SONY

SONY

High-Speed Digital Data Recorder

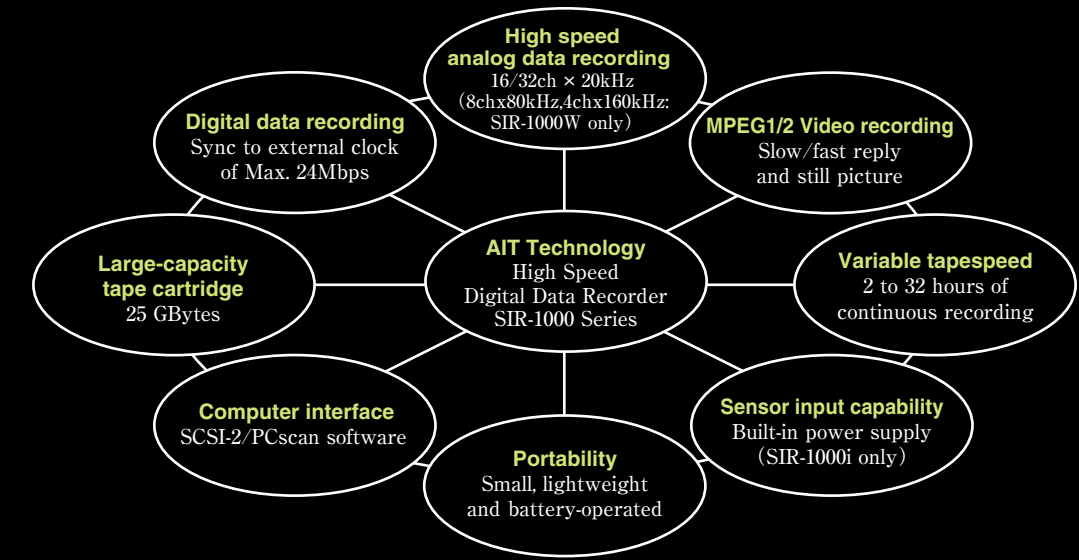## SIR-1000 Series

SIR-1000 / SIR-1000i / SIR-1000W

Sony Precision Technology Inc.

The first high-speed digital data recorder in the world to use the AIT technology!

The SIR-1000 Series
Sony's solution to today's complex data acquisition

The SIR-1000 Series recorders are designed to cover a wide range of measurement applications.

Newly added to the family are the SIR-1000i, which enables direct connection with sensors (ICP® type) and the SIR-1000W, which has the capability of recording wide band signals. The SIR-1000 Series recorders offer a unique feature of simultaneous recording of measurement data and video signal, which opens a door to a new era of measurement and analysis.

SIR-1000, Standard model   SIR-1000i, Sensor (ICP® type) input model   SIR-1000W, Wide band model

∗SIR-1000W does not have playback compatibility with SIR-1000 and SIR-1000i.
∗∗ICP®(Integrated Circuit Piezoelectric) is a registered trademark of PCB Piezotronics, Inc.

High speed analog data recording
16/32ch × 20kHz
(8ch×80kHz,4ch×160kHz:
SIR-1000W only)

Digital data recording
Sync to external clock
of Max. 24Mbps

MPEG1/2 Video recording
Slow/fast reply
and still picture

Large-capacity tape cartridge
25 GBytes

AIT Technology
High Speed
Digital Data Recorder
SIR-1000 Series

Variable tapespeed
2 to 32 hours of
continuous recording

Computer interface
SCSI-2/PCscan software

Portability
Small, lightweight
and battery-operated

Sensor input capability
Built-in power supply
(SIR-1000i only)

The SIR-1000 Series are high-speed digital data recorders which apply Sony's latest AIT recording technology to meet the ever-advancing needs of measurement applications. SIR-1000/SIR-1000i is capable of recording 20kHz for 16 or 32 channels and expanding the channels up to 128 per recorder. SIR-1000W is a wide band recorder for data of 4 channel-160kHz, 8 channel-80kHz, or 16 channel-40kHz. All the SIR-1000 Series recorders are equipped with independent AD/DA converters with 16-bit linear quantization and 64 time oversampling digital filters for each channel. Together with the SCSI-2 high-speed data transfer, these features allow the recorder to be used as a high performance front end. Data recorded on the SIR-1000 Series can be played back on an AIT streamer drive. This makes the recorder a very user and computer-friendly data collection system.

AIT (Advanced Intelligent Tape) technology

AIT cartridge (with memory): actual size
AIT is a new standard for high-speed, large-capacity streamers (computer data back-up) which use a data cartridge the same size as an 8mm video cassette. Using Sony's high-density magnetic recording technology, AIT provides a storage capacity of 25 Gbytes (non-compressed) per cartridge and a data transfer rate of 24 Mbps.

Wide band · Multi channel · Video · Dir ect sensor input · Digital data recording

Highly reliable and felxible, the SIR-1000 Series High-Speed Digital Data Recorders feature a high level of recording capability, expandability and portability, meeting a wide variety of measuring applications.
New features such as wideband recording, direct sensor input function and video recording are now available to further expand the measuring capabilities.

Wide bandwidth, multi-channels

The number of channels for the SIR-1000/SIR-1000i can be expanded up to 128 (16 channels for SIR-1000W)and 2 hour recording is possible regardless of the channel configuration.
Synchronous recording and play back up to 8 units are also possible using an optional SSB-10, Multisync adapter.
●SIR-1000/SIR-1000i : The SIR-1000/SIR1000i in basic configuration features a 20kHz bandwidth for all 16 channels. In addition, 32 channels of DC to 20kHz analog data can be simultaneously recorded on a single data cartridge by combining the recorder with an optional SCX-32/SCX-32i Channel Expansion Unit. The number of channels can be further increased by adding channel expansion units. 128 channels of 5kHz analog data can be recorded with a system consisting of the SIR-1000/SIR-1000i and seven SCX-32/SCX-32i
●SIR-1000W : The SIR-1000W is capable of recording 4 channels of DC to 160kHz or 8 channels of 80kHz analog data. With an optional SCX-16W Channel Expansion Unit the number of channels is expanded to 16 for the bandwidth of 40kHz.
→ See "Supporting the Multi-channel operation" for details.

Time axis conversion

Tape speed can be selected from a wide range of choices both on recording and playback. During recording, for example, tape speeds of 1×, 1/2×, 1/4×, 1/8× and 1/16× can be selected to provide from 2 to 32 hours of recording time. Upon playback, long recordings can be played back quickly(up to 16 times the recording speed)to decrease data reproduction time or more slowly the recording speed(down to 1/16th the recording speed)to expand the data time base. Output filters are provided for the whole bandwidth at any tape speed to smooth out the reproduction waveform.

High-grade recording and playback

The PCM system provides a dynamic range of 80 dB or more (SIR-1000/-1000i)through 16-bit linear quantization and independent AD/DA conversion for each channel. This not only allows extremely accurate data recording but also facilitates the input range settings. In addition, the adoption of 64 × oversampling digital filters provides nearly linear phase characteristics and achieves an inter-channel phase difference of less than 1 degree(SIR-1000/SIR-1000i). The analog input level has an allowable range of up to 133% of the full scale range setting. (The analog characteristics specified in this data sheet are for up to 133%.) And the input DC offset can also be adjusted within the range of ±100%. The analog output level can be selected from ±1 Vpk, ±2 Vpk or ±5 Vpk (calibrated output), or from ±0.5 to 5 Vpk (continuous variable output).

The cartridges use the newly developed AME(Advanced Metal Evaporated)tape which features superior output characteristics, reliability and durability. The SIR-1000 Series' real-time verify-rewrite function reads the data written on the tape during recording and rewrites the data at once if errors occur. This reduces data dropout to virtually zero and greatly improves data integrity. Furthermore, the SIR-1000 Series is equipped with an active head cleaner that automatically detects and cleans the heads to keep them constantly clean even when the SIR-1000 Series is used outdoors.

SIR-1000＋SCX-32 ＋Combine frame

Versatile control functions

In addition to the key switches on its front panel, the SIR-1000 Series can be controlled from the SRM-10 dedicated remote controller(option), RS-232C port, or relay contact port. The SRM-10 is a highly functional remote controller with an LCD display panel identical to that on the recorder main unit, including a 16-channel bar meter display. The SRM-10 allows remote monitoring of the recording setup information, tape address information and other information. The RS-232C port is used when controlling the recorder from a host computer, and the relay contact port is used with TTL level external signals. Furthermore PCscan III software with STB-30 can control via SCSI.

Easy setup and monitoring

Care has been taken to ensure easy operation during multi-channel, on-site measurement.
●16-channel bar meter display : The incoming signal level for 16 channels is displayed on a backlit LCD panel with a wide viewing angle for high visibility outdoors and in dark locations. The display can be switched to match the measured phenomenon such as decibel(dB)for noise and vibration and percentage(%)for stress and distortion.
●Test signals(internal or external) : Four types of test signals(± 100% AC sine wave, +100% DC, −100% DC and 0V)are stored as digital data and can be used as highly accurate reference signals for the analog channels. Users can also input a reference signal from an external source to channel 1 for distribution to all channels as a reference signal.
●Calibration : The analog channel DC offset and gain can be calibrated.
●Auto range/auto offset : The analog channel input range can be set and the input offset canceled automatically.
●Setting for all channels : Parameters for all channels can be set by pressing one key.
●High-speed tape search : This function allows rapid access to target data stored on the tape. Also, storing the Table of Contents (ID and tape address information)in the Memory-In-Cartridge allows even higher speed searches.
●Self check : The self diagnostic check can be performed to ensure the operations.

Pre-trigger recording

The main unit has a built-in, large-capacity buffer memory enabling pre-trigger data of 3 seconds(normal speed)to be recorded on tape. This allows reliable recording of unpredictable events and transient signals.

Convenient auxiliary channels

In addition to the analog data channels, the SIR-1000 Series main unit is equipped with auxiliary channels as standard, allowing other useful information and data to be recorded and played back along with the main analog data.
●AUX-1(serial digital channel) : tacho pulse, etc.
●AUX-2(analog channel) : IRIG-B time code signals, etc.
  IRIG-B time code calibrates the recorder's internal clock.
●Voice channel : voice annotations

Alternative power sources

The SIR-1000 Series operates on AC 100/120 V (90 to 132 V, 47 to 440 Hz), AC 220/240 V(198 to 250 V, 47 to 66 Hz), or external DC 12 V(11 to 30 V)power source. Also large-capacity lithium ion battery pack can be mounted on the data recorder for convenient use outdoors. AC can be backed up by external DC or the battery pack, and external DC can be backed up by the battery pack to allow uninterrupted recording of valuable data.

Highly resistant to vibration and shock

The SIR-1000 Series can perform normal recording even when exposed to vibrations of ±14.7m/s²(± 1.5G), 6 to 200Hz. For applications under harsher vibration or shock, the shock mount adapter which can absorb a shock of 98.1m/s² (±10G, 74〜2000Hz)may be used to ensure reliable recording.

Shock mount adapter SSM-10

Small, lightweight and rugged

The SIR-1000 Series has dimensions of 340 (W) × 115 (H) × 260 (D) mm and weighs approximately 7.5kg(SIR-1000), 7.6kg(SIR-1000i), 7.7kg(SIR-1000W) (basic configuration), giving it the best portability and space factor of any data recorder in its class. In addition, the SIR-1000 Series tough-durability is assured by the use of strong cast aluminum in the unit's casing and steel frame construction for your difficult field environments.

Various option boards

Option slots are provided on the rear panel of the recorder for mounting option boards.
●SBS-10A/10S bit serial boards : These option boards are used to input and output a max of 24Mbps digital data.
●STB-10/30 SCSI interface boards : These option boards are used to perform high-speed SCSI transfer of digital data to and from a host computer.
→ See "Integrating the SIR-1000 Series with a Computer" for details.
●SVB-10 video board : This option board is used for recording and replaying video signal.

SIR-1000 (Rear)

High-speed digital data recording

The SBS-10A(asynchronous, option) and SBS-10S(external sync, option)bit stream boards are provided for recording and playback of high-speed digital data in applications such as telemetry and monitoring digital network. The SBS-10A or SBS-10S is mounted in one of the option slots on the rear panel of the SIR-1000 Series.
Digital data can be recorded either alone or together with analog data. In addition to the functions the SBS-10A offers, the SBS-10S can synchronize the recorder with external clock up to 24 MHz and can record digital data at any desired bit rate by using variable buffer memory. The number of high-speed digital channels can be switch-selected to 1, 2, 4 or 8-channel mode.

Video recording

The SIR-1000 Series recorder can record video and measurement data simultaneously on a single tape cartridge using optional video board, SVB-10. The visual image played back on the video channel can be used as complimentary analysis information in analysing the measurement data. Employing MPEG compression scheme high quality picture can be recorded and played back. Slow or fast replay is possible by playing back at a different tape speed from that of recording. Still picture is also possible by pressing PAUSE key. On input video format of either NTSC or PAL can be selected manually and video signal in the same format as the input is played back.

Supporting the Multi-Channel Operation

Up to 128 channels with a single SIR-1000

The number of channels can be expanded by using the SCX-32/SCX-32i Channel Expansion Unit（option）for SIR-1000, SIR-1000i, or SCX-16W Channel Expansion Unit（option）for SIR-1000W. Like the SIR-1000 Series, these expansion units are equipped with 16-bit AD/DA converters and 64 × oversampling digital filters to provide a high-performance front end. Thus, the number of channels can easily be expanded by connecting the expansion unit to the SIR-1000 Series via a supplied connection board and expansion cable.

Channel Expansion Unit（SCX-32）

SIR-1000 /SIR-1000i

No. of SCX-32/32i	No.of channels	Tape speed	Frequency bandwidth (kHz)	Continuous recording time (hour)
1	32	1×（normal speed）	20	2
		1/2×	10	4
		1/4×	5	8
		1/8×	2.5	16
		1/16×	1.25	32
3	64	1×（normal speed）	10	2
		1/2×	5	4
		1/4×	2.5	8
		1/8×	1.25	16
		1/16×	0.625	32
7	128	1×（normal speed）	5	2
		1/2×	2.5	4
		1/4×	1.25	8
		1/8×	0.625	16

（Continuous recording times are for a tape length of 170 m.）

SIR-1000W

No. of SCX-16W	No. of channels	Tape speed	Frequency bandwidth (kHz)	Continuous recording time (hour)
1	16	1×（normal speed）	40	2
		1/2×	20	4
		1/4×	10	8
		1/8×	5	16
		1/16×	2.5	32

（Continuous recording times are for a tape length of 170 m.）

A portable and space-saving design even with multi-channels

The Channel Expansion Units feature excellent portability with dimensions of 340（W）× 65（H）× 250（D）mm, a weight of approximately 3.5 kg, and a design that allows integration with the SIR-1000 Series by using a combined frame. In addition, the expansion unit can be mounted below the SIR-1000 Series in an EIA standard 19" rack by using the SRT-10/20 dedicated rack mount adapters（option）. A multi-channel configuration can be achieved inside vehicles and other restricted spaces by using the SHL-64/-128 dedicated stacking frames（option）. This makes it possible to configure 32 to 128 channel configurations with the smallest space and overall weight of any data recorder in this class.

SIR-1000 mounted in a rack-mount adapter（SRT-10）

64-channel configuration in a stacking frame（SHL-64）

128-channel configuration in a stacking frame（SHL-128）

Synchronous operation up to 1024 channels

The SIR-1000 Series recoder has a synchronous operation capability. Connecting the two recorders via SCK-10 sync cable（option）allows recording and playback in sync with the clock of one of the units. This makes it possible to simultaneously record and play back up to 256 channels. With use of SSB-10, multi sync adapter, up to 8 recorders can be synchronized.（SCK-10 cables are necessary for connection.）The number of channels can be expanded to 1024 with the bandwidth per channel being at 5kHz.
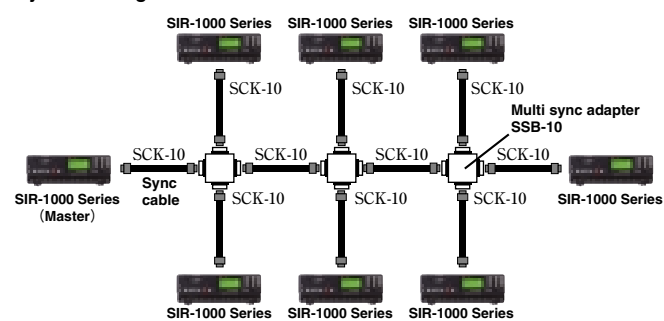
Note: Synchronous operation is available among the same models or between SIR-1000 and SIR-1000i. For synchronization of SIR-1000/SIR1000i with SIR-1000W, please consult.

Channel configuration

No. of channels	Tape speed	Frequency bandwidth (kHz)	Continuous recording time (hour)
64 (SIR-1000/-1000i×2 +SCX-32/32i×2)	1×（normal speed）	20	2
	1/2×	10	4
	1/4×	5	8
	1/8×	2.5	16
	1/16×	1.25	32
128 (SIR-1000/-1000i×2 +SCX-32/32i×6)	1×（normal speed）	10	2
	1/2×	5	4
	1/4×	2.5	8
	1/8×	1.25	16
	1/16×	0.625	32
256 (SIR-1000/-1000i×2 +SCX-32/32i×14)	1×（normal speed）	5	2
	1/2×	2.5	4
	1/4×	1.25	8
	1/8×	0.625	16
1024 (SIR-1000/-1000i×8 +SCX-32/32i×56 +SSB-10×3)	1×（normal speed）	5	2
	1/2×	2.5	4
	1/4×	1.25	8
	1/8×	0.625	16

（Continuous recording times are for a tape length of 170 m.）

System Configuration

SIR-1000 Series　SIR-1000 Series　SIR-1000 Series

SCK-10　SCK-10　SCK-10

Multi sync adapter SSB-10

SCK-10　SCK-10　SCK-10　SCK-10

SIR-1000 Series（Master）　Sync cable　SCK-10　SCK-10　SCK-10　SIR-1000 Series

SIR-1000 Series　SIR-1000 Series　SIR-1000 Series

Power supply for channel expansion units

SAA-24 is a dedicated power supply when more than two units of SCX-32/32i are used. SAA-24 can supply power up to three SCX-32/32i's. A lithium ion battery can be mounted on the side and the battery can power the expansion units without shutdown even if AC or DC power supply to the SAA-24 has failed.

Power supply for SCX-32（SAA-24）

Supporting a Wide Range of Measurement Fields

SIR-1000　Compact, lightweight and powerful. Suitable for data recording in the field or laboratory

SIR-1000

■ DC to 20kHz for 16 or 32 channels
■ Channel expandability up to 128
■ 2 to 32 hour recording and playback with variable tape speeds
■ Over 80 dB dynamic range thanks to 16 bit linear quantization
■ Compatible with AIT streamer via SCSI-2. Easy data transfer to a PC
■ Small（340×115×260mm : 13.4"×4.5"×10.2"）Light（7.5kg : 16.5lbs ）
■ Differential inputs（option）

The SIR-1000 and SCX-32 are equipped with BNC single-ended analog input connectors as standard. However, the SIR-1000 and SCX-32 can have differential inputs as an option to minimize interference from external noise（for SIR-1000: SDF-10, for SCX-32: SDF-20）.

SIR-1000i　Sensor（ICP[®]type）input capability in addition to all the same features of the SIR-1000

SIR-1000i

The SIR-1000i has built-in ICP[®]power supply, which enables direct connection with ICP[®]sensors. This function saves space at a recording site, making the SIR-1000i a perfect fit in field recording applications. Input mode is switchable between sensor and direct voltage, latter of which is SIR-1000's standard. Type of input mode is recorded on tape along with other auxiliary information such as input range and time code and is displayed on play back.

■ Selectable input mode SENSOR or DIRECT
■ Extended input range
　·For SENSOR input : ±0.1, 0.2, 0.5, 1, 2, 5, 10Vpk/7 steps
　·For DIRECT input : ±0.1, 0.2, 0.5, 1, 2, 5, 10, 20Vpk/8 steps
■ Compatible with SIR-1000. Data recorded on the SIR-1000 can be played back on the SIR-1000i, vice versa.
■ Indicators : Colored LED's for SENSOR input modes and warning indication.

SIR-1000W　High definition recording for wide band data up to 160kHz for 4channels
Recording time of 2 hour at the highest tape speed

SIR-1000W

The SIR-1000W is designed to record wide band analog data. Data of 4 channel 160kHz, 8 channel 80kHz or 16 channel 40kHz （using SCX-16W）can be recorded. The SIR-1000W boasts a long recording time of 2 hours for wide band frequencies.
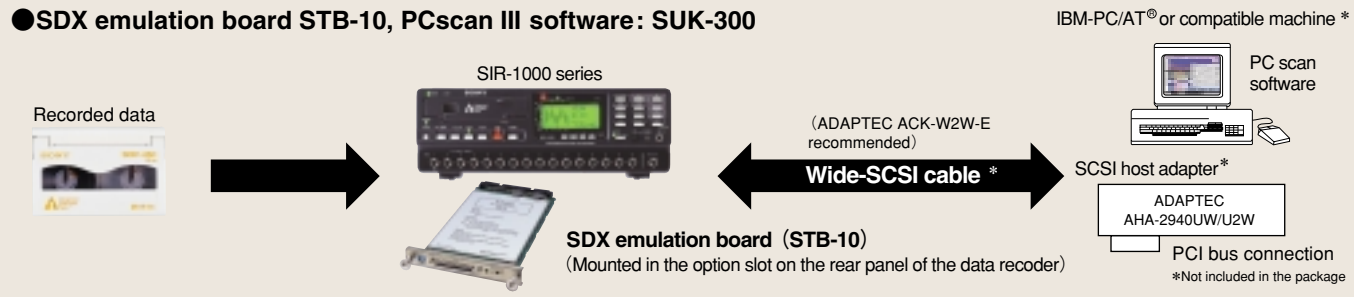
■ Wide band recording
4 channels DC to 160kHz, or 8 channels DC to 80kHz
With SCX-16W Channel Expansion Unit recording of 16 channels for DC to 40kHz
■ LSB digital channel（analog 15-bit mode）
High speed sampling at 768kHz for external bit stream data
Number of channels up to 4

Integrating the SIR-1000 Series with a Computer

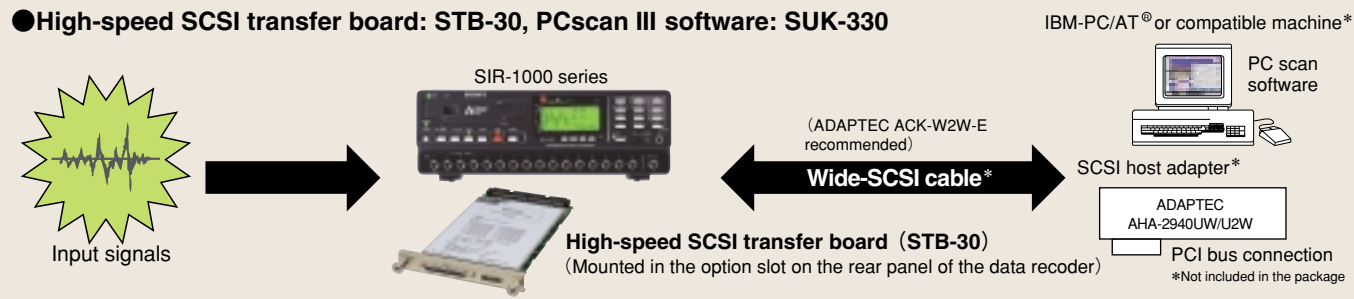**Data transfer to a computer with a variety of interfaces to suit your system.**

Data transfer from the SIR-1000 Series to a PC

●SDX emulation board STB-10, PCscan III software：SUK-300

Recorded data → SIR-1000 series

IBM-PC/AT® or compatible machine ＊

PC scan software

（ADAPTEC ACK-W2W-E recommended）

Wide-SCSI cable ＊

SCSI host adapter＊

ADAPTEC AHA-2940UW/U2W

SDX emulation board（STB-10）
（Mounted in the option slot on the rear panel of the data recoder）
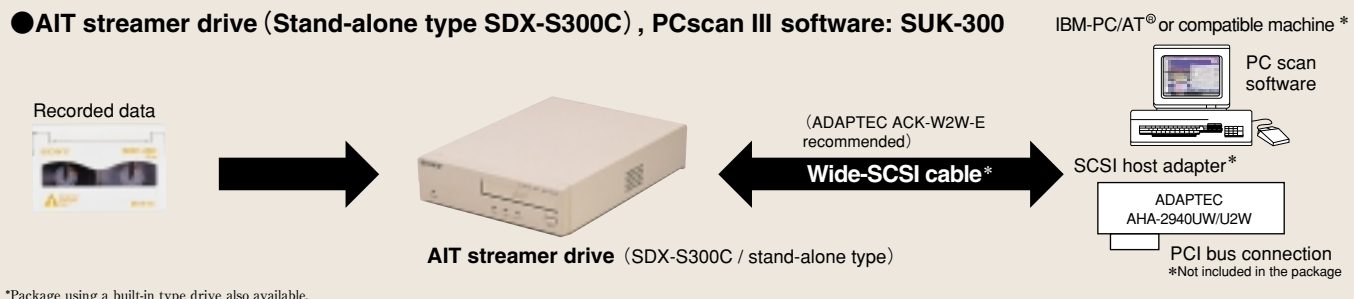
PCI bus connection
＊Not included in the package

AD converted incoming signals from the SIR-1000 Series to a PC in real time.The SIR-1000 Series as a high performance front end

●High-speed SCSI transfer board: STB-30, PCscan III software: SUK-330

Input signals → SIR-1000 series

IBM-PC/AT® or compatible machine＊

PC scan software

（ADAPTEC ACK-W2W-E recommended）

Wide-SCSI cable＊

SCSI host adapter＊

ADAPTEC AHA-2940UW/U2W

High-speed SCSI transfer board（STB-30）
（Mounted in the option slot on the rear panel of the data recoder）

PCI bus connection
＊Not included in the package

Recorded data from an AIT streamer drive to a PC

●AIT streamer drive（Stand-alone type SDX-S300C），PCscan III software: SUK-300

Recorded data →

IBM-PC/AT® or compatible machine ＊

PC scan software

（ADAPTEC ACK-W2W-E recommended）

Wide-SCSI cable＊

SCSI host adapter＊

ADAPTEC AHA-2940UW/U2W

AIT streamer drive（SDX-S300C / stand-alone type）

PCI bus connection
＊Not included in the package

*Package using a built-in type drive also available.

PCscan Ⅲ

For Windows®95 / Windows NT®

PCscan III is software for controlling the SIR-1000 Series from an IBM-PC/AT® or compatible. This software allows measurement data to be transferred directly to the computer for data processing such as plotting and analysis. Used together with a high-speed SCSI transfer board (STB-30*), PCscan III allows the SIR-1000 Series to be used as a compact, high-performance front end, making it possible to display waveforms on and transfer data to a computer. Used together with an SDX SCSI emulation board (STB-10) or an AIT streamer, PCscan III offers functions for transferring and displaying recorded data and for exporting data to major analysis software.

After data transfer, various analysis such as primary and secondary differentiation can also be performed.
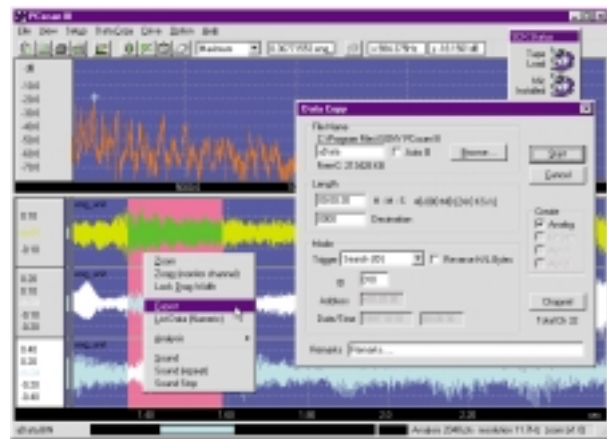
〈Supported export formats〉
Binary（Intel86）, Binary（Motorola68）, ASCII-Eng（delim/comma）, ASCII-Eng（delim/tab）, ASCII-Eng（delim/space）, WAVE, DADisp, MATLAB, Snap-Master（HEM）, STAR, nVision（EZFile）, UDF58（Universal file）

〈Computer requirements〉
Computer	：IBM-PC/AT®or compatible machine	
OS	：WindowsNT4.0 or later, Windows95	
CPU	：Pentium 266MHz or faster（PentiumⅡ 350MHz）	
Memory	：64 Mbytes or more（128 Mbytes or more）	

Specs in parentheses are for STB-30

Interface	：Wide SCSI-2 type
SCSI adapter	：AHA-2940UW/U2W by ADAPTEC
SCSI cable	：ACK/WP-W2W-E by ADAPTEC
Display	：800 ×600 dpi/256 colors or more
Floppy disk drive	：3.5" 2HD/1.44 MB
Hard disk drive	：EIDE type, 5 Mbytes or more free space

*There may be some restrictions in the data transfer through the STB-30 depending on the computer's performance.

Options

■For SIR-1000/1000i

●Channel expansion unit SCX-32
・Dimensions: 340（W）×60（H）×250（D）mm
・Weight: 3.5kg

＊Direct voltage input only

●Channel expansion unit SCX-32i
・Dimensions: 340（W）×60（H）×250（D）mm
・Weight: 3.6kg

＊ICP or Direct voltage input

■For SIR-1000W

●Channel expansion unit SCX-16W
・Dimensions: 340（W）×60（H）×250（D）mm
・Weight: 3.5kg

■For SIR-1000 Series

●Guard frame SHL-10
・Dimensions when mounted on the SIR-1000 Series: 352（W）×115（H）×356（D）mm

※This photograph shows the SHL-10 mounted on the SIR-1000.

●Rack mount adapter
For SIR-1000 Series: SRT-10

For Channel expansion unit: SRT-20
Can be used in EIA standard 19" racks.

●Multi sync adapter SSB-10

●Sync cable SCK-10
●Carrying case
For SIR-1000 Series: STC-10
For SIR-1000 Series + Channel expansin unit: STC-23
Shipping Case (STC-10R, STC-30R) is also available

●AIT tape SDX1-25C（with memory）

●Lithium ion battery pack BP-L60A BP-L90A

●Battery charger BC-L100
・Sequential charging of up to 4 battery packs

●Stacking frame
For 64 channels ：SHL-64
For 128 channels: SHL-128

●Power supply unit SAA-24
・Power supply for SCX-32/32i can supply up to 3 SCX-32/32i's

●Remote control unit SRM-10
・Display ： Bar meter (max. 16 channels), tape address, input range, warning indicators such as over range, etc.
・Control ： REC, STOP, FWD, FF, REW, PAUSE, tape speed, B/C mode, input range, ID No. increment, search, etc.
・Interface ： RS-232C protocol
・Dimensions: 210（W）×70（H）×25（D）mm
・Weight ： approx. 0.5 kg

●Shock mount adapter SSM-10
・Vibration: MIL-STD-810C Method 514.2.2 Curve AR＋H; 74-2000Hz 98.1m/s²（±10G）

●Differential input kit
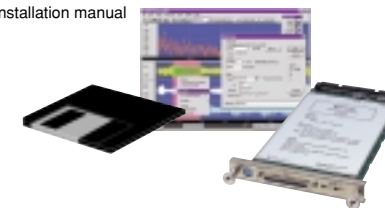**For SIR-1000: SDF-10**

For SCX-32: SDF-20

●BNC cable length: 2 m, 1.5C-2V
PCBK21（BNC/BNC） **PCBK28**（BNC/BNC 8-cable set）
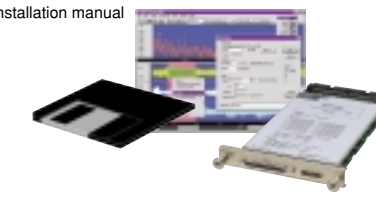
SIR-1000 Series computer interface options

●SDX SCSI emulation package STF-10PK
Consisting of:
・SDX SCSI emulation board（STB-10）
・PCscan software
・Installation manual

●High-speed SCSI transfer package STF-30PK
Consisting of:
・High-speed SCSI transfer board（STB-30）
・PCscan software
・Installation manual

●SDX drive transfer package
SDV-300PK
Consisting of:
・AIT streamer（stand alone type）
・PCscan software
・Installation manual

SDV-N300PK
Consisting of:
・AIT streamer（built-in type）
・PCscan software
・Installation manual

SIR-1000 Series digital data / video interface options

●High-speed digital I/O board（asynchronous type）SBS-10A
Maximum sampling frequency: 24 MHz/1 channel
Switchable between digital only or use with 16 analog channels
Switchable to 1, 2, 4 or 8 channels

●High-speed digital I/O board（external sync type）SBS-10S
Maximum synchronous bit rate: 24 Mbps/1 channel
Synchronized to an external clock 90k~24Mbps
Switchable to 1, 2, 4 or 8 channels
Switchable to internal or external sampling CLK

●Level converter SBS-LC1
Provides TTL/Bipolar interface for input/output
To be used with SBS-10A/10S

●Video board SVB-10
Television system：NTSC-M/ PAL-B, D, G, H, I, N
Data compression：MPEG2
Number of channel：×1
Input/ Output connector：BNC
＊As to the combination of optional board,consult your nearest distributor

■ Specifications

Tape transport system		SIR-1000	SIR-1000i	SIR-1000W
Tape		Type : AIT（AME）/Width : 8mm/Length : 170m/Storage capacity : 25 Gbyte per cartridge		
Recording system		Rortary head, helical scanning, real-time verify-rewrite function		
Fast forward/Rewind time		150 s or less（for tape length of 170 m）		
Recording/Playback time		2h:1×（normal speed）, 4h:1/2×, 8h:1/4×, 16h:1/8×, 32h:1/16×		

Main analog channels（input level±133%）

		SIR-1000	SIR-1000i	SIR-1000W
Number of channels		16 (32, 64, 128/with SCX-32/32i) switchable		4,8 (16/ with SCX-16W)
Quantization		16-bit linear quantization, 64 × oversampling with digital filter（15 bit mode available for SIR-1000W）		
Input — Direct voltage input — Connector		BNC（single ended）		
Impedance		100kΩ		
Range		±0.5,1,2,5,10,20Vpk（6 steps）manual or automatic	±0.1,0.2,0.5,1,2,5,10,20Vpk（8 steps）manual or automatic	±0.5,1,2,5,10,20Vpk（6 steps）manual or automatic
Coupling		DC		
DC offset		±100%manual or automatic		
Sensor input — Range		—	±0.1,0.2,0.5,1,2,5,10Vpk（7 steps）manual or automatic	—
Power supply		—	24V/4mA（2V voltage drop in constant current power supply）	—
Coupling		—	AC（Fc=0.5Hz）	—
Output — Connector		BNC（single ended）		
Impedance		50Ω		
Level		±1,2,5Vpk（calibrated）or ±0.5〜5Vpk（couuinously variable）		
Frequency response		±0.5dB ; 0dB@200Hz		+1/-1.5dB; 0dB@200Hz
Dynamic range		80 dB or more	80 dB or more/±0.5 to ±20Vpk range 74 dB or more/±0.1, ±0.2Vpk range	76 dB or more/DC to 40kHz 74 dB or more/DC to 80kHz or 160kHz
Inter-channel phase difference		1° or less		2°or less/DC to 40kHz 5°or less/DC to 80kHz or 160kHz
Crosstalk		-80 dB or less	-80 dB or less/±0.5 to ±20Vpk range -74 dB or less/DC to 80kHz or 160kHz	-76 dB or less/DC to 40kHz -74 dB or less/DC to 80kHz or 160kHz
Distortion		0.02% or less	0.02% or less/±0.5 to ±20Vpk range 0.05% or less/±0.1, ±0.2Vpk range	0.016% or less/DC to 40kHz 0.02% or less/DC to 80kHz or 160kHz
DC linearity		±0.1% or less		
Drift		±0.1% or less for both the recording and playback（for 2 hours starting from 15 minutes after power on）		

LSB Digital channels（SIR-1000W）

		SIR-1000	SIR-1000i	SIR-1000W
Internal sampling frequency（normal speed）		—		1ch mode 768kHz / 2ch mode 384kHz / 4ch mode 192kHz — Quantization of all analog channels is set to 15-bit

Auxiliary channels

	SIR-1000 / SIR-1000i / SIR-1000W
AUX-1 Digital channel	Internal sampling frequency : 384kHz（normal speed）
AUX-2 Analog channel（IRIG-B time code）	Frequency response : DC to 19.2kHz（normal speed）S/N ratio : 40 dB or more
Voice channel	Frequency response : DC to 19.2kHz（normal speed）
Subcode information	ID number, Tape address, Input setup, parameters, etc.

Controls

Local	Panel key switch
Remote	RS-232C, Contact closure（TTL）, Dedicated remote controller（SRM-10）, SCSI（STB-30）

■ Frequency bandwidth

Tape speed		1×（normal speed）	1/2×	1/4×	1/8×	1/16×
Continuous recording time		2h	4h	8h	16h	32h
Analog channel（bandwidth）	SIR-1000/1000i 16/32ch mode*	20kHz	10kHz	5kHz	2.5kHz	1.25kHz
	64ch mode**	10kHz	5kHz	2.5kHz	1.25kHz	0.625kHz
	128ch mode***	5kHz	2.5kHz	1.25kHz	0.625kHz	———
	SIR-1000W 4ch mode	160kHz	80kHz	40kHz	20kHz	10kHz
	8ch mode	80kHz	40kHz	20kHz	10kHz	5kHz
	16ch mode*	40kHz	20kHz	10kHz	5kHz	2.5kHz

*with a SCX-32/32i or SCX-16W, **with 3 SCX-32/32i's, ***with 7 SCX-32/32i's

■ High-speed digital channel（option）

	ASYNC mode（SBS-10S / SBS-10A）		EXTERNAL SYNC mode（SBS-10S）
Channel mode	Maximum sampling frequency		Maximum synchronous bit rate
	Using with analog channels*	Using only high-speed digital channels	
1	12.288MHz	24.576MHz	24.576Mbps
2	6.144MHz	12.288MHz	12.288Mbps
4	3.072MHz	6.144MHz	6.144Mbps
8	1.536MHz	3.072MHz	3.072Mbps

*The number of analog channels is halved when SBS-10S/SBS-10A is installed in the SIR-1000W.

I / O connector：Half-pitch, 68-pin connector
I / O level：TIA / EIA-644（LVDS）

Display		SIR-1000	SIR-1000i	SIR-1000W
Front panel LCD		Level meter, ID number, Tape address, Input setup, Warning		

Other functions

		SIR-1000	SIR-1000i	SIR-1000W
High-speed search		Up to 75 times at normal speed		
High-speed search target		Via front panel：ID number, MARK, BOD, EOD, Start ID, Via the RS-232C：ID number, Address, Real time clock in addition to the left		
Display	ID	001 to 999, with Auto-increment		
	Address	Hour, Minute, Second		
	Tape remaining	Hour, Minute (for recording and playback only)		
	Real-time clock	Switches between year/month/day and hour:minute:second（six digit）		
	Bar meter	Switches between % and dB		
	Tape speed	×1（normal speed）, ×1/2, ×1/4, ×1/8, ×1/16		
	Analog channel setting	Input range, Input DC offset, Output level		
	Warning indicator	Low DC voltage, Error check message, Over-range input, Dew condensation		
Monitor output		Data of the selected channel		
Sound monitor		Switchs between voice annotation and selected data channel, using internal speaker or earphone（option）		
Synchronous operation		Synchronous recording/playback with eight SIR-1000s/-1000is, up to 1024 channels		Synchronous recording/playback with eight SIR-1000Ws, up to 128 channels
Self-check		Power supply, servo, head（recording/play back function）, amplifiers		
Test signal		±100% AC sine wave（normal speed 1kHz）/＋100% DC/−100% DC and 0V or external input（from CH1）, Selection		
Calibration		Gain, DC offset		
Pre-trigger recording		Holds 3-s data prior to the start of recording（normal speed）		
TOC recording		Tape address information, recording setup imformation, and other imformation are recorded on the tape and in the cartridge's internal memory（cartridges with MIC only）		

Power requirements,environmental and safety

		SIR-1000	SIR-1000i	SIR-1000W
DC	Voltage	11 to 30V（15V or more when supplying power to an expansion unit）		
	Current consumption	Approx.5.5A@12V	Approx.6.0A@12V	Approx.7.0A@12V
AC	Voltage/Frequency	90 to 132V/47 to 440Hz or 198 to 250V /47 to 60Hz		
	Current consumption	Approx.1.1A@120V	Approx.1.3A@120V	Approx.1.6A@120V
Battery（option）		BP-L60A（14.4V, 5.4Ah）BP-L90A（14.4V, 8.1Ah）		
Dimensions W×H×D		340×115×260（mm）,13.4"×4.5"×10.2"		
Mass		Approx.7.5kg（16.5lbs）	Approx.7.6kg（16.8lbs）	Approx.7.7kg（17.0lbs）
Operating temperature		0 to 40℃/20 to 80% RH（no condensation）		
Airpressure		860 to 1060 hPa		
Vibration resistance		MIL-STD-810C（±1.5G, 6〜200Hz）		
Shock resistance		392m/s², 11ms, Half-sine		
Safety regulations		UL, CSA, TÜV		
EMC compliance		FCC, CE, AS/ NZS		
Standard supplied accessories		Microphone, AC power cord, DC power cord, cartridge tape, precision screw driver, cleaning tape, instruction manual, performance test document（one each）		

＊SIR-1000W does not have playback compatibility with SIR-1000 and SIR-1000i. ＊Design and specifications are subject to change without prior nortice.

		SCX-32	SCX-32i	SCX-16W
DC	Voltage	11 to 30V		
	Current consumption	Approx.2.0A@12V	Approx.3.5A@12V	Approx.4.0A@12V
Dimensions（W×H×D）		340×65×250（mm）,13.4"×2.6"×9.8"/Approx.3.5kg,7.7lbs		
Mass		Approx.3.5kg,7.7lbs	Approx.3.6kg,7.9lbs	Approx.3.5kg,7.7lbs

■ Video channel（option）

Video signal compression		MPEG2
Input	Video signal	NTSC or PAL (manually selectable)
	connector	BNC×1
	Impedance	75Ω
Output	Video signal	NTSC or PAL (same format as the input) LED indication for video format（NTSC or PAL）
	connector	BNC×1
	Replay mode	Fast or slow replay, or still picture（by changing tape speed or pressing PAUSE key）
	Impedance	75Ω
Number of video channels		1 *Main analog channels are limited to 16 (for SIR-1000,1000i), or to half for the same bandwidth（for SIR-1000W）when SVB-10 is installed
Power consumption		Less than 18W

＊When using SVB-10,SIR-1000 series require 15V DC or more.
＊ICP®（Integrated Circuit Piezoelectric）is a registered trademark of PCB Piezotronics, Inc.
＊Windows®95, Windows NT®is a trademark of Microsoft Corporation.

Bit rate

Tape Speed	Rec/Replay Time	Video channel bit rate	Analog channel bandwidth for SIR-1000/1000i*	Analog channel bandwidth for SIR-1000W		
				2ch mode	4ch mode	8ch mode
×1	2h	12.288Mbps	20kHz	160kHz	80kHz	40kHz
×1/2	4h	6.144Mbps	10kHz	80kHz	40kHz	20kHz
×1/4	8h	3.072Mbps	5kHz	40kHz	20kHz	10kHz
×1/8	16h	1.536Mbps	2.5kHz	20kHz	10kHz	5kHz
×1/16	32h	0.768Mbps	1.25kHz	10kHz	5kHz	2.5kHz

*SIR-1000/1000i:16channel mode
**The picture quality declines remarkably at 1/8 speed recording
***Recording at 1/16 speed is not available.（Replay is possible）

Advanced Intelligent Tape is a trademark of Sony Corporation.

ISO 9001/14001 JACO / JAB

These products are manufactured at our Isehara Plant that is certified to ISO9001 Quality Management System and ISO14001 Environmental Management System