NEW PRODUCTS

FOURIER TRANSFORM INFRARED SPECTROMTER (FTIR)

The Fourier Transform Infrared Spectrometer (FTIR) has many advantages over the dispersive infrared spectrometer (DIR), such as high resolution, high wave number precision, etc. and was used mainly in research with high performance research grade instruments. On the other hand, the smaller size and higher performance of the computer have made it possible to reduce the size and price of the FTIR and its popularity is increasing rapidly even in fields closer to the production line.

Fuji Electric has now commercialized the economical FIRIS25, following commercialization of the resolution 0.125 cm^{-1} research grade FTIR FIRIS100. The FIRIS25 is outlined here.

FEATURES OF FIRIS25

(1) Since corner cube reflectors are used in the interferometer, which is the heart of the optical system, stability is excellent.

(2) The Fuji Electric advanced super microcomputer FASMIC G100II is used as the data station and an excellent man-machine interface is built as a dialogic color graphic multi-window system with mouse operation.
(Japanese language menu also available)

(3) The spectrometer has a built-in local operation modem (local operation key and diagnostic liquid crystal display) and routine analysis operation is easy.

(4) A water-cooled glower source is used, the same as research grade instruments, and its 100 mW or greater throughput at the sample position is the highest of its class. Therefore, more opaque or scattering measurement and a wide range of other applications is possible.

(5) Since the sample compartment is wide and the entrance and exit beams are a collimated beam, optical alignment of sampling optics is easy and the optical layout in the sample compartment is extremely flexible.

Fig. 1 Exterior view of FIRIS25 system

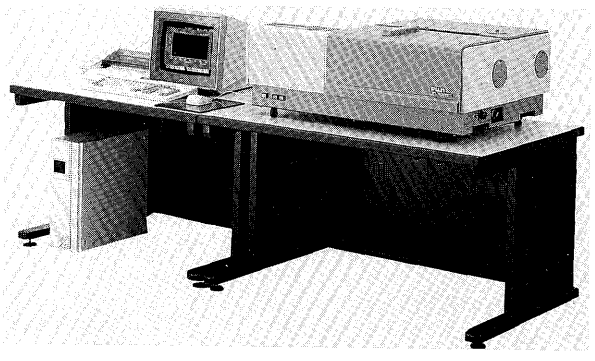
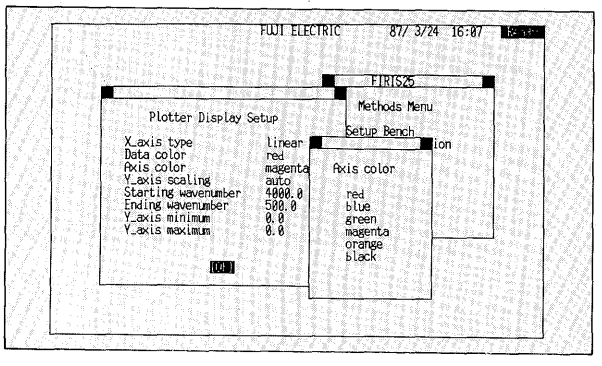


Fig. 2 Multi-window color graphic display (example)



GENERAL SPECIFICATIONS OF FIRIS25

An exterior view of the FIRIS25 system is shown in *Fig. 1*, an example of the multi-window color graphic display is shown in *Fig. 2*, and the specifications are shown in *Table 1*. *Fig. 3* is the built-in local operation modem of the spectrometer.

All operations are performed by mouse and the corresponding function keys at the bottom of the color graphic display. Spectrum expansion, integral, derivative, base line collection, smoothing peak search, and various other data handling software and spectral library search software (option), including spectrum subtraction, are available.

FUTURE DEVELOPMENT

With completion of the FIRIS25, we have established a foundation as an FTIR manufacturer of research grade and analytical grade instruments.

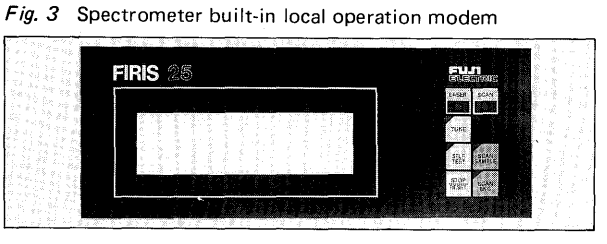
In the future, the Business Department and Engineering Department intend to increase our market share by upgrading performance and cost, accumulating application technology, and expanding the software.

Table 1 Standard specifications

	Item	FIRIS25 (FASMIC G100II)
Spectrometer	Wave number range	4,800~400 cm^{-1}
	Wave number precision	0.01 cm^{-1}
	Resolution	0.5 cm^{-1}
	Scan velocity	0.32 cm/s (2.5 cm/s option)
	Scan trigger	Laser quadrature control
	Interferometer	90° Michelson interferometer
	Beam splitter	KBr with dielectric coating
	Source	Water cooled silicon carbide glower
	Detector	DTGS
	Sample compartment	564 x292 mm
Data system	CPU	68000, 32 bit data processing
	Main memory	1MB up to 3MB max
	Disk storage	20/40MB up to 80MB max
	Backup storage	Diskette
	Operating system	OS-9/68000® <Note>
	Graphic terminal	14 in. color graphic display
	Plotter	A4, 6 pen color plotter

<Note> OS-9/68000 is a registered trademark of Microware Systems of the U.S.A.

Fig. 3 Spectrometer built-in local operation modem



NEW PRODUCTS

VORTEX GAS FLOWMETER

OVERVIEW

The flowmeter, together with temperature sensors, pressure sensors, etc., is widely demanded as industrial instrumentation. However, because the industrial flowmeters currently being sold are expensive, a cheaper flowmeter is demanded.

This vortex gas flowmeter is a high precision, inexpensive flowmeter developed especially for air, N_2, and other comparatively clean gases. Use in air lines and in energy-saving and labor-saving equipment impossible with conventional flowmeters because of high is now possible. (*Fig. 1*)

PRINCIPLE AND CONSTRUCTION

The measurement principle is shown in *Fig. 2*. Stable vortexes, called Karman's vortexes, are created at the specified correct interval alternately at the left and right at the downflow of a Colum placed in the flow. Because the creation of Karman's vortexes is proportional to the flow velocity, the flow velocity can be found by measuring the number of vortexes generated, that is, the vortex frequency. A pressure change is generated by the vortex pressure generated alternately at the left and right at the downstream of the Colum. This vortex pressure change is transmitted to a mirror through a pressure supply hole.

The mirror is suspended by a small spanband and is vibrated around the axis of the spanband by the vortex pressure from the supply hole.

An LED and phototransistor are installed near to the mirror. The light of the LED is reflected by the mirror and enters the phototransistor and is converted to electric current. When the mirror vibrates, the amount of reflected light changes and the vibration is detected by the phototransistor and the vortex frequency is measured.

Disturbances by outside vibration, pulse pressure, etc. are considered and the spanband tension is kept constant by a plate spring so that stable mirror vibrations are obtained relative to the vortex pressure.

Consideration is also given so stable measured result can be made even when the mirror is soiled by dust, etc. in the measurement air and the light reflectivity drops.

FEATURES

(1) Measurable flow range is wide and measurement is extremely accurate.
(2) Construction is simple and the instrument is small and light weight.
(3) A pulse output proportional to the flow velocity is obtained and is suitable for computer input.
(4) Excellent response to sudden flow changes.
(5) Excellent cost-performance.

SPECIFICATIONS

The main specifications are shown in *Table 1*.

Fig. 1 Exterior view of vortex gas flowmeter

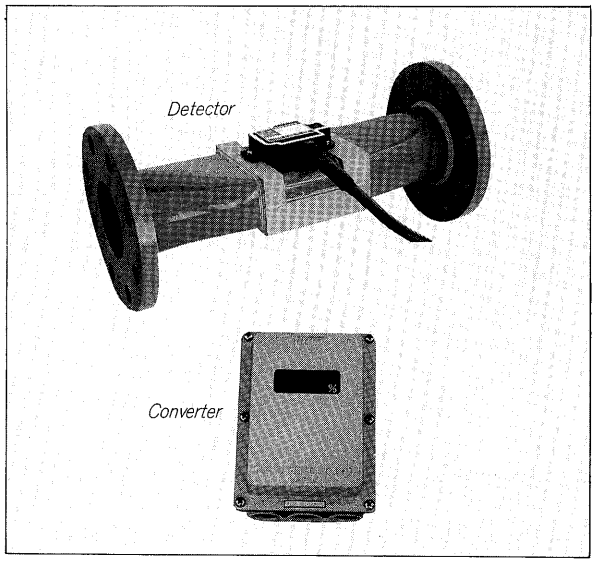


Fig. 2 Vortex gas flowmeter measurement principle

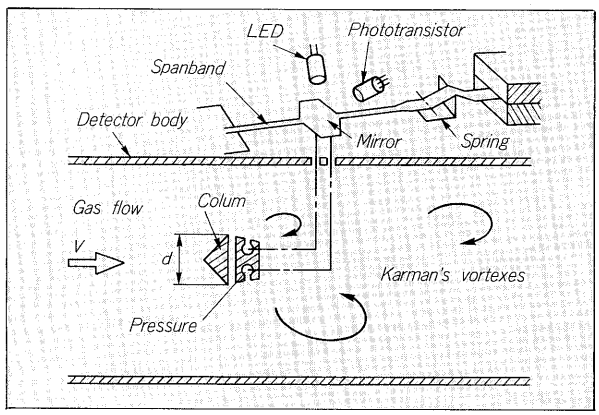


Table 1 Vortex gas flowmeter specifications

Measurement objective	Air, nitrogen gas and other noncorrosive, clean gases		
Size and measuring range	Size	Measuring range	Rangeability
	25A	3 ~ 92 Nm^3/h	1:30
	40A	6 ~ 290	1:50
	50A	16 ~ 480	1:30
	80A	21 ~ 1,060	1:50
Accuracy	±1.5% (relative to indicated value)		
Output signal	Pulse output 0 ~ 1,300 Hz (detector output) 4 ~ 20 mA DC (converter output)		
Material	Detector body PVC resin (low pressure type) Cast aluminum (10K type) Vortex detector PPS resin		
Pressure rating	Low pressure type 500 mmHg abs ~ 0.5 kgf/cm^2G max 10K type 500 mmHg abs ~ 10 kgf/cm^2G max		
Temperature	Low pressure type −10 ~ 50°C 10K type −30 ~ 110°C		
Power supply	24V DC or 100, 110, 200, 220V AC		
Options	Digital indicator (added to converter)		

NEW PRODUCTS

SUPER MINI COMPUTER SYSTEM "A-SERIES"

The so-called process computer called the industrial computer built its own world, centered about the PA field, by displaying its excellent control ability, a special feature, to the full. However, from this, a total view, including up to the OA field, is indispensable.

Against this background, a new series of minicomputers, the A (Ace) Series, has now been commercialized with a wider range of industrial fields as the target. This series is outlined below. (*Table 1*)

FEATURES

(1) Improvement of cost-performed by the use of the newest technology
(2) Series standardization by realtime UNIX
(3) Installation of OS 'OSIV/S' with good affinity with the FACOM M Series in the top four models.
(4) Japanese language processing, image processing function, relational data base system.
(5) International standards GKS (Graphical Kernel System) compatible graphics function.
(6) International protocol (TCP/IP (Note 1), OSI (Note 2), MAP (Note 3)) and host computer, personal computer linkage function
(7) Control LAN (DPCS-F) and general-use LAN (IEEE 802.3, 802.4) support
(8) Connection to distributed control system (MICREX) and programmable controller (MICREX-F100/200)
(9) High reliability system by duplicated system
(10) Complete advanced control functions
(11) Abundant AI (Artificial Intelligence) tools

<Note 1> TCP/IP: Transmission Control Protocol/Internet Protocol
<Note 2> OSI: Open System Interconnection
<Note 3> MAP: Manufacturing Automation Protocol

HARDWARE

The A Series is a true 32 bit minicomputer consisting of seven models: three low-level models (Compact A) for building a flexible system and four high-level models (Super A) which pursue high performance. The features of the hardware common to the A Series are described below.

(1) Substantial improvement of CPU performance compared to the old U-1000 Series and S-3000 Series. (4 to 8 times by scientific technical arithmetic performance)
(2) Quadruple improvement of minicomputer bus (FS-BUS) compared to old U-1000 Series and S-3000 Series.
(3) Realization of an electric, instrumentation, and computer unified system linked with MICREX and centered about high-speed, high reliability control LAN (DPCS-F: transmission speed 10 Mbps, duplex optical loop, maximum length 32 km, maximum 64 stations).

BASIC SOFTWARE

OS of the A series, SX/AR and SX/UTS are realtime UNIX and are interchangeable at user interface level.

With the Super A, system implementation by OVIS/S is possible, the same as the S-3000 Series, and existing software can be used. It is an operating system with good affinity with the M Series.

CONCLUSION

The basic concept of the A Series is "open architecture".

To amply cope with growth of the industrial field in the future, which is the user's mind, we will put our efforts as one with users into the completion of application software, in particular, with the aim of expanding the application range in existing fields and developing new fields.

Table 1 A Series specifications

Item	Compact A			Super A			
	A-30	A-50	A-70	A-300	A-400	A-500	A-600
CPU	68010 (10 MHz)	68020 (16.7 MHz)	Independent (32 bits) 183 instructions	Independent (32 bits), 193 instructions, 32 bit general register x 16, 64 bit floating point register x 4			
Logical address space (bytes)	16M	1G		16M x 255 (multi-virtual space)			
Main memory capacity (M bytes)	1~8	2~18	4~24	7~31		15~63	15~95
Cache memory capacity (k bytes)	–	16	32	24	32		
Internal magnetic disk capacity (G bytes)	~0.5			~1.5	~3	~4	~6
Bus performance (M bytes/sec)	6			6, 33			
Interrupt priority	7 levels		9 levels	13 levels (internal 3, external 3 + 7)			
OS	SX/AR			SX/UTS, OVIS/S			
Cabinet dimensions (mm) (width x depth x height)	Floor type 250 x 700 x 700 Rack mounting type 482 x 660 x 619			900 x 750 x 1,400	1,050x750 x 1,400	1,300 x 800 x 1,630	