The following product was discontinued as of March, 2013.
Discontinued product: DR232 Hybrid Recorder (Expandable model)

Hybrid Recorder
DR230

- Scanning speed of 500 ms/300 channels for high speed, accurate measurement
- Network data acquisition using Ethernet interface
  - Greatly reduced size and weight for efficient space utilization
- Reduced wiring for excellent cost performance
- Flexibly configured and expanded to meet a wide range of needs, from small-scale data logging to multi-point data acquisition
- Application software that supports efficient data gathering and processing

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The DR230 is a high performance desk-top hybrid recorder that can measure data from 10 to 300 channels in 500 ms. Compact input modules measure input variables, such as temperature, flow rate, strain, etc. and can simultaneously record and transfer the measured data to a personal computer or store it in a memory device (floppy disk).

The DR230 is available in two versions, a stand-alone model which has an integrated input, output and recording section and a maximum capacity of 30 channels. The expandable model uses input modules which can be easily expanded from 10 to 300 channels in 10-channel increments. Alarm output modules are also available. The input and output sections of the expandable model are modularized, enabling you to freely configure the optimum data acquisition environment.

This highly reliable, expandable and economical unit was developed as the next generation hybrid recorder. It also meets a wide range of needs from small-scale data logging to multi-point data acquisition.

DR230 stand-alone model
This general-purpose model measures and records up to 30 channels. Specify 10, 20 or 30 channels at the time of ordering. The construction of this DR230 model provides excellent cost performance.
- Input channels: From 10 to 30 channels, connected directly to the main unit
- Measurement interval: 2 s minimum
- Universal inputs: DCV, TC, RTD, contact, power monitor (option)
- Memory devices (specified when ordering): 3.5” floppy disk drive (FDD)

DR230 expandable model
Connecting the main unit to each subunit with dedicated cables, you can easily configure a multi-channel hybrid recorder.
- Input channels: The number of input channels can be increased from 10 to 300 channels in steps of 10 channels.
- Measurement interval: 500 ms maximum
- Inputs: Universal (DCV, TC, RTD, DI), DCV/TC/DI dedicated, power monitor, pulse, strain and direct current (mA) modules
- Up to six subunits can be connected to a main unit
- Up to six input and/or output modules can be connected to one subunit
- Subunits can be separated from the main unit by up to 500 m total cable length
- Memory devices (specified when ordering): 3.5” floppy disk drive (FDD)

High speed, accurate measurement
The DR230 expandable model has a scanning speed of 500 ms/300 channels, while the stand-alone model scans up to 30 channels in 2 seconds.

Cost-effective
The depth and weight of the DR230 are significantly less than conventional multi-point strip chart recorders, thus reducing total control panel volume.

High expandability
The DR230 can be flexibly configured and expanded to meet a wide range of recording, small-scale data logging and multi-point data acquisition needs. The recorder accepts a large variety of inputs including: voltage, temperature (thermocouple, RTD), contact, power monitor, pulse, strain and DCA signals.

Highly Advanced, Versatile, 250 mm Hybrid Recorder that Meets Your Present and Future Needs

DR230 stand-alone model

DR230 expandable model

Highly Advanced, Versatile, 250 mm Hybrid Recorder
that Meets Your Present and Future Needs

A highly reliable, functional expert tool—ideal for data acquisition and recording

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High reliability and environmental durability
The DR230 recorder provides high reliability and performance over a wide range of environmental conditions.

Support for efficient data processing
You can configure your personal computer based data acquisition environment with ease.
The DR230 expandable model enables you to start with a small number of channels, and conveniently expand, up to 300 channels. The architecture of the DR230 allows you to increase the number of input and/or output modules as your application needs change.

The versatility of the DR230 recorder enables you to freely configure a recording/data acquisition environment that matches your particular application, while effectively reducing your initial investment.

**Main unit (DR232)**

The DR230 expandable model consists of a main unit, subunits, input/output and communications modules. Connecting the main unit to multiple subunits with dedicated cables of up to 500 m in total length, you can easily configure a recording/data acquisition environment ranging from 10 to 300 channels. Another key feature is its ability to scan up to 300 channels every 500 ms. You can also install one subunit on the back of the main unit of the hybrid recorder.

**Subunits (DS400, DS600)**

A subunit acts as an interface for connecting input modules to the main unit of the DR230 expandable model. There are two types of subunits, the DS400 which permits connection of up to four input and output modules, and the DS600 which permits connection of up to six input and output modules. Normally, when a subunit is connected, it will be at a separate location from the main unit. (When a subunit DS600 is mounted on the back of a main unit, a dedicated cable is required between them.)

**Input Module**

The input module is a 10-channel* small remote multiplexer that A/D-converts the measured signals as fast as every 500 ms. The input signals include not only DC voltage and temperature, but also contact, power monitor, pulse, strain and DCA (mA) signals.

- **Universal Input Module**
  - The universal input module permits measurement of DC voltages between 20 mV and 50 V, thermocouples inputs, RTD inputs, and contact signals in up to 500-ms intervals.
  - Other cost-effective universal input modules are available that measure data from 20 or 30 channels in 2-second intervals, and low-cost dedicated input modules that accept voltages and thermocouple outputs.

- **Power Monitor Module**
  - The power monitor module receives AC voltage or current input signals and measures RMS values, active power, apparent power, reactive power, frequency, power factor and phase angle. The minimum measurement interval (data update cycle) is 2 seconds.

- **Pulse Input Module**
  - The pulse input module receives TTL or contact signals from a flow or tachometer, and counts and integrates the number of pulses. The minimum measurement interval is 0.5 second and the data update cycle is one second.

- **Strain Measurement Module**
  - The strain measurement module measures static strain, and comes in two types. One corporates a 120 or 350 Ω bridge-resistor, the other is for connecting an external bridge box. One module enables data in 10 channels to be measured. However, it requires two slots where space of width is 100 mm. The minimum measurement interval (data update cycle) is 500 ms.

- **Direct Current (mA) Module**
  - The shunt resistor (100 mΩ) is pre-installed to the main unit. This module supports all commands of the standard input module.

**Alarm output module**

This is a 4-channel or 10-channel output module which outputs alarm signals according to preset conditions. You can set four alarm levels per channel (choose from upper limit, lower limit, delta high limit, delta low limit, enable or disable). You can install alarm output modules on the subunits.

**General-purpose communications module**

You can connect a Ethernet, GP-IB, RS-232C or RS-422/424/485 general-purpose communications module to the back panel of the main unit. All measured data is transferred in real time via the installed communications module.

**Ethernet module**

The Ethernet module enables you to achieve high-speed multi-channel remote data communication via Ethernet. The module supports all commands generally used for DARWIN and permits access from a maximum of four personal computers (configured to do so with user-created software).

**Di/DO module**

This module enables the DR230 hybrid recorder to be controlled from a remote location, and also outputs the chart end and fail signal to your external annunciation. Remote control functions:
- Chart start/stop
- Chart print initiation
- Start and stop recording

The DR230 expandable model incorporates the fail and chart end output as standard features.

**Extension module**

Using an extension module, you can supply power directly from a subunit for each input module* mounted on an extension base unit. Also, connecting an extension module on a subunit allows connection of up to three input modules as well as three extension base units, over a distance of up to 30 m.

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*10 ch universal input module or 10 ch DC V/TC/DI input module.

The DR230 expandable model is highly expandable and cost effective.
This model has a simple building block architecture, and comes with I/O and communications modules installed on the back of the main unit.

Specify 10, 20 or 30 input channels, and desired options, at the time of ordering.

Simple integrated construction
You can connect 10, 20 or 30 channels directly to the main unit. The DR230 stand-alone model, which comes with I/O modules already installed, is a cost-effective general-purpose model.
The external appearance, recorder function, memory and communications functions of this model are identical to those of the expandable model. Because this model is of integrated construction, it can be carried about easily.

Universal and power monitor range
Universal inputs permit measurement of a variety of inputs including DC voltage, thermocouple, RTD and contact signals. Low-cost model for measuring only voltage and thermocouple signals is available. You can also select power monitor (optional) for measuring AC voltage and current.

Comparison of expandable and stand-alone models

<table>
<thead>
<tr>
<th>Model</th>
<th>DR230 hybrid recorder</th>
<th>Expandable model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>Integrated type that can measure up to 30 channels. Can be carried about easily, and is suitable for small tasks data logging.</td>
<td>Expandable up to 300 channels. By connecting subunits to the main unit, you can perform multi-channel measurement with the minimum amount of wiring.</td>
</tr>
<tr>
<td>Number of input channels</td>
<td>DR230 (Specify when ordering)</td>
<td>10 to 300 channels. Connect to subunits.</td>
</tr>
<tr>
<td>Expanding or changing inputs</td>
<td>Not applicable (Fixed according to ordered quantity)</td>
<td>You can expand the number of inputs in 10-channel steps, and also change the kinds of inputs.</td>
</tr>
<tr>
<td>Universal, DCV/TC/DO, power monitor (optional)</td>
<td>Bezel, power monitor and pull-down menu (optional)</td>
<td></td>
</tr>
<tr>
<td>Max. number of subunits and remote measurement distance</td>
<td>Not applicable</td>
<td>Up to six subunits can be connected, 500 m max.</td>
</tr>
<tr>
<td>Max. scanning speed</td>
<td>2 s/all channels</td>
<td>0.5 s/all channels</td>
</tr>
<tr>
<td>Max. recording speed</td>
<td>Common (2 sub units)</td>
<td>Common (3.5-inch FDD)</td>
</tr>
<tr>
<td>Recording function</td>
<td>Common</td>
<td>Common</td>
</tr>
<tr>
<td>Memory device</td>
<td>Common (2.5-inch FDD)</td>
<td>Common</td>
</tr>
<tr>
<td>Selection and operation method</td>
<td>Common</td>
<td>Common</td>
</tr>
<tr>
<td>Communication channel</td>
<td>Max. 30 channels</td>
<td>Max. 60 channels</td>
</tr>
<tr>
<td>Alarm output</td>
<td>12 points</td>
<td>1 to 300 points</td>
</tr>
<tr>
<td>Power supply</td>
<td>AC and DC (option)</td>
<td>AC</td>
</tr>
</tbody>
</table>

Universal input
- DC power supply connector (option)
- AC power supply inlet
- Universal input
- Alarm output (option)
- Communication interface (option)
- Power monitor (option)

Rear panel of the stand-alone model
Versatile Operator Display and Ease of Operation
Monitoring/Configuration Functions

The DR230 incorporates a 3-line, large vacuum fluorescent display (VFD) which can be used as a process monitor enabling you to readily view data or check alarm statuses, even from a remote location. The DR230 is interactively configured using the easily-read display.

Versatile display formats

The large vacuum fluorescent display shows a total of 102 characters, one line of 22 large characters, and two lines of 44 smaller characters. It displays the measured results and alarm statuses in an easily readable format. There are a large number of display formats including up to 5-ch digital data, bar graph, and alarm relay status. Tag names and engineering units are displayed, making process monitoring easier than ever.

Simple setup

The DR230 is interactively configured using the 102 character VFD display. The setup items are always displayed in large characters at the top, with the range of choices and other information displayed at the bottom. In addition, the setup menus separate items that are frequently used from those that are rarely changed once set, thus simplifying configuration.

Replacing consumables

The ink ribbon is a quickly replaceable cassette. Also, the chart holder is a pull-out type enabling the chart to be replaced with ease. The ink ribbon and chart paper are completely interchangeable with the ribbon and paper used in YOKOGAWA’s HR2300 hybrid recorder.

Removable input/output modules

The input and output sections are of modular construction, enabling them to be removed when performing wiring. Also, the universal input modules are available with either screw or push-in (clamp) type terminals.
Clear Hybrid Recording Functions

A recorder's performance is measured by the readability of the information on its printed chart. The DR230 can record clearly, in 10 colors, data from all measurement points, at 2-second intervals. It has a wide variety of recording functions including analog trend recording over an effective recording width of 250 mm, recording of digital measured values, recording of various messages, zone recording, and partially compressed and expanded recording, that help interpret the data.

- High speed recording at 2-second intervals
- Versatile recording formats
- Programmable ten-color recording

(1) Analog trends
Records clearly in 10 colors. You can assign the recording color to each channel.

(2) Digital recording
Measured values are recorded digitally either at an interval based on the chart speed, or at your specified interval. You can also start the recording of digital data by a remote contact input.

(3) Manual recording
By pressing a key, analog recording can be interrupted and measured values of one scan recorded digitally.

(4) Scale printout
The recording scale is printed out for each channel.

(5) Alarm printout
A change in the alarm status (ON/OFF state and time, for each channel) is printed out.

(6) Message printout
The contents of a preset message are printed out by pressing a key, contact closure on a remote control terminal, or when an alarm is detected.

You can preset up to five messages of 16 characters each.

(7) Header printout
Headers are printed as comments (five rows of 80 characters) for experiments or process monitoring.

(8) Printing channel No. and tag No.
The channel number or tag are printed periodically.
PC-Friendly
Data Acquisition Software is designed to run under Windows 98/Me/NT4.0/2000/XP

The DR230 comes in two versions, an expandable model and a stand-alone model. In addition to performing real-time recording and data saving to a medium, it functions as a high-speed multiplexer A/D converter of 300 ch/500 ms. Software for configuration and data acquisition, and software for converting data saved to a removable memory device, is available. This application software makes your tasks of configuration and data acquisition quick and easy.

DAQ32 Software
The DARWIN DAQ32 software is the standard software for common use with all the data gathering instruments in the DARWIN series. The software includes hardware setup, simplified data logging, simplified data viewing, data conversion (Excel, Lotus 1-2-3 or ASCII format), preference setting, system diagnosis and calibration functions, all in one package. All models of the DA100 data acquisition unit and DC100 data collector come standard with this software. For each model of the DR130, DR230 and DR240 hybrid data recorders, you can specify whether software is necessary or unnecessary when ordering. When you specify software as “necessary,” DAQ32 software comes standard with the model.

Example of hardware setup display

Example of date logging display

Example of date viewing display

DAQ32Plus Software
The data acquisition software 32PLUS (DAQ32Plus) is the enhanced software for common use with all the data gathering instruments in the DARWIN series. Like the standard DAQ32, this software includes hardware setup, simplified data logging, simplified data viewing, data conversion (Excel, Lotus 1-2-3 or ASCII format), preference setting, system diagnosis, calibration, and tag number setting functions, all in one package. DAQ32Plus is far more powerful than DAQ32; however, in terms of the data monitoring and logging functions. It contains a number of additional functions not found in DAQ32. Additions include a display of up to 30 data groups each having a maximum of 32 channels’ worth of data per window (as compared with the DAQ32’s display of up to 2 data groups each having a maximum of 10 channels’ worth of data per window); displays of various meters including level meters, analog meters and thermometers (not offered by DAQ32); alarm displays; as well as a DDE server, logger autostart, retry, password and tag setting function.
The DR230 provides many economic benefits for the user, such as reduced wiring for remote measurement, space saving due to compact design, and optimized signal conversion costs due to the availability of a large variety of input modules.

In addition, it provides superb environmental ruggedness, and onboard computation and memory functions, enabling it to be used for a wide range of applications.

Remote Measurement Reduces Wiring (expandable model)

You can connect subunits to a main unit over a distance of up to 500 m using a single dedicated cable. Consequently, you can greatly reduce field wiring and installation costs. For example, in the case of a 60-channel thermocouple input, 120 wires must normally be connected to the main unit, but by using a subunit you can replace these wires by a single cable.

- **Convenient power to the input modules**

  By using an extension module, you can supply power to each input module directly from the main unit or subunit.

Complete channel isolation and high-voltage measurement

Channels at the input circuit are fully isolated with high-voltage solid-state relays.* The DR230 can withstand a common-mode voltage of up to 250 VAC*** and a withstanding voltage of up to 1500 VAC** (for a duration of one minute). These features ensure that the model can be used even for multi-point measurement in the field.

* RTD and pulse inputs share a common line within the same module.

** Depends on module types.

Superb environmental ruggedness

Every effort has been made in the design of the DR230 to reduce power consumption, thereby minimizing temperature rise. As a result, the subunits can be operated over an ambient temperature range of –10 to 60°C. The DR230 can also withstand severe conditions encountered in the field.

Max. 500 ms/300 channel high speed measurement (expandable model)

Parallel processing of data is used by the dedicated A/D converter inside each input module. 1 Mbps high speed data transfer is accomplished between the main unit and each subunit. Furthermore, the use of a distributed multi-CPU control method for the overall system achieves high speed measurement of data from 300 channels over an interval of 500 ms. The DR230 has a time axis resolution four times that of the previous model (DA2500E), achieving better time synchronization between channels.

Space saving due to compact design

The depth of the main unit of the DR230 hybrid recorder has been greatly reduced: it is about 60%* of previous models in the case of the 60-channel model, and about 80%** in the case of the 30-channel general-purpose model. Also, the use of high breakdown voltage solid state relays and a planar transformer developed by YOKOGAWA has enabled the volume of the 60-point input remote measurement section to be reduced to 1/5*** of that of previous models, resulting in a highly compact unit. The mass of the unit has also been reduced to about 1/2*. This makes for more efficient use of control room or laboratory space and reduces total costs.

* Compared to YOKOGAWA’s HR2500E, including the input measurement section

** Compared to YOKOGAWA’s HR2300, including the input measurement section

*** Compared to YOKOGAWA’s DA2500E remote scanner plus a subunit in which six input modules are installed
Computing functions
The main unit of the DR230 with optional MATH feature can perform the four arithmetic operations, integration of measured data, and computations such as detection of maximum and minimum values, in realtime. Even without the optional feature, the DR230 can compute linear scaling, difference and moving average. The results of such computations are transferred with the measured data to a PC, thus reducing system requirements on the PC and also resulting in more efficient analytical processing.

The main computing functions are as follows. (The shortest computation period differs depending on the kind of computation.)

Standard computing functions
Linear scaling, moving average, differential calculation, pulse integration (when a pulse input module is recognized)

Optional functions
The four arithmetic operations, logic operations, related operations, calculation of absolute and relative values, and statistical calculations (maximum, minimum, mean, and integrated values for fixed intervals)

Moving average function
This function renews the measured value while calculating the moving average, thus effectively monitoring the trend of a varying input signal over a long period. It can also be used as a digital filter when noise components are present on the input signal. You can set the number of moving average scans by selecting a value between 2 and 64.

Batch integration
By using the DR230 in combination with the optional DI/DO module or alarm function, you can easily perform batch processing.

Report function (/M3)
You can calculate the maximum, minimum, average values, and integrated value of the measured results, and print hourly, daily and monthly reports. The calculated values are also recorded in the report results.

Memory function
You can select a floppy disk function when noise components are present on the input signal. (When the 10 Hz integration mode is activated, the minimum measurement interval is 4 s.)

The save modes are as follows:

- Single: Data of the specified length is sampled once only.
- Repeat: Data of the specified length is sampled exactly the number of times specified in advance.

* When measured values are saved to a floppy disk, they are first stored in the buffer memory (512 kB DRAM).

Other standard functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input</strong></td>
<td>You can select the 50/60 Hz or 10 Hz integration mode. The 10 Hz integration mode is useful when power line noise containing both 50 Hz and 60 Hz components is superimposed on the signal. (When the 10 Hz integration mode is activated, the minimum measurement interval is 4 s.)</td>
</tr>
<tr>
<td>Integration mode selection</td>
<td>You can select the 50/60 Hz or 10 Hz integration mode. The 10 Hz integration mode is useful when power line noise containing both 50 Hz and 60 Hz components is superimposed on the signal. (When the 10 Hz integration mode is activated, the minimum measurement interval is 4 s.)</td>
</tr>
<tr>
<td>Low-pass filter</td>
<td>You can insert a low-pass filter in the path of a signal on which noise components are superimposed. (When the filter is ON, the minimum measurement period becomes more than 3 seconds, depending on the input types and channels.)</td>
</tr>
<tr>
<td>Scaling</td>
<td>The input signal is displayed and/or recorded as an industrial quantity or a physical quantity.</td>
</tr>
<tr>
<td>Burn-out</td>
<td>When the thermocouple input goes open circuit, the indicator moves to the 100% or 0% side.</td>
</tr>
<tr>
<td>Differential calculation</td>
<td>The difference between the reference channel and measured channel is measured.</td>
</tr>
<tr>
<td><strong>Record</strong></td>
<td>The recording area can be set freely for each channel.</td>
</tr>
<tr>
<td>Zone recording</td>
<td>The recording area can be set freely for each channel.</td>
</tr>
<tr>
<td>Partially compressed and expanded recording</td>
<td>Unimportant parts are compressed, and only necessary parts are expanded, thus enabling the recording resolution to be increased.</td>
</tr>
<tr>
<td>Group channel trend</td>
<td>Only channels that belong to the specified group are recorded. Switchover between groups can be done using a remote contact.</td>
</tr>
<tr>
<td>Alarm generation channel trend</td>
<td>Trend recording takes place only for channels that emit an alarm.</td>
</tr>
<tr>
<td><strong>Setting</strong></td>
<td>The set data is protected by a lithium battery inside the unit.</td>
</tr>
<tr>
<td>Memory backup</td>
<td>The set data is protected by a lithium battery inside the unit.</td>
</tr>
<tr>
<td>Security</td>
<td>The unit comes with a standard password lock function, preventing mis-operation and also protecting the set data.</td>
</tr>
<tr>
<td><strong>Alarm</strong></td>
<td>The alarm output can be refreshed when an alarm is emitted.</td>
</tr>
<tr>
<td>Re-breakdown re-alarm</td>
<td>The alarm output can be refreshed when an alarm is emitted.</td>
</tr>
<tr>
<td>Hold function</td>
<td>Once an alarm is emitted, the alarm indication and relay state are held until the operator acknowledges the alarm.</td>
</tr>
<tr>
<td>Switch over between excitation and non-excitation</td>
<td>The alarm mode can be switched between the alarm output relay excitation/non-excitation state.</td>
</tr>
</tbody>
</table>

You can record the memorized data on DR230 chart, transfer it off-line to a PC, or analyze it or make it into a report using commercially available spreadsheet software.
High breakdown voltage solid state relay (SSR)

Developed by YOKOGAWA, the SSR switches the inputs when performing multi-channel measurement. A semiconductor device takes the place of the contacts and drive part of a mechanical relay, thus overcoming the problem of defective measurement caused by faulty or worn contacts of the mechanical type relay. YOKOGAWA’s solid state relay has a high breakdown voltage (1500 VDC), enhancing safety in the field. Also, its low leakage current (1 nA) enables the very low level voltage signals from a thermocouple to be measured with high accuracy.

YOKOGAWA currently uses this SSR in its hybrid recorders and the advanced µR series of industrial recorders. Over 800 thousand channels of this technology have performed successfully in various field and laboratory applications, thus verifying the reliability of the relay device.

A new surface-mounted version of this highly reliable SSR is used in the DAR-WIN family. This permits a high degree of miniaturization, low power consumption, long device life and quiet operation.

Planar transformer

A planar transformer is a revolutionary integrated transformer which takes the place of the conventional wire-wound transformer, the most antiquated of all electronic components. This small, thin transformer consists of multi-layer precision thin film coils, enhancing insulation, and also reducing heat and noise emission. This concept design means that the power supply unit occupies just 1/2 to 1/4 of the volume of conventional units.

All of the transformers in the main unit, subunits and input and output modules of the DR230 are planar transformers. This is an important factor in achieving the large degree of miniaturization and weight reduction of the DR230.

Adoption of ASICs

The DR230 uses ASICs (Application Specific Integrated Circuit) which were developed with more than 40 years of data acquisition know-how accumulated by YOKOGAWA. Moreover, a high degree of integration has been attained by gate arrays, used around the A/D converter, communication interface, recording and display control circuits. As a result of this high degree of integration, the DR230 has become smaller and lighter, and power consumption and heat generation reduced, improving the reliability of the overall system.

Advanced carriage drive

The carriage drive section of the dot printer head employs a screw shaft which is unique for a strip chart recorder. The drive belt and wire cable have been removed, resulting in increased reliability.

Integration of the design, manufacture and quality evaluation system

Routine installation work is automated, preventing careless mistakes during the production process from assembly through inspection. The result is a high grade, highly reliable product. We also use precision test equipment on the production line to further increase reliability.

Supported

<table>
<thead>
<tr>
<th>CSA</th>
<th>Obtained CSA22.2 No.1010.1, Installation category (Ovoltage category): II, Degree of pollution: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL</td>
<td>Obtained UL3111-1 (CSA NRTL/L/C)</td>
</tr>
<tr>
<td>CE</td>
<td>EN61326</td>
</tr>
<tr>
<td></td>
<td>EN61000-3-2</td>
</tr>
<tr>
<td></td>
<td>EN61000-3-3</td>
</tr>
<tr>
<td></td>
<td>EN55011 Class A Group 1</td>
</tr>
<tr>
<td>Low voltage directive</td>
<td>EN61010-1, Measurement category: II, Degree of pollution: 2</td>
</tr>
<tr>
<td>C-Tick</td>
<td>AS/NZS 2064 Class A Group 1</td>
</tr>
</tbody>
</table>
Specifications

Standard Specifications

General Specifications

- **External Dimensions:** Weight (with I/O module installed)
  - DR231: approximately 438 W x 291 H x 165 D (approximately 13 kg)
  - DR232: approximately 438 W x 291 H x 336 D (approximately 20 kg)
- **DC Power Supply:**
  - Rated supply voltage: 100 to 240 VAC
  - Usable supply voltage: 90 to 250 VAC
  - Rated supply frequency: 50/60 Hz
  - Ramping time: 50% to 100% (when using power modules)
- **Input Modules:**
  - Universal modules: DCV, TC, RTD and DI; DCV/TC/DI dedicated power monitor, strain, pulse, direct current (mA) and digital input
  - Communications modules: Ethernet, GPIB, RS-232C and RS-422A/485
  - Alarm contact output modules: 4 contacts (C contact: NO-C)
  - Dedicated power monitor, strain, pulse, direct current (mA) and digital input
- **Memory Function Section**
  - Display: VFD display (5 x 7 dot matrix, 3 lines)
  - Memory: 300 points maximum (stand-alone model: 30 points + AC 6 points)
- **Recording Paper**
  - AUTO: Linked to recording paper feed speed
  - Display Section
    - Display: VFD display (5 x 7 dot matrix, 3 lines)
  - Number of characters: 22 characters (large 1 line), 40 characters (2 lines)
  - Memory Function Section
    - Memory Media: 3.5-inch floppy disk drive with 512 kB SAMR buffer memory
    - Data Capacity: 10 data/10s to 50 kdata/10s
    - (Total data memory should be at least total memory length.)
  - Applicable setting values, measured values and computed values except report calculation values
  - Memory Mode: Binary
  - Can be converted to ASCII (CSV) format for copying buffer memory data to floppy disk.
  - Sample Rate: Synchronized with the measurement interval of the recorder unit, or synchronized with event.
  - Alarms: Number of Settings
    - Up to four settings can be made for each channel.
    - Kinds of Alarms
      - Upper/lower limit, difference upper/lower limit, upper/lower limit of percentage change, upper or lower limit only for the results of computation
    - Percentage change alarm time interval: 1 to 15 scans
  - Number of Alarm Output Points
    - DR231: 12 maximum (alarm option: 10; DI/DO option: 2)
    - DR232: 300 in total

Standard Computation Functions

- **Kinds of Computation**
  - Difference between arbitrarily selected channels, linear scaling, moving average, pulse integration
  - Scaleable range: DC voltage, thermocouple, RTD, contact
  - Scaling range: ±100 x 1000
  - Moving average: 2 to 64 scans
  - Pulse integration: Effective when a pulse input module is recognized (up to 60 channels)

Fail, Chart End Output
- (DR expandable model. The DR stand-alone model uses the /R1 option.)

Functions:
- Refer to the DI / DO modules.

Optional Specifications

Computation Function (M1)

- **Number of Computation Channels**
  - DR231: 30 channels maximum
  - DR232: 60 channels maximum
- **Kinds**
  - Remote JR, JR arithmetic operations, OR (square root), ABS (absolute value), LOG (common or natural logarithm), EXP (exponential), statistics processing (CLOG, TLOG, logic [AND, OR, NOT, XOR], relative computation, previous data reference)
- **TLOG:**
  - Mathematical processing within a group of data that was measured at the same time (total, maximum, minimum, average, max. - min.)
  - Mathematical processing of data from a certain channel over a period of time (24 hours maximum) (total, maximum, minimum, average max. - min.)

Report Function (M3)

- **Instantaneous values of measured data, as well as maximum, minimum, average and total, for each hour, day or month are printed in tabular form on recording paper. Analog recording is interrupted while a report is being made.**

Report calculation channels: Up to 60 channels

Note: This function does not allow the results of the report and computing function to be saved on floppy disks. (Thus, to be able to transfer the results to a personal computer, the DP380 report software is needed. Note that the DP380 software cannot be run simultaneously with the DAQ32 or DAQ32plus software package.)
**General IB Communications Option (C1)**
- Applicable models and outline specifications
  - DR232 stand-alone model (For the DR232, the GP-IB module is sold separately.) Refer to the GP-IB module.

**RS-232C Communications Option (C2)**
- Applicable models and outline specifications
  - DR231 stand-alone model (For the DR231, the RS-232C module is sold separately. Refer to the RS-232C module.

**RS-422/485 Communications Option (C3)**
- Applicable models and outline specifications
  - DR231 stand-alone model (For the DR232, the RS-422/485 modules are sold separately.) Refer to the RS-232C/422/485 module.

**Ethernet Communications Option (C7)**
- Applicable models and outline specifications
  - DR231 stand-alone model (For the DR232, the Ethernet module is sold separately.) Refer to the Ethernet module.

**Alarm Contact Output Option (A4)**
- Applicable models and outline specifications
  - DR231 stand-alone model (For the DR232, the alarm contact output module is sold separately.) Refer to the alarm output module.

**Recorder Function Remote Control Option (R1)**
- Applicable models and outline specifications
  - DR231 stand-alone model (For the DR231, the alarm output module is sold separately.) Refer to the alarm output module.

**Input Module**
- Specifications Common to Input Module
  - Normal Operating Temperature/Humidity Range
    - Universal, DCV/TC/DI input modules: –10 to 60˚C, 20 to 80% RH
  - Normal Operating Temperature/Humidity Range
  - Input method: Transformer isolation
  - Measurement range (resolution):
    - ±200 mV
    - A/D resolution:
      - 20 mV
    - A/D integration time: Manual selection or automatic switchover between
      - 20 ms (50 Hz), 16.7 ms (60 Hz), and 100 ms (10 Hz)
    - Noise rejection: By means of integrating A/D, low-pass filter or moving average
  - Between input terminals: 1,000 VAC (50/60 Hz) for one minute
    - Strain input: 50 VDC (50/60 Hz), 1,500 VAC (50/60 Hz) for one minute
  - Applicable models and outline specifications
    - Universal input modules DCV/TC/DI Input modules
      - Model | Number of Channels | Type of Terminal | Measurement range/interval
        | Universal input | 10 | Screw | 0.5 s
        | DU100-12 | 10 | Clamp | 0.5 s
        | DU100-21 | 20 | Screw | 2 s
        | DU100-22 | 20 | Clamp | 2 s
        | DU100-31 | 30 | Screw | 2 s
        | DU100-32 | 30 | Clamp | 2 s
        | DU200-11 | 10 | Screw | 0.5 s
        | DU200-12 | 10 | Clamp | 0.5 s
        | DU200-21 | 20 | Screw | 2 s
        | DU200-22 | 20 | Clamp | 2 s
        | DU200-32 | 30 | Screw | 2 s

**General Specifications**
- Input method:
  - Floating imbalance input, and inter-channel isolation
  - RTD and pulse inputs are of the same potential within
  - 20 ms (50 Hz), 16.7 ms (60 Hz), and 100 ms (10 Hz)
  - Bridge voltage: Fixed at 2 V

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Channels</th>
<th>Type of Terminal</th>
<th>Measurement range/interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>DU100-12</td>
<td>10</td>
<td>Screw</td>
<td>0.5 s</td>
</tr>
<tr>
<td>DU100-21</td>
<td>10</td>
<td>Screw</td>
<td>0.5 s</td>
</tr>
<tr>
<td>DU100-22</td>
<td>10</td>
<td>Screw</td>
<td>0.5 s</td>
</tr>
<tr>
<td>DU100-31</td>
<td>10</td>
<td>Screw</td>
<td>0.5 s</td>
</tr>
<tr>
<td>DU100-32</td>
<td>10</td>
<td>Screw</td>
<td>0.5 s</td>
</tr>
</tbody>
</table>

**General Specifications**
- Input method:
  - Floating imbalance input, and inter-channel isolation
  - RTD and pulse inputs are of the same potential within
  - 20 ms (50 Hz), 16.7 ms (60 Hz), and 100 ms (10 Hz)

- Bridge voltage: Fixed at 2 V
- Pulse integration: The computation function is used when integrating
  - 20 ms (50 Hz), 16.7 ms (60 Hz), and 100 ms (10 Hz)
- Filter:
  - For rejection of chattering up to 5 ms (can be turned on and off for every channel)
- Digital Input Module

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Channels</th>
<th>Type of Terminal</th>
<th>Measurement range/interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>DU700-11</td>
<td>10</td>
<td>Screw</td>
<td>0.5 s</td>
</tr>
</tbody>
</table>

**General Specifications**
- Input method:
  - Unbalanced floating point, with channel-to-channel isolation (individually separated channels)

- Measuring range:
  - Voltage input: 2.3 V or less
  - Voltage-free contact input: Off (open)

- Maximum input range:
  - Voltage input: ±10 V DC
  - Voltage-free contact input: ±10 V DC

- Alarm, DIDO and Other Modules

**Alarm Contact Output Modules**
- Selection between excitation and non-excitation, output hold and non-hold and AND OR modes
- Re-breakdown re-alarm: Maximum of 6 contacts can be selected.
- Contact capacity:
  - 250 VDC/0.1 A (resistive load), 30 VDC/2 A (resistive load)
- DI Modules

**Common Specifications**
- Measuring range:
  - Voltage input: 2.3 V or less
  - Voltage-free contact input: Off (open)

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Outputs</th>
<th>Contact Arrangement</th>
<th>Type of Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT200-11</td>
<td>4</td>
<td>SPDT (NO-C NC)</td>
<td>Screw</td>
</tr>
<tr>
<td>DT200-21</td>
<td>10</td>
<td>Make contact (NO-C)</td>
<td>Screw</td>
</tr>
</tbody>
</table>

**General Specifications**
- Input mode:
  - Non-voltage contact or open collector (TTL or transistor)

- Measurement modes:
  - RATE (count value instantaneous mode):
    - The number of pulses input during the most recent one-second period of measurement is output as the scale value set.
  - Pulse integration:
    - The computation function is used when integrating
      - either the count value each second or the ON period.

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Channels</th>
<th>Type of Terminal</th>
<th>Measurement range/interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>DU700-11</td>
<td>10</td>
<td>Screw</td>
<td>0.5 s</td>
</tr>
</tbody>
</table>
Contact capacity: 250 VDC/0.1 A (resistive load), 30 VDC/2 A (resistive load), 250 VAC/2 A (resistive load)

- **Remote Control Signal Input**
  - Function: Start and stop recording
  - Change chart speed
  - Start message printing
  - Start and stop memory sampling
  - Control statistical calculation interval

- **Input signal:** Non-voltage contact or open collector (TTL or transistor)

**Extension Modules**
- Unit to connect with: DS400 or DS600 subunit (one for each subunit)
- Number of input modules: One input module can be mounted on an extension base unit. Up to 3 extension base units can be connected to one extension module in series.
- Types of input modules: 10-ch universal input module
- Extensible distance: Up to total length of 30 m

**Communications Modules**

### Specifications Common to Communications Modules
- **Functions:**
  - Common Specifications
  - Outline of functions: Output of measured values, output of set points, control of start/stop of measurement, etc.
  - Withstanding voltage: 1,500 VAC (50/60 Hz) for one minute between output terminal and ground

**GP-IB Modules**
- Electrical and mechanical specifications: Based on IEEE standard 488-1978
- Addresses: 0 to 15

**RS-232C Modules**
- Electrical and mechanical specifications: Based on EIA RS-232C
- Communications format: Half duplex
- Baud rate: 150, 300, 600, 1200, 2400, 4800, 9600, 19200 or 38400 bps
- Transmission distance: Maximum of 1200 m
- Connector: D-sub 25-pin connector

**RS-422A/485 Modules**
- Electrical and mechanical specifications: Based on EIA RS-422A and EIA RS-485
- Communications format: Half-duplex, 4-wire method/2-wire method
- Synchronization: Start-stop synchronization (synchronization by means of the start and stop bits)
- Baud rate: 150, 300, 600, 1200, 2400, 4800, 9600, 19200 or 38400 bps
- Transmission distance: Maximum of 15 m
- Connector: 6-screw terminal

**Ethernet Modules**
- Network configuration: Ethernet (10Base-T)
- 10Base-T modular connector: 1
- Communication protocol: TCP, UDP, IP, ARP or ICMP
- Input data: ASCII or binary

**Communication Module**

### Model and Suffix Codes

**DR230 Stand-alone model**

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR231</td>
<td></td>
<td>Desk-top type hybrid recorder</td>
</tr>
<tr>
<td>Memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No memory</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3-pin PD</td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td></td>
<td>No DAQ 32 software</td>
</tr>
<tr>
<td>2</td>
<td>DAQ 32 software included</td>
<td></td>
</tr>
<tr>
<td>Input channel</td>
<td></td>
<td>10-ch</td>
</tr>
<tr>
<td>1</td>
<td>20-ch</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>30-ch</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Universal input, screw</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Universal input, clamp</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>DC/TC/DI input screw</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>DC/TC/DI input clamp</td>
<td></td>
</tr>
<tr>
<td>Power supply voltage</td>
<td></td>
<td>100 to 240 VAC</td>
</tr>
<tr>
<td>D</td>
<td>3-pin power input w/UL CSA cable</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>3-pin power input w/ULVDC cable</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>3-pin power input w/ULCC cable</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>Additional specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>Computing function</td>
<td></td>
</tr>
<tr>
<td>M3</td>
<td>Report function</td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>GB-PUS</td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td>RS-232C</td>
<td></td>
</tr>
<tr>
<td>C3S</td>
<td>RS-422A/485 (screw)</td>
<td></td>
</tr>
<tr>
<td>C7</td>
<td>Ethernet</td>
<td></td>
</tr>
<tr>
<td>N7</td>
<td>Must not connect</td>
<td></td>
</tr>
<tr>
<td>H8</td>
<td>Power monitor for single phase</td>
<td></td>
</tr>
<tr>
<td>H9</td>
<td>Power monitor for 3 phases</td>
<td></td>
</tr>
<tr>
<td>S4</td>
<td>Alarm output module (A type 10 contacts)</td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>2-point alarm output, remote control signal input, fail output, and shut end output</td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>Internal illumination</td>
<td></td>
</tr>
<tr>
<td>H5</td>
<td>Carrying handle</td>
<td></td>
</tr>
<tr>
<td>D2</td>
<td>&quot;&quot;</td>
<td></td>
</tr>
<tr>
<td>P6</td>
<td>DC power supply (AC and DC power supply costs)</td>
<td></td>
</tr>
</tbody>
</table>

**DR230 Expandable model**

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR332</td>
<td></td>
<td>Desk-top type hybrid recorder</td>
</tr>
<tr>
<td>Memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>No memory</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3-pin PD</td>
<td></td>
</tr>
<tr>
<td>Data connector</td>
<td></td>
<td>No DAQ 32 software</td>
</tr>
<tr>
<td>2</td>
<td>DAQ 32 software included</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Always -00</td>
<td></td>
</tr>
<tr>
<td>Power supply voltage</td>
<td></td>
<td>100 to 240 VAC</td>
</tr>
<tr>
<td>D</td>
<td>3-pin power input w/UL CSA cable</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>3-pin power input w/ULVDC cable</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>3-pin power input w/ULCC cable</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>Additional specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>Computing function</td>
<td></td>
</tr>
<tr>
<td>M3</td>
<td>Report function</td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>Internal illumination</td>
<td></td>
</tr>
<tr>
<td>D2</td>
<td>&quot;&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**Subunit: DS400, DS600**

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS400</td>
<td></td>
<td>4-module connection type subunit</td>
</tr>
<tr>
<td>DS600</td>
<td></td>
<td>6-module connection type subunit</td>
</tr>
<tr>
<td>Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0C</td>
<td>Always -00</td>
<td></td>
</tr>
<tr>
<td>Power supply voltage</td>
<td></td>
<td>100 to 240 VAC</td>
</tr>
<tr>
<td>D</td>
<td>3-pin power input w/UL CSA cable</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>3-pin power input w/ULVDC cable</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>3-pin power input w/ULCC cable</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3-pin power input w/ULBC cable</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>With 3-pin screw screw connection terminal</td>
<td></td>
</tr>
</tbody>
</table>

**Configuration example of the expandable model**

- 100 ch, 0.5 s universal input, with RS-232C and 20-ch alarm output
- DR230 expandable main-unit: DR332 x 1
- Sub unit: DS600 x 2
- Universal input modules: DU105-11 x 12 x 10
- Communication modules: DT300-21 (RS-232C) x 1
- Alarm output module: DT320-21 x 2
- Extension cable x 2
**Input modules**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Required size</th>
<th>Terminal parts</th>
<th>Bar requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Du100-12</td>
<td>1-channel universal input (DCV, TC, RTD)</td>
<td>2</td>
<td>Screw</td>
<td>0.5 m</td>
</tr>
<tr>
<td>Du100-18</td>
<td>2-channel universal input (DCV, TC, RTD)</td>
<td>2</td>
<td>Clamp</td>
<td>2 m</td>
</tr>
<tr>
<td>Du500-11</td>
<td>1-channel universal input (DCV, TC, RTD)</td>
<td>2</td>
<td>Clamp</td>
<td>0.5 m</td>
</tr>
<tr>
<td>Du500-12</td>
<td>2-channel universal input (DCV, TC, RTD)</td>
<td>2</td>
<td>Clamp</td>
<td>2 m</td>
</tr>
</tbody>
</table>

**Optional accessories**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Order qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX100-011</td>
<td>Extension module</td>
<td>1</td>
</tr>
<tr>
<td>DX100-012</td>
<td>Extension base unit</td>
<td>1</td>
</tr>
<tr>
<td>DX200-005</td>
<td>Extension cable (2.5 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-001</td>
<td>Extension cable (1 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-002</td>
<td>Extension cable (2.5 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-010</td>
<td>Extension cable (10 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-020</td>
<td>Extension cable (20 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-022</td>
<td>Extension cable (50 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-040</td>
<td>Extension cable (400 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-060</td>
<td>Extension cable (600 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-200</td>
<td>Extension cable (200 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-300</td>
<td>Extension cable (300 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-400</td>
<td>Extension cable (400 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-600</td>
<td>Extension cable (600 m)</td>
<td>1</td>
</tr>
<tr>
<td>DX200-001</td>
<td>Power cable between DR expandable main unit and subunit</td>
<td>1</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP32-12</td>
<td>LM32E (DAQWIN software) (Supports setup, simplified data logging and viewing, and diagnosis and calibration functions. One package of this software comes standard with the purchased DR3200 recorder if you specify the model code specification for Software included.)</td>
<td>Windows 98, Windows NT 4.0, Windows 2000 XP</td>
</tr>
<tr>
<td>GP32-12</td>
<td>LM32E (DAQWIN software) (Supports setup, data logging and viewing, diagnosis and calibration, and log sending functions.)</td>
<td>Windows 98, Windows NT 4.0, Windows 2000 XP</td>
</tr>
</tbody>
</table>

**Spares**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Name</th>
<th>Order qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>B9627RY</td>
<td>Z-fold paper (30 m) (time axis: 10 mm)</td>
<td>10</td>
</tr>
<tr>
<td>B9627AY</td>
<td>Z-fold paper (30 m) (time axis: 25 mm)</td>
<td>10</td>
</tr>
</tbody>
</table>

### External Dimensions (DR232 with DS600 subunit on the rear panel)

**Unit: mm (inches)**

For specific dimensions, refer to the catalog (DL06.02-02E) of "Data Acquisition Software Suite DAQWIN."