Product Summary

Versatile motion servo

MOVO®

Motion language

User program

Servo with disturbance rejection

Network function

SVF	DSP model	High-performance servo
SVF	NWK model	Ethernet, USB
SVF	ECAT model	EtherCAT
SVF	CCL model	CC-Link
SVE	Economy, compact, all-in-one	
SVN	Non-switching linear amplifier	

Servoland corporation

www.servoland.co.jp

1. MOVO Network

System example

|	
PLC	Inverter ▷ (M)
PC	MOVO Servo ▷ (M)(E)
	MOVO Servo ▷ (M)(E)
Master	Slave

Network: CC-Link / Ethernet / EtherCAT
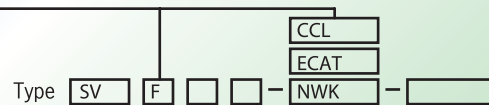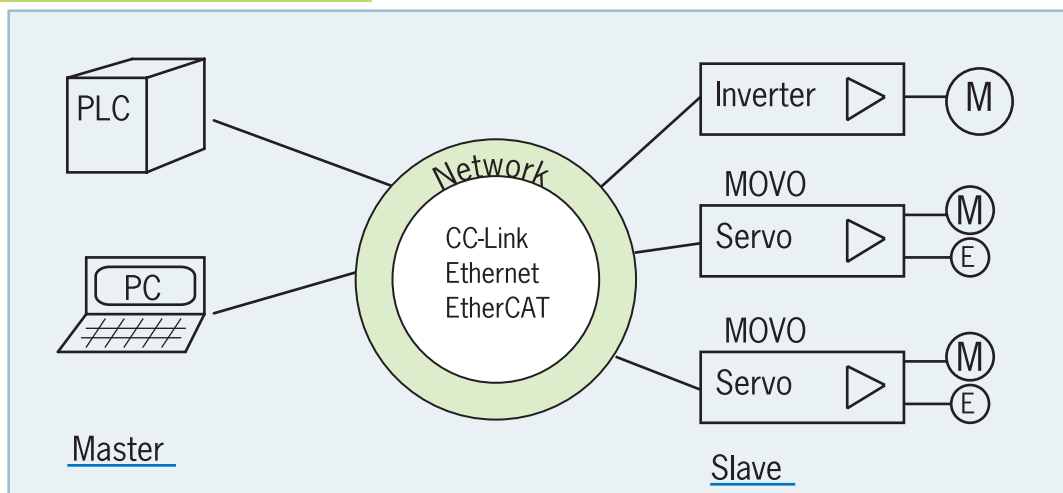
Open standard communication develops the conventional operating of motors with analog signals or pulse signals to the flexible and advanced real-time data system.

Open standard

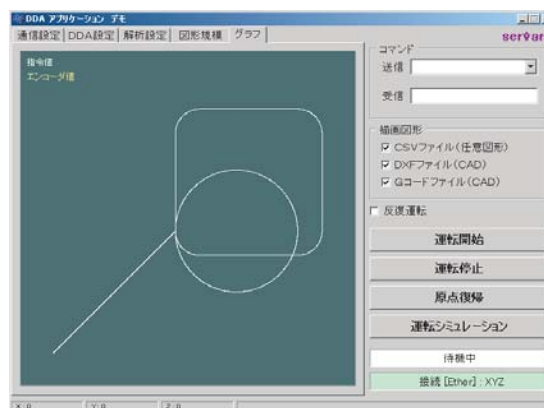| CC-Link	Field network	Simple	Standard profile MOVO command
Ethernet	UDP	Easy	MOVO command
EtherCAT	Realtime Ethernet	High speed	Standard profile MOVO command

Tool MovoNTF

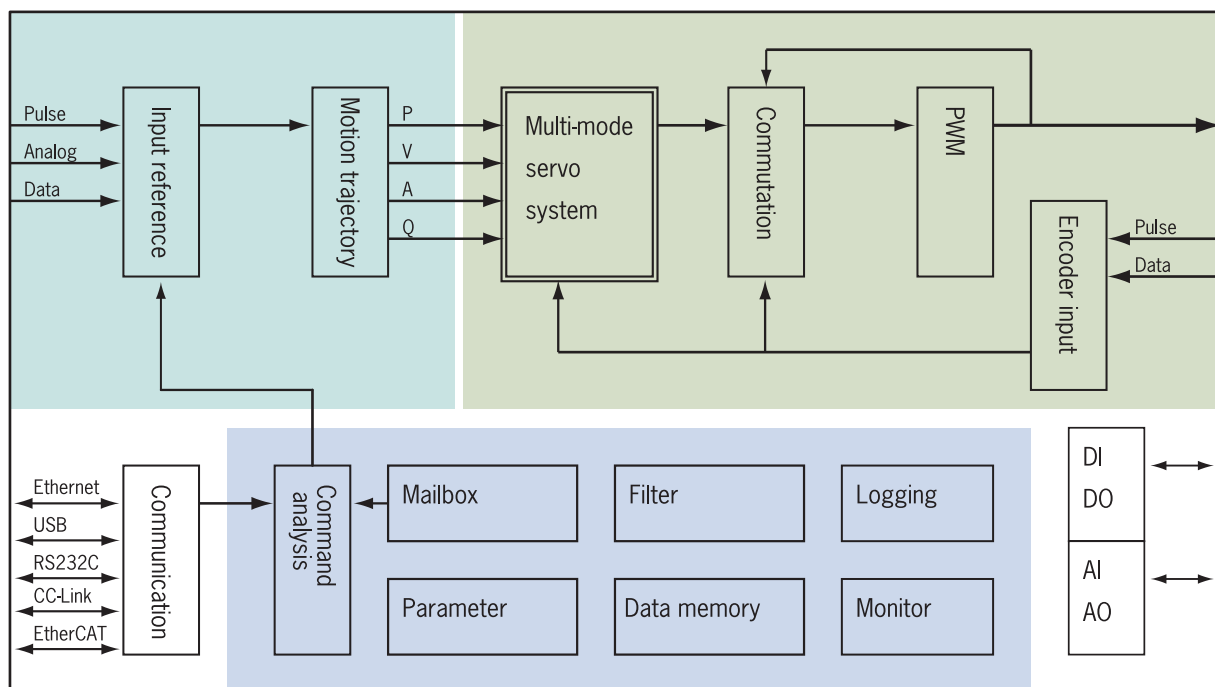- MOV/2 Command execution
- Status monitor
- Data logging
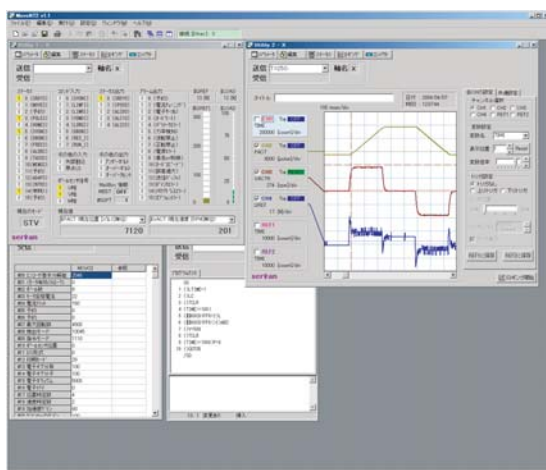
API

- Network connection
- MOV/2 command access
- MOVO binary variable access

Example of an application using API

MovoNTF and API support Windows and Linux

2. MOVO Servo

Type SV ☐ ☐ ☐ – ☐ – ☐

Reference input	**Motion trajectory**	**Servo system**
○ Various inputs such as Pulse, data, communication, analog, program ○ Input data with electronic gear ○ Various circuit types of A/B, CW/CCW, pulse/dir ○ Conversion function of user unit and internal unit	○ Feedforward of Position, speed, acceleration, and torque ○ Generation of s-curve pattern of acceleration specified by user parameters	○ Selectable loop of position, speed, accaleration, torque, three-phase current and analog force control by multi-mode servo ○ Acceleration loop rejecting disturbance directly and fine response acheived by selecting flexible PID ○ Very few tracking error of servo system with quadruple feedforward of position, speed, accaleration and torque ○ Precise multi-axis synchronization within 200 nsec ○ Three channels of notch filters ○ Servo tuning ○ Adaptive control responding to fluctuation of inertia automatically ○ Useful sinusoidal pattern for observing responses of each loop ○ Out of control detection
Encoder input	**Commutation**	
○ A/B incremental and various sereal communication protocols such as Endat 2.2, Biss, etc ○ High-speed encoder counter with clock at 75MHz ○ Circuit types of TTL, line receiver, dividing output ○ Modifying filter for jitter of encoder ○ Error detection of encoder	○ Sigma-delta digital current control ○ High precise vector control ○ Encoder commutation, inverter commutation ○ Various motors can be applied such as induction motors, stepping motors, SRMs and VCMs ○ Automatic power factor detection for vertical axis ○ Automatic power factor detection for DC excitation, resistered electrical angle poll sensor, and so on. ○ Automatic current tuning	

User parameter	○ Customization of user system with 200 parameters ○ Three sets of flash memory - current, preveous and factory memory sets ○ Parameters can be change dynamically even under servo operation ○ Secure protection with user key-lock

* Some of functions above are optional

3. MOVO Mailbox

Type SV ☐ ☐ ☐ – ☐ – *HMB

User program function   Option

- ■ MOVO has a function called "Mailbox" which enables users to program.
- ■ Mailbox can operate motion control in stand-alone mode.
- ■ The original programming language of Servoland is used to write a program.

Features of mailbox

- ■ Mailbox can customize a user system easily.
- ■ Mailbox works instead of functions of a PLC or a Motion controller.
- ■ Mailbox can utilize any features of servo command language MOV/1 and MOV/2.
- ■ Mailbox has link mechanism which interlocks or synchronizes each other in a multi-axis system.

Mailbox program

Programming example
X:($PACT>50000)V=100

In the example on left, the following command is executed,
  Wait until the position value becomes over 50000 pulse,
 then update the referential speed to 100 rpm.

Syntax
☐ (Condition) Execution ☐

Comparing expression of control variables
Executing servo command, reading or writing servo variable,
logical operation, mathmatical operation
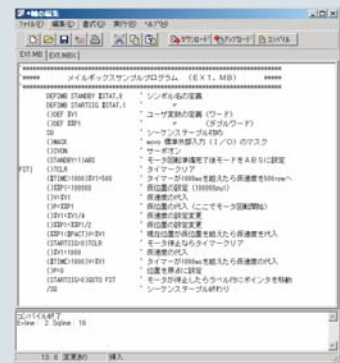
Servo command language

Servo command language is produced in order to operate a servo motor.
Commands can access control variables of servo system and others.
Servo commands are used in mailbox and in ordinal communication in common.
Command language have two standards - MOV/1 and MOV/2 (extended).
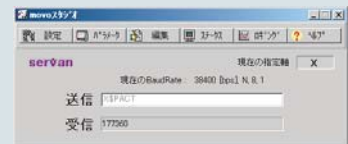
Operational contents

- ■ Execution of servo command, reading or writing control variable, logical operation, mathmatical operation
- ■ Setting parameters of servo gain and other parameters.
- ■ Mutual converting function of user unit and internal unit.

Communication tool   MovoNT, MovoNTF

Various command can be operated via communication even the motor is running.
Multi-dropped communication of multiple MOVOs is available under RS232C.
Multiple monitors can be shown at the same time in realtime with network model.

Operational contents

User parameters, mailbox, status monitor, logging, motion commands, data I/O, specifying axis name

4. MOVO Lineup

Type SV ☐ ☐ ☐ – ☐☐ – ☐

Series lineup

Features

S V F

S V N

S V E

Price

Comparison of series

SVF	■Combined model of basic performance and extensiblity · 16bit vector current control · 16kHz servo cycle · Encoder frequency 32Mpps (50Mpps in a moment) · Network models are available (CC-Link, Ethernet, EtherCAT) · Optional functions of PLC, CAM · Interpolation, full-closed functions, etc. are planned
SVE	■Small-sized, usability, low-price · Optional function of PLC
SVN	■Model with high current performance for precise control · Non-switching linear amplifier with precise current, without noise · Usable as a current amplifier

Power lineup

Input Voltage		
3-phase 200V		SVF
Sinle phase 200V	SVF / SVE	
AC 100V	SVF / SVE	
DC 88V	SVN	
DC 48V	SVF / SVE	
DC 24V	SVF / SVE	

Rated power

200w 400w 800w 1kW 2kW 4kW 8kW

Comparison of functions

	SVF	SVE	SVN
Analog/ Pulse reference	○	○	○
Communication (RS232C)	○	○	○
Flexibility of various motors	○	○	○
PLC functions (Mailbox)	○	○	○
Full-closed loop	○	○	○
Electric CAM	○	△	○
Linear/ arc interpolation (2 axes)	○	×	○
High resolution encoder	○	○	△
Network	○	×	×
DSP Servo	○	×	×
Encoder correction	○	△	△
High-speed commutation	○	△	△
Servo filter	○	△	△
Serial encoder	○	△	△
Analog 2-phase current reference	○	×	○
Regeneration absorption	○	×	×

* Some of functions above are optional
* △ represents simplified function

5. MOVO Power class

Type SV ☐ ☐ ☐ – ☐ ☐ – ☐

100V Single phase

Rated power (W)	80	160	262	436	654
Rated current (A)	0.8	1.6	2.5	4.2	6.3
SVE	SVEM1	SVEM2	SVEM4	SVEM6	SVEM8
SVF	SVFM1	SVFM2	SVFM4	SVFM6	SVFM8

Overload tolerance: 250%, 30sec for each model
24/48V DC input can be applied by option

200V Single phase

Rated power (W)	160	262	436	727	1,090
Rated current (A)	0.8	1.3	2.1	3.5	5.3
SVE	SVEH1	SVEH2	SVEH3	SVEH5	SVEH8
SVF	SVFH1	SVFH2	SVFH3	SVFH5	SVFH8

Overload tolerance: 250%, 30sec for each model

200V Three-phase

Rated power (W)	2	4	8
Rated current (A)	7.5	15	30
SVF	SVFH10	SVFH20	SVFH40

Overload tolerance: 200%, 30sec for each model

DC24V Battery system

Rated power (W)	131	255	495
Rated current (A)	5	10	20
SVE	SVEL124	SVEL224	SVEL424
SVF	(SVFL124)	(SVFL224)	(SVFL424)

Overload tolerance: 200% 30sec for SVEL424, SVFL424
250%, 30sec for other models

DC48V Battery system

Rated power (W)	526
Rated current (A)	10
SVE	SVEL448
SVF	(SVFL448)

Overload tolerance: 250% 30sec
for each model

* Models in parentheses are planned

Linear amplifier with DC input, AC three-phase output

Rated power (W)	250
Rated current (A)	2.4
Rated voltage (V)	60
Input voltage (V)	DC88
SVN	SVNT2

Overload tolerance: 200%, 30sec