EUROTHERM suite

Powerful controller with large application capacity

Redundant processor option

Open I/O network

Process Supervisor

Product Specification

PROCESS SUPERVISOR

Distributed process controller

Redundant processor option with automatic and seamless switchover

Large application capacity

Live replacement of processor and automatic initialisation

ALIN control network provides peer-to-peer and supervisory communications

Open I/O network supports PROFIBUS DPVI and MODBUS RTU

Redundant PROFIBUS DPVI with redundant processor option

Multiple network support for interface to supervisory systems

Extensive health monitoring and diagnostics including watchdog relay

Ability to run two processors independently on the same base
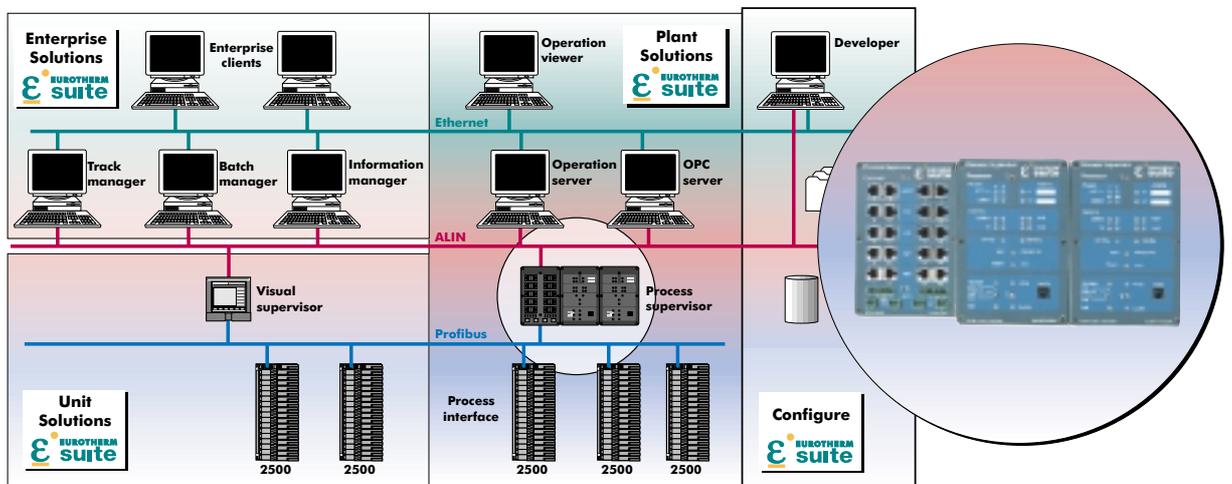
The Process Supervisor is a powerful and configurable strategy engine capable of performing both continuous and sequential control. It has evolved from the successful T103/T102/T100 Unit Controllers and is designed for large applications.

The optional redundancy of processor modules provides high availability solutions for process control and the live replacement of processor modules prevents any interruption of the process

The Process Supervisor's support for PROFIBUS DPVI and MODBUS RTU provides a truly open I/O network. The advanced peer-to-peer communications on ALIN, together with the open I/O network delivers a distributable system.

CONTROL ENVIRONMENT

The Process Supervisor is capable of both continuous and sequential control. Its open network architecture allows interface to the Process Interface (2500) I/O modules and other third party devices. Separating the processing from the I/O allows physical distribution of the I/O modules, saving on wiring costs.

Continuous Control

The continuous strategy is built up by interconnecting function blocks from a large library of analogue and logic elements. The function block library includes control, timing, logic, maths, etc. There are also a set of control module blocks which are based on the ISA-S88 standard, representing physical plant equipment such as valves and pumps. These include all the functionality required to control a device in a single block.

In addition to fixed function blocks, ACTION blocks support user-algorithms written in ST (Structured Text).

Sequential Control

Sequence strategies are built using the powerful and intuitive SFC configurator. Sequential control follows the IEC-1131 standard. Sequences act in a supervisory role relative to the continuous control and can be loaded and unloaded as required.

The sequential control capability of the Process Supervisor allows the configuration of phases for a batch process as defined by the ISA-S88 process model.

REDUNDANCY

The Process Supervisor provides redundancy in the following areas:

    Main processor units
    Power supply units for each processor module
    Connection to ALIN
    Connection to I/O via PROFIBUS DPVI

In duplex operation, the Process Supervisor has two Processor Modules; one designated as primary and one as secondary. This designation enables the user to determine which will assume control on power-up.
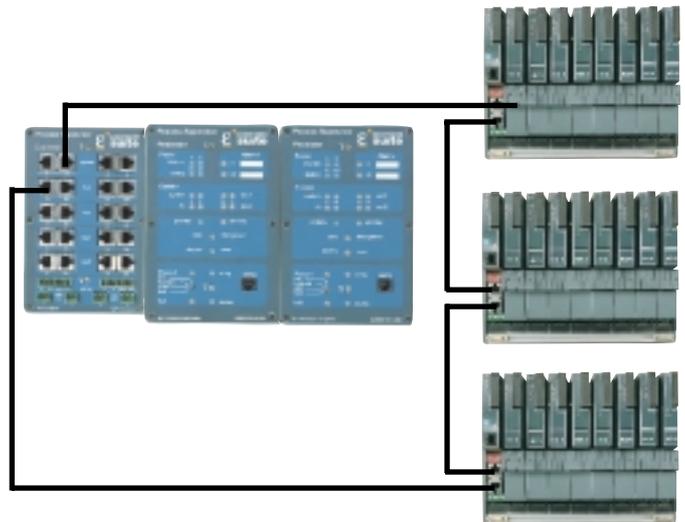
In the event of a Processor Module failure, the switch from primary to secondary will be automatic, initiated by hardware watchdog circuits and software checks. A high-speed data link between the processors provides exact tracking of the control database so that the switch to the secondary processor unit is seamless.

In redundant mode, the Processor Modules can be made to synchronise as required. A secondary processor can also be made primary if necessary.

Each processor provides a dual 24V input capability, allowing the switch of control to the secondary unit in the event of a loss of the processor.

The Processor Supervisor in duplex mode provides ALIN and PROFIBUS DPVI redundancy. A single ALIN/PROFIBUS DPVI connection will be used by each of the two processors, each connecting to the same networks. The primary processor monitors the status of its ALIN/PROFIBUS DPVI and will automatically switch from primary to secondary in the event of failure.

FLEXIBLE COMMUNICATIONS

The Process Supervisor has a flexible communication facility. Its communication ports use RJ45 connectors and include ALIN, PROFIBUS DPVI and MODBUS RTU (master and slave). Communications can be easily upgraded with minimum effort to include any other network that will be supported in the future.

All communication ports are provided via the Connect Module which allows for the replacement of the Processor Module without removing cables.

ALIN Communications

An ALIN control network enables the Process Supervisor to communicate with the other nodes in the control layer and with the operations layer. The ALIN control network allows peer-to-peer communications between nodes via a daisy-chain configuration, or via a central ALIN hub. All ALIN nodes appear as a part of a coherent distributed database. The database in any element is accessible to any other network element, allowing complete flexibility in strategy interconnection.
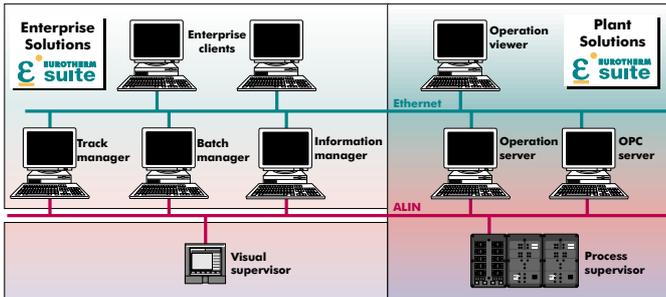
PROFIBUS DPVI Communications

The Process Supervisor supports PROFIBUS DPVI, an industrial standard open network which allows it to communicate with the Process interface (2500) units and to receive both cyclic and acyclic data. The Process Supervisor can communicate with any third party supporting PROFIBUS DPVI, creating an open network.
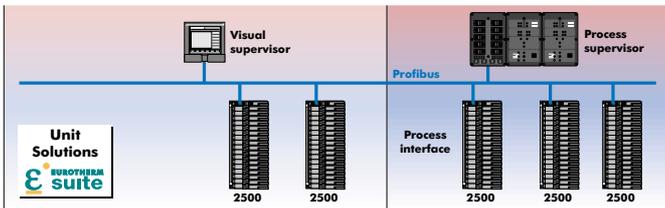
MODBUS Communications

The Process Supervisor supports MODBUS RTU master and slave and can be readily integrated with third party I/O devices and other devices such as PLCs.

MODULAR HARDWARE

The modular hardware of the Process Supervisor comprise a chassis, a Connect Module and up to two Processor Modules.

Connect Module

All external connections to the Processor Module are via the Connect Module, allowing the removal of a processor unit without any disturbance to the external cable interface. All the communication connectors and termination
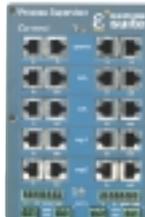
plug-ins are RJ45 format. The RJ45 connectors on the front panel can be wired for ALIN, MODBUS RTU or PROFIBUS DPVI use, according to specification at the time of order. The pairs of RJ45 connectors on the left-hand side of the module are assigned to the left-hand processor and the right-hand connectors to the right-hand module. Each pair of connectors is wired in parallel to facilitate easy daisy chaining. Each processor has two 24V-supply connections. Additionally, a separate connector allows external battery, watchdog, and two software configurable alarm relays.

Processor Module

Up to two Processor Modules can be installed on a chassis and can operate either independently (simplex), or in redundant mode. In redundant mode, one of the processors acts as a primary which is backed-up by the secondary in case of failure.

All external interfaces to the Processor Modules are via the Connect Module.

Processor modules can be supplied by two external 24V-power supplies to ensure operation in the event of power failure. The LEDs on the front panel of the Processor Modules provide comprehensive status indication, allowing for rapid verification and diagnostics.

The start-up mode of the module is selected from the front panel switch.

Inside the processor, a plug-in memory module holds both control strategies and operating software, enabling their rapid transfer to a spare instrument.

CONFIGURATION

Eurotherm Project Studio runs on a Windows 95/NT and can be used to create both continuous and sequential control strategies.
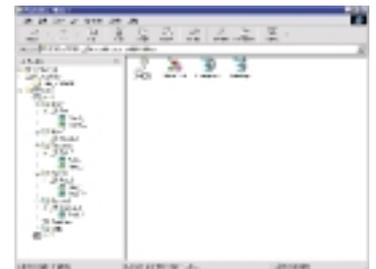
REMOTE I/O

The Process Supervisor is designed to work with Eurotherm Suite Process Interface (2500) units. Up to 16 Process Interface units may be multi-dropped from the Process Supervisor and it can work with any third party I/O which supports PROFIBUS DPVI or MODBUS RTU.