Specifications

DR-600 Main Unit

No. of Slots	8 for AR-60 series amplifier module
Max. Data Transfer Rate	100BASE-TX Ethernet: 1.28MB/sec, PC Memory Card (only): 1. 1MB/sec, 100BASE-TX/PC Memory Card (Both): 600kB/sec (Actual recording throughput is equaled or lowered than this rate depending on network environment or media to be used.)
Sampling Frequency (Limited by each amplifier module's specifications)	Series 1: 1, 2, 5, 10, 20, 50,100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k, 200kHz Series 2: 12.8, 25.6, 51.2, 128, 256, 512, 1.28k, 2.56k, 5.12k, 12.8k, 25.6k, 51.2k, 128k, 256kHz. Series 3: 30, 300, 3kHz
External Sampling	Yes
Media	PC Card Type II Memory Card or CompactFlash™ (with Card Adapter)
Recording Mode	Manual, Pre/Post trigger, Level trigger start
Controls	For recording: ARMED, START, STOP, MARK For settings: Buttons, Rotary knobs
Display	VFD, characters and bar graph monitor
Interface	100BASE-TX Ethernet
Power Supply and Consumption	11 to 30 V DC, Approx. 60 W (64ch strain measurement)
External Dimensions	300W x 100H x 210D mm
Mass	5.6 kg (64ch strain measurement system)
Operating Temperature	-10 ~ 60 degree C (60 sec pre-heat required for power-on at 5 degree C or lower)
Vibration Proof	10G, 30 to 200Hz

AR-60ST8 8ch Strain/DC Input Amplifier Module

No. of Channels	8
Connector	Binder719 5-pin Female
Applicable Gage	120 to 1k Ω
Input Impedance	1 M Ω or more (at differential input mode)
Excitation Voltage	2 V
Balance Method	Electrical balance, within +/- 700%
Input Range	+/- 1000, 2000, 5000, 10000, 2000 micro ST +/- 0.5, 1, 2, 5, 10 V
Low Pass Filter	20, 50, 100, 200, 500, 1k, 2k, Pass -48 dB/Oct Butterworth
Frequency Bandwidth	0 to 10 kHz -3 dB
ADC	16-bit successive comparison method ADC x 8 Max. Sampling frequency 20 kHz

AR-60PA9A 9ch IEPE Input Amplifier Module

No. of Channels	9
Connector	10-32 UNF Microdot x 9
Input Impedance	100 k Ω unbalanced voltage input
Sensor Power Supply	Constant current 4 mA, 24V power supply
Input Range	+/- 50m, 100m, 200m, 500m, 1, 2, 5, 10 V
Low Pass Filter	200, 500, 1k, Pass -24 dB/Oct Butterworth
Frequency Bandwidth	1.5 ~ 20 kHz -3 dB
ADC	16-bit successive comparison method ADC x 8, Max. sampling frequency 51.2 kHz

Note: External dimension of Input Amplifier Module: 24.8W x 95H x 151.5D mm.

AR-60FV6 6ch FV/ Pulse Count Input Amplifier Module

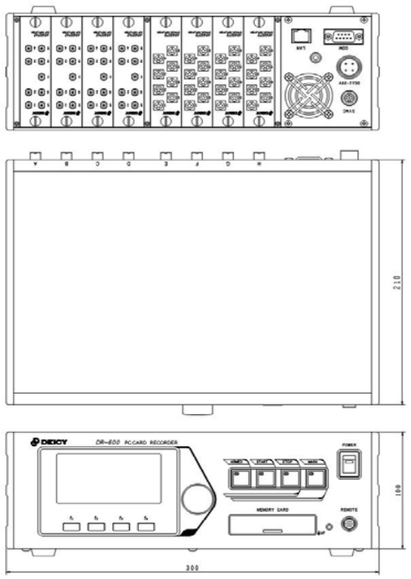
No. of Channels	6
Connector	Binder719 4-pin Female
Input Impedance	10 k Ω or more
Max. Input Voltage	± 40 V or less
Sensor Power Supply	+5V max. 30mA, +12V max. 100mA, total max. 100mA
Input Mode	1ch: Dedicate for F-V TTL/Electromagnetic coupler, threshold adjustable with 15-turn trimmer Detect 20 micro sec or more pulse width and 200 micro sec or more pulse duty as a valid signal, applicable model to be connected: DEICY ER-01 Electromagnetic coupler type rotation sensor 2ch: Dedicate for F-V TTL or AC, Threshold +/- 50mV 3ch to 6ch: F-V or Counter F-V mode: TTL or AC, Threshold +/- 50mV Counter mode: 16bit, 32bit counter mode use 3 and 4, 5 and 6ch
FV Method and Range	Cycle measurement between input channels 1ch: 0.1 to 500Hz, 0.5 to 5kHz 2ch to 6ch: 0.1 to 500Hz, 0.5 to 5kHz, 1 to 50kHz
Response Speed	Max. sampling frequency of each range or 5 kHz (only 1ch ON, the number will be reduced in case measurement channels are increased)
Pre-scaler	1 to 255
Smoothing	Simple moving average method, 1 to 100

AR-60TC6-K 6ch K-type Thermocouple Input Amplifier Module

No. of Input Channels	6
Connector	Omega GIM-K2
Input method	Flying capacitor method, between-channels' isolation
Max. Isolation Voltage	200 V DC
Applicable Thermocouple	K-type (with burnout detection)
Frequency Bandwidth	0 to 10 Hz, -3 dB fixed
ADC	16-bit successive comparison method ADC x 1, Max. sampling frequency 20 Hz simultaneous, moving average at 100Hz

J and T-type thermocouple models are also available.

DR-600 External View



Read Instruction Manual carefully before using the unit.

PC Card Recorder

DR-600

October 2006 Rev. 1.04

64ch strain measurements in A4 size

Increasing efficiency on your tasks by multiple-channel measurements

Multiple-channel measurement at a time replaces multiple-test implementations, it results to save your time to the test result

The DR-600 is A4 size, compact, and transportable PC Card Recorder, which has been designed for multi-channel measurements in testing fields.
Various types of amplifier modules, such as strain, DC, IEPE (Integrated Electronics Piezo Electric), Thermocouples, and FV/Pulse inputs can be freely installed into 8 slots of the main unit. The DR-600 can store acquisition data into a PC memory card or can transmit to PC via 100BASE-TX Ethernet interface. Stand-alone or controlling from PC operations are possible.

- Multi-channel recordings, 64ch strain, or 72ch IEPE
- Multi-unit recording synchronization
- Amplifier modules is shielded housing
- Operating temperature range from – 10 to 60 degree C
- 100BASE-TX interface
- Voice memo recording
- Control program and Waveform viewer program standard accessories

Amplifier modules, easy to remove and to install

Availability at Measurement Fields

Compact and light weight hardware for “availability” at the field and on-board multi-channel measurements, it results to increase your efficiency by making set up easy.

Easy to Change System Configurations

Each amplifier unit in the shielded case is modular-design for easy installation/removable in the field with 2 screws on its front panel. Maximum 8 amplifier modules are freely selectable and can be installed in to the main unit.

External dimension of amplifier module 24.8W x 95H x 151.5D mm

AR-60ST8	DC Bridge Method Strain/DC Input Amplifier Module	8ch
AR-60PA9A	IEPE Input Amplifier Module	9ch
AR-60TC6-K	K-type Thermocouple Input Amplifier Module	6ch
AR-60TC6-J	J-type Thermocouple Input Amplifier Module	6ch
AR-60TC6-T	T-type Thermocouple Input Amplifier Module	6ch
AR-60FV6	FV/Pulse Count Input Module	6ch

(IEPE: Integrated Electronics Piezo Electric)

Portable, Compact, Light Weight

It is a compact and light weight unit, for example, 64ch strain measurement system is 5.6 kg, so that it is easy to carry to your test site or to install into your test vehicle. Multi-channel bridge boxes as the same A4 size with the main unit are fit to mount on the top of the DR-600.

DR-600 with Bridge Box

DR-600 with Anti-vibration Mount Unit

Uses at Field Test Environments

The DR-600 has been designed to meet the field test environments, such as high temperatures, dusts, shock, etc.. The DR-600 intakes cooling air from the bottom of the unit through a replaceable dust filter and exhausts from the rear panel. This cooling system allows you to operate the DR-600 up to 60 degree C operating temperature.
The main unit can be used for on-vehicle tests by meeting 10G 30Hz – 200Hz shock specification.
Power supply is 11 -30 V DC.

Reduce Number of Tests

Increasing the channel count density to be installed along with minimizing a foot-print of the unit enables multi-channel 64 strain measurements or 72 vibration measurements by using IEPE sensors within a single unit. Multiple units can be recording-synchronized for recordings of more than 100ch.

Data Transfer Rate and Sampling Frequencies

Data transfer rate of the DR-600 supports the higher sampling frequencies at the multi-channel recording applications. Recording to PC memory card and/or PC’s hard disk drive are/is possible.
Depending on your measurement applications, you can select one sampling frequency out of 3 sampling frequency series explained below.

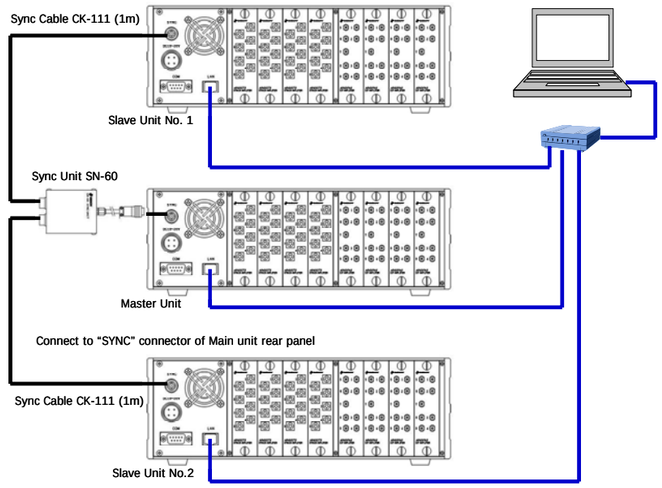
- Series 1: 1, 2, 5, 10, 20, 50,100, 200, 500, 1k, 2k, 5k, 10k, 20k, 50k, 100k, 200kHz
- Series 2: 12.8, 25.6, 51.2, 128, 256, 512, 1.28k, 2.56k, 5.12k, 12.8k, 25.6k, 51.2k, 128k, 256kHz
- Series 3: 30, 300, 3kHz

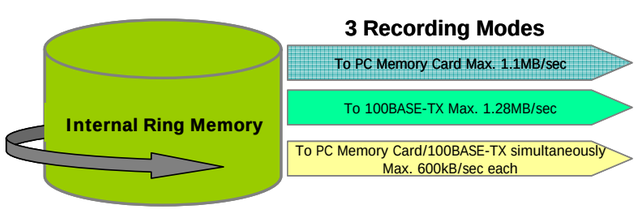
Remote Control Unit

A standard accessory remote control unit allows you to control recordings of the DR-600 at the environment where the PC cannot be used. Recording data can be monitored in the bar-meter or the percentage display at the VFD (Vacuum Fluorescent Display) of the DR-600. Voice memo recording and the balance operation are available at the remote control unit.

Synchronizing 3 x DR-600s

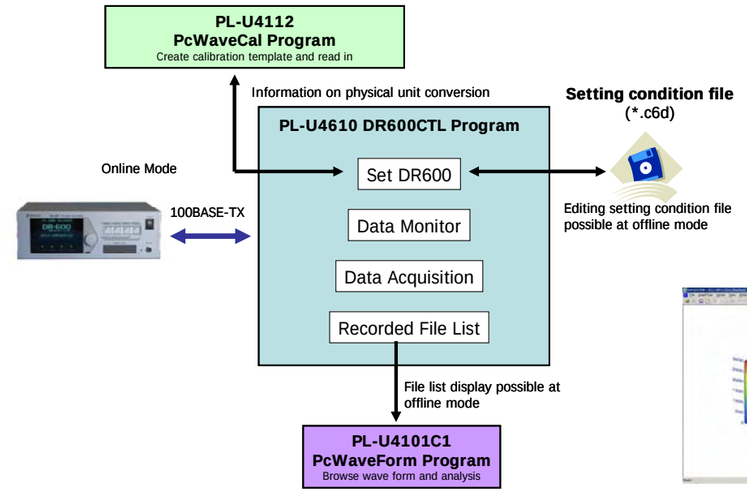
LAN cables and Switching hub are needed for controlling from PC.





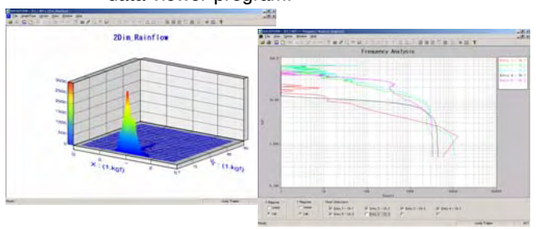
Browse Recorded Data File Promptly

The DR-600 system combines the control program for settings, monitoring, and data acquisition, and the waveform data viewer and analysis program as standard accessories.

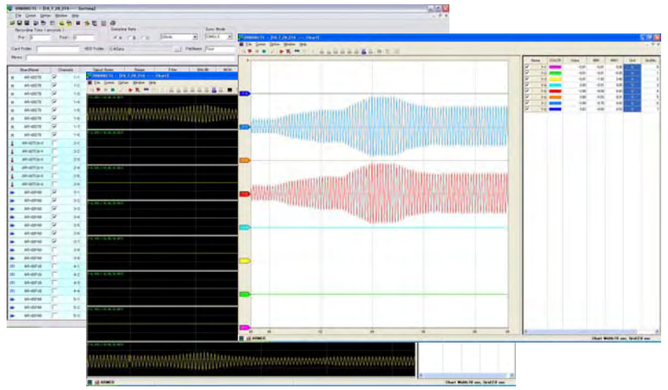


Data File Format

Recording data files consist of a header file for recording parameter settings and a binary measurement data file. An standard accessory data viewer program can browse and analyze data files. Optional stress frequency analysis and human vibration exposure analysis programs are available for specific and further analysis.
Voice memo is recorded as WAV file at the remote control unit and it is shown and played at the related data point by using the data viewer program.

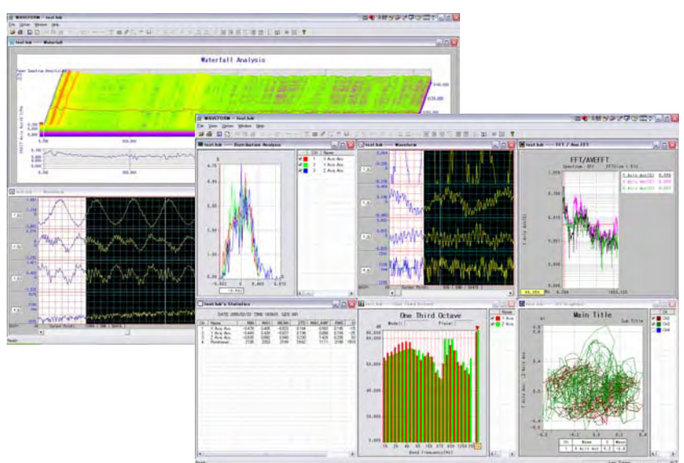


Fatigue Life Prediction and
Stress Frequency Analysis Program (Option)



Control Program

An standard accessory control program provides with a spread sheet type setting menu and the data monitor menu. Data monitor supports the selection of multi-channel waveform display or multi-axis display with maximum and minimum value digital display.



PcWaveForm for Browsing Data and General Data Analysis

An standard accessory data viewer program PcWaveForm provides the waveform data browsing and general post-data analysis, such as FFT, etc..

- Multi-channel overlay view
- Zoom waveform
- Extracting data by signal level, mark, or count number
- Playback channel data with sound by converting to WAV file.
- X-Y graph, FFT, 2D/3D color spectrum, 1/3 Oct., etc.
- Data calculations among channels
- Data export to DADiSP, MatLab, RPCIII, or Text file