

Industrial Thin Client

The new TCS Industrial Thin Client allows the IT world controlled access to the harsh and demanding world of plant operations.

This extremely compact micro controller will revolutionise the way factories control their plants, giving seamless integration to what is presently a very costly and complex process.

What is a thin client?

A thin client, or lean client, is a low-cost, centrally-managed computer devoid of CD-ROM players, diskette drives, and expansion slots.

The term derives from the fact that small computers in networks tend to be clients and not servers. Since the idea is to limit the capabilities of these computers to only essential applications, they tend to be purchased and remain "thin" in terms of the client applications they include.



In general, thin clients are not as vulnerable to malware attacks, have a longer life cycle, use less power and are less expensive to purchase.

They don't come any thinner

The TCS Industrial Thin Client has been developed to run standard MS Windows-based applications on the plant floor under the mainframe-computing model and to minimize complexity by simplifying long-term maintenance. But the real savings come from the centralised computing model where software loads and runs on a single machine.

The TCS Industrial Thin Client is aptly named **MO intelligence** as it distributes far more intelligence to plant floor than ever before and its industrial communications protocols allow it to blend in with other industrial control products without difficulty.

Why Industrial?

There are particular issues to be met, understood and overcome when running thin clients in an industrial environment. The plant floor is a harsh place. These issues include EMI, RFI, harmonics, transient noise and ground loop issues affecting the reliability of the application and also the hardware it is expected to run on.

The TCS Industrial Thin Client addresses these and then some. The following industrial features make it stand out from the rest.

Communications:

The application use of the TCS Industrial Thin Client is all about communications interfacing to plant equipment for gathering data or controlling devices.

- The Ethernet 10/100 base-T hardware has 60dB common mode rejection with a protection circuitry giving *Electrostatic Discharge* (ESD), surge and *Electrical Fast Transient* (EFT) protection. Isolation between the shield and the ground ensures ground loop isolation. RJ45 connectors are gold plated to prevent corrosion and are rated to withstand high vibration.
- EtherNet/IP™ library is available for integration into an application giving access to an open industrial communications network, as defined by ODVA for industrial applications.
- Serial RS-232, 422, 485 is completely optically isolated with decoupled power supply to ensure electrical isolation and noise immunity from all the industry interference that is commonly present.
- The Control Area Network (CAN) with isolation, full crow bar protection and voltage level detection allows open communication protocols such as DeviceNet™, CANopen, CANkingdom to connect multi-vendor industrial products.
- An Optional 2.4Ghz Wi-Fi IEEE 802.11b compliant link satisfies the unique needs of low-cost, low-power wireless networks delivering critical data between devices reliably.

Power Supply:

The 24VDC power supply is designed to withstand the industrial plant floor environment and has a step-down (buck) switching regulator. The power supply is electronically fused with reverse diode protection, and transient and harmonic suppression.

Hardware:

Based on an Intel® XScale processor with 32Mb RAM and 32Mb Flash, including battery backup RAM and real-time clock (RTC).

Software:

The TCS Industrial Thin Client is designed with flexibility in mind and to permit a multitude of industrial applications to be addressed.

- The operating system (RTOS) is MS Windows.CE.net 5.0 designed specifically for embedded applications.
- EtherNet/IP™, DeviceNet™ and Common Industrial Protocol (CIP™) for industrial communications.
- JAVA K virtual machine. The JAVA KVM is optimised for small size, portability, modularity and extensibility.
- XML (Extensible Markup Language) Parser. Software to read XML documents, identifies XML tags and passes the data to the application.
- SQLite. An ACID (Atomicity, Consistency, Isolation, and Durability) -compliant relational database management system contained in a relatively small C library.
- IEC-61499. A function block programming language that provides true distributed control over an Ethernet backbone.
- C++ programming environment to provide object-oriented programming, software portability, brevity, modular programming, compatibility and speed.

Electrical / Mechanical Specifications

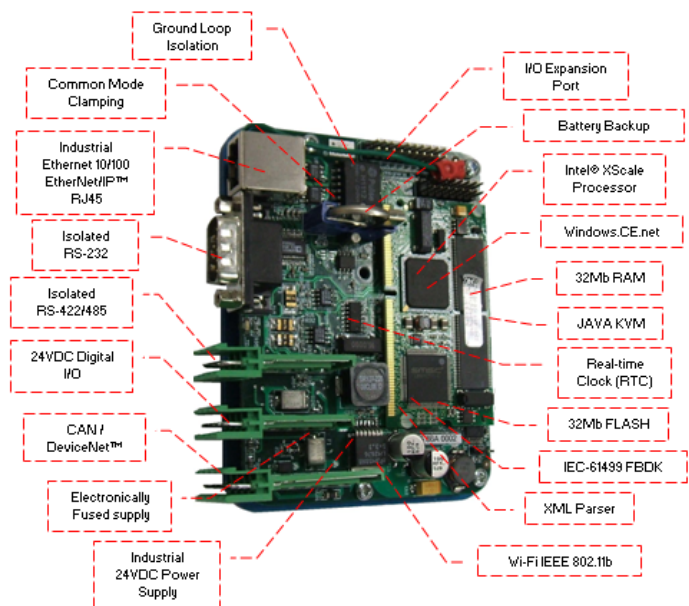
Dimensions:	115 mm x 95 x 38 mm
Weight:	224grams
Voltage:	12-24VDC
Current:	150mA
Enclosure:	Milled Aluminium
Mounting:	DIN Rail EN50 022,35,45
Ethernet:	RJ45
RS-232	D9 Plug
RS-422/485	Phoenix 4 way
CAN/DeviceNet	Phoenix 5 way
I/O Port	Phoenix 4 way
Operating Temp	0 – 60°C
Storage Temp	-40 to 85°C
Relative Humidity	5 to 95% non-condensing
Optical Isolation	2.5KV rms min

Software Specifications

RTOS	Windows CE Version 5.0
Database	SQLite3
Virtual Machine	JAVA KVM XML Parser Web server
Communications	CIP (Common Information Protocol) EtherNet/IP™ DeviceNet™ Ethernet TCP/UDP/IP CAN (Control Area Network) Wifi IEEE 802.11b compliant
COM Component	Microsoft XML Parser
Programming	C++ IEC-61499 Function Block

Hardware Specifications

Processor	Intel PXA 255 ARM9 X-Scale
Flash	32Mb
RAM	32Mb
RTC	
Ethernet	10 / 100 base-T
CAN	125 – 500kbaud
RS-232	1.2 – 115.2 kbaud
RS-422/485	1.2 – 115.2 kbaud



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