

ThinkIO™ - P

Premium DIN Rail PC for Fieldbus and IO Systems

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QUICK START GUIDE



The product described in this manual is in compliance with all applied CE standards.



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Explanation of Symbols



CE Conformity

This symbol indicates that the product described in this manual is in compliance with all applied CE standards. Please refer also to the section “Applied Standards” in the ThinkIO-P Hardware Reference Guide.



Caution, Electric Shock!

This symbol and title warn of hazards due to electrical shocks (> 60V) when touching products or parts of them. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.

Please refer also to the section “High Voltage Safety Instructions” on the following page.



Warning, ESD Sensitive Device!

This symbol and title inform that electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

Please read also the section “Special Handling and Unpacking Instructions” on the following page.



Warning!

This symbol and title emphasize points which, if not fully understood and taken into consideration by the reader, may endanger your health and/or result in damage to your material.



Note ...

This symbol and title emphasize aspects the reader should read through carefully for his or her own advantage.



For Your Safety

Your new Kontron product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your Kontron product, compliance with the following guidelines is imperative.

Temperature and High Voltage Safety Instructions



Warning!

All operations on this device must be carried out by sufficiently skilled personnel only.

During operation the ThinkIO-P heats up and some parts of the enclosure may get hot enough to cause light burns if touched for a period of time longer than 1 to 2 seconds. Exercise care when handling a ThinkIO-P that has just been operated. If necessary, cool down the ThinkIO-P before handling it.



Caution, Electric Shock!

Before installing your new Kontron product into a system always ensure that your mains power is switched off. This applies also to the installation of piggybacks.

Serious electrical shock hazards can exist during all installation, repair and maintenance operations with this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing work.

Special Handling and Unpacking Instructions



ESD Sensitive Device!

Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

- Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.
- Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.
- It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the product is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the board.



1. General

1.1 About This Guide

This Quick Start Guide is designed to provide information necessary to quickly install and begin operations with the ThinkIO-P. It begins with unpacking and ends with the ThinkIO-P being ready for operation in an application development environment. It includes not only the ThinkIO-P, but also, where applicable, makes references to optionally available WAGO-I/O-SYSTEM-750/753 I/O modules. Operating system or application software descriptions are not part of this guide. Refer to the appropriate programming guide or application documentation for further information concerning software.

The use of this guide requires that all applicable safety requirements are complied with in order to prevent bodily harm or damage to the equipment involved.

This guide is designed to be read sequentially and is, as such, a procedure in itself. Do not skip over subjects unless they have been previously read and understood.

The information and all of the instructions and procedures provided in this guide must be taken into account or complied with to avoid improper operation or damage to the equipment.

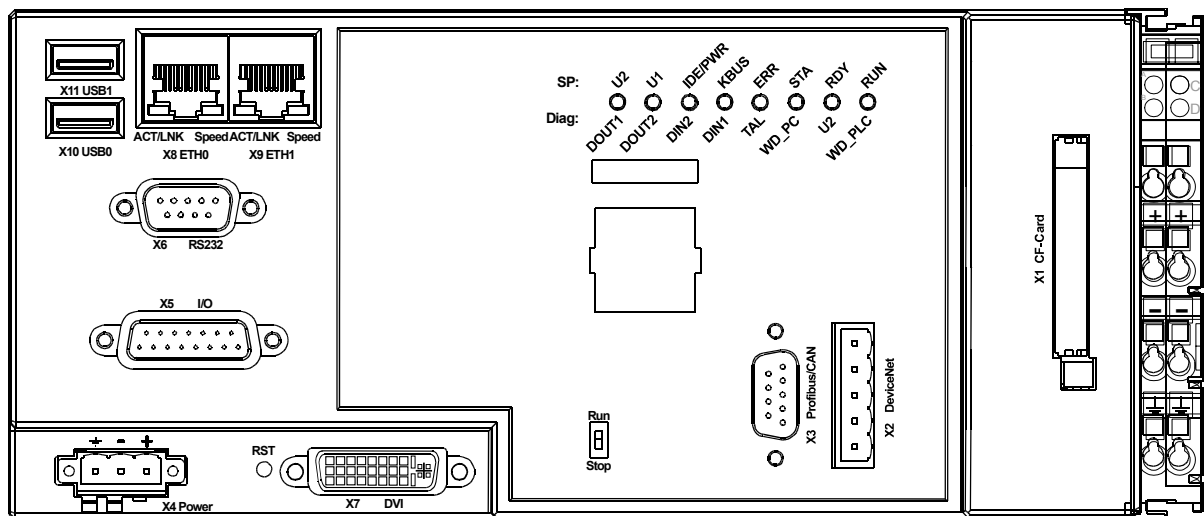
1.2 Requirements

This guide assumes that the ThinkIO-P application requirements and system configuration have been defined and that this information and all other required elements of the application are available to the integrator at the time the procedures of this guide are applied.

1.3 The ThinkIO-P

The ThinkIO-P is an industrial PC packaged in an assembly, 224 x 70 x 100 mm, for mounting on a DIN rail. It can be complemented with WAGO-I/O-SYSTEM-750/753 input and output modules using the optional WAGO interface module (K-Bus) for controlling of the I/O modules. The following figure demonstrates this configuration.

Figure 1-1: ThinkIO-P with the WAGO Interface Module (K-Bus) Assembled on the Right



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1.4 The WAGO Interface and I/O Modules

The WAGO-I/O-SYSTEM-750/753 families of industrial input and output modules is optionally available for usage with the ThinkIO-P. This option requires the WAGO interface module (K-Bus) for interfacing between the ThinkIO-P and the WAGO I/O modules. Through the WAGO interface module (K-Bus) access is gained to a wide variety of industrial digital and analog input/output devices as well as special encoders and counters.

1.5 Unpacking the ThinkIO-P

The ThinkIO-P is shipped in appropriate packaging material. This packaging material should be retained for future use if it is necessary to return the product for servicing.

To unpack the ThinkIO-P proceed as follows:

1. Observing ESD requirements, carefully open the packaging and remove its contents.
2. Verify that the contents are as described in the delivery document(s) and are not damaged.

If anything is missing, damaged, or not as described by the packing list, contact Kontron for further instructions. Do not proceed until notified by Kontron.

3. Dispose of the packaging material as appropriate.



Warning!

The ThinkIO-P itself is delivered as a closed unit and **must not be opened**. In particular, if the ThinkIO-P is provided with a WAGO interface module (K-Bus) attached to it, **the interface module is not removable**. Except for the backup battery which is accessible from the front, there are no user serviceable parts within the ThinkIO-P or WAGO interface module (K-Bus). Opening or removing of any attached components except for the battery will void the product warranty.

1.6 Mounting

The ThinkIO-P is designed to be mounted on a securely fixed, grounded, top-hat DIN rail for operation. If for any reason that this is not possible, it must be ensured that the ThinkIO-P is placed on a secure, flat, level surface with ESD protection before being operated.

Kontron assumes no liability for any damage whatsoever resulting from the operation of an un-securely fixed ThinkIO-P.

1.7 Software and Documentation

The ThinkIO-P is delivered initially with pre-installed software. This is to ensure that it may be operated for application installation or development. In addition, software and product documentation are provided on accompanying CD-ROMs.



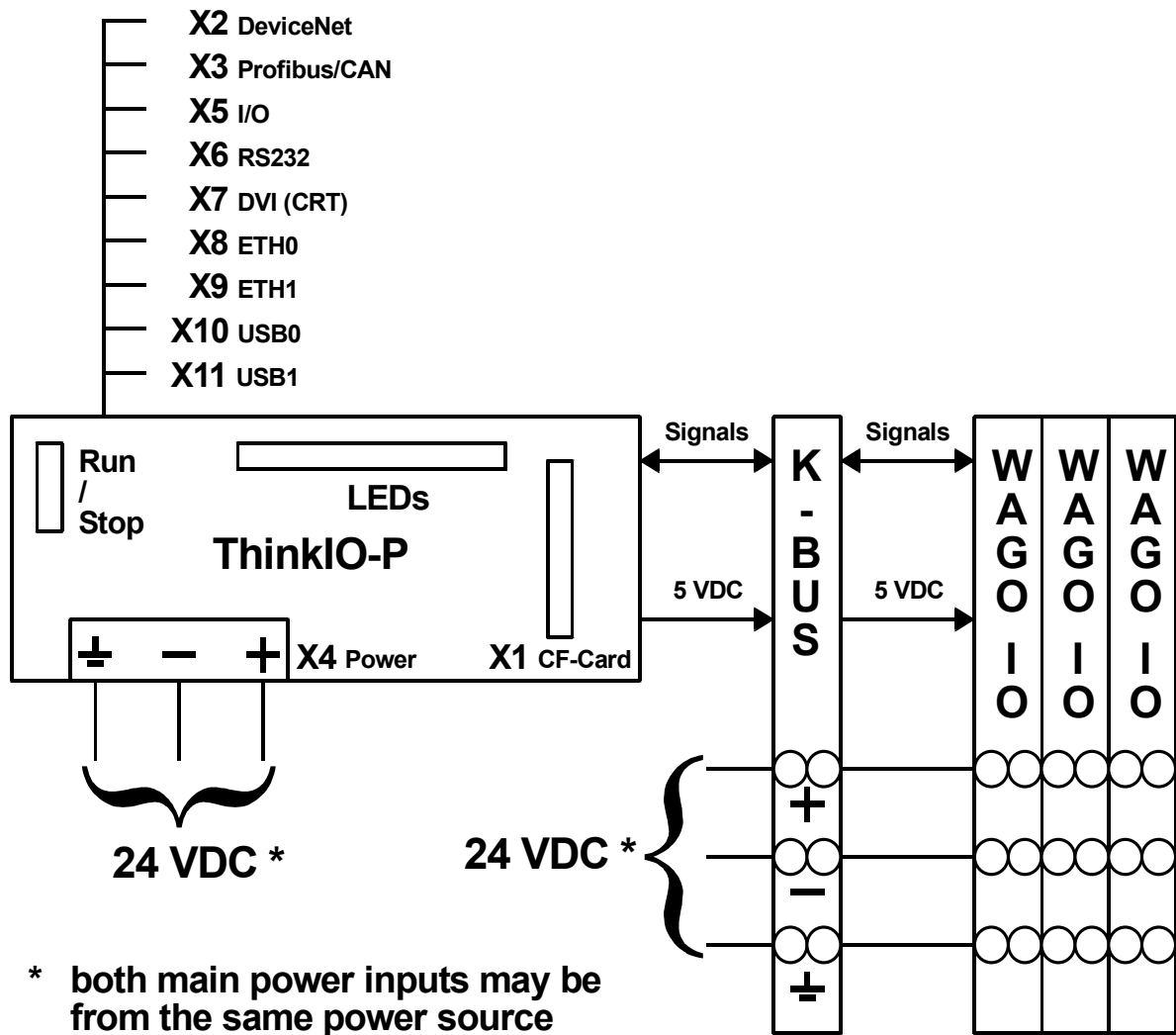


2. Pre-Operation

2.1 System Configuration

Basically, a ThinkIO-P application is comprised of the ThinkIO-P hardware, the ThinkIO-P software, interfacing cabling, and, as an option, a WAGO interface module (K-Bus) and, as required, optional WAGO-I/O-SYSTEM 750/753 modules.

Figure 2-1: ThinkIO-P and K-Bus Cabling Diagram





Before applying power to the ThinkIO-P, all interfacing cabling must be connected and, if required, the WAGO-I/O-SYSTEM 750/753 modules must be installed and their interfacing cabling connected.



Warning!

If the ThinkIO-P is to be operated with a CompactFlash card installed, it must be installed **before applying power** to the system. The CompactFlash interface is not a “hot plug” interface. In addition, **do not remove** the CompactFlash card **with power applied** to the system.

Failure to comply with this directive can result in damage to the CompactFlash card, and will result in improper operation of the system.

2.2 Power Requirements

The ThinkIO-P itself requires 24 V DC for operation. This is supplied via the X4 connector.

The optional WAGO-I/O-SYSTEM 750/753 modules have their own power input connections. Refer to appropriate WAGO module documentation for the exact power and wiring connection requirements.

Availability of appropriate power sources must be ensured prior to installation.

Note...



The ThinkIO-P provides 5 VDC internal system power for the WAGO I/O modules (excluding the WAGO interface module (K-Bus)) up to a maximum of 1 A of current. If more power is required for I/O modules, one or more WAGO Internal System Supply modules (750-613) must be added as appropriate to provide additional module power.

2.3 Installation of the ThinkIO-P

Using the application requirements as a guide, assemble the ThinkIO-P and the associated application components. To achieve this, perform the following:

1. Mount the ThinkIO-P on the DIN rail or place on an appropriate surface.
2. If WAGO I/O modules are to be installed, refer to WAGO documentation for their assembly.
3. Ensuring that no power is applied, connect all interfacing cables.

Note...



If any connector protection caps were removed to install interfacing cables, retain these caps for future use. They are special ESD protection devices for the connectors on which they were installed, and they are required to be installed if the connector is not used.

4. Verify the physical configuration with the application requirements. Resolve any anomalies before proceeding.



3. Initial Operation

3.1 Power On

As stated previously, the ThinkIO-P is delivered with pre-configured software for initial operations. This software allows the ThinkIO-P to initialize itself and to boot the operating system. Once the system has booted it is ready either for application development or the installation of an application.

What transpires now depends on the system configuration and the application requirements. Three possibilities exist: performance of a simple system operation verification; establishment of the basis for application development or the installation of an application. The following chapter provides only information and procedures to perform a system operational verification. For assistance concerning application development refer to the appropriate ThinkIO-P Programming Assistance Guides.

3.2 System Operation Verification

When power is applied to the ThinkIO-P the system initializes itself and then boots the operating system. At completion of the boot process, control of the system is available to an operator.

To proceed, perform the following:

1. Ensure that all interfacing cabling is properly connected.
2. Ensure that the main input power to the ThinkIO-P is correct: + 24 V DC.
3. If applicable, ensure that the input power to the WAGO interface module (K-Bus) and the I/O modules is of the correct type and voltage.
4. Apply power to the system.



Note ...

The ThinkIO-P now initializes itself and boots the operating system. This can take several minutes to be accomplished. At the end of this process, either an operating system command prompt will appear on the display indicating that the operator now has control or an appropriate graphic user interface (GUI) is displayed allowing operator control of the system. Refer to the appropriate software documentation for further information.

The operator can now determine the operational status of the system and also make changes to the system software configuration such as setting the IP address of the ThinkIO-P or deactivating the BootP server if required.



5. Verify the system operational status.

**Note ...**

At this time there are several possibilities to assess the operational status of the ThinkIO-P.

For example, during bootup the status LEDs are operated in accordance with pre-programmed functionality. This information is contained in the Hardware Reference Guide for the ThinkIO-P.

If access is available to the operating system, various configuration information is available via OS functions. Refer to the appropriate Programming Assistance Guide for more information.

6. Upon completion of the system status verification either remove all power from the system and dispose of the system as required or proceed with application development or installation. For application development or installation, refer to the appropriate ThinkIO-P guides.

