

# » ThinkIO-Duo «



powered by Embedded  
Dual Core Processor

ThinkIO



## Dual Core DIN Rail PC

- » Intel® Core™ Duo fan less
- » Rugged and ultra compact
- » Maintenance free
- » High system availability

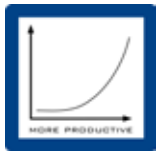
# ThinkIO-Duo

## Dual Core DIN Rail PC

ThinkIO-Duo achieves exceptional performance in an ultra compact unit. The Industrial PC for DIN rail mounting combines Intel® Core™ Duo performance and standard PC connectivity with a rugged design, which is also suitable for harsh environmental applications. Two independent processor cores allow for parallel computing. Therefore ThinkIO-Duo meets the requirements

for demanding control and visualization tasks as well as web server and firewall applications.

The system is designed to decrease the total cost of ownership for OEMs through a very reliable architecture and long term availability. The completely integrated platform significantly reduces time to market, allowing customers to focus on software development and system integration.



### Product Characteristics

#### Outstanding performance

Intel® Core™ Duo technology, unique housing concept with optimized power dissipation permit a real estate saving, fan less design without throttling  
Fast onboard IO facilitate quick reaction times

#### Flexible connectivity

2x GBit and 1x Fast Ethernet or field bus for optical inspection, remote control/visualization, wireless, redundant communication or Ethernet based field bus implementation  
2x USB, 1x RS232 and DVI to attach human machine devices

#### Embedded real-time Linux BSP

2.6/RT-preempt patch kernel  
Distribution independent  
Command line tool chain included  
Configuration via web browser (network, security, backup, clock, graphics)  
Remote update  
Protection of investment through open source idea



#### Windows XP embedded BSP

Componentized version of XP Professional  
tailor-made in memory size  
Run-time image creation with Windows Embedded Studio



#### Beneficial industrial design

Compact: (224 x 100 x 70) mm  
Long term available embedded roadmap components  
512kB retain memory  
Watchdog relay output  
Highly scalable, directly attached, modular IO option: WAGO-I/O-SYSTEM 750/753  
Easy international certification based on CB scheme  
Field bus option: Profibus DP, CANopen, Profinet  
Field bus configuration tool comes with BSPs on DVD



#### Maintenance free, reliable design

No fans  
No batteries  
No rotating mass storage (HDD), soldered onboard flash



#### Excellent operational availability

Improved vibration resistance through soldered components and solid mechanical design/mounting.  
Qualified with 4g acceleration instead of 1g demanded for "industrial grade/programmable controllers" (IEC 61131-2)  
Higher electromagnetic compatibility facilitated by full metal housing and electrical design.  
Better emission standard EN55022/class B and FCC class B compliant instead of „industrial“ (EN61000-6-4).  
Integrated temperature monitor provided in hardware and software.

## Technical Information

<b>Processor</b>	Intel® Core™ Duo U2500 2x 1.2 GHz
<b>Chipset</b>	
GMCH	945GM
IOCH	ICH7-M
<b>Memory</b>	
DDR-SDRAM	512 MByte / 1 GByte
CF onboard, soldered	512 MByte / 2 GByte
CF external	socket type I+II for CF cards and microdrives
Non volatile memory	512 kByte
<b>System I/O</b>	
Ethernet	2x 10/100/1000 Base-TX, additional 1x 10/100 Base-TX if no field bus is used
USB	2x USB 2.0
Serial	1x RS232 with all handshake signals
Digital In	7x 24 V, high side switching, opto-isolated, with hysteresis <5 V / >11 V
Digital Out	2 x 24 V / 0.1 A, high side switching, opto-isolated, overcurrent protected
Watchdog	1x relay output (max. 32 V DC / 1 A)
DVI-I	digital (panel link) and analog (CRT/VGA via adaptor)
RTC	gold cap backup
Status LEDs	4x / 8x tri-colored: IDE/Power, Temperature, KBUS, Application / field bus
Run / stop	1x switch
Reset	1x button
<b>Modular IO (optional)</b>	
WAGO-I/O	1x right side, connection to WAGO-I/O-System 750 / 753 clamps
<b>Field bus (optional, one at the time only)</b>	
Profibus-DP master	1x DSUB-9 female
CANopen master	1x DSUB-9 male
Profinet RT controller	2x RJ45, switched
<b>Software</b>	
BSP	Windows XP embedded, embedded real-time Linux 2.6 kernel with RT-preempt patch
<b>Environmental</b>	
Supply	Nominal 24 V DC (-20%/+30%), 30 W
Temperature operating	0 °C to 55 °C
Compliance	Operating temperature IEC 60068-2-1 / IEC 60068-2-2 Vibration IEC 60068-2-6 (4 g) Shock IEC 60068-2-27 (15 g) Safety CB scheme Immunity EN61000-6-2 Immunity EN61000-6-2 Emission EN61000-6-3, EN55022/class B, FCC class B Protection class IP20 DIN 35 Rail mounting EN50022
<b>Construction</b>	
MTBF (Mil, 30°, GB)	139.000 h ... 195.000 h (dependent on field bus and WAGO-I/O configuration)
Dimensions	224 x 100 x 70
(w x h x d) / mm	236 x 100 x 70 (with WAGO-I/O interface)
Housing	Aluminum, passive cooled, no fan
Weight	Approx. 1100 gr.
Mounting	DIN Rail TS 35

## Ordering Information

	CPU/RAM	Flash	Field bus	WAGO-I/O	License
<b>TIOD</b>	- U3 2x 1.2 GHz 512 MByte	3 512 MByte	- X1A no field bus, 3x LAN	1 no WAGO-I/O	- B no license, order BSP separately
	- U4 2x 1.2 GHz 1 GByte	5 2 GByte recommended for XP embedded	- B1A Profibus master  - D1A CANopen master  - P1A Profinet controller	2 with WAGO-I/O, end clamp included	

## Ordering Information

Article	Order-No.	Description
<b>LIN-BSP-THINKIO-D</b>	35932	Embedded real-time Linux 2.6 BSP with RT-preempt patch, distribution independent
<b>WXP-BSP-THINKIO-D</b>	35933	Windows XP embedded BSP for XP Embedded Studio
<b>THINKIO-W-...</b>	...	WAGO-I/O, please ask for available clamps
<b>CP-ADAP-DVI-CRT</b>	24368	DVI to CRT adaptor
<b>CP-ADAP-DVI-CRT</b>	28807	DVI-I to DVI and CRT adaptor for dual head usage
<b>TIO-SURGE-HOLDUP</b>	37305	24 V surge filter module with 10 ms holdup time, GL and EN50155 compliant

Note:  
Manuals are provided with software packages and are also downloadable from [www.kontron.com/thinkio](http://www.kontron.com/thinkio).  
Information on WAGO-I/Os can be obtained from [www.wago.com](http://www.wago.com).  
Field bus configuration tool Sycon.net on software DVD (BSP,...) or obtainable from [www.hilscher.com](http://www.hilscher.com)

## Ordering Example

<b>Your requirement</b>	Dual Core CPU, 512 MByte RAM, WAGO-I/O, application development under Linux
<b>You order</b>	TIOD-U33-X1A2-B, 35932, additional WAGO-I/O modules
<b>You get</b>	ThinkIO-Duo, 2x 1.2 GHz, 512 MByte RAM, 512 MByte Flash, WAGO-I/O interface, WAGO-I/O end clamp, additionally ordered WAGO-I/O modules, Linux 2.6 BSP including documentation on DVD, preinstalled Linux image

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