

ThinkIO™ - Duo

Intel® Core™ Duo DIN Rail PC

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Quick Start Guide



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Explanation of Symbols



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-Duo 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-Duo that has just been operated. If necessary, cool down the ThinkIO-Duo 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-Duo. It begins with unpacking and ends with the ThinkIO-Duo being ready for operation in an application development environment. It includes not only the ThinkIO-Duo, 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-Duo 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-Duo

The ThinkIO-Duo 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: ThinkIO-Duo with the WAGO Interface Module (K-Bus) Assembled





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-Duo. This option requires the WAGO interface module (K-Bus) for interfacing between the ThinkIO-Duo 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-Duo

The ThinkIO-Duo 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-Duo 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-Duo itself is delivered as a closed unit and **must not be opened**. In particular, if the ThinkIO-Duo is provided with a WAGO interface module (K-Bus) attached to it, **the interface module is not removable**. There are no user serviceable parts within the ThinkIO-Duo or WAGO interface module (K-Bus). Opening or removing of any attached components will void the product warranty.

1.6 Mounting

The ThinkIO-Duo is designed to be mounted on a securely fixed, grounded, top-hat DIN rail for operation. This not only ensures a stable mounting, it provides additional heat sink capacity for cooling of the ThinkIO-Duo. If for any reason that this is not possible, it must be ensured that the ThinkIO-Duo 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 insecurely fixed ThinkIO-Duo.

1.7 Software and Documentation

The ThinkIO-Duo 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/DVD.

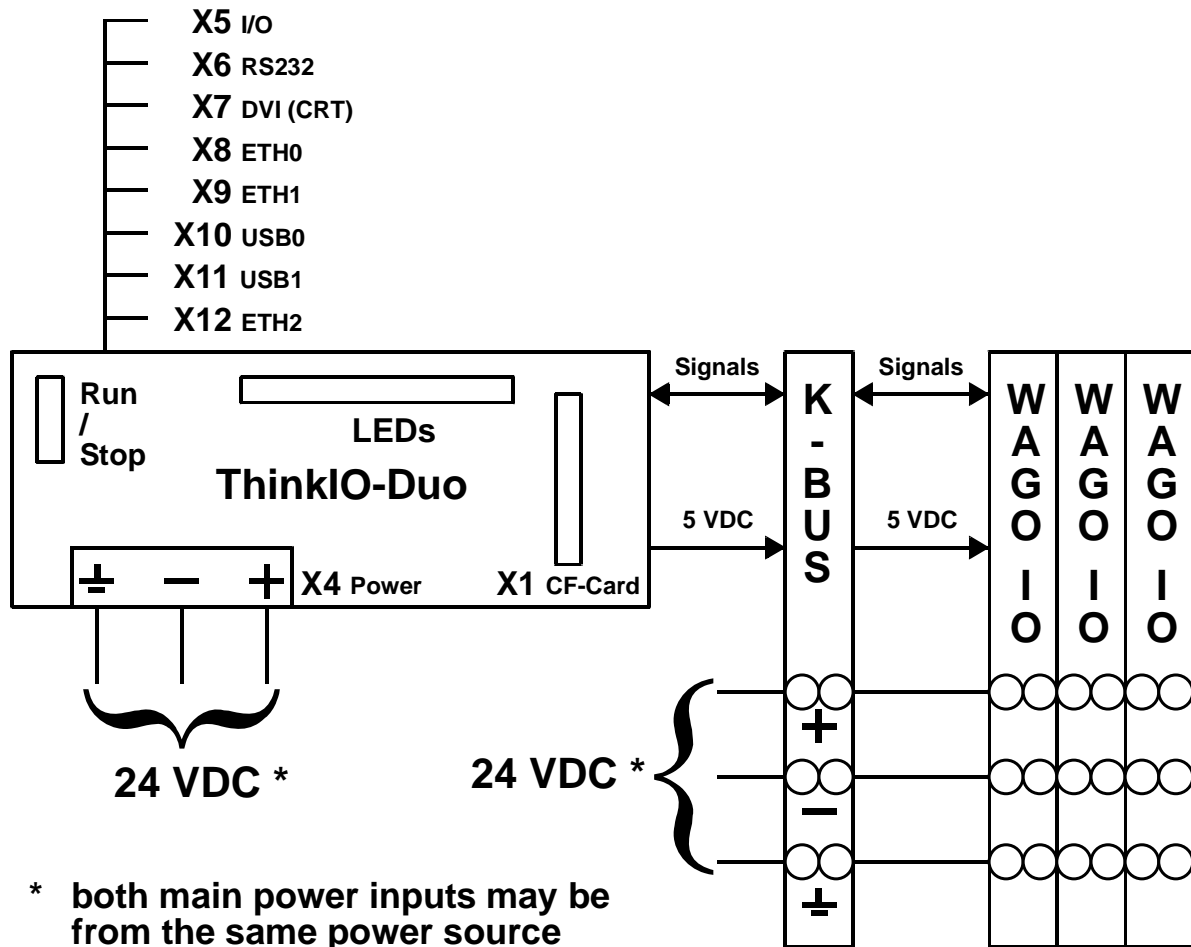


2. Pre-Operation

2.1 ThinkIO-Duo / K-Bus Module Configuration

The following figure illustrates the basic ThinkIO-Duo and the optional WAGO interface module (K-Bus module) interfacing along with WAGO-I/O-SYSTEM 750/753 modules.

Figure 2: ThinkIO-Duo and K-Bus Interfacing



Warning!

The ThinkIO-Duo itself requires 24V DC for operation. Do not apply any other voltage type to the X4 connector.

In addition, if the K-Bus field side terminals, ST4 and ST5 are to be used, they also require 24V DC. WAGO IO modules requiring other than 24V DC may not be supplied via these terminals. Refer to the WAGO documentation for further information.

Failure to comply with the above will result in damage to the ThinkIO-Duo or the K-Bus module and voiding of the product warranty.



Before applying power to the ThinkIO-Duo, 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-Duo 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-Duo 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-Duo provides 5 VDC internal system power for the WAGO I/O modules (excluding the WAGO interface module) 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. Refer to WAGO documentation for individual module power requirements.

2.3 Installation of the ThinkIO-Duo

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

1. Mount the ThinkIO-Duo 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-Duo is delivered with pre-configured software for initial operations. This software allows the ThinkIO-Duo 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-Duo Programming Assistance Guides.

3.2 System Operation Verification

When power is applied to the ThinkIO-Duo 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-Duo is correct: + 24 V DC.
3. If applicable, ensure that the input power to the WAGO interface module and the I/O modules is of the correct type and voltage.
4. Apply power to the system.



Note...

The ThinkIO-Duo 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-Duo 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-Duo.

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

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, the operator may either proceed with application development or software installation, or shut down the operating system, remove all power from the system, and dispose of the system as required. For application development or installation, refer to the appropriate ThinkIO-Duo guides.

