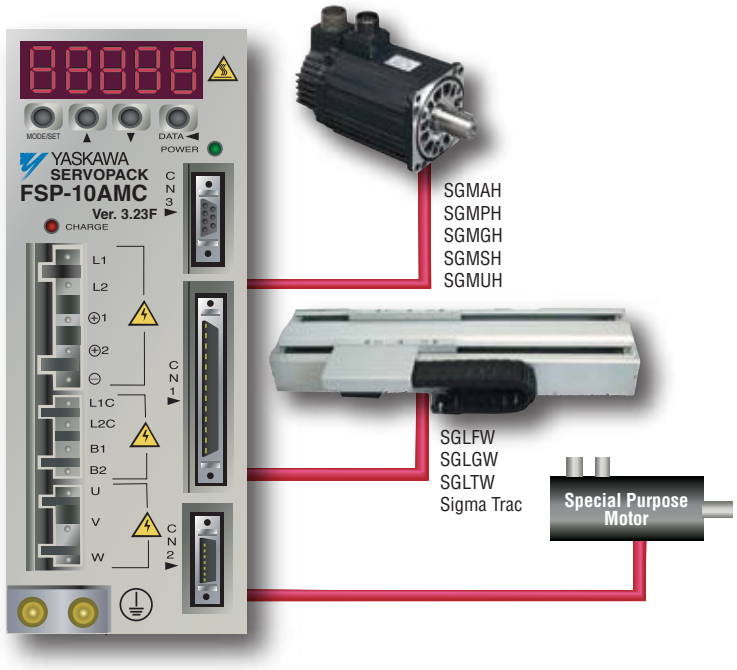
YASKAWA

efesotomasyon.com

MOTION...

- Programmable
- Flexible
- Built-In Indexer

The **FSP** amplifier or **F**lexible **S**ervo**P**ack extends the capabilities of the Sigma family. The traditional pulse input and analog modes are enhanced with an additional programmable motion function, a built-in indexer. The latest generation Non-linear Control Technique (NCT) for tuning provides the shortest settling times for high performance applications. The FSP can also be configured to drive Special Purpose Motors* such as food grade washdown servomotors, integrated servo gearmotors and actuators, and explosion-proof servomotors.



Sigma II Rotary and Linear Servo Combinations

Modes of Operation

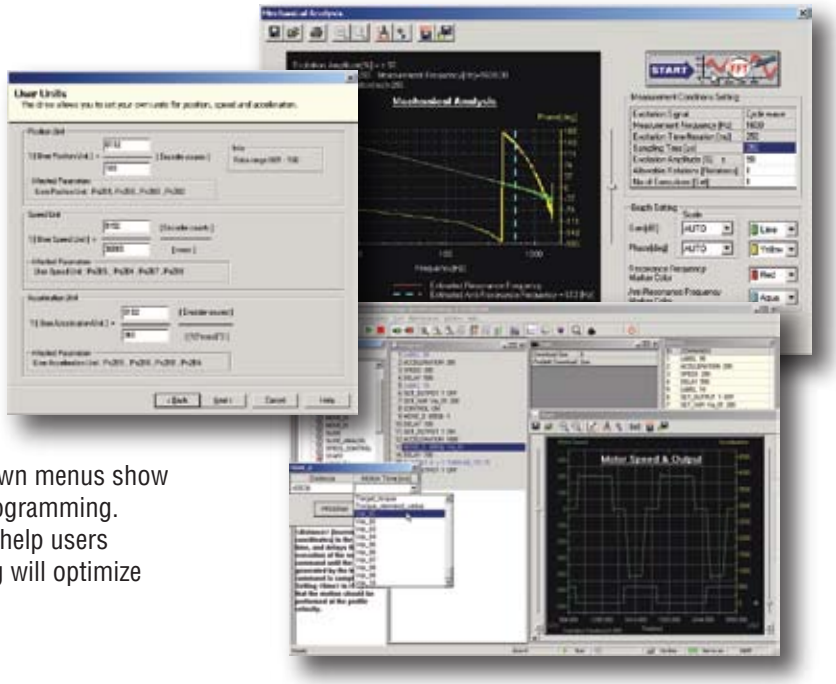
- Programmable Single Axis Point-to-Point Motion
- Change Speed or Target Position While-in-Motion
- High Speed Input and Output Synchronized to Motion
- Geared Motion Coordinated with Master Encoder
- Point-to-Point Motion Superimposed on Gear
- Motion Based on Cam Profile to Master Encoder

Digital Amplifier

- Pulse Input Position Control
- Analog Input Speed Control
- Analog Input Torque Control
- Automatic Recognition of Yaskawa Servomotors
- Third Generation NCT for Tuning

FlexWorks Software

Designed for ease-of-use and fast installation and start-up, FlexWorks uses a wizard for quick amplifier setup of parameters, I/O, units, and functions. Drop-down menus show a list of commands arranged by function for motion programming. The graphic scope and Bode plot of system mechanics help users visualize system performance. Single button autotuning will optimize most applications.



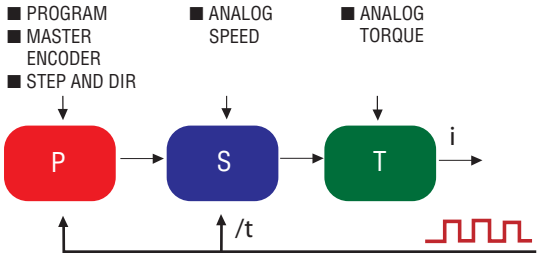
- Wizard Setup
- Menu-Driven Motion Commands
- Graphical Scope of Motion Variables and I/O
- Mechanical Analysis Finds Mechanical Resonance Points

* Contact your Yaskawa representative or visit www.yaskawa.com for more details about Special Purpose Motors.

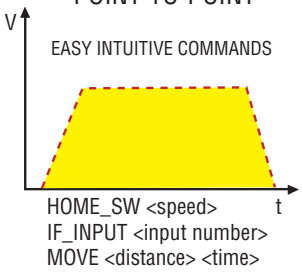
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Flexible Motion Functionality

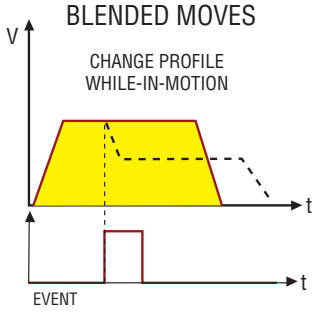
CONFIGURABLE ARCHITECTURE



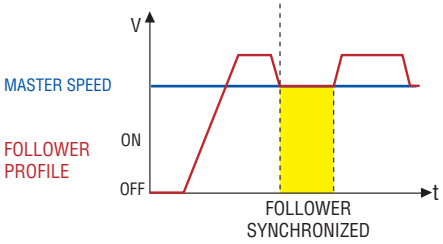
POINT-TO-POINT



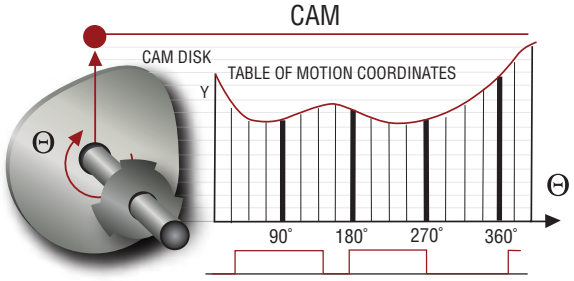
BLENDED MOVES



GEAR



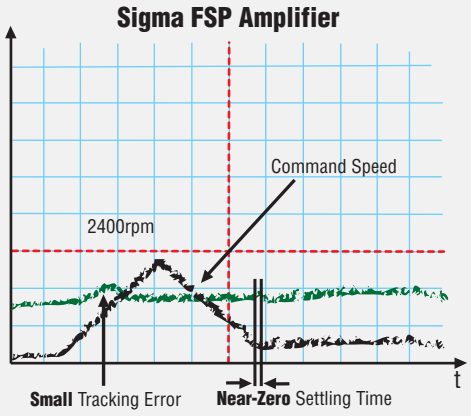
CAM

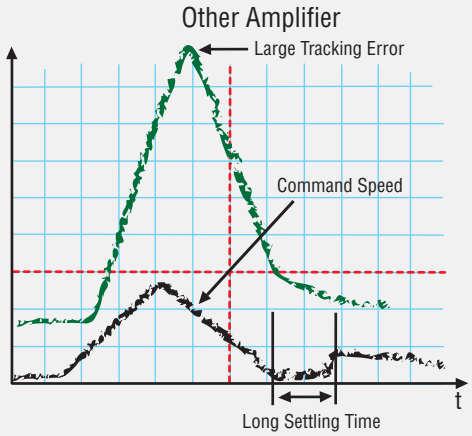


NCT Tuning

Non-linear control, adaptive feed-forward algorithm, and sub-pulse interpolation of encoder feedback provide both small tracking error and near-zero settling time.

- Increases throughput
- Reduces the influence of external load disturbances





Sigma FSP Specifications

Servomotor Capacity (kW)	0.1 / 0.2	0.1 / 0.2 / 0.4 / 0.8 / 1.5	1.0 / 2.0 / 3.0	0.5 / 1.0 / 1.5 / 2.0 / 3.0 / 5.0
Connected Voltage	1-Phase 100-115 VAC	1-Phase 200-230 VAC	3-Phase 200-230 VAC	3-Phase 380-480 VAC
Command Input	Analog, pulse train, programmable inputs and outputs, external encoder, RS232/422 serial communications			
Integrated Positioner	Multiple programmable motion profile modes			
Dual Port RAM (CN10)	Reserved for future enhancements (i.e. MECHATROLINK)			
Encoder Feedback	AB(Z) encoder, serial encoder: 13, 16 or 17-bit (incremental/absolute value)			
Protection Functions	Overcurrent, overload, regeneration error, main power voltage error, heat sink overheat, power open phase, overflow, overspeed, encoder error, overrun, encoder disconnected, CPU error, parameter error			
Digital Inputs	7 programmable			
Digital Outputs	3 programmable, 4 dedicated			
Analog Input	2 (16-bit)			
Speed Control Range	1 to 6000 rpm			
Speed Regulation	0% (at rated speed); rated voltage ± 10%			
Speed-load Regulation	0-100% load: 0.01% max. (at rated speed)			
Ambient/Storage Temperature	0-55˚ C/ -20 to 85˚ C			
Ambient/Storage Humidity	90% or less (non-condensing)			