

# The Panasonic Realtime Express™ (RTEX) Ethernet-Based Servo Interface

## Host CPU

- HMI/CNC operation
- G code processing
- Interpolation
- Position control
- Smoothing
- Compensations
- Soft PLC

FPA-200/FPA-300 PCI  
RTEX Adapter  
Board

A4N/A5N Ethernet  
Servo Network

Panasonic  
MINAS A4N/A5N  
Servo Drives  
and Motors

## Overview

Soft Servo Systems offers a variety of PC-based CNC and general motion control (GMC) products. Each product is available with a choice of several servo and I/O communications hardware platforms, including the RTEX™ interface system.

The Panasonic Realtime Express™ (RTEX) interface system is an all-digital, minimal-hardware control architecture that works with low-cost Ethernet cables and with Panasonic MINAS A4N/A5N servo drive systems from Matsushita Electric Industrial Co., Ltd. This system provides high speed, high resolution, simple wiring and precise synchronization.



**Panasonic MINAS A4N  
Servo Drive and Motor**

MINAS A4N/A5N servo drives are based on the high performance MINAS A4/A5, and uses the original Realtime Express servo network. RTEX allows high resolution and the command of fast motion that is impossible in conventional pulse interfaces, and its very short transmit time maximizes servo performance. Motion commands are reflected in all axes at the same time, so it's particularly well suited for Continuous Path motion as well as point-to-point motion. RTEX allows information such as parameter settings and data monitoring to be exchanged in addition to motion commands, yet wiring is drastically reduced compared to conventional interfaces. The affordable shielded twisted pair cable lowers system costs, while the high noise immunity (in compliance with IEC61000-4-4) provides excellent servo performance.

An RTEX PCI adapter board easily inserts into your PC, and connects to a servo network of exactly the number of servo drives needed. Users can also take advantage of Soft Servo System's optional and affordable fiber-optic VersioBus I/O network as part of their RTEX interface system.

Soft Servo Systems offers Panasonic MINAS A4N/A5N servo drives and motors bundled with our ServoWorks CNC and SMP general motion control products for the RTEX platform.

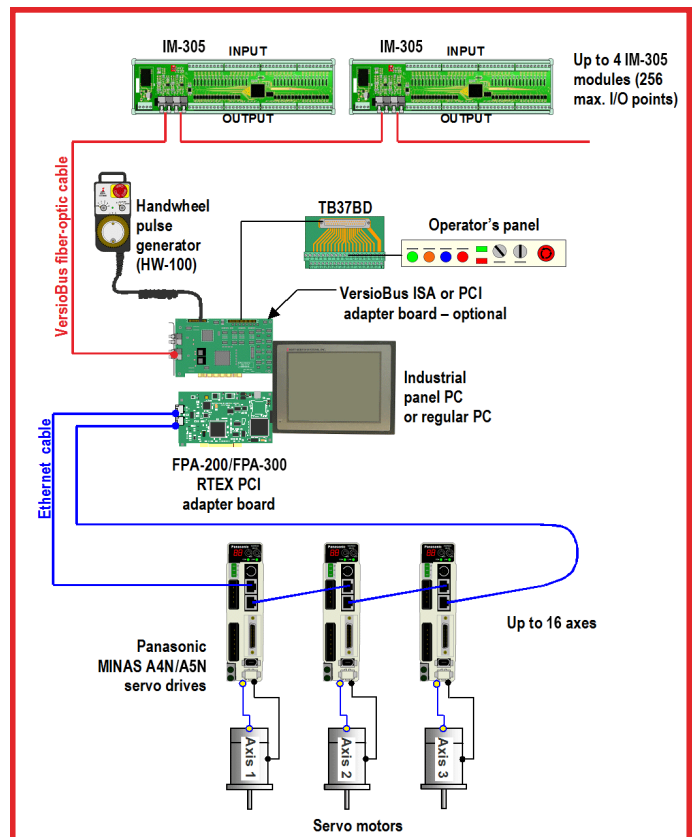
## RTEX Ethernet Servo Communications

The Panasonic Realtime Express™ (RTEX) is a high-speed (100 Mbps), Ethernet-based digital synchronous servo communications technology developed by Matsushita Electric Industrial Co., Ltd.



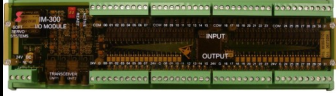
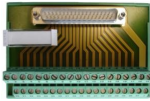


Up to 32 servo drives can be integrated in one network with a single, commercial LAN cable and an FPA-200/FPA-300 RTEX PC adapter board – no additional proprietary hardware interface modules or components are necessary.

## MOTOR COMPANY, MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

Best known by its Panasonic brand name, Matsushita Electric Industrial Co., Ltd., based in Osaka, Japan, is a worldwide leader in the development and manufacture of electronic products for a wide range of consumer, business, and industrial needs. For more information on the company and the Panasonic brand, visit <http://panasonic.co.jp/motor/eng>.



**Hardware Connections in the RTEX Interface System**

Part No.	Description	Specification	Photo
FPA-200 or FPA-300	RTEX PCI adapter board	<ul style="list-style-type: none"> <li>For insertion in a host PC PCI slot</li> <li>Provides two RJ45 Ethernet connectors (TX and RX) for the A4N Ethernet servo network (with ring topology)</li> </ul>	
FP-105	VersioBus adapter boards (PCI)	<ul style="list-style-type: none"> <li>For insertion in a host PC (FP-105: PCI slot)</li> <li>Provides a connector for an optional VersioBus I/O network of IM-300s</li> <li>Provides 32 points of on-board general I/O</li> <li>Provides an encoder and digital I/O connector for a handwheel</li> </ul>	 <b>FP-105</b>
IM-305	64-point general I/O module	<ul style="list-style-type: none"> <li>Provides built-in wire-entry screw terminals, LEDs and DIN rail mounting</li> <li>Up to 4 IM-305s can be daisy-chained for up to 256 points of additional I/O, with distributed control and multiple nodes</li> <li>32 optically isolated output points (N-Ch MOSFET), and 32 optically isolated input points</li> </ul>	
TB37BD	37-pin breakout box	<ul style="list-style-type: none"> <li>Provides screw terminal blocks for making connections between the VersioBus adapter board and local I/O</li> <li>37-pin screw terminal module with a single terminal block for wire entry screw terminals</li> </ul>	
HW-100	handwheel	<ul style="list-style-type: none"> <li>A handheld manual pulse generator for manual jog operation of the machine or machine tool</li> <li>Emergency Stop button</li> <li>5 axes available for single-axis control</li> <li>4 multipliers: X1, X10, X100 or X1000</li> </ul>	
	VersioBus fiber-optic cable	<ul style="list-style-type: none"> <li>For connecting VersioBus hardware components</li> <li>4.5 meters per IM-305 is included – more cable can be ordered</li> </ul>	

## RTEX Features and Specifications

- Control of up to 16 servo axes with a 0.5 ms – 1 ms cycle time
- High-speed communications: 100 Mbps (100BASE-TX) full duplex Ethernet communications servo network with ring topology (IEEE 802.3u)
- Precise synchronization allowing interpolation
- Low-cost commercial Ethernet LAN servo cables (shielded twisted pair cable, TIA/EIA-568B CAT5e compliant or more)
- 2.5 kV over, IEC61000-4-4 compliant noise immunity
- Daisy-chainable servo drives offer distributed control and multiple nodes with a total servo network length of up to 200 meters (and an inter-node maximum cable length of 60 m), allowing distance between PC, machine and peripherals
- All-digital network eliminates digital to analog conversions, saving money and simplifying system setup and maintenance
- Simple wiring (a single, shielded twisted pair interface cable) and only one interface card (PCI)

## Features of MINAS A4 Series Drives/Motors

- Easy-to-use servo gain-tuning with “Real-time auto tuning”
- 1,000 Hz speed-loop bandwidth improves productivity
- Vibration suspension filter minimizes vibrations
- Slim design (from 150 mm high x 40 mm wide x 130 mm deep)
- Full closed control of position and speed loops using a linear scale signal (standard) enables high accuracy positioning
- Motor output ranges from 50 W to 5 kW (geared motors are also available for a wide variety of applications)
- Available with 2500 pulse per revolution incremental encoders or 17-bit absolute encoders
- Suitable for applications where large-scale, complicated tasks are required, such as part mounting machines and multi-joint robots – the motor exhibits excellent capabilities specifically in production sites using semiconductor manufacturing equipment, packing/wrapping machines, winding machines, machine tools, fabricating machines, and more