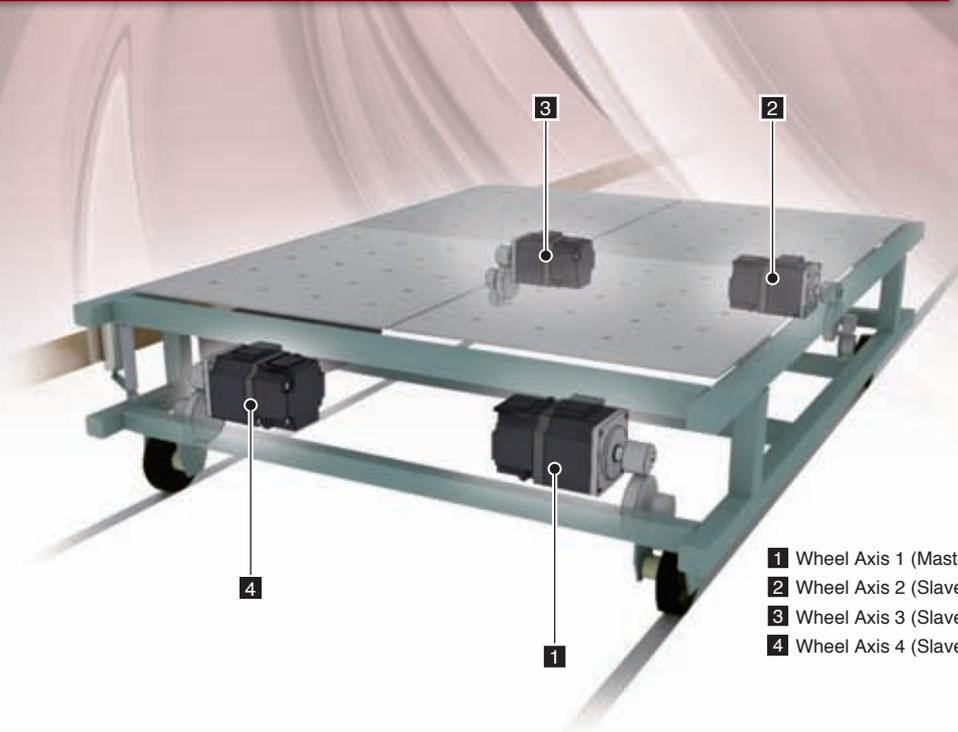


For all of your production needs

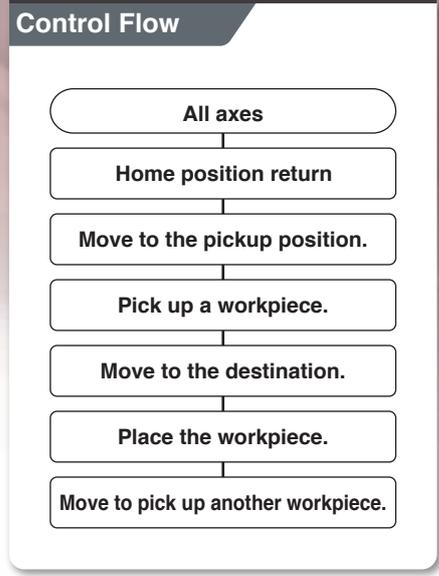
MELSERVO Solutions

vol.11

Automated Guided Vehicle



- 1 Wheel Axis 1 (Master)
- 2 Wheel Axis 2 (Slave)
- 3 Wheel Axis 3 (Slave)
- 4 Wheel Axis 4 (Slave)



Issues at production sites

Issue 1 Effect from slippage during high-speed operation and stopping

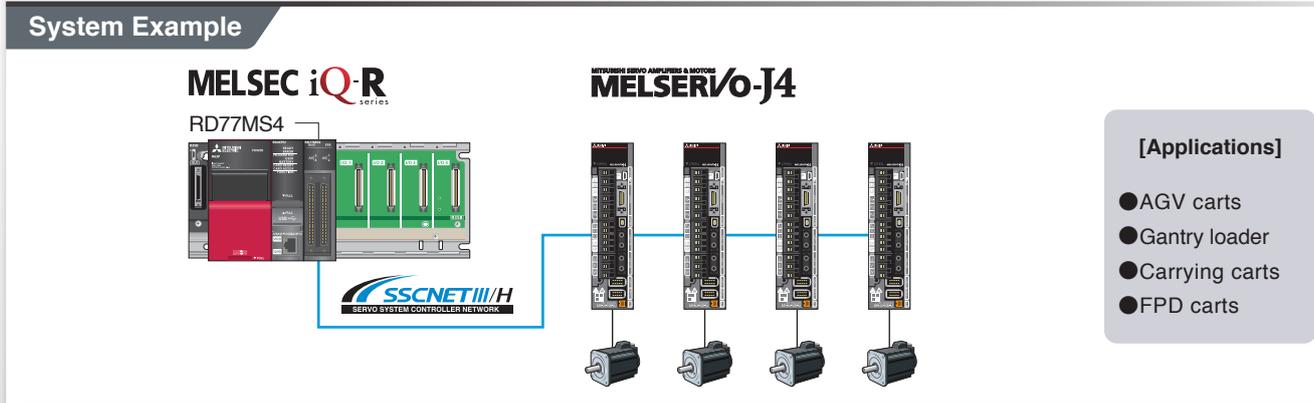
➔ Fully Closed Loop Control

Issue 2 Simplifying complex machine control as much as possible

➔ Master-slave Operation

Issue 3 Easier programming for faster startup

➔ Function Block (FB)



《Mitsubishi solution》

PLC CPU R04CPU	Simple Motion module RD77MS4	Servo amplifier ... MR-J4-B-KJ
Main base unit R35B	Engineering environment MELSOFT GX Works3	Servo motor HG-SR, HG-KR
Power supply module ... R63P		

Offering Exceptional Solutions

Solution 1

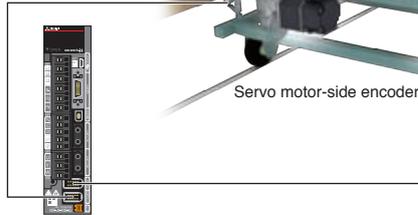
Fully Closed Loop Control

Since control can be switched based on the information from the load-side encoder during stopping, and the servo motor-side encoder during operation, high gain can be set.

Effects from wheel slippage can be eliminated while shortening the settling time, achieving high accuracy positioning control.

High response, high-accuracy positioning realized with motor-side and load-side encoders

Load-side encoder
(Linear scale, linear measurement sensor (using bar codes), etc.)



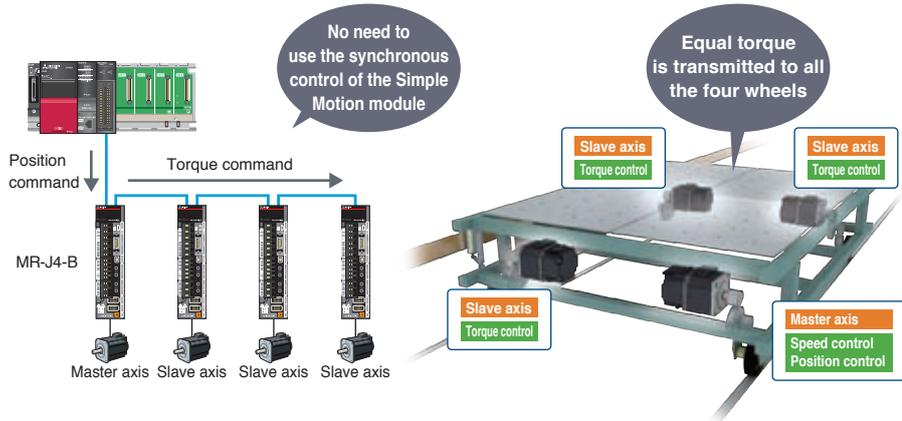
Servo motor-side encoder

Solution 2

Master-slave Operation

For MR-J4-B with driver communication, the master axis can transmit its torque data to the slave axes, enabling multi-axis simultaneous operation without depending on the synchronous control of the Simple Motion module. This allows a simple system configuration and faster startup.

Multi-axis operation with position commands for master axis only



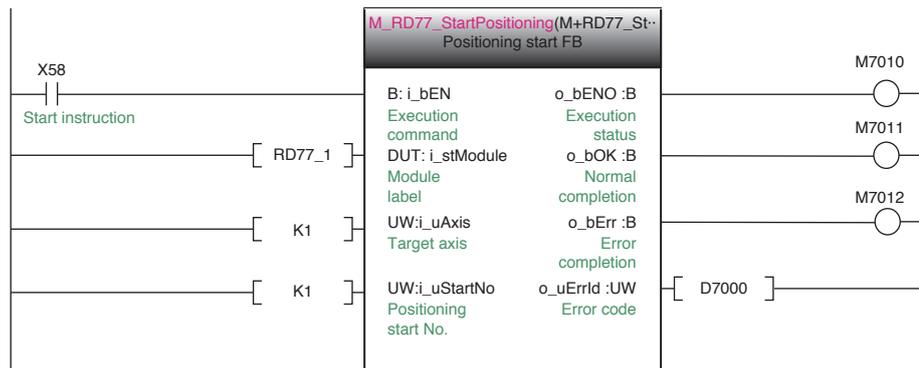
Solution 3

Function Block (FB)

The use of module FBs of MELSOFT GX Works3 enables the PLC CPU to start Motion control including positioning and advanced synchronous controls, achieving easy programming and faster machine startup.

Positioning control with function blocks in GX Works3

[Start from FB]

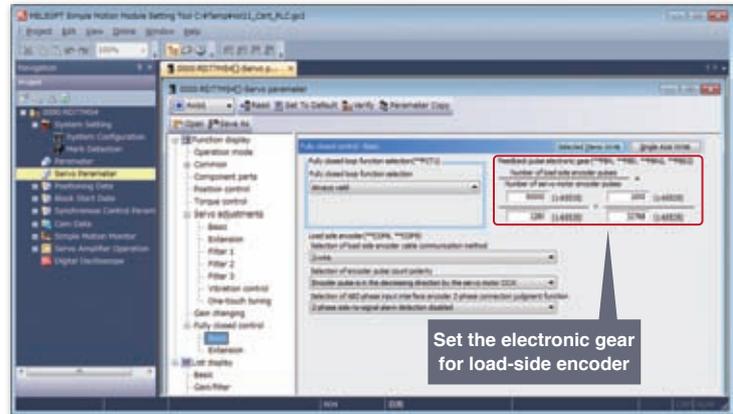


Setup Procedure

Step 1 Settings for Fully Closed Loop Control

Set the electronic gear for fully closed loop control with axis1 servo parameter.

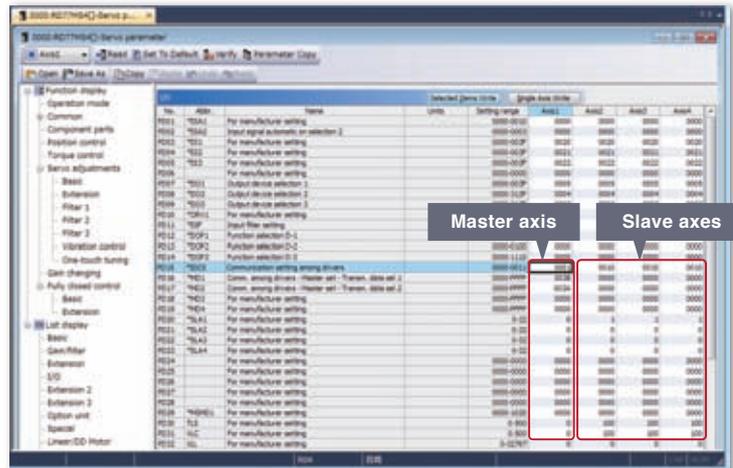
[MELSOFT GX Works3 Fully closed loop control setting screen]



Step 2 Settings for Master-slave Operation

Set the servo parameters for the master axis and the slave axes.

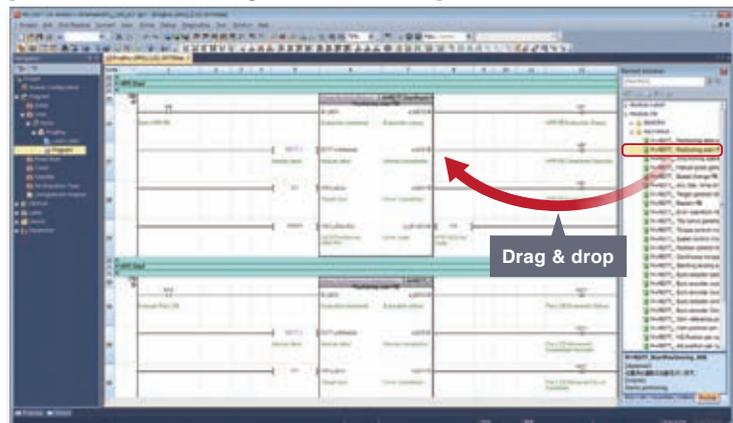
[MELSOFT GX Works3 Master-slave operation setting screen]



Step 3 Programming with Function Blocks

Select a necessary FB from module function blocks (Mitsubishi products) and user-registered function blocks in the list, and just drag and drop it to the program editor screen.

[MELSOFT GX Works3 Program creation screen]

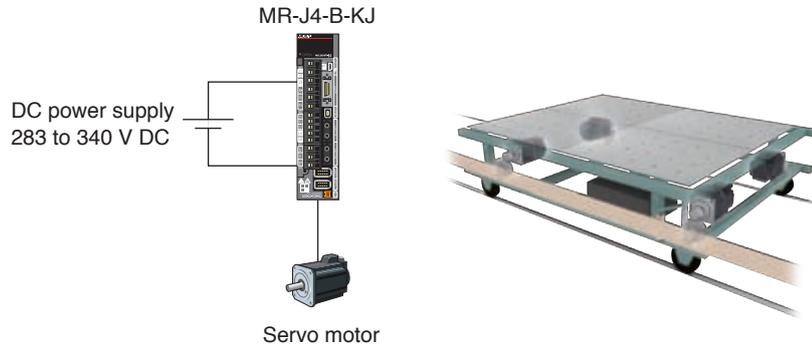


Servo System Features

Flexibility

Servo Amplifier with DC Power Input

Cables for power supply can be eliminated by directly receiving DC power from a battery to MR-J4-B-KJ (Servo amplifier with DC power ^(Note-1) input).



(Note-1): The AC input power supply voltage on the rating plate can be used as control circuit power supply input and main circuit power supply input after being rectified.
 $\sqrt{2} \times 200\text{V AC}$ to $\sqrt{2} \times 240\text{V AC}$ (283V DC to 340V DC)
 Contact your local sales office for servo amplifier with DC power input.

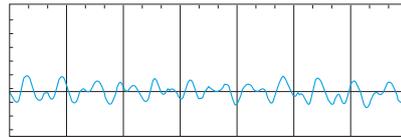
High Stability

Reduced Torque Ripple

By optimizing the combination of the number of motor poles and the number of slots, torque ripple is greatly reduced. Thus, smooth, more stable operation is achieved even for low-speed operation which is easily affected by torque ripple.

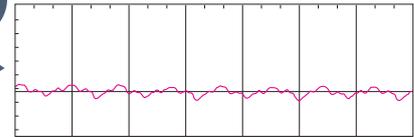
Torque ripple

(Prior model(HF-KP series))



As compared to the prior series,
1/4

(New model(HG-KR series))

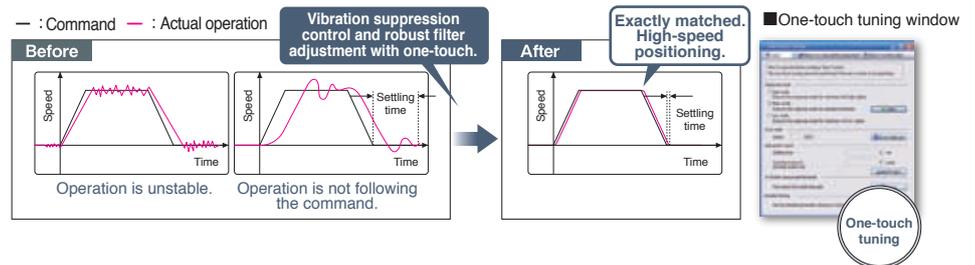


* For 400 W

Advanced One-touch Tuning Function

Quick and Easy Servo Gain Adjustment with Just a Click

Servo gain adjustment is complete just by turning on the one-touch tuning function. With this function, machine resonance filter, advanced vibration suppression control II, and robust filter are automatically adjusted to maximize your machine performance. This function also sets responsiveness automatically while the real-time auto tuning requires manual setting.



MITSUBISHI ELECTRIC CORPORATION

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