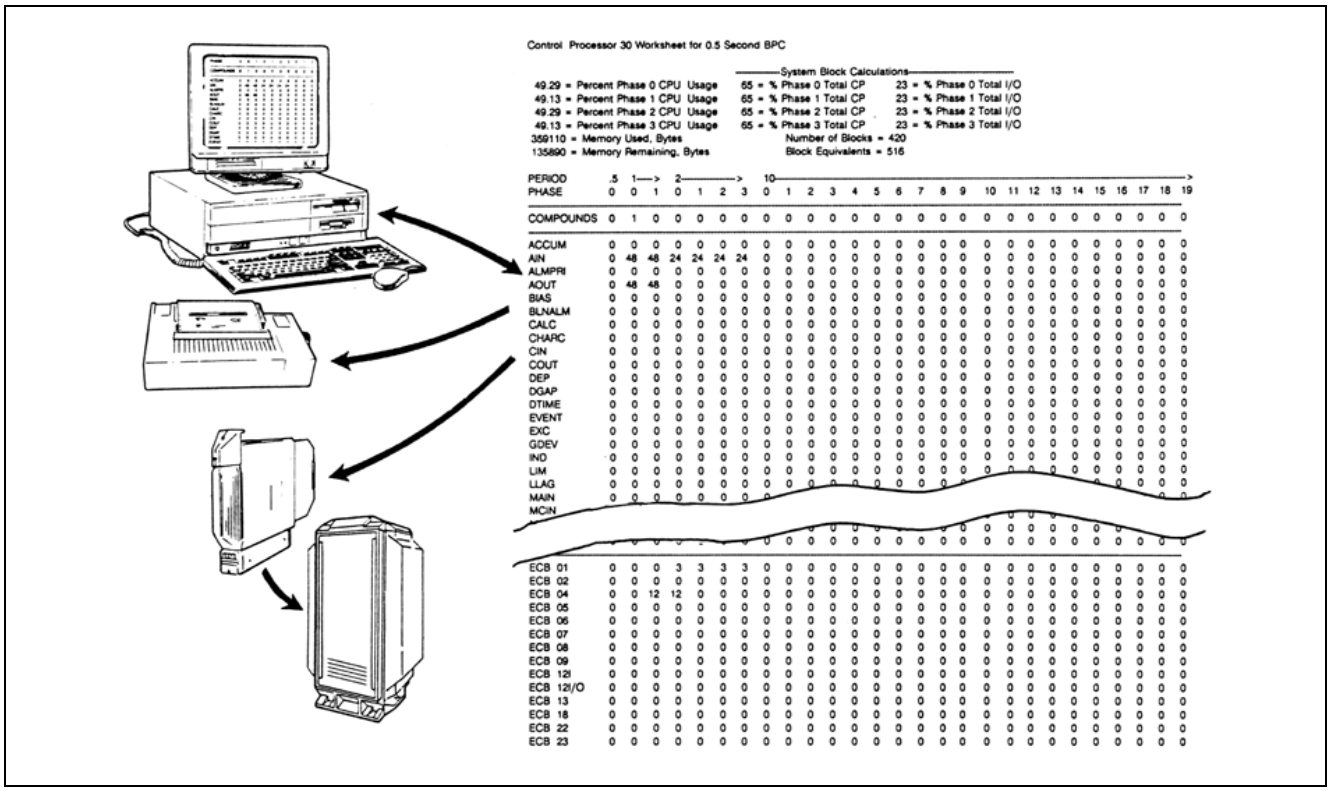
FOXBORO®

PSS 21S-4Q1 B3

I/A Series® Software
Control Processor Sizing Spreadsheet



The I/A Series Control Processor Sizing Spreadsheet is an application software package that makes a variety of calculations for Control Processor based operations and provides input for system planning.

The Control Processor (CP) Sizing Spreadsheet is an interactive, easy-to-use tool that allows engineers and managers to plan and lay out a control processor setup that will provide the optimum strategy for processing control schemes and loops. When used prior to final system configuration, it will expedite the configuration process and eliminate the need for reconfiguration. Specifically, the spreadsheet:

- Computes control processor main CPU usage (% CPU time)
- Calculates total control processor I/O operations over the fieldbus
- Calculates total control processor operations activities (CPU + I/O)
- Computes memory used
- Computes memory remaining
- Produces printed reports of spreadsheet/worksheet output

This spreadsheet can be run on any personal computer that has Lotus 1-2-3 (Version 2.01 or later) software. Output from the worksheets can be printed at any printer attached to the PC.

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Product Specifications

SPREADSHEET INTERFACE

Interface to the spreadsheet is via a set of worksheets for CP10s and CP30s that allow you to specify compound/block data; peer-to-peer and interprocess communications (IPC) connections; and changes for default values.

An online worksheet help screen is also available showing the different macro commands used for moving about the spreadsheet or printing the data.

Block Data Worksheets

As shown by the example in Figure 1 for a CP30, input for compound/block computations is in the form of a matrix. You enter data for compounds, blocks, equipment control blocks (ECBs), period and phase.

In the CP, there is a main/CPU processor that handles compound;block processing as well as a coprocessor that handles I/O (fieldbus) communications. Information is processed as operations occur; block calculations are interspersed with nodebus and fieldbus communications calculations. Totals are computed for main CPU, I/O coprocessor, and the sum of both main CPU and I/O coprocessor.

Using linear equations, the spreadsheet calculates the following: main CPU usage for the CP10 or CP30 as percent CPU time, total I/O (percent of each phase), total CP (main CPU + I/O coprocessor), plus number of blocks, block equivalents, memory used (bytes), and memory remaining (bytes).

Peer-To-Peer and IPC Connection Worksheets

For this worksheet, you enter data for:

- The number of peer-to-peer source and sink connections,
- The number of workstation processors that can access this control processor,
- The number of application processors that can access this control processor.

An example of worksheet output for the CP30, shown in Figure 2, indicates connection and point information, as well as various calculations for control processor CPU usage.

Default Parameters Worksheets

These worksheets primarily concern themselves with specifications for Object Manager (OM) list scanning, phasing, and special requirements for selected blocks. They also calculate the control processor main CPU time requirements for supporting the IPC connections and performing OM scanner functions. These values are then totaled for each phase.

Users who change default values are expected to be conversant with integrated control software requirements, and to observe recommended practices for phasing process control blocks. Figure 3 following shows an example of a worksheet.

Control Processor 30 Worksheet for 0.5 Second BPC

----------System Block Calculations----------

49.29 = Percent Phase 0 CPU Usage	65 = % Phase 0 Total CP	23 = % Phase 0 Total I/O
49.13 = Percent Phase 1 CPU Usage	65 = % Phase 1 Total CP	23 = % Phase 1 Total I/O
49.29 = Percent Phase 2 CPU Usage	65 = % Phase 2 Total CP	23 = % Phase 2 Total I/O
49.13 = Percent Phase 3 CPU Usage	65 = % Phase 3 Total CP	23 = % Phase 3 Total I/O
359110 = Memory Used, Bytes		Number of Blocks = 420
135890 = Memory Remaining, Bytes		Block Equivalents = 516

PERIOD	.5	1--->		2---------->				10---------->																		
PHASE	0	0	1	0	1	2	3	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
COMPOUNDS	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACCUM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AIN	0	48	48	24	24	24	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALMPRI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AOUT	0	48	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIAS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLNALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHARC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COUT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DGAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DTIME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GDEV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LIM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LLAG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MCIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MCOUT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOVLV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MTR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PATALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PID	0	48	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PIDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PIDX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PIDXE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PTC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAMP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REALM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SIGSEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWCH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VLV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 01	0	0	0	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 04	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 12I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 12I/O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECB 23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 1. Block Data Worksheet Example

Peer-to-Peer and IPC Connection Information	
Number of Peer-to-Peer Source Connections	0
Number of Peer-to-Peer Sink Connections	0
Number of WPs accessing this CP	3
Typical Point Connections per Graphic	75
Number of APs accessing this CP for Historian and other Applications	1
Number of points accessed by Historians	96
Number of points accessed by other Applications	0
CPU Usage for IPC Connection Support	1.0
CPU Usage for Peer-to-Peer Support	0.0
CPU Usage for WP Display Support	3.2
CPU Usage for Historian/Application Support	0.6
Total CPU Usage for these functions	4.9

Figure 2. Peer-To-Peer and IPC Connection Worksheet Example

Default Parameters - CHANGE THESE AT YOUR OWN RISK

Percentage of OM Lists updated each scan 50.0

Percentage of PID blocks using alarm opt 100.0

Percentage of	AIN Blocks	MAIN Blocks
using TC sci	10.0	10.0
using RTD sci	10.0	10.0

Percentage of following blocks using extender FB

MCIN 25.0% MCOUT 25.0%

Average CALC Block Steps 25

Average BLNALM Block inputs used 4

Sequence Blocks	EXC	DEP	IND
Average BPCSTM	15	15	15
Average Lines of Code	100	100	100

Figure 3. Default Parameters Worksheet Example

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