"EX Recorder Pack" for easy data recording using PCscan IV EZY recording software and a touch-panel PC.

Offers the same easy operability as DAT recorder's on PC's touch panel display
The touch panel PC functions as a remote controller.

Recording software + EX Series

(Above photograph: EX-RP30, 16 channel pack and a "Slate Touch" (optional))

EX-RP10/20/30

*Modules supported by PCscan IV EZY: IEPE/Direct and Analog Output

EX Series	Communications and data storage via i.LINK
Three Recorder Packs consisting of an Interface Unit with IEPE/Direct and Output modules are available. EX-RP10, 4 channel pack (4ch input, 4ch output), EX-RP20, 8 channel pack (8ch input, 4ch output), EX-RP30, 16 channel pack (16ch input, 8ch output) All three Packs are easy to set up and operate. Perfect for a data recording application.	i.LINK is used for communication between the EX Series and a PC. Data can be recorded on the PC's HDD, or on a Memory Stick or a Compact Flash. When combined with a touch panel PC such as "Slate Touch", the PC can be used as a remote controller in a mobile application.

Pack contents	EX Series (main unit), i.LINK cable (6P), earphone-microphone, AC adapter, AC cable, DC cable, CD-ROM (PCscan IV EZY, PCscan IV STD), driver, setup manual, instruction manuals (hardware + software) A PC is not included in the EX Recorder Pack. For the recommended system requirements for the PC, please contact us.

PC-less data recording. Handheld Memory Recording Module makes the EX Series a PC-less data recording system with control keys and easy-to-see color LCD it becomes a remote control as well.

Combined with the EX Series,
the EX-RM10 can record up to 24channels of data.
With a solid state memory card as the recording medium,
it is very vibration resistant.
It is suitable for data recording in harsh
environments. It has a built-in remote control
function allowing setting, recording and playback.
The input signal level can be monitored
with the bar-meter on the color LCD.

EX-RM10

*Modules supported: IEPE/Direct, Microphone, Charge, DC Strain and Analog Output.

Memory card recording	High-capacity data recording
The module accepts PCMCIA Card Adapters, into which various types of memory can be inserted. Flash memory retains data even when power is switched off, and is far less susceptible to shock and vibration. The data format is PCscan III, which makes data reading very easy by analysis software.	The module has two PCMCIA slots and allows for high-capacity data recording using two memory cards. Use of Memory Stick PRO allows for up to 4 GByte of continuous data recording. The module covers a wide range of applications from low-sampling 24-hour recording to high frequency audio-band signals.

■Max. number of channels

Bandwidth (Sampling freq.)	20.48kHz (51.2kHz)	10.24kHz (25.6kHz)	5.12kHz (12.8kHz)
Max. number of channels	8	16	24

■Recording time

Bandwidth (Sampling freq.)		20.48kHz (51.2kHz)	10.24kHz (25.6kHz)	2.56kHz (6.4kHz)	160Hz (400Hz)
No. of channels		8	16	16	16
Recording time	128MB memory card	2min	2min	10min	2hr.45min
	2GB memory card	35min	35min	2hr.30min	43hr.15min

■Specifications (EX Series)

No. of input channels		4-24ch (1-6 modules: 1 measuring group) Up to 192 ch (when connecting 8 measuring groups)
Sampling frequency ・Bandwidth= Sampling frequency x 1/2.5 (Type 2: 1/2.56) ・Setting of sampling frequency: per module ・Same type of sampling frequency within the system	Type 1	102.4k^{*1}/51.2k/25.6k/12.8k/6.4k/3.2k/1.6k/800/400/200/100/50/25 Hz (40.96k^{*1}/20.48k/10.24k/5.12k/2.56k/1.28k/640/320/160/80/40/20/10 Hz)
	Type 2	131.072k^{*1}/65.536k/32.768k/16.384k/8.192k/4.096k/2.048k/1.024k/512/256/128/64/32/16/8 Hz (51.2k^{*1}/25.6k/12.8k/6.4k/3.2k/1.6k/800/400/200/100/50/25/12.5/6.2/3.1 Hz)
	Type 3	10k/5k/2k/1k/500/200/100/50/20/10 Hz (4k/2k/800/400/200/80/40/20/8/4 Hz)
Transfer rate		Max. 26.2144 Mbps
Quantization		16/24 bit selectable
Operating environment		Temperature: 0-40℃, Humidity: 20-80% RH, Air pressure: 500-1060 hPa, Vibration resistance: MIL- STD-810C
Dimensions (W x H x D)		4 ch system: 88 x 110 x 200 mm, 24 ch system: 213 x 110 x 200 mm
Mass		4 ch system: 1.9kg, 24 ch system: 4.8kg
Power supply		AC: 100-240 V (using AC adapter) DC: 11-30 V Battery: for main power supply, or backup power supply when AC/DC is not connected Battery operation time: Approx. 320 min (4 ch system), Approx. 130 min (24 ch system)^{*2}
Power consumption		4 ch system: Approx. 18 W @ DC12 V, 24 ch system: Approx. 44W @ DC12 V
Compliance		Safety compliance: UL, CSA, CE, Japanese Electrical Appliance and Material Law EMC compliance: FCC, CE, AS/NZS

*1: When using EX-MA10 *2: Depends on the battery used

■Input Modules

[IEPE/Direct EX- MI10]

No. of channels	4 (Single ended), 2 (Differential)
Connector	BNC
Input signal	Preamp built-in sensor (IEPE) or voltage
Sensor power supply	24V, 4mA
Input impedance	100kΩ
Input range	±0.1, 0.2, 0.5, 1, 2, 5, 10, 20 Vpk
Input offset	±100%, 201 steps
Coupling	AC/DC
Low pass filter	1st order RC filter + Digital filter
High pass filter	0.5Hz, 20Hz
Weighing filter	A, B, C or none
TEDS	Supported (IEEE1451.4)

[Microphone EX-MM10]

No. of channels	4 (Single ended)
Connector	LEMO= 7pin
Preamp power supply	±14V
Polarization voltage	0, 200V
Input impedance	100kΩ
Input range	±7.07m, 22.36m, 70.71m, 223.6m, 707.1m, 2.236, 7.071Vpk
Low pass filter	1st order RC filter + Digital filter
High pass filter	0.5Hz, 20Hz
Weighting filter	A, B, C or none
TEDS	Supported (IEEE1451.4)
Recommended microphone	B&K 4190-L-001, Type 2669L

[Charge EX-MC10]

No. of channels	4 (Single ended)
Connector	Micro dot
Input range	1, 3.16, 10, 31.6, 100, 316, 1000, 3160, 10000 pC
Low pass filter	1st order RC filter + Digital filter
High pass filter	0.5Hz

[Pulse/FV EX-MP10]

No. of channels	4 (Periodic time measuring, Digital bit stream), 1 (FV)
Connector	BNC
Measuring mode	Periodic time measuring, Digital bit stream, FV
Periodic time measuring mode	Accuracy: 25-6400 ns
Digital bit stream mode	Sampling frequency: 8.388 MHz-256 Hz
FV mode	Frequency: 500 kHz-0.01Hz
Connector	BNC
Input impedance	100kΩ
Input signal level	±10V(=±100%)
Threshold	±100%, 201 steps

[DC Strain EX-MG10]

No. of channels	4 (Differential)
Connector	LEMO® 6pin (For other connectors, contact us.)
Bridge resistance	120Ω or more
Bridge type	Half, Full
Bridge excitation voltage	DC 2.5, 5 V
Input range	±400, 1000, 2000, 4000, 10000, 20000 μ ST (Gauge factor=2.0)
Coupling	DC
Zero balance adjustment	Automatic
Low pass filter	1st order RC filter + Digital filter

[Thermocouple EX-MT20]

No. of channels	4
Supported thermocouple types	Thermocouple: J, K, T, E, N, R, S, B, Platinum Resistance Thermometer: Pt100 (3 wire)
Measuring temperature	−200 to 1820℃
Temperature resolution	0.1˚C
Cold junction compensation (Thermocouple)	Internal/External

[CAN EX-MB10]

No. of ports	2
CAN type	CAN 2.0A, 2.0B
Protocol	High-speed, Low-speed, DeviceNet, Optical, SingleWire, LIN
Triggers	CAN message
Message transmission	Receiving (recording), Sending

[Wideband/AES EX-MA10]

No. of channels	2(Analog, Unbalanced), L+R(AES/EBU, Balanced)
Connector	BNC (Analog), LEMO= 6pin (AES/EBU)
Measuring mode	Wideband mode (Analog), AES/EBU mode (AES/EBU + Analog)
Wideband mode	Sampling frequency: Type1: 102.4 kHz, Type2: 131.072 kHz
AES/EBU mode	Sampling frequency AES/EBU ch: 48k, 44.1k, 32 kHz Analog ch: Type1: 51.2 kHz, Type2: 65.536 kHz
AES/EBU	Supporting AES3-1992
Signal input type (Analog)	Preamp built-in sensor (IEPE) or voltage

■Output Module EX-FA10

No. of channels	4 (Single ended)
Connector	BNC
Output impedance	50Ω
Output level	±1, 2 Vpk or variable at 0.1V step (Max. ±5Vpk)
Output signals	Monitoring (E to E) Replay of recorded data Function generator: DC, Sine wave (fixed, sweep), Noise (white, pink)

■Interface Unit EX-UT10

PC interface	i.LINK (IEEE1394)
Max. no. of modules	Up to 6 modules
Triggers	Trigger channel: TTL Input channel(s): Level/Edge, Pre/Post
Voice memo	1ch
Fan control mode	Available (On/Off)
Supplied accessories	AC adapter, Power cable (AC, DC), i.LINK cable (EX-DK10), Earphone-microphone, Screwdriver

■Memory recording module EX-RM10

Recording media	Memory Stick, Memory Stick PRO, Compact Flash™
No. of PCMCIA slots	2
No. of input channels	Max. 24 ch
Supporting modules	EX-MI10, EX-MM10, EX-MC10, EX-MG10, EX-FA10
LCD	Color LCD (Indications: bar meter, system status, and over range)
Operation	REC, STOP, FWD, Search, Menu Tab
Vibration resistance	MIL-STD-810C
Dimensions (W x H x D)	200 x 38 x 110 mm
Mass	Approx. 0.8 kg
Supplied accessories	Memory Stick (128MB x 1), PC card adaptor (1)

* The corporate names and names of the products stated in this brochure are trademarks or registered trademarks of the respective companies.
* Specifications and appearances are subject to change without prior notice.
* For inquiries on the measuring system configuration and software, contact Sony Manufacturing Systems or local representative.
* The actual specifications may change from the above hardware specifications in accordance with performance of the software and PC.

⚠ **Safety Notice: For your safety, please read the instruction manual carefully before using the product.** ●Specifications and appearance are subject to change without prior notice.

Used material: 100% recycled paper, recyclable
Zero-VOC (Volatile Organic Compound) vegetable oil ink

032E-0606-03-01A

SONY

Data Acquisition Front-end
EX Series

Compact, mobile and versatile front-end for data acquisition and recording.
For strain, vibration, noise, rotation, temperature and CAN data.
System configurable from 4 to 192 channels.

* Picture in actual size

Data Acquisition System

Sony Manufacturing Systems Corporation

Isehara Center is registered to ISO 9001 (Quality)

High-performance front-end for data acquisition as your analysis tool.

■ Use of analysis software products supporting the EX Series allows for a range of process from hardware settings to real-time/post analysis.
■ A broad range of input signals (IEPE/Direct, Microphone, Charge, DC Strain, Pulse/FV, Thermocouple, CAN and Wideband/AES)
■ Expansion flexibility from a small 4 channel system up to a 192 channel system using a high speed i.LINK network.
■ A compact system with 3-way power supply (AC/DC/battery), ideal for mobile applications.
Battery power can also be used as automatic backup power upon main power failure.

EX Series

CAN
Strain
Temperature
Vibration
Rotation
Noise
Wideband AES

Data acquisition/recording/analysis
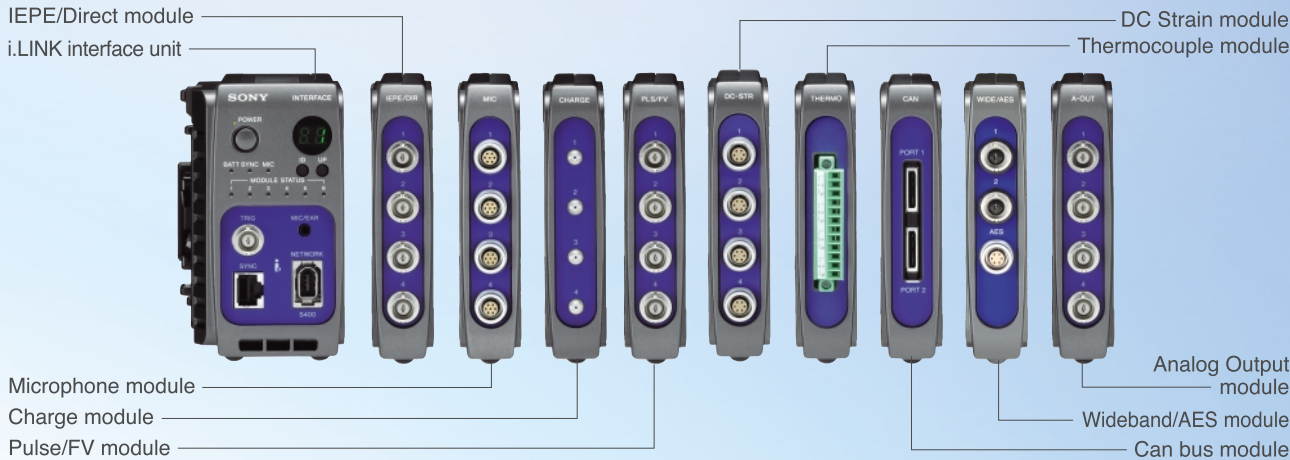
Real-time data processing *Setting and control*
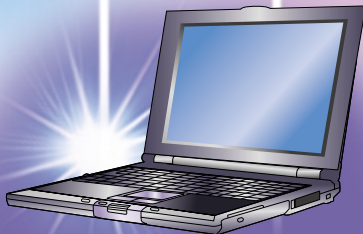
Setting and control of hardware and real-time data processing by analysis software

The EX Series is a high-performance front-end to meet your measurement requirements from data logging of strain and temperature to supersonic signals.
The EX Series employs a modular structure enabling different input signals and sampling frequencies to be combined in one unit corresponding to each sensor's input signal.
Combined with a PC and analysis software, your measurement process is streamlined and testing time is significantly reduced.

Functions

IEPE/Direct module
i.LINK interface unit
DC Strain module
Thermocouple module
Microphone module
Charge module
Pulse/FV module
Analog Output module
Wideband/AES module
Can bus module

Built-in sensor amplifiers
The module's build-in amplifiers enable direct connection with sensors.
The EX offers 8 input modules: IEPE/Direct, Microphone, Charge, DC Strain, Pulse/FV, Thermocouple, CAN and Wideband/AES. The system also supports TEDS sensors for quicker set-up.

Modular structure
The EX Series does not require a mainframe thanks to its space-saving modular design. Choose a right input module corresponding to the input signal type.
It can be connected to the Interface Unit easily with a screw driver.
The minimum configuration of a 4ch system measures only 88x110x200mm(excluding the battery), so it can be used in cars, on aircraft or on trains, or for field measurement where size matters. Robust aluminum die cast chassis allows for heavy-duty use.

Multiple sampling
The EX Series offers three different types of sampling frequencies. With an A/D converter for each channel, all incoming signals are sampled simultaneously on one clock signal.Variable sampling frequencies from 8 Hz to 131.072* kHz can be set per module, supporting a wide range of measuring applications from high-frequency, short-time test to long-time measuring of more than 24 hours. The quantization can also be switched between 16-bit and 24-bit (high dynamic range).
*When using EX-MA10 (Type 2 sampling freqency)

System expansion of up to 192 channels
Up to six 4ch-input modules can be connected to a single Interface Unit, allowing measuring of up to 24 channels per system. Counting this as a single Measuring Group, up to 8 Measuring Groups can be interconnected via a high speed i.LINK network, making the system expansion flexible up to a total of 192 channels.
*An i.LINK cable and a Sync cable are necessary for connection between an Interface Unit(EX-UT10) and an i.LINK adapter(EX-AD10)

Options

Optional accessories, batteries, battery charger, setting/monitoring software "PCscan IV"

■ Accessories (Option)

EX-AD10	i.LINK adapter (2 measuring groups connectable per adapter)
EX-DK10	i.LINK cable (6P-6P, 3.5m)(with a lock function)
EX-DK11	i.LINK cable (6P-4P, 3.5m) (with a lock function)
EX-CC20	Carrying bag (Soft)
EX-CC30	Shipping case (Hard)
EX-HL10	Mounting bracket (with a handle)

EX-CC20 Carrying bag (Soft)   EX-CC30 Shipping case (Hard)   EX-HL10 Mounting bracket (with a handle)

■ Batteries and Battery Charger (Option)

BP-GL65	or equivalent Litium-ion battery (65Wh)
BP-GL95	or equivalent Litium-ion battery (95Wh)
BC-L70	or equivalent Battery charger

■ Setting/monitoring software "PCscan IV"

STD	Replay of recorded data
ADV/PRO (Option)	Post analysis
RTA (Option)	Real-time analysis
EZY*	For Recorder Pack only (for Setting and Recording/Replay)

*The EX Recorder Pack, EX-RP10/20/30, comes with PCscan IV STD and EZY as standard.

Analysis software supporing the EX Series (sofware sold separately)

Analysis software	Measuring applications	IEPE/Direct	Micro phone	Charge	DC Strain	Pulse/FV	Thermo couple	CAN	Wideband/AES	Analog Output	System over 24ch*
HEAD acoustics	ArtemiS Supplier: HEAD acoustics GmbH URL: www.head-acoustics.de	√	√	√	√	√	√	√	√	√	√
PAK MÜLLER-BBM	PAK Supplier: Müller-BBM VibroAkustik Systeme GmbH URL: www.muellerbbm vas.de	√	√	√	√	√		√		√	√
I-DEAS PRO	I-DEAS PRO Supplier: Brüel & Kjaer Sound & Vibration Measurement A/S www.bksv.com	√	√	√							√
ME'scope VES Visual Engineering Series	ME'scopeVES Supplier: Vibrant Technology,Inc. URL: www.vibetech.com * ME'scope VES is a registered trademark of Vibrant Technology,Inc.	√									
MATLAB	mexEX (MATLAB Extension for Sony EX Series) Supplier: Sony Manufacturing Systems Corp. URL: www.sonysms.co.jp * MATLAB is a registered trademark of The Math Works, Inc.	√	√	√						√	
LabVIEW	LabVIEW Driver For EX Supplier: Sony Manufacturing Systems Corp. URL: www.sonysms.co.jp * LabVIEW is a registered trademark of Nation Instruments Co.	√	√	√		√				√	

*. 25 to192ch system configurable using the EX-AD10 i.Link adapter.