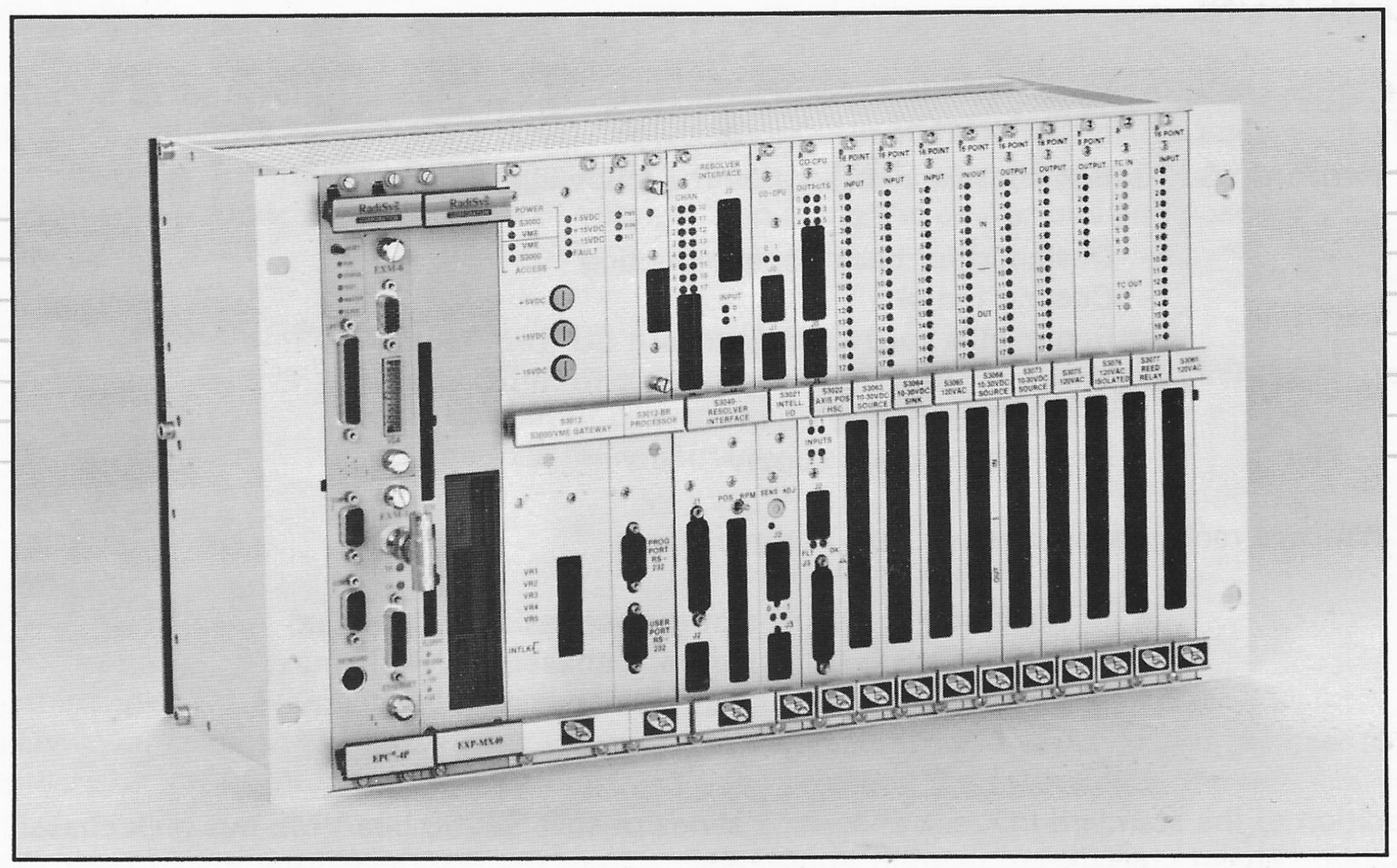
SYSTEMS ELECTRONICS GROUP

SYSTEMS S3000 INDUSTRIAL CONTROLLER

PRODUCT OVERVIEW

The Systems S3000 is a high speed industrial controller designed for applications requiring ultra fast throughputs and scan times that cannot be provided adequately by other Programmable Logic Controllers (PLC). The S3000 can be used as a stand alone controller or as part of a distributed control system.



FEATURES

- Modular design consisting of power supply, main processor board, intelligent (CO-CPU) I/O boards, digital I/O boards, analog I/O boards, and three sizes of rack chassis to accommodate the above boards. The rack chassis conform to Eurocard/DIN standards and are equipped with the proprietary S3000 bus.

- High speed main processor boards with nominal scan times of 0.25 milliseconds. High speed timed interrupt feature allows minimum throughputs as low as 0.25 milliseconds.

- Extended multiprocessing capability accomplished by high performance application specific intelligent (CO-CPU) I/O boards.

- Optional high speed serial network allows up to 32 S3000 main processors to communicate with one another and to communicate to third party VME-based systems.

FEATURES (cont'd)

- Optional S3000 bus/VME bus racks available which allow VME-based IBM PCs or other VME-based processors to be embedded directly with the S3000 systems. This combines the high speed control of the S3000 with the computational power of a computer to facilitate powerful control/expert systems or data acquisition systems.

- Programming is implemented with SYSdev, a DOS-based software package which allows the S3000 main processor boards and intelligent I/O boards to be programmed in a combination of Ladder, High-level (C), and Assembly. In addition, on-line monitoring of user program execution is implemented with SYSdev.

PRODUCT LINE

Rack Chassis:

The standard S3000 rack chassis incorporates the following features:

- Designed for back panel mounting
- Cooling fan(s)
- Removable card rack (Eurocard 6U form factor)
- Wireway for field wiring routing from I/O boards
- S3000 proprietary bus
- First stage power supply

The standard rack chassis are available in three sizes:

- S3004CHR: 4-I/O slot rack chassis (64 I/O max)
- S3008CHR: 8-I/O slot rack chassis (128 I/O max)
- S3016CHR: 16-I/O slot rack chassis (256 I/O max)

In addition to the standard I/O rack chassis, a series of split S3000 bus/VME bus rack chassis are also available. These chassis are used in applications where the S3000 will be mixed with VME-based products (VME-based IBM compatible PCs, etc.). These racks are used with the S3013 processor/VME gateway module which allows direct communication between the S3000 and VME bus. In addition to the features incorporated in the standard S3000 rack chassis, these racks include:

- Both an S3000 bus and VME bus
- +5VDC, +12VDC, and -12VDC power supply for VME bus

The S3000/VME rack chassis are available in three sizes:

- S3013VME5: 13-I/O slot S3000 / 5-slot VME rack chassis
- S3011VME7: 11-I/O slot S3000 / 7-slot VME rack chassis
- S3009VME9: 9-I/O slot S3000 / 9-slot VME rack chassis

All rack chassis conform to Eurocard/DIN criteria and are constructed in accordance to IEEE/VME standards.

Processor Boards:

The primary processor boards control the S3000 bus, directing communications between the processor and other intelligent I/O boards, read and write to all basic I/O and execute the user application program. Two primary processors are available: the S3012 and S3013. The S3012 is used in standard S3000 systems (S3000 bus only) while the S3013 is used in S3000 bus/VME bus systems.

- S3012: Main Processor Board
  - 44K bytes program memory
  - 8K bytes data memory
  - Two RS-232 ports (PROG PORT and USER PORT)
  - Optional S3000 serial network interface port
  - 0.25msec per K program byte scan time
  - Programmed with SYSdev
  - Two versions:
    - S3012-BR: battery-backed program memory
    - S3012-EP: EPROM program memory

- S3013: Processor/VME Gateway Module
  - Incorporates S3012 processor
  - 4K byte dual-port RAM to interface with VME bus
  - Two versions:
    - S3013-BR: battery-backed program memory
    - S3013-EP: EPROM program memory

Intelligent I/O Boards:

Intelligent (CO-CPU) I/O boards incorporate their own processors, execute their own programs independent of the main processor and interface directly with the specific I/O associated with the task performed by the intelligent I/O. This provides a multi-processing capability to the system which reduces the main processor work load as well as the total system throughput.

- S3021: Intelligent I/O Board (Timing Advance)
  - On board processor
  - 8K bytes program memory
  - 128 bytes RAM
  - 2 digital 15-30VDC inputs
  - 2 digital 20-30VDC outputs
  - 1 8-bit analog-to-digital input
  - Programmed with SYSdev
  - 0.75msec per K scan time (typical)

- S3022: Intelligent I/O Board (Axis Positioning)
  - On board processor
  - 8K bytes program memory
  - 256 bytes RAM
  - 4 digital 15-30VDC inputs
  - 6 digital 10-30VDC outputs
  - Programmed with SYSdev
  - 0.75msec per K scan time (typical)

Intelligent I/O Boards (cont'd):

- S3041: Resolver Interface (Programmable Cam Switch)
  - Accepts input from machine mounted resolver
  - 16 programmable timing channels
  - Programmable scale factor and offset
  - Position/RPM display on faceplate
  - Programmed with PLSdev or PRG34-DM or PRG34-HH Programmers
  - Brake wear compensation algorithm for use with presses

Communications Board:

- S3014: VME to S3000 Communications Board
  - Allows VME bus-based systems to communicate to S3000 systems via the S3000 serial network
  - VME bus-based slave board with 2K bytes dual-port RAM
  - Built-in processor
  - 24K bytes user program memory
  - 2K bytes data memory
  - Programmed with SYSdev
  - Built-in S3000 serial network interface port

Digital I/O Boards:

Full line of digitial I/O boards include 16 point DC inputs, 8 and 16 point DC outputs, 16 point AC inputs, 8 and 16 point AC outputs. All digital I/O boards incorporate the following features:

- Optical Isolation
- Individual Status Indication for each I/O point
- Removable field wiring connector
- DC inputs have selectable filter delay (1msec or 10msec)
- Eurocard 6U form factor

- S3063: 16-point 10-30VDC Input (source)
- S3064: 16-point 10-30VDC Input (sink)
- S3065: 16-point 120VAC Input
- S3068: 8-Input/8-Output 10-30VDC/1Amp (source)

- S3070: 8-point Output (sink)
  - -05: 5-10VDC/.5Amp
  - -12: 10-20VDC/2Amp
  - -24: 20-30VDC/2Amp

- S3071: 8-point Output (source)
  - -12: 10-20VDC/2Amp
  - -24: 20-30VDC/2Amp

- S3073: 16-point 10-30VDC/1Amp Output (source)
- S3075: 16-point 120VAC/.75Amp Output
- S3076: 8-point 120VAC/1Amp Isolated Output
- S3077: Dual 4-to-1 Reed Relay Multiplexer

Analog I/O Boards:

Analog I/O is provided by the S3080. This board incorporates both analog inputs and analog outputs on one single width board.

- S3080: Analog Input/Analog Output board
  - 4 single ended analog inputs
  - 4 single ended analog outputs
  - selectable 0-5V, 0-10V, and 0-20mA input ranges
  - selectable 0-5V, 0-10V, and 0-20mA output ranges
  - 12-bit, unipolar, analog-to-digital converter for inputs
  - 12-bit, unipolar, digital-to-analog converter for outputs

Power Supply:

Input power to the S3000 rack is 120VAC. This input power is converted and distributed to the boards in the rack by the rack chassis and PS3007 power supply. In addition to providing power, the PS3007 performs power monitoring and diagnostics. Each S3000 board incorporates on-board voltage regulation which reduces the problem of voltage drop along the power bus and susceptibility to noise pick up.

- PS3007: Power Supply
  - Provides all internal power for S3000 boards mounted in rack chassis
  - LED indication of power supply status
  - Fault interlock relay contact

PROGRAMMING

Programming of the S3000 processors and intelligent I/O boards is implemented with SYSdev, a DOS-based software package, programmable from any IBM compatible PC, which allows the user to perform all aspects of S3000 program development. SYSdev provides the following features:

- User program creation/editing
- User program documentation (variable names, inter-program comments, etc.)
- Program compilation
- Program down-load to target board
- EPROM programmer interface
- On-line user program monitoring

PROGRAMMING UNITS

- PRG34-PC - S386SX 20MHz notebook computer loaded with SYSdev and PLSdev
- PRG34-DM - Panel/Door Mountable Unit for programming and monitoring S3041 PLS
- PRG34-HH - Hand Held Unit for programming and monitoring S3041 PLS

NOTES:

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