CWICOW) for speed command for power supply for speed command OUT 13 +10Vout Power supply for speed command OUT Used when shipped 14 Vref+ Speed and trouge command for position for Position control or Zero speed for Speed control when shipped 15 vref+	No.	Signal Name	Details	IN/OUT	Remarks
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27 ECZ- Encoder 2 phase OUT Differential output	26	ECZ+	Encodes 7 - b	OUT	Differential extent
Same voltage as internal			Encoder ∠ phase		Dillerential output
20 Signal ground Signal ground			Signal arctined		
	28	30	Signal ground		Signal ground

No.	Signal Name	Details	IN/OUT	Remarks
	Ť	+24V power supply		+24V ±10% power supply
1	COM+	for I/O	IN	input for insulation
2	СОМ-	0V power supply for I/O	IN	Power supply input for insulation
3	IN1	Digital input 1	IN	Servo on when shipped
4	IN2	Digital input 2	IN	The alarm is reset when shipped
_				Start/Stop for Speed or
5	IN3	Digital input 3	IN	Torque control when shipped
6	IN4	Digital input 4	IN	P operation when shipped
_				Control mode switch when
7	IN5	Digital input 5	IN	shipped (Mode 0 / Mode 1)
				Revolution direction (CW/CCW)
8	IN6	Digital input 6	IN	for Speed or Torque control
	-	5		when shipped
9	IN7	Digital input 7	IN	General input when shipped
10	IN8	Digital input 8	IN	General input when shipped
11	+LM	+ limit sensor	IN	
12	-LM	 limit sensor 	IN	Mechanical sensor
13	ORG	Origin sensor	IN	
				In position for Position control
14	OUT1	Digital output 1	OUT	or Zero speed for Speed
				control when shipped
15	OUT2	Digital output 2	OUT	Alarm when shipped
4.0		Disital autout 0	OUT	Torque limit for the forcing
16	OUT3	Digital output 3	001	control when shipped
47		Disting autout 4	OUT	Speed reached for Speed
17	OUT4	Digital output 4	OUT	control when shipped
18	OUT5	Digital output 5	OUT	General output when shipped
19	OUT6	Digital output 6	OUT	General output when shipped
20	OUT7	Digital output 7	OUT	General output when shipped
21	OUT8	Digital output 8	OUT	General output when shipped
22	BRAKE+	Brake release output +	OUT	+24V (Same voltage level as 5th pin)
23	BRAKE-	Brake release output -	OUT	500mA max
24	FG	Shield		

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CN485A, CN485B (For RS485 communication)

No.	Signal Name	IN/OUT	Details
1			
2	SG		Signal ground
3	Sig-A	IN/OUT	Signal line A
4			
5	SG		Signal ground
6	Sig-B	IN/OUT	Signal line B
7			
8	SG		Signal ground

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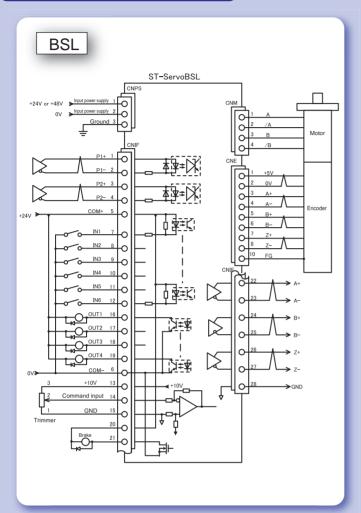
Communication switch

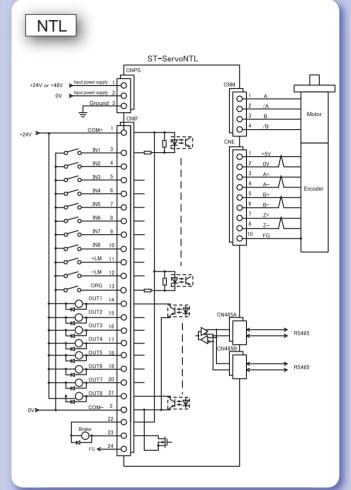
SW	Details	Remarks	
SW_ID	SW_ID Communication ID Set the ID for the machine with 0-F.		
SW/ TM		The termination will be OFF when both 1 and 2 are OFF. The termination will be ON when both 1 and 2 are ON.	



Electrical Schematic and List of Combinations

Electrical Schematic





List of Combinations

Size (mm)	25mm squarex50.5	28mm squarex50.5	42mm squarex48.0
Motor Model	STM25S100A (Single-Sided) STM25W100A (Double-Sided)	STM28S100A (Single-Sided) STM28W100A (Double-Sided)	STM42S100A (Single-Sided) STM42W100A (Double-Sided)
Set Model	BSL25S100AB* (Single-Sided) BSL25W100AB* (Double-Sided)	BSL28S100AB* (Single-Sided) BSL28W100AB* (Double-Sided)	BSL42S100AB* (Single-Sided) BSL42W100AB* (Double-Sided)
Driver Model	BSL25X100AB*	BSL28X100AB*	BSL42X100AB*
	, ,	*	
Size (mm)	42mm squarex58.0	56mm squarex60.0	
Motor Model	STM42S101A (Single-Sided) STM42W101A (Double-Sided)	STM56S100A (Single-Sided) STM56W100A (Double-Sided)	
Set Model	BSL42S101AB* (Single-Sided) BSL42W101AB* (Double-Sided)	BSL56S100AB* (Single-Sided) BSL56W100AB* (Double-Sided)	
Driver Model	BSL42X101AB*	BSL56X100AB*]

Software

The ST-Servo comes with application software running on Windows. The application software allows you to do the following:

• Set and edit ST-Servo parameters

Set and edit program data

Manual operation

and more.

Operating Environ	ment
[OS]	Windows 7
	Windows 8 / 8.1
	* The application software can be run on both 64 bit (x64) and 32 bit (x86) Japanese operating systems.
[Processor]	Intel Pentium 4 3GHz or faster (Recommended: Intel Core2 Duo 2GHz or faster)
	Or another processor with compatible capability.
[Memory]	1GB or more (Recommended: 2GB or more)

The ST-Servo communication specifications have also been made public for users to control it using their own programming.

	<< 全て >>				
で 	N	o. 記号	内容	範囲	データ
分類02:速度制御用パラメータ	▶ 1-	01 PKp	位置ループゲイン		120
分類03:トルク制御用パラメータ 分類04:押し当て(位置、速度)制術		02 PKv	速度演算比例ベースゲイン		60
分類047年0日(10世、速度7年11 分類05:共通パラメータ	1-	03 PTv	速度演算積分ベース時定数		25
…分類06:入力ポートアサイン …分類07:出力ポートアサイン	1-	D4 PKd	速度フィードバックゲイン		320
分類07:出力ホートアリイン 分類08:位置制御時の速度パラメ、	1-	05 PDv	微分補償ゲイン	$0\sim 20$	5
一分類09:原点復帰パラメータ	1-	D6 PKvp	P制御時の比例ゲイン		20
	1-	07 Ff	フィードフォワード(%)	$0 \sim 100$	0
	1-	08 SelComPulse	指令パルスの形式	$0 \sim 2$	0
	1-	09 ErrCountClr	サーボOFF時の偏差カウンタクリア	$0 \sim 1$	0
	1-	10 FullCountValue	フルカウントアラームカウント値	$1 \sim 2147483647$	30000
	1-	11 InPositionZone	インボジションゾーンカウント値	$0 \sim 1000$	4
	1-	12 ElectroGearNum	電子ギア分子	$1 \sim 10000$	1
	1-	13 ElectroGearDen	電子ギア分母	$1 \sim 10000$	1
	1-	14 PosDir	パルス指令のときの回転方向指定	0~1	0
	1-	15 OpenModeSwitch	停止時のオープン制御またはクローズ制御の選択	$0 \sim 2$	0
	1-	16 CloseToOpenSpeed	クローズからオープンに切り替える回転数(rpm)	$0\sim 5000$	10
	※各モータ	こより異なった初期値が設定	Ečhます。		常時変更可能パラメーク
					市時変更可能ハフメーン
					モーダー利御用のバラメ 電源再投入が必要です
					電源再投入加必要じ9 EEP ROMに書き込み後 電源の再投入を行ってく

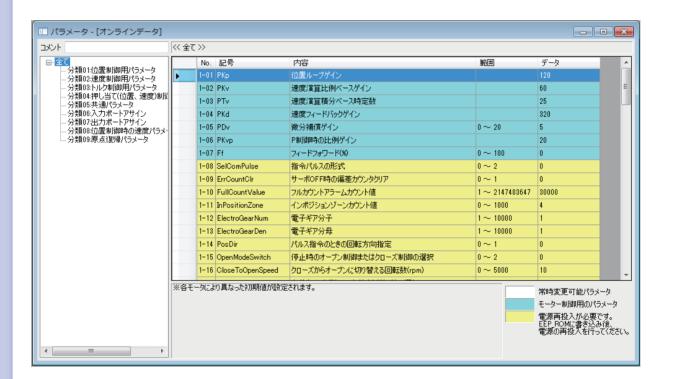


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Software

• Setting and Editing Parameters There are parameters for each function. BSL has 9 classifications while NTL has 11 classifications.

Classification 01: Position Control Parameters Classification 02: Speed Control Parameters Classification 03: Torque Control Parameters Classification 04: Forcing (Position / Speed) Parameters Classification 05: Common Parameters Classification 06: Assign Input Ports Classification 07: Assign Output Ports Classification 07: Assign Output Ports Classification 08: Speed Parameters During Position Control Classification 09: Zero Return Parameters Classification 10: Communication Settings Parameters (*NTL only) Classification 15: Expansion Parameters (*NTL only)



ST-SEPV0 https://www.hp-vanguard.com/

Software

Programming

A maximum of 32 steps (64 steps for the NTL) can be programmed.

The step no. executed can be selected from the input port for the program selection no. When setting the steps, you can either set one step or multiple steps.

The function for each step is selected using the mode.

Mode types

- 0: INC Relative Positioning
- 1: ABS Absolute Positioning
- 2: ORG Zero Return
- 3: +TLS Search for + Directional Torque Limit
- 4: -TLS Search for Directional Torque Limit
- 5: +SIG + Direction Signal Detection

6: -SIG - Direction Signal Detection

7: SET Set the Current Position

8: CLR Clear the Deviation Counter

9: OUTI General Output - Instant

10: OUTB General Output - Coordinate Comparison (Large)

11: OUTS General Output - Coordinate Comparison (Small)

	■ プログラム - [オンラインデータ]							×			
プログロ 分類05 2(モード また、モ・ 分類05 1(ご設定	ムを動/ 注2)に割 ード10 (共通/	作させる場合は 〈ラメータ「SelCh 〈定しておく必要だ 3+TSLJ「04-TS 〈ラメータ「Modes は入力ポートの「	angeMode 制御モー (あります。 にJで動作させる場合、 Switch モード切り替え CONT_MODEJをON(;	ド切替え入 :ソフトスイッ :しておく必	力による制御モー チ]を 要があります。	・ドの種類」を					
	No.	モード	移動量	速度(%)	トルク(×0.1%)	対象ポート	レンジロ	レンジ用	ウェイト(msec)	次	-
•	0	00:INC	0.0	100	500	0	0.0	0.0	0	-1	
	1	00:INC	0.0	100	500	0	0.0	0.0	0	-1	Ξ
	2	00:INC	0.0	100	500	0	0.0	0.0	0	-1	
	3	00:INC	0.0	100	500	0	0.0	0.0	0	-1	
	4	00:INC	0.0	100	500	0	0.0	0.0	0	-1	1
	5	00:INC	0.0	100	500	0	0.0	0.0	0	-1	1
	6	00:INC	0.0	100	500	0	0.0	0.0	0	-1	1
	7	00:INC	0.0	100	500	0	0.0	0.0	0	-1	1
	8	00:INC	0.0	100	500	0	0.0	0.0	0	-1	1
	9	00:INC	0.0	100	500	0	0.0	0.0	0	-1	1
	10	00:INC	0.0	100	500	0	0.0	0.0	0	-1	
	11	00:INC	0.0	100	500	0	0.0	0.0	0	-1	
	12	00:INC	0.0	100	500	0	0.0	0.0	0	-1	
	13	00:INC	0.0	100	500	0	0.0	0.0	0	-1	
	14	00:INC	0.0	100	500	0	0.0	0.0	0	-1	.
	45	00710	0.0	400	500	•			l		

Software

Manual Operation

•

Perform various manual operations and monitor the current operational status.

💷 マニュアル動作 - 制御モード:位置	×
移動	- ステータス
サーボON/OFF サーボON サーボOFF 偏差カウンタクリア	サーボON/OFF 1:サーボON 動作状態 0:停止中 位置制御用
位置/押し当て(位置)制御	インポジション 1:インポジションON
起動速度 100.0 ← JOG動作 最高速度 1000.0 ← -移動 +移動	速度制御用 ゼロ速度 0:モータ回転中 速度到達 0:目標速度OFF
相対移動 150000.0 ◆ -移動 +移動 絶対移動 0.0 ◆ 実行 位置指定 0.0 ◆ 実行	トルクノ押し当て用 トルクリミット ロトルクリミットOFF
非常停止 減速停止	共通
シグナルサーチ 対象入力ポート 10:IN6/\イレベル↑ ・ 速度(%) 100 テ 一方向移動 +方向移動	アラーム 0:アラームなし モータの回転数(rpm) 0 モータの電流(%) 1.2 指令現在位置 0.0 エンコーダ位置 0.0
押し当て(位置)制御 原点復帰 トルクリミットサーチ 一方向移動 (+方向移動) 速度/トルク制御	出力 1 VELO_ZERO 2 ALARM 3 TRQ_LMT 4 VELO_COIN CONT_MODE 6 VELO_DIR
──方向移動 (+方向移動) 停止	通信エラーステータス 0:エラーなし

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Quotation Request / Order Form

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- Be sure to read the Instruction Manual beforehand to safely operate the equipment.
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ST-SERVE