Process Solutions

Honeywell

PlantCruise by Experion C300 Controller

Honeywell's C300 controller provides powerful and robust control for the PlantCruise by Experion® platform. With the C300 and the Control Execution Environment, customers can improve engineering productivity and maintenance, maximize process uptime, and reduce production costs.

At the core of the C300 in PlantCruiseis Honeywell's field-proven deterministic Control Execution Environment (CEE) core software. The CEE provides a superior control execution and scheduling environment. Control strategies are configured and loaded through Control Builder, an easy to use and intuitive engineering tool.

The C300 controller hardware offers unique space saving, installation, and maintenance benefits consistent with its innovative Series 8 form factor.

The C300 is optionally redundant, requiring no additional hardware other than an identical second hardware module.

The 'designed-vertical' C300 controller provides a superior control execution and scheduling environment.

- Improve engineering productivity with a rich set of function libraries and a seamless and intuitive user environment,
- Maximize process uptime and minimize maintenance effort with robust diagnostics and full hardware redundancy, and,
- Reduce production costs with flexible and efficient control strategies, on-process migration, and efficient hardware processing power.

Easy Control Strategy Creation through Rich Function Libraries

The Control Execution Environment function blocks support:

- Continuous Control
- Logic Based Control
- Sequential Control
- Model Based Control

Each function block contains a rich set of predefined features, such as alarm limits and priorities, various control algorithms, and maintenance statistics, all of which are configurable parameters. Function blocks are linked together in Control Modules to perform specific control tasks, which provide a foundation for efficient control engineering.

Embedded functionality guarantees consistent control strategy execution and delivers consistent alarming and operations behavior. This consistency reduces operator errors and saves implementation time by eliminating the need to develop low-level basic functions.

With the C300 controller, customers can:

The CEE fully supports the ISA S88.01 batch standard and integrates sequences with devices. The devices will track the state of the sequences and perform pre-configured actions based on those sequences. This reduces the implementation and complexity of handling abnormal situations. The SCMs support abnormal handling, recipe parameters, and on-line monitoring of the execution through chart visualization.

One Seamless Environment through Easy Data Communication

Parameters provide access to every imaginable piece of information in the controller. This data can be used throughout the Experion system, whether for other control strategies or for operator purposes. For example, in custom displays, parameters such as setpoints or outputs can be historized and used in trend views. The engineer does not need to know where the information resides. Instead, he can just reference it, and the system manages the underlying logistics of that information. The system will notify the user based on the status information associated with the value and take appropriate action when required.

Each parameter is also protected from accidental changes through a security access level, and certain parameters can only be changed off-line. Communication is based on report- by-exception and publish-subscribe, making efficient use of communication bandwidth by accessing data only when needed and avoiding duplication.

Consistent and Predictive Behavior Makes Engineering and Maintenance Easier

The C300 CEE supports an execution period per control strategy, ranging from 50 msec to 2000 msec. The user can make changes to existing or add new control strategies without interrupting other control strategies executed by the controller. The user has full control over the function block execution order within the control strategy and the execution order of multiple control strategies. Control strategies can be easily moved between control environments by using the convenient drag-and-drop feature within Control Builder.

Easy and Intuitive Engineering Environment

Control Builder is the control engineering and maintenance tool for the Control Execution Environment, and improves the control engineer's productivity by simplifying configuration with a graphical user interface and predefined function blocks ready for wiring into a specific control strategy. The control engineer can enable and change standard function block features without the need to build these from the ground up. The control strategy can be documented with embedded objects such as text, documents or web-links.

Online Monitoring Is Available to the Engineer and Operator

Once control strategies are created and loaded to the C300 controller, the engineer can monitor the strategy on-line using the same graphical interface. This is helpful for verifying a control strategy or for troubleshooting a process problem. The control or maintenance engineer can directly modify parameters from the engineering environment without needing an operator interface.

Controller Based Model Predictive Tuning with ProfitLoop

Profit Loop is Honeywell's patented algorithm that provides a single input / single output model-predictive function block that is included in the standard C300 controller function block library. It has the operating simplicity and computational efficiency of a standard PID function block, yet provides tight, robust control, increasing process stability by up to 30 percent. Profit Loop creates a simple model of the process to predict the effect of control moves on the process (controlled) variable. Because Profit Loop can anticipate future process behavior, the controller knows exactly how much to move the process to meet the desired control objectives. Profit Loop incorporates the best elements of both traditional PID algorithms and the model-based control and optimization technologies of Profit Controller at the regulatory level.

Custom Algorithm Blocks

Custom Algorithm Blocks (CABs) are similar in purpose and structure to native function blocks included with Control Builder. These blocks have predefined algorithms and data structures. By contrast, Custom Algorithm Blocks have user defined algorithms and data structures. CABs are developed using Visual Basic integrated into Control Builder.

The C300 controller supports the execution of CABs in Experion LX. CABs can greatly reduce the effort required to create complex control strategies that require the robust control environment offered by the C300.

Investment Protection

Honeywell is committed to protecting customer investments by supporting and integrating previous control products. Consistent with this philosophy, the Control Execution Environment, which holds the user application, is platform- independent. This allows the user to make use of new, more powerful hardware platforms when they become available, while retaining the specific user application.

For More Information
To learn more about how Honeywell's PlantCruise by Experion C300 Controller can improve plant performance, visit our website www.honeywellprocess.com or contact your Honeywell account manager.

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