UDC 681. 322

PROCESS COMPUTER CONTROL FOR FACOM SERIES (HARDWARE)

Mitsuaki Sato

Hiroaki Ikuta

Control Technique Center

I. INTRODUCTION

Fuji Electric has delivered complete process computer control systems including instrumentation apparatus and heavy electrical equipment to various plants. The manufacture of the computer control system is centered around the combination of a Fujitsu central processing unit and Fuji Electric real time controller. There are five FACOM series of process CPU, the FACOM 270–10, –20, –30, –25 and –R. The optimum model is selected in accordance with the scale of the plant and the contents of the job.

II. FACOM SERIES

Th FACOM series of process computers consists of five high speed, high performance computer systems—very small-scale models 10, R, medium-scale models 20, 30, and large scale model 25.

The models 10, 20 employ discrete circuits, and the models R, 30, 25 employ integrated circuits.

This series is ideal for on line real time processing such as data communication control, process control and scientific, engineering computation. In addition, any system configuration can be built to user's requirement. Therefore, you can select the most suitable system for your application.

The FACOM Series of process computers is expandable from a very small configuration to a large one. Selection of the most suitable model is possible according to the application. Moreover, a system which satisfies space requirement can be built in a building block system.

The models –10, –20, –30 (operate in a similar fashion) and a program used in one system is common to other systems, replacement of the system can be performed easily and economically when the need arises for system expansion due to an increase in the work load.

The FACOM series can be connected to another computer to compose a multi system. The models 10, R can also be used as a satellite computer of a large-scale computer system and the models 20, 30, 25 can also be used as the master computer of a master-satellite system. The models 20, 30, 25 can use a compiler such as process FORTRAN even in an inexpensive system without a magnetic tape unit by employing the high speed, large capacity magnetic drum unit built in the central processor.

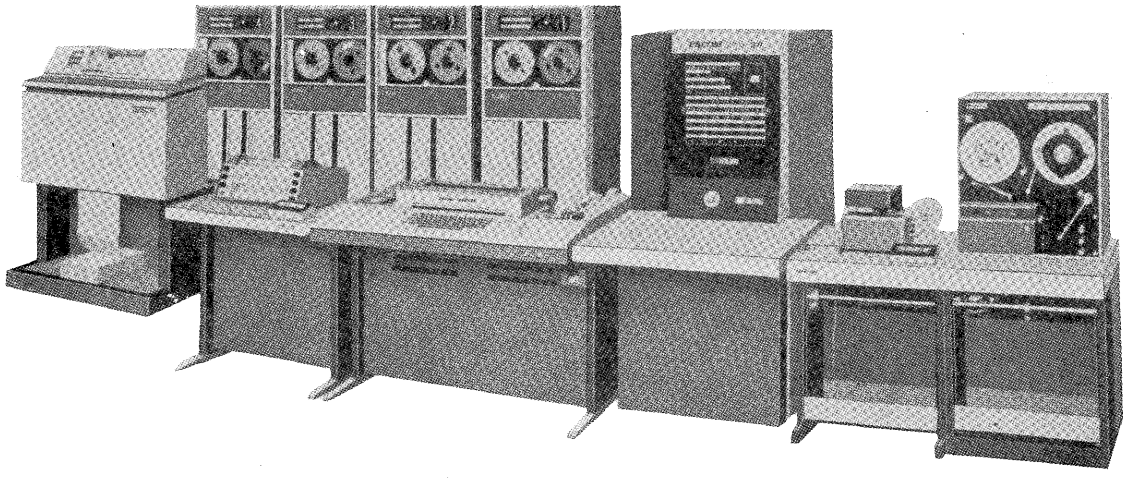

Fig. 1 View of FACOM 270–20

III. SPECIFICATIONS

Table 1 shows the specifications of the FACOM series of process computers

IV. CONFIGURATION

Fig. 2～*Fig. 6* show the largest scale configuration of the FACOM Series of process computers.

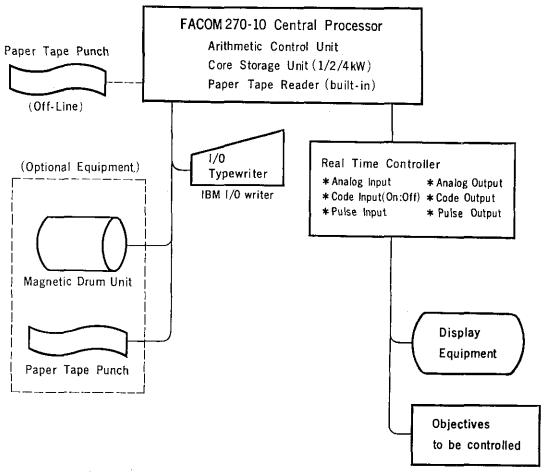

Fig. 2 FACOM 270-10 system configuration (Largest scale)

Table 1 **Specifications of Facom series for process computer**

Item			Model: FACOM 270-10	FACOM 270-20	FACOM 270-30	FACOM R	FACOM 270-25
Central process unit	Logic elements		Discrete components	Discrete components	Monolithic integrated circuit	Integrated circuit	Integrated circuit
	Programming system		Stored	Stored	Stored	Stored	Stored
	Instruction Format		1 1/2 address	1 1/2 address	1 1/2 address	1 1/2 address	1 1/2 address
	Computing system		Binary serial	Binary parallel	Binary parallel	Binary parallel	Binary parallel
	Data structure		Fixed word length	Fixed word length	Fixed word length	Fixed word length	Fixed word length
	Data (Bits)		16	16	16	16	16
	Memory protection		No	Yes	Yes	No	Yes
	Logic register		A	IC, A, R	IC, A, R	A	IC, X_0～X_7
	Core register		IC, X_1～X_3	X_1～X_3	X_1～X_3	IC, X_1～X_4	—
	Number operation		14	28	28	29	84
	Computing time (μs)	Add. and sub	120	4.8	1.8	6	3.0
		Multiplication	By subroutine	20.4	9.7	By subroutine	17.2
		Division	By subroutine	39.0	15.5	By subroutine	33.0
	Floating arithmetic (Circuit)		By subroutine	Option	Option	By subroutine	Option
	Interrupt priority (Level)		1	12	12	1	6
Memory	Core memory capacity (kW)		1/2/4	4/8/16/32	8/16/32/65	1/2/4/8/12/16/20/24/28/32	4/8/12/16/24/32

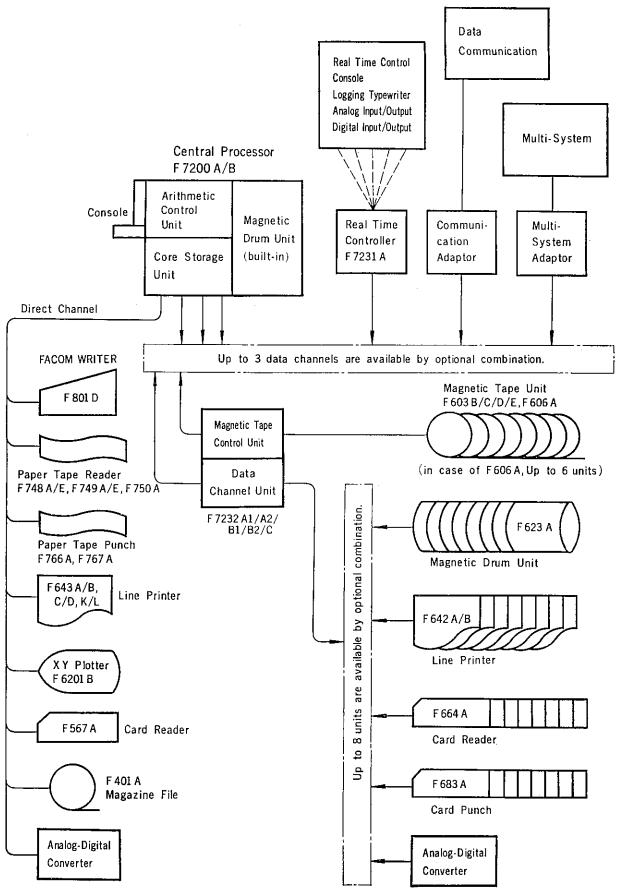

Fig. 3 **FACOM 270–20 system configuration (Largest scale)**

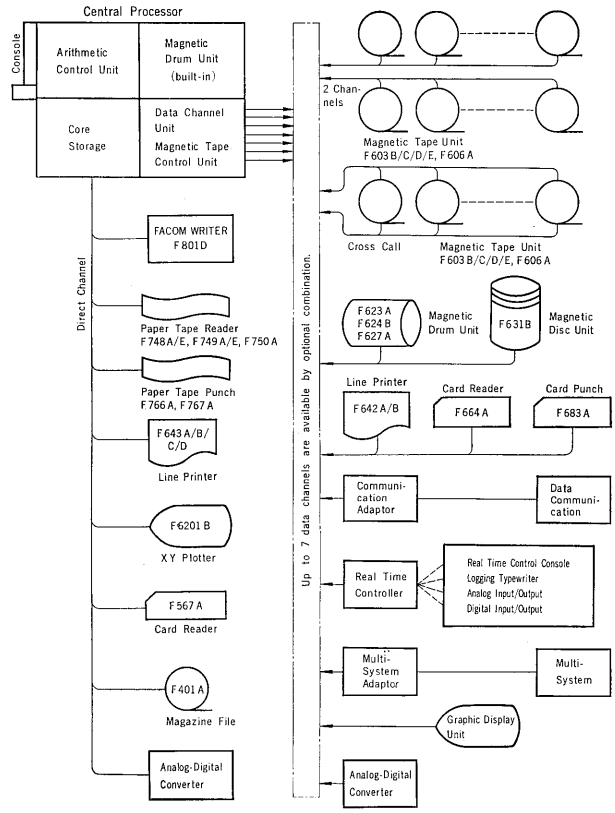

Fig. 4 **FACOM 270–30 system configuration (Largest scale)**

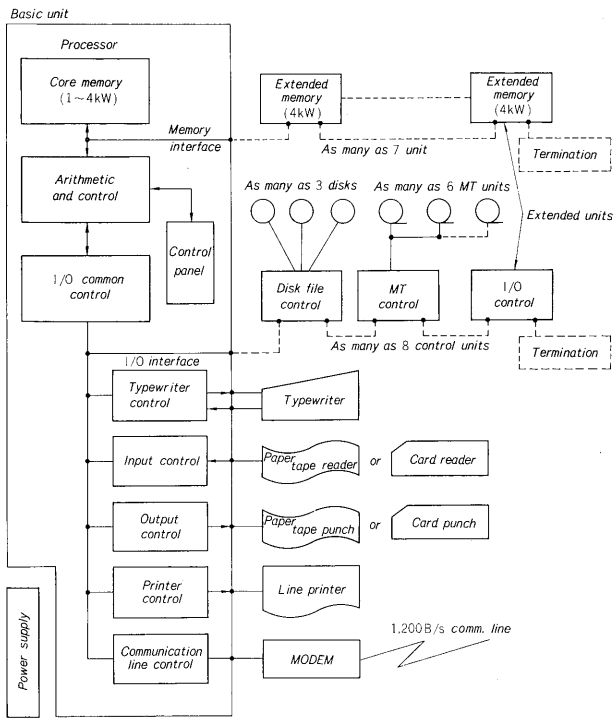

Fig. 5 **FACOM R system configuration (Largest scale)**

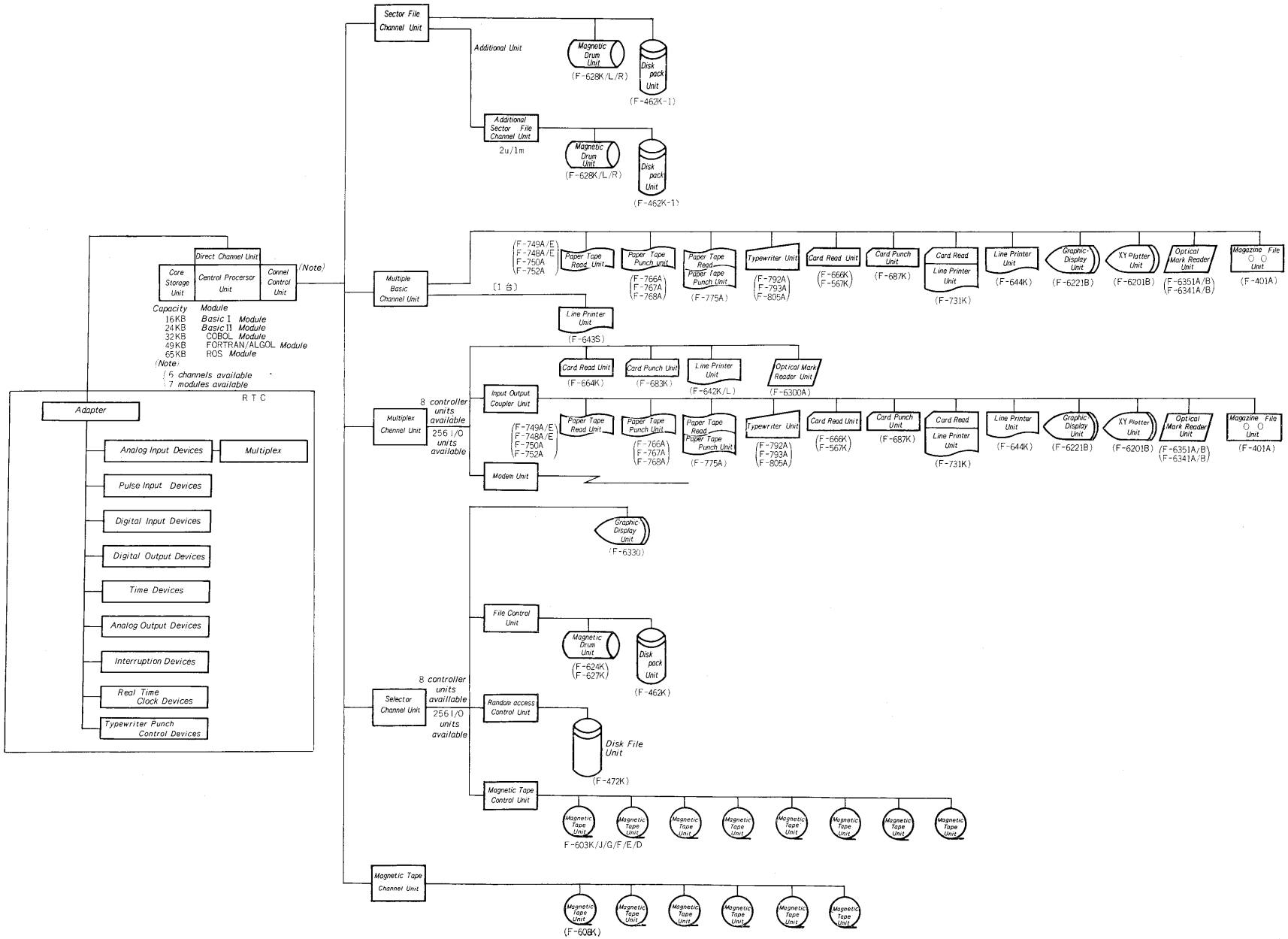

Fig. 6 FACOM 270–25 system configuration (Largest scale)