PPX:505–6860 RS-485/RF I/O Channel Converter
Installation Instructions

About this Product

These instructions describe the installation of a PPX:505–6860 RS-485/RF I/O Channel Converter in the SIMATIC® 505 programmable controller system.

The PPX:505–6860 converter allows the use of coaxial cables in a 505 system (extending the maximum distance to 4 km) by converting the RS-485 interface to an RF interface. This also permits use of dual media from a 545/555 to the I/O bases.

Installing a PPX:505–6860 converter also allows you to update an existing 560/565 system, that is already using coaxial cables, with a 545/555 and 575 CPU providing the advantages of greater speed, dual media, and greater remote distance.

Organization of Instructions

- Compatibility Issues
- Installation Procedure
- Upgrading from a 560/565 system to a 545/555
- Upgrading from a 560/565 system to a 575

Related Manuals

The following manuals contain information related to the installation of the PPX:505–6860 converter and cables:

- *SIMATIC 505 Redundant I/O System Manual* (PPX:505–8125–x).
- *SIMATIC 545/555 System Manual* (PPX:555–8101–x).
- *SIMATIC 575 System Manual* (PPX:575–8101–x).
- *SIMATIC 505 Programming Reference Manual* (PPX:505–8104–x).
- The user manual for your release of TISOFT™ programming software.
- The system manual(s) for your controller(s).

Technical Assistance

For technical assistance, contact your Siemens Industrial Automation, Inc., distributor or sales office. If you need assistance in contacting your U.S. distributor or sales office, call 1–800–964-4114.

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Compatibility Issues

Before installing the PPX:505–6860 converter, ensure that your system hardware is compatible with the PPX:505–6860, as defined below:

Compatibility with Bases

The PPX:505–6860 RS-485/RF converter can be installed in the following type of bases:

- PPX:505–6504 4-slot base
- PPX:505–6508 8-slot base
- PPX:505–6511 11-slot dual media base
- PPX:505–6516 16-slot base

Compatibility with CPUs

The PPX:505–6860 RS-485/RF converter is compatible with firmware Rel. 3.0 or later in the following CPUs:

- PPX:545–1102
- PPX:555–1101
- PPX:555–1102
- PPX:575–2102
- PPX:575–2103

Compatibility with Power Supplies

The PPX:505–6860 RS-485/RF converter can be powered by the following supplies:

- PPX:505–6660 115/230 VAC
- PPX:505–6660A 115/230 VAC (dual media compatible)
- PPX:505–6663 24 VDC (dual media compatible)

Compatibility with Remote Bases

The PPX:505–6860 RS-485/RF converter is compatible with bases controlled by the following Remote Base Controllers (RBCs):

- PPX:505–6850 RF RBC
- PPX:505–6850A RF RBC (dual media compatible)
- PPX:500–2112 RF RBC
- PPX:500–2114A RF RBC (dual media compatible)
- PPX:500–9912 RF RBC (dual media compatible); cannot use dual media with this unit, replace it with a PPX:500–2114A.

NOTE: The RBC must have firmware Rel. 3.0 or later if you use the dual media option or RBE function.

Installation Procedure

Installing the PPX:505–6860

Use the following procedure to install the PPX:505–6860:

1. Remove the power from the base in which you are installing the PPX:505–6860.
2. In the case of a 545/555 installation, install the PPX:505–6860 in the same base as the CPU and in the first double I/O slot adjacent to the CPU.

   In the case of a 575 installation, the PPX:505–6860 must be installed in a 505 base within three feet of the 575 base that is electrically bonded to the 505 base.
3. Use an RS-485 cable to connect the CPU and PPX:505–6860 RS-485 I/O ports together. The RS-485 cable should be as short as possible.

   The correct wiring for the cable that connects from the 545/555/575 CPU to the new PPX:505–6860 RS-485 I/O channel converter is shown in Table 1. This is different from the normal connections for an RS-485 I/O channel in that a cable with two twisted, shielded pairs with 9 pin, subminiature, male D-connectors at each end is required (instead of the single pair cable that is normally used). Pair like named signals 3 and 8, and 4 and 9.

   The suggested cable types follow:

Alpha #5472	2TP w/shield	24 AWG
BELDEN® #9502	2TP w/shield	24 AWG

CPU Connector Pin	Module Connector Pin	Description
5	5	Ground (Shields)
3	3	D485–
4	4	RTS485–
8	8	D485
9	9	RTS485

Table 1 Pin-out Specifications

4. Connect the RF (coaxial) cable to the PPX:505–6860 port that is labeled: **RF TO I/O BASES**. See Figure 1.

NOTE: All the remote bases connected to a 545/555/575 CPU must have RF RBCs. RS-485 bases cannot be connected between the CPU and the PPX:505–6860.

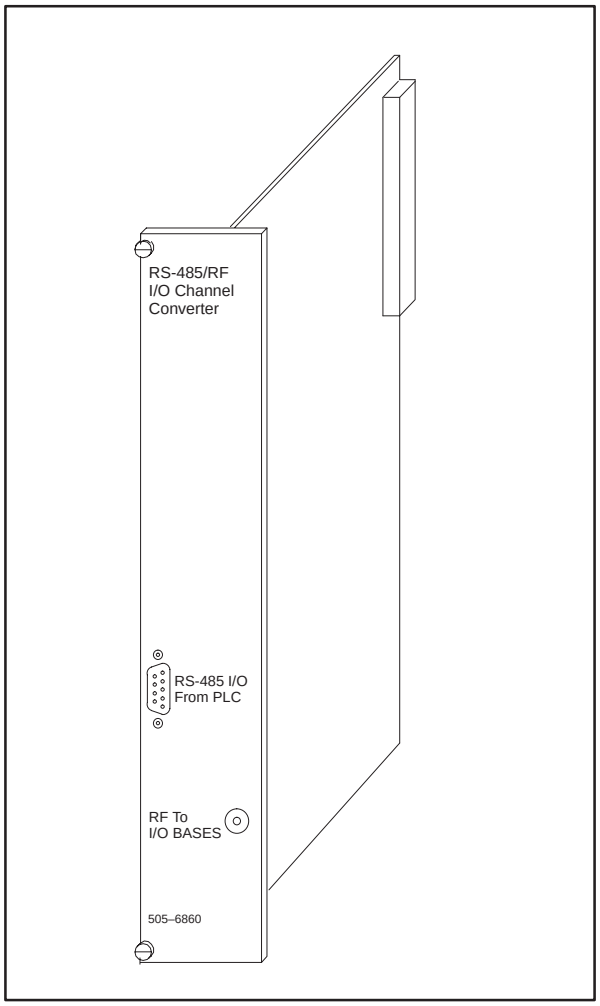

Figure 1 PPX:505–6860 Bezel

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Upgrading an RF-Based TI560/TI565/TI560T/TI565P to a TI545/TI555/TI575

To upgrade an existing RF-based 560, 560T, 565, 565P system, replace the existing programmable controller, including its chassis, its power supply, and all its installed boards with the 505 base, the 505 power supply, 545/555 CPU, and RF/RS-485 converter. To upgrade to a 575 system, replace the existing programmable controller, (including its chassis, its power supply, and all its installed boards) with a 575 base, 575 Power Supply, 575 CPU, 575 Remote I/O Annex, 505 base, the 505 power supply, and RF/RS-485 converter. The upgrade to a 545/555 is shown in Figure 2, and the upgrade to a 575 is shown in Figure 3.

NOTE: The 545/555 cannot directly replace either a hot backup (HBU) configuration or a system with more than 15 bases.

1. If the Series 500™ remote I/O installation consists of more than one coaxial (RF) remote I/O channel, combine these channels into a single remote I/O channel. Refer to the section entitled, “Cabling and Wiring the System,” in the your system manual for information about installation of a coaxial remote I/O channel.

2. If the system has more than 15 bases, multiple VME 575 CPUs can be used. (Each 575 controller has its own I/O channel. Refer to the *SIMATIC 575 System Manual* (PPX:575–8101–x) for information on installation and operation of the 575.) However, using multiple CPUs may require significant program modifications in order to divide the 565 program and redistribute the program among the 575 CPUs.

3. Re-number your bases between 1 and 15 so that no two bases have the same number.

   Base number 0 is the local base where the CPU resides and may be used for additional 505 modules, if desired.

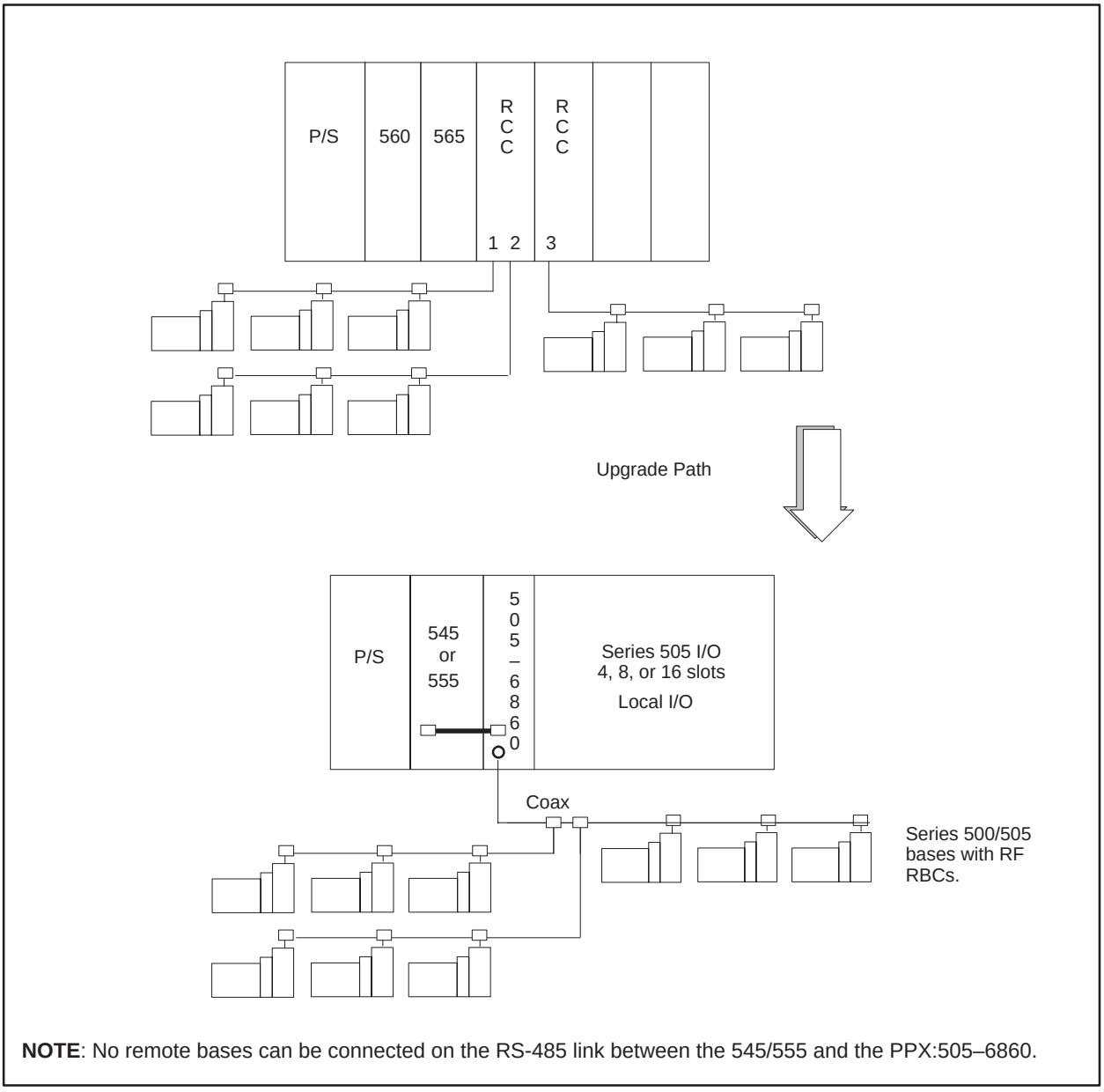
4. Modify the controller’s I/O configuration to reflect the channel number and base number changes.

5. Connect the resulting I/O channel to the 545/555 or the 575 system using the PPX:505–6860 RS-485/RF I/O Channel Converter.

6. When using a 545/555 controller, connect a 120 ohm resistor between pins 3 and 8 on the RS-485 I/O connector of your CPU, in order to properly terminate the I/O channel data lines. When using a 575 controller, set jumper E8 on the Remote Annex from the “U” position to the “T” position to activate termination.

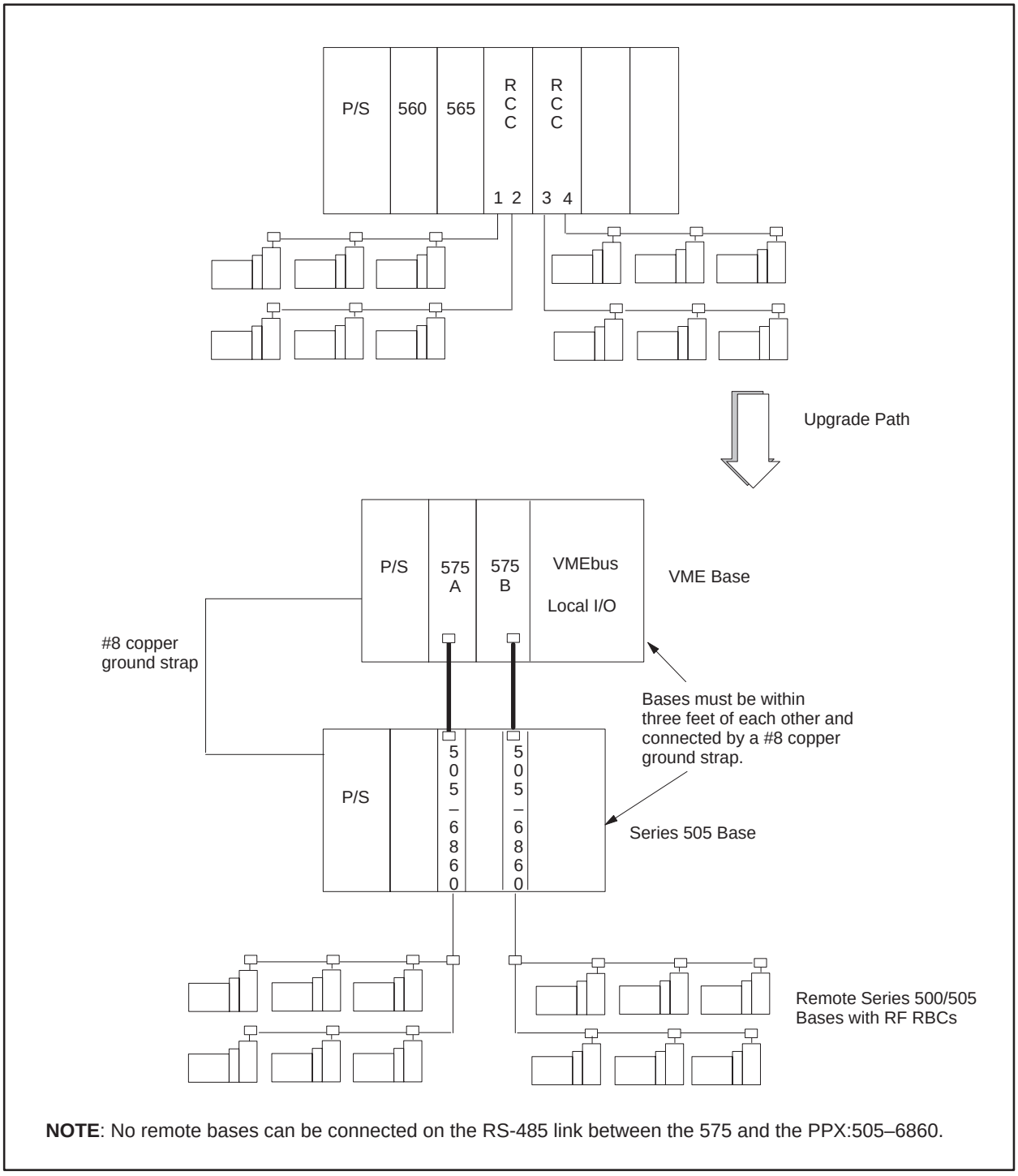
Update time for a special function (SF) module is significantly faster when you install the module in the local base, rather than a remote base. You can improve both SF module performance and scan performance by replacing the Series 500 SF modules with Series 505™ SF modules and installing them in the 545/555 local base.

If all SF modules cannot be installed in the local base, consider placing low-activity SF modules, such as the ASCII, BASIC, or DCP modules, in a remote base. Place high-activity modules, such as the NIM or Peerlink™, in the local base.



NOTE: No remote bases can be connected on the RS-485 link between the 545/555 and the PPX:505–6860.

Figure 2 Upgrading an RF-Based 560/565/560T/565P System to a 545/555



NOTE: No remote bases can be connected on the RS-485 link between the 575 and the PPX:505–6860.

Figure 3 Upgrading an RF-Based 560/565/560T/565P System to a 575