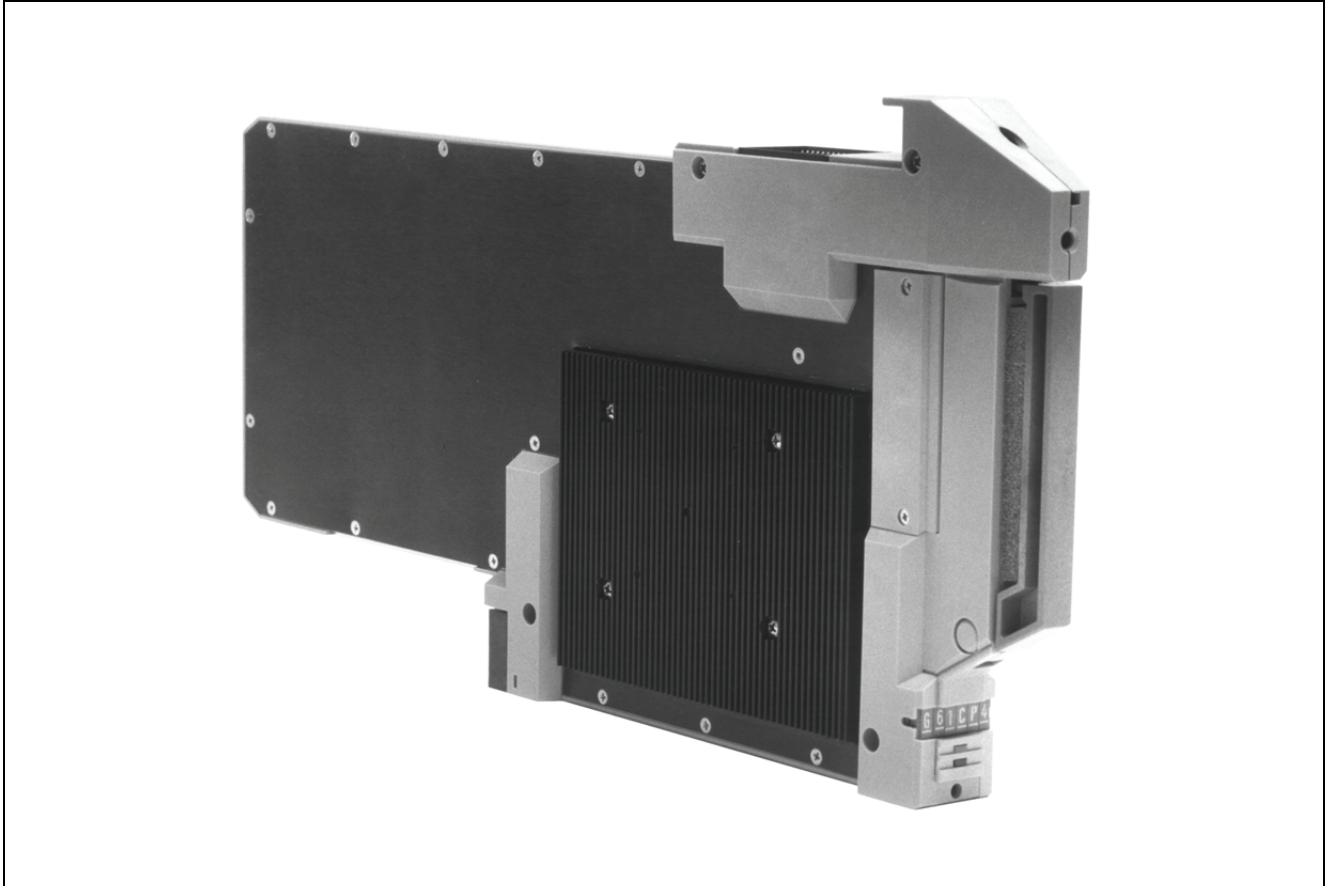


I/A Series® Hardware Control Processor 40 2000 Block Software



The Control Processor 40 is a high-end optionally fault-tolerant station that provides:

- a large memory capacity for supporting additional blocks
- increased block processing due to a faster processor
- increased input/output capabilities

Together with connected Fieldbus Modules (FBMs), the Control Processor 40 performs regulatory, logic, timing, and sequential control. It also performs data acquisition (via the Fieldbus Modules), alarm detection and notification, and may optionally serve as an interface for one or more Panel Display

Stations. The non-fault-tolerant version of the Control Processor 40 is a single-width processor module. The fault-tolerant version consists of two single-width processor modules.

Process variables are controlled using time-proven algorithms (mathematical computations performing specific functions), including the EXACT algorithm and the EXACT MV family of algorithms. The algorithms are contained in functional control blocks, which are configured by on-site process engineers to implement the desired control strategies.

The versatility of the algorithms, coupled with the variety of Fieldbus Modules available, provides control capabilities suited to a broad range of process control applications. Control strategies ranging from simple feedback and cascade control to highly sophisticated feedforward, nonlinear, and complex characterization control schemes are readily implemented.

Specific functions performed by the Control Processor 40 are listed in Table 1. For a description of the various block types, refer to PSS 21S-3B1 B3 Integrated Control Software.

Display and adjustment of control parameters are implemented through operator interface devices (video monitors, keyboards, touchscreens, etc.) in the I/A Series System. The control processor interacts with these devices by communicating with the workstation processors and/or application processors to which they are connected. Communication takes place via the Nodebus, and via a higher-level Local Area Network (LAN), if implemented. Various other system stations also communicate with each other over these links.

Table 1. Control Functions

Input/Output	Data
AIN - Analog Input AINR - Redundant Analog Input AOUT - Analog Output AOUTR - Redundant Analog Output CIN - Contact Input COUT - Contact Output MAIN - Multiple Analog Input MCIN - Multiple Contact Input MCOU - Multiple Contact Output	BOOL- Boolean Variable Block LONG - Long Integer Variable PACK - Packed Boolean Variable REAL - Real Variable STRING - String Variable
Control	Sequence
ACCUM - Accumulator BIAS - Bias Computation CALC - Calculator CALCA - Advanced Calculator CHARC - Characterizer DGAP - Differential Gap DPIDA - Distributed Advanced PID DTME - Dead Time LIM - Limiter LLAG - Lead/Lag LOGIC - Logic MATH - Math PATTERN - Pattern PID - Proportional, Integral, Derivative PIDA - Advanced PID used in Conjunction with FBTUNE and FFTUNE FBTUNE - Feedback Self-Tuner FFTUNE - Feedforward Self-Tuner PIDE - PID with EXACT Tuning PIDX - PID Extended PIDXE - PID Extended, with EXACT Tuning PTC - Proportional Time Control OUTSEL - Output Select RAMP - Multi-Ramp Sequence RATIO - Ratio Computation SIGSEL - Signal Selector SWCH - Switch Position Selector STATE - State	DEP - Dependent EXC - Exception IND - Independent MON - Monitor TIM - Timer
	Motor
	GDEV - General Device MDACT - Motor Driven Actuator Controller MTR - Motor Controller MOVLV - Motor-Operated Valve VLV - Valve On/Off Controller
	Alarm
	ALMPRI - Alarm Priority Change BLNALM - Boolean Alarm MEALM - Measurement Alarm MSG - Message Alarm PATALM - Pattern Alarm REALM - Real Alarm STALM - State Alarm
	Miscellaneous
	EVENT - Event Reporting PLB - Programmable Logic Block
	Optional
	DSI - Panel Display Station Interface AMSSEC - Gas Chromatograph Secondary
	Window Equipment Control Blocks
	AMSPRI - Gas Chromatograph ECB13 - Hydrostatic Tank Gauge ECB18 - Intelligent Transmitter ECB22 - Mass Flow Transmitter

Table 2. Control Functions (Cont.)

Equipment Control Blocks	
ECB01 - Analog Input	ECB14 - Panel Mounted Display
ECB02 - Analog Input & Analog Output	ECB23 - Multibaud FBM44; FBM39 IT 2 Interface Parent
ECB04 - Pulse In & Analog Output	ECB34 - MDACT Feedback Tri-State
ECB05 - Digital In, Sustained/ Momentary, Digital Out	ECB36 - MDACT Pulse Width Modulation Tri-State
ECB06 - Sequence of Events Input	ECB38R - IT2 Interface Redundant Parent
ECB07 - Digital In & Pulse Count Input	ECB41 to ECB46 - Cluster and SPECTRUM I/O ECBs
ECB08 - Ladder Logic - OR - dc Out/Validated Input	ECB47 to ECB51 - Cluster and SPECTRUM FBPs
ECB09 - Remote/Manual Station (Analog/Digital I/O)	ECBs
ECB11 - Reserved for Primary FBM	ECB48R - Redundant SPECTRUM UCM
ECB12 - Parent ECB for Window ECB18	ECB52 - DPIDA Controller
ECB12 - Multibaud FBM43	

PERFORMANCE SPECIFICATIONS**Memory Allocation for Blocks**

1.3 MB (2,000 blocks at 650 bytes, average)

Number of FBMs Supported

64 (excluding expansion modules)

Minimum Block Processing Cycle (BPC)

50 ms

Configurable Block Periods.05, 0.1, 0.2, 0.5, 0.6, 1, 2, 5, 6, 10, 30 seconds
1, 10, 60 minutes**Basic Processing Cycle**

0.1, 0.2, 0.5, 1.0, 2.0 seconds, selectable at system configuration time

IPC Connections

51

Object Manager (OM) Lists (Maximum)

360

Block Executions Per Second

3200 blocks/second, typical

Memory Allocation for OM Scanner Points

600 K Bytes

Maximum OM Scanner Data Base

12,000 points

Sequence Block Size

32 K Bytes maximum for each block

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