

Plantguard

Architecture and Software

Fault Tolerant Technology



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ABB

Plantguard

Fault Tolerant Technology

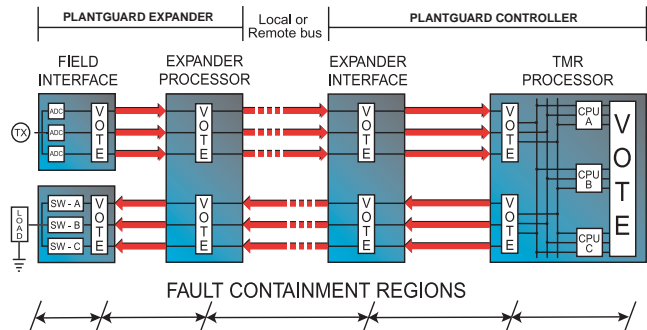


With an increasing awareness of personnel safety, environmental protection, and process profitability, the Plantguard fault tolerant control system offers a safe solution with near zero downtime.

It's powerful, flexible and extremely configurable.

- No compromise design - TUV certified fault tolerant without repair time restrictions. Always fault tolerant, always safe.
- Maximise plant up time - TMR architecture identifies and outvotes CPU mismatches and keeps running.
- Certified safe - certified by TUV to AK6 and meets IEC61508 SIL1-3 requirements.
- Certified to NFPA72C for Fire and Gas detection applications.
- Simple user programming - familiar IEC61131-3 based programming allows users to configure both safety and continuous process programs.
- Plantguard features full online (Bumpless) module replacement with no process interruption.
- HIFT keeps it simple, keeps it safe - Hardware implemented fault tolerance design reduces operating system size, minimises systems software and increases processing speed, offering the end user the safest and simplest design.
- Buy only what you need - wide range of configurable, fault tolerant, multi function I/O modules to suit most applications.

Plantguard Architecture

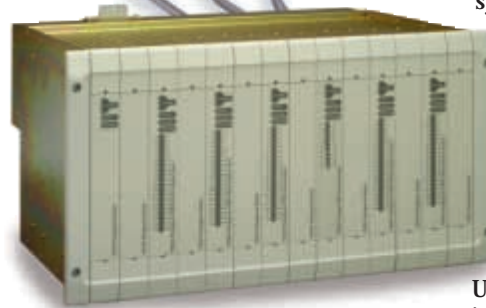


Fault Containment

Distributed hardware voting prevents hardware fault propagation. Fault containment allows the system to operate safely with multiple faults.



Up to 320 TMR I/O in a single chassis system

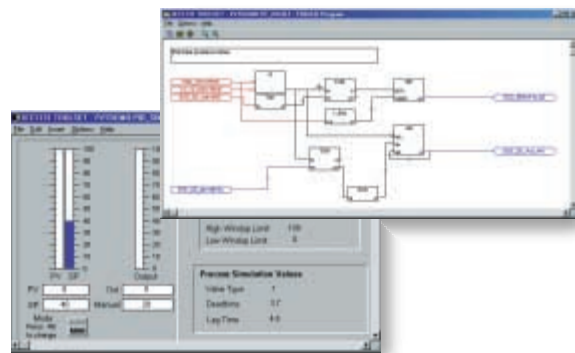


Up to 480 TMR I/O in each expander

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Largest I/O Capacity

Plantguard can support systems of over 7000 I/O points. Using the same architecture for applications from 16 to 7000 I/O means less training and fewer spares.



Plantguard Software

TMR tolerates faults

The Plantguard TMR architecture will outvote errors to continue running safely. This fault tolerant feature ensures maximum run time of the plant - a major life time cost improvement factor. To repair an unhealthy CPU or I/O module, you simply swap the module online without upsetting the process or taking the system offline.

Plantguard controller

This 19" x 6µ chassis contains CPU, CPU spare slot and 8 slots for any mix of interface module.

Open but safe

Using Ethernet, Plantguard can integrate with other process management products. OPC allows seamless integration with a host system. The Plantguard OPC implementation includes the data acquisition and alarms and events protocols. This ensures that all locally time stamped (1MSEC) data is transferred to the host system.

Remote Diagnostics

Using the Internet, a Plantguard system can be configured and monitored from anywhere in the world provided local password protected permission is given.

Remote Expander

Expander chassis (10 per system) can be distributed over 10km or 6 miles apart using the fibre-optic expander bus which saves cable costs and improves immunity from external interference.

Signature Analysis Diagnostics

Predictive maintenance diagnostics provide signature analysis of end device as well as environmental conditions of the hardware, alerting the operator to problems before they happen!



Scan time optimisation

I/O module scanning is user configurable to suit the dynamics of the process measurement. Scan time optimisation ensures the maximum performance from your Plantguard system.



1ms time event stamps

True 1ms sequences of events (SOE) resolution (regardless of system size), for each alarm threshold, analogue or digital, input or output point, configured at the module to give the operator the most accurate resolution for process and system level alarms.

Sitewide synchronised time

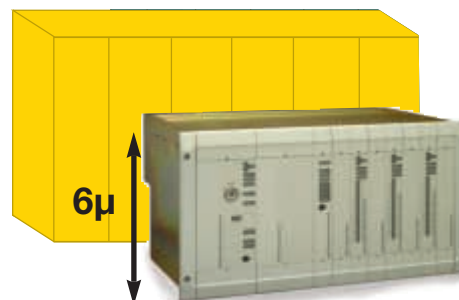
All Plantguard systems can be synchronised to any IRIG-B time source for sitewide synchronisation of all events to a few milliseconds.

IEC61131-3 Configuration Tools

The IEC1131 Toolset allows you to define up to 250 individual programs using any of the 5 specified languages, LD, FBD, ST, SFC, and IL in each project. Offline simulation, online de-bug, graphical interface provides simple and appropriate tools for configuration, verification and maintenance of the application logic.

Firewall Protection

The toolset makes use of the Firewall protection designed into the operating system to guarantee that safety related application tasks are isolated from non-critical tasks.



Saves space and cost

Plantguard has the smallest footprint of any fault tolerant system.

Self protected outputs

By replacing troublesome, short-lived fuses in output circuits with current limited, self-protected outputs Plantguard I/O reduces maintenance costs.

The widest range of fault tolerant I/O modules

Ranging from low density modules of 16 points to high density modules with 40 and 60 points, Plantguard I/O makes it possible to tailor the most cost effective solutions for each segregated process under control.

Distributed fault tolerant intelligence

Because Plantguard has distributed fault tolerant intelligence at the I/O module, you can configure multiple alarm thresholds per point and active line monitoring continuously checks sensor and wiring.





Providing fault tolerant technology to a range of applications worldwide

You cannot predict the future
. . . . but you can plan for it.

ABB has over 20 years of experience in designing, installing and maintaining fault tolerant systems, both on and offshore.

Safety systems have been supplied to the world's premier companies in oil and gas, petro-chemicals, fine chemicals, aerospace and power generation.

Applications include emergency shut down, fire and gas, burner management, electricity distribution control, rocket launch control and many other of the most safety, environmental or cost critical control requirements.

ABB products are in service onshore and offshore, throughout the globe.



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