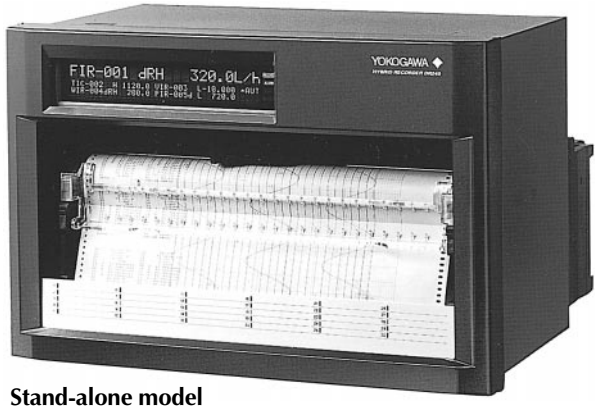
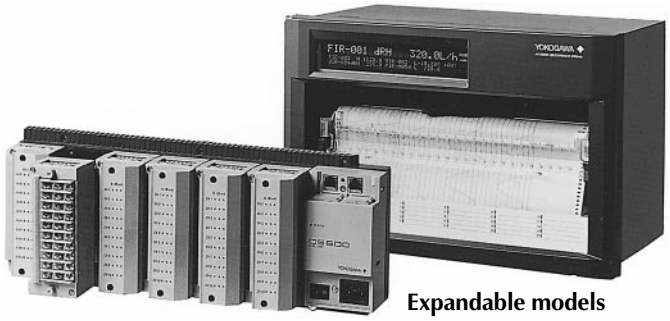
Hybrid Recorder
DR240



Stand-alone model

DR241
444 × 288 × 343mm 16kg
(17-1/2 × 11-3/8 × 13-1/2" 35.3 lbs)



Expandable models

DR242
444 × 288 × 308mm 12kg (Excluding subunit)
(17-1/2 × 11-3/8 × 12-1/8" 26.5 lbs)

CE RS-232-C RS-422-A/485 GP-IB Ethernet

★
Safety Standards ; CSA1010.1, EN61010-1
EMI Standard ; EN55011 Group 1 Class A
Immunity Standard ; EN50082-2 : 1995

The DR240 is a high performance panel-mounted hybrid recorder that can measure data from 10 to 300 channels in 500 ms for the expandable model. 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 DR240 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.

FEATURES

- **High speed, accurate measurement**
  The DR240 expandable model has a scanning speed of 500 ms/300 channels, while the stand-alone model scans up to 30 channels in 2 seconds.
- **Economical excellence**
  The depth and weight of the DR240 are significantly less than conventional multi-point strip chart recorders, potentially resulting in a total control panel volume reduction.
  A DR240 configuration can also greatly reduce the amount of wiring needed, particularly for remote measurements, providing a favorable cost/performance ratio.
- **Highly functional expandability**
  The DR240 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 DC A signal.
- **High reliability and environmental durability**
  The DR240 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.
- **Network data acquisition**
  Real-time data logging and remote monitoring via Ethernet is available.

COMPONENT MODELS OF DR242 EXPANDABLE MODEL

The DR240 expandable model enables you to start with a small number of channels, and conveniently expand, up to 300 channels. The architecture of the DR240 allows you to increase the number of input and/or output modules as your application needs change.
The versatility of the DR240 recorder enables you to freely configure a recording/data acquisition environment that matches your particular application, while effectively reducing your initial investment.
Connecting the main unit to each subunit with dedicated cable, you can easily configure a multi-channel hybrid recorder.

DR241 STAND-ALONE MODEL

This model has a simple building block architecture, and comes with I/O and communications module installed on the back of the main unit.
You specify 10, 20 or 30 input channels, and desired options, at the time of order.

COMPARISON OF EXPANDABLE AND STAND-ALONE MODELS

Model	DR240 hybrid recorder	
	Stand-alone model	Expandable model
Features	Integrated type that can measure up to 30 channels. Can be carried about easily, and is suitable for small-scale data logging.	Expandable up to 300 channels. By connecting subunits to the main unit, you can perform multi-channel measurement with the minimum amount of wiring.
Number of input channels	10/20/30 channels (Specify when ordering.) Connect to the recorder main unit.	10 to 300 channels; Connect to subunits.
Expanding or changing inputs	Not applicable (Fixed according to ordered quantity.)	You can expand the number of inputs in 10-channel steps, and also change the kinds of inputs.
Inputs	Universal, DC V/TC/DI, power monitor (optional)	Universal, DC V/TC/DI, power monitor, strain, pulse, direct current (mA)
Connection of subunits, and remote measurement distance	Not applicable	Up to six subunits can be connected; 500 m max.
Max. scanning speed	2 s/all channels	0.5 s/all channels
Max. recording speed	Common (2 s/all channels)	
Recording function	Common	
Memory device	Common (3.5-inch FDD)	
Indication and operation method	Common	
Computation channels	Max. 30 ch	Max. 60 ch
Alarm output	12 points	10 to 300 points

SPECIFICATIONS

DR240 Main Unit

● Stand-alone model (DR241) or Expandable model (DR242)

DR240 Subunit

● DS400 or DS600

General Specifications

● External Dimensions; Weight (with I/O module installed)
DR241: approximately 444 (W)×288 (H)×343 (D) mm; approximately 16 kg
DR242: approximately 444 (W)×288 (H)×308 (D) mm; approximately 12 kg
DS400: approximately 336 (W)×165 (H)×100 (D) mm; approximately 2.5 kg
DS600: approximately 422 (W)×176 (H)×100 (D) mm; approximately 3.5 kg
● AC Power Supply
Rated supply voltage: 100 to 240 VAC
Usable supply voltage: 90 to 250 VAC
Rated supply frequency: 50/60 Hz
● DC power supply (Runs on a DC power supply only. Specify when ordering.)
Rated supply voltage: 12 to 28 VDC
Usable supply voltage: 10 to 32 VDC
Terminal: Screw terminals
● Insulation Resistance
At least 20 MΩ at 500 VDC between the power supply and ground, between each terminal and the ground, and between input terminals
● Withstanding Voltage
Between power supply terminal and ground: 1,500 VAC (50/60 Hz, 1 min.)
Between input/output terminal and ground: 1,500 VAC (50/60 Hz, 1 min.)
● Normal Operating Conditions
Supply frequency: 50 Hz ±2% or 60 Hz ±2%
Ambient temperature: DR241, DR242 0 to 50˚C (FD operation 5 to 40˚C)
DS400, DS600 Panel mount –10 to 60˚C
Desk-top –10 to 50˚C
Ambient humidity: 20 to 80% RH (between -10 and 40˚C)
● Safety Standards
CSA C22.2 No.1010.1-92, IEC1010-1:1995, EN61010
● EMI Standard
EN55011:1991, Group 1 class A
● EMC Standard
EN50082-2:1995

System Configuration

● Configuration Method
DR241: Configure a system with this model by specifying necessary options, such as the input and communications functions, according to the model code when ordering.
DR242: Configure a system with this model by combining one or more of the modules and subunits listed below.

Connecting Modules and Subunits (DR242)

● Standard Modules and Software for System Configuration
The following modules and software can be installed in a main unit and subunit to configure a data acquisition system.
Input Modules: Universal (DCV, TC, RTD and DI), DCV/TC/DI dedicated, power monitor, strain, pulse, direct current (mA) and digital input modules
Connectable to DS400 and DS600
Communications Modules: Eternet, GP-IB, RS-232C and RS-422A/485
Connectable to DR242 main unit
Alarm Contact Output Modules: 4 contacts (SPDT: NO-C-NC) and 10 contacts (make contact: NO-C).
Connectable to DR242 main unit or DS400 and DS600
DI/DO Modules: Two alarm output contacts (NO-C-NC) and fail output
Connectable to DR242 main unit or DS400 and DS600
Up to 1 module/1 system can be connected.
Extension Modules: Interfaces for remote power supply
One extension module can be connected to each DS400 and DS600.
(should be used with extension base units)
Software: DAQ32 (Stardard software)
DAQ32 plus (Optional software)
● Types and Number of Modules That Can Be Connected
DR241: Specify the types of modules and the number according to the model code.
DR242: Communications module DI/DO module or alarm contact output module
DS400/600 Input module, alarm contact output modules, DI/DO modules and extension modules
Four or six modules can be connected.
● Connection of Subunits
DR241: Cannot be connected.
DR242: Up to 6 subunits can be connected. One subunit can be installed on the rear panel by screws.

Input Section

● Number of Input Channels
DR241: 10 to 30 channels (Specify the number of channels when ordering)
Power monitor input option: 2 or 6 channels
DR242: 0 channel. Expandable up to 300 channels by connecting subunits.
● Types of Input Modules
DR241: Universal (DC voltage, thermocouple, RTD and contact), DCV/TC/DI dedicated (Specify the types when ordering), power monitor option
DR242: Universal (DC voltage, thermocouple, RTD and contact), DCV/TC/DI dedicated, power monitor, strain, pulse, direct current (mA) and digital input modules
● Measurement Range: See the specifications for each input module.
● Measurement Interval: 0.5, 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60 seconds
DR241: Maximum of 2 s per 30 channels
DR242: Maximum of 500 ms per 300 channels (including the subunit)
The measurement interval is dependent on the slowest input module if input modules of different measurement intervals are connected at the same time.
● A/D Integration Period
Manual selection or automatic switchover between 20 ms (50 Hz), 16.7 ms (60 Hz) and 100 ms (10 Hz)
Minimum measurement interval when the 100-ms integration mode becomes:
DR241: 30 channels; 6 seconds
DR242: 4 seconds per 300 channels (including the subunit)
(depends on the modules and number of channels)

Recording section (DR241/242 main unit)

● Recording Method
Raster scan method, 10-color wire dot recording
● Number of Recording Points
300 points maximum (stand-alone model: 30 points + AC 6 points)
● Recording Paper
Effective recording width: 250 mm (for analog trend measurement)
● Analog recording color (You can specify a color for each channel.)
Purple, red, green, blue, brown, black, navy blue, yellow-green, red-purple, orange
● Analog Recording Interval
FIX: Recording takes place at the specified measurement interval between 2 and 60 seconds (not all measured values are sampled for analog recording in case of the 0.5- and 1-second measurement intervals)
AUTO: Linked to recording paper feed speed
● Recording Paper Feed
Paper feed speed: 1 to 1,500 mm/hour

Display Section

● 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 SRAM buffer memory
● Data Capacity
10 data/ch to 50 kdata/ch
(Total data memory should be less than total memory length.)
● Applicable data
Setting values, measurement values and computed values except report calculating 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
DR241: 12 maximum (alarm option: 10; DI/DO option: 2)
DR242: 300 in total

Standard Computation Functions

● Kinds of Computation
Difference between arbitrarily selected channels, linear scaling, moving average, pulse integration
Scalable range: DC voltage, thermocouple, RTD, contact
Scaling range: –30,000 to +30,000

DR240

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
DR241: 30 channels maximum
DR242: 60 channels maximum
● Kinds
Remote RJC, four arithmetic operations, SQR (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.
CLOG: Mathematical processing within a group of data that was measured at the same time (total, maximum, minimum, average, max. - min.)
TLOG: 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

Power Monitor Options (/N7, /N8)
● Applicable models and outline specifications
DR241 stand-alone model (For the DR242, the power monitor module is sold separately.)
Refer to the power monitor module.

GP-IB Communications Option (/C1)
● Applicable models and outline specifications
DR241 stand-alone model (For the DR242, the GP-IB module is sold separately.)
Refer to the GP-IB module.

RS-232C communications option (/C2)
● Applicable models and outline specifications
DR241 stand-alone model (For the DR242, the RS-232C module is sold separately.) Refer to the RS-232C module.

RS-422A/485 communications options (/C3S)
● Applicable models and outline specifications
DR241 stand-alone model (For the DR242, the RS-422-A/485 modules are sold separately.)
Refer to the RS-422A/485 module.

Ethernet communication option(/C7)
● Applicable models and outline specifications
DR241 stand-alone model (For the DR242, the Ethernet module is sold separately.) Refer to the Ethernet module.

Alarm Contact Output Option (/A4)
● Applicable Models and outline specifications
DR241 stand-alone model (For the DR242, 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
DR241 stand-alone model (For the DR242, the DI/DO module is sold separately.)
The DR242 expandable model incorporates fail and chart-end outputs as standard features.
Refer to the DI/DO module.

Input Module

Specifications Common to Input Module
● Normal Operating Temperature/Humidity Range
Universal, DCV/TC/DI input module:
–10 to 60˚C, 20 to 80% RH (non condensing)
mA, power monitor, strain, except DU500-14 pulse input module:
0 to 50˚C, 20 to 80% RH (non condensing)
● Withstanding Voltage
Between input terminals: 1,000 VAC (50/60 Hz) for one minute
Strain input: 50 VDC (50/60 Hz, 1 minute except DU500-14)
Between input terminal and ground: 1,500 VAC (50/60 Hz) for one minute

Universal Input Modules
DCV/TC/DI Input Modules

Module	Model	Number of Channels	Type of Terminal	Measurement Interval
Universal input	DU100-11	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
DCV/TC/DI input	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
	DU200-31	30	Screw	2 s
	DU200-32	30	Clamp	2 s

● General Specifications
Input method: Floating imbalance input, and inter-channel isolation
RTD and pulse inputs are of the same potential within the same input module.
A/D resolution: ±20,000
A/D integration time: Manual selection or automatic switchover between 20 ms (50 Hz), 16.7 ms (60 Hz) and 100 ms (10 Hz)
Measurement Range
DC voltage range: 20 mV to 50 V
Thermocouple: R, S, B, K, E, J, T, L, U, N, W, KP-Au7Fe
RTD: Pt100, JPt100, Ni100, Ni120, Cu10, and J263*B
Contact input: Voltage-free contact input or voltage input
Mixed input is allowed for DC voltage, thermocouple, RTD and contact inputs. (For an DCV/TC/DI input module, RTD input is not allowed.)
Measurement accuracy: ±(0.05% of reading + 2 digits)
(at 2-V range, 23 ±2˚C and 55 ±10% RH)
Noise rejection: By means of integrating A/D, low-pass filter or moving average
Burnout: Detected within thermocouple-input range

DC Current Input Modules

Model	Number of channels	Type of Terminals	Measuring Interval
DU300-11	10	Screw	0.5 s
DU300-12	10	Clamp	0.5 s

● General Specifications
Input method: Floating imbalance input, and inter-channel isolation
Shunt resistor (100 Ω) is pre-installed.
A/D resolution: ±20,000
A/D integration time: Manual selection or automatic switchover between 20 ms (50 Hz), 16.7 ms (60 Hz) and 100 ms (10 Hz)
Measurement range (resolution): ±20 mA (1μA)
Noise rejection: By means of integrating A/D, low-pass filter or moving average

Power Monitor Modules

Model	Number of Channels	Type of Terminal	Measurement Interval
DU400-12	For single phase: one for voltage and one for current	Clamp	2 s
DU400-22	For 3 phases: three for voltage and three for current	Clamp	2 s

Input method: Transformer isolation
Measured variables: Six items can be selected from the the following: RMS value of AC voltage/current, active power, apparent power, reactive power, frequency, power factor and phase angle (There is a restriction in combining selected items.)
Measurement range (resolution):
Voltage: 250 V (0.1 Vrms), 25 V (0.01 Vrms)
Current: 5 A (0.001 Arms), 0.5 A (0.0001 Arms)
Measurement accuracy: ±(0.5% of span when RMSV and A are measured)
Measured frequency: 45 to 65 Hz (all channels must have the same frequency)
Crest factor: Up to 3
Power integration: Calculated by M1 (computation function) option.
/M1 must be specified for the DR240.

Strain Measurement Modules

Model	Number of Channels	Type of Terminal	Measurement Interval
DU500-12	10*, with built-in 120 Ω resistance	Clamp	0.5 s
DU500-13	10*, with built-in 350 Ω resistance	Clamp	0.5 s
DU500-14 **	10*, for external bridge box	NDIS	0.5 s

* : 2 modules' width is required.
** : If connecting a strain gauge sensor, whichdoes not comprise any line for sensing bridge voltage, to a DU500-14 strain input module with an NDIS connector, use a DV450-001 strain conversion cable together with the module.

● General Specifications
Measurement range (resolution):
2,000 με (0.1 με)
20,000 με (1 με)
200,000 με (10 με)
Built-in bridge resistance: 120 Ω, 350 Ω, or none (for an external bridge box)
Wiring: 1/4 bridge 1/2 bridge (neighbor), 1/2 bridge (opposite), full bridge
Applicable gauge resistance: 1/4 or 1/2 bridge: 120 or 350 Ω
Full bridge: 100 to 1,000 Ω
Bridge voltage: Fixed at 2 V
Gauge factor: 2.00 (with scaling function)
Strain balance: Electronic auto-balancing (can be turned on or off in each module) within ±10,000 με (1/4bridge)

Pulse Measurement Modules

Model	Number of Channels	Type of Terminal	Measurement Interval
DU600-11	10	Screw	0.5 s*

*: Rate of data update is fixed at one-second interval.

● General Specifications
Input method: Shared common line within the same module
Type of input: 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 set value.
GATE (ON time instantaneous mode):
The ON (make)/OFF (break) state (ON = 1, OFF = 0) of the contact input during the most recent one-second period of measurement is output as the scale set value.
Pulse integration: The computation function is used when integrating either the count value each second or the ON period.
Computation formula: TLOG.PSUM (XXX)
Number of computation channels:
Max. 60 channels
Max. count value/ON period:
99999999
(/M1 (computation option) need not be specified for the DA100 or DR recorder main unit. Pulse integration can be used automatically when a pulse module is recognized.)
Maximum input frequency: 6 kP/s (10 P/s for voltage-free contact)
Filter: For rejection of chattering up to 5 ms (can be turned on and off for every channel)

Digital Input Module

Model	Number of Channels	Type of Terminals	Measurement Interval
DU700-11	10	Screw	0.5 s

● General Specifications
Input method: Unbalanced floating-point, with channel-to-channel isolation (individually separated channels)
Measuring range:
Voltage input: 2.3 V or less 0
2.5 V or greater 1
Voltage-free contact input: Off (open) 0
On (closed) 1

Maximum input voltage range:
Voltage input ±60 V DC
Voltage-free contact input ±10 V DC

Alarm, DI/DO and Other Modules

Alarm Contact Output Modules

Model	Number of Outputs	Contact Arrangement	Type of Terminal
DT200-11	4	SPDT (NO-C-NC)	Screw
DT200-21	10	Make contact (NO-C)	Screw

● General Specifications
Output mode: Selection between excitation and non-excitation, output hold and non-hold and 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)
250 VAC/2 A (resistive load)

DI/DO Modules
● Common Specifications
Model: DT100-11
The DR242 expandable model incorporates fail and chart-end output as standard features. (Up to 1 module can be connected to the DR240 expandable model.)
● Alarm Contact Output
Number of outputs: 2
Contact mode: SPDT—NO-C-NC terminal
Contact capacity: 250 VDC/0.1 A (resistive load)
30 VDC/2 A (resistive load)
250 VAC/2 A (resistive load)
● Chart End Output
Outline of functions: The chart end output terminal is energized if the recording paper in the recorder breaks.
The DR stand-alone model uses the /R1 option.
Contact mode: Make contact (NO-C). Cannot be switched between excited and non-excited.
Contact capacity: 250 VDC/0.1 A (resistive load)
30 VDC/2 A (resistive load)
250 VAC/2 A (resistive load)
● Fail Output
Function: If an abnormality is found in the total system, the fail output terminal is de-energized.
Output mode: Make contact (NO-C). Cannot be switched between excited and non-excited.
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.
Type of input modules: 10-ch universal input module
10-ch DCV/TC/DI 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, setup of measurement conditions, 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
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: D-sub 25-pin connector

RS-422A/485 Modules
Electrical and mechanical specifications:
Based on EIA RS-422A and EIA RS-485
Connection method: Multi-drop
Address: 1 to 31
Communications format: Half-duplex, 4-wire method/2-wire method
Synchronization: Start-stop synchronization (synchronization by means of start and stop bits)
Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200 or 38400 bps
Transmission distance: Maximum of 1200 m
Connector: 6-screw terminal

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

AVAILABLE MODELS

● DR240 Stand-alone model

Model	Suffix code	Description	
DR241		Panel mount type hybrid recorder	
Memory	-0	No memory	
	-1	3.5-inch FD	
Software	0	No DAQ32 software	
	2	DAQ32 software included	
Input channel	-1	10 ch	
	-2	20 ch	
	-3	30 ch	
Input	1	Universal input, screw	
	2	Universal input, clamp	
	3	DCV/TC/DI input screw	
	4	DCV/TC/DI input clamp	
Power supply voltage	-1	100 to 240 VAC	
	-2	12 to 28 VDC (DC power supply only)	
Power inlet, power cable	W	Screw terminal	
	Y	Screw terminal for DC power supply (w/o power cord)	
Additional specifications	/M1	Computing functions	
	/M3	Report function	
	/C1	GP-IB	Must not coexist
	/C2	RS-232C	
	/C3S	RS-422/485 (screw)	
	/C7	Ethernet	
	/N7	Power monitor for single phase	Must not coexist
	/N8	Power monitor for 3 phase	
	/A4	Alarm output module (A type 10 contacts)	
	/R1	2-point alarm output, remote control signal input, fail output, and chart end output	
	/H1	Internal illumination	
	/D2	°F display	

- The maximum allowable number for the / N□, / C□, / A4 and / R1 options is determined according to the specified channel number.
  10 ch: All options can be specified.
  20 ch: All of them can be specified.
- 30 ch: 3 of them can be specified.
  When "-0" of the memory code is selected, "0" of the software code must be always specified.
  No data conversion software is provided with the unit.

● DR240 Expandable model

Model	Suffix codes	Description
DR242		Panel mount type hybrid recorder
Memory	-0	No memory
	-1	3.5-inch FD
Software	0	No DAQ32 software
	2	DAQ32 software included
Input	-00	Always -00
Power supply voltage	-1	100 to 240 VAC
Power inlet, power cable	W	Screw terminal
Additional specifications	/M1	Computing functions
	/M3	Report function
	/H1	Internal illumination
	/D2	°F display

- Subunits and input/output modules must be ordered separately from the main unit.
- The extension cable must be ordered separately when the subunit is specified.

● Subunit: DS400, DS600

Model	Suffix codes	Description
DS400		4-module connection type subunit
DS600		6-module connection type subunit
Type	-00	Always -00
Power supply voltage	-1	100 to 240 VAC
Power inlet, power cable	D	3-pin power inlet w/UL, CSA cable
	F	3-pin power inlet w/VDE, cable
	R	3-pin power inlet w/SAA, cable
	S	3-pin power inlet w/BS, cable
	W	With 3-pin inlet screw conversion terminal

● Configuration example of the expandable model

- 100 ch, 0.5 s universal input, with RS-232C and 20-ch alarm output
  DR240 expandable main-unit: DR242 × 1
  Sub unit: DS600 × 2
  Universal input module: DU100-11 or -12 × 10
  Communication module: DT300-21 (RS-232C) × 1
  Alarm output module: DT200-21 × 2
  Extension cable × 2

DR240

● Input modules

Model	Description	Required slots	Terminal profile	Max. measuring period
DU100-11	10-channel universal input (DCV, TC, DI & RTD)	1	Screw	0.5 s
DU100-21	20-channel universal input (DCV, TC, DI & RTD)	2	Screw	2 s
DU100-31	30-channel universal input (DCV, TC, DI & RTD)	3	Screw	2 s
DU100-12	10-channel universal input (DCV, TC, DI & RTD)	1	Clamp	0.5 s
DU100-22	20-channel universal input (DCV, TC, DI & RTD)	2	Clamp	2 s
DU100-32	30-channel universal input (DCV, TC, DI & RTD)	3	Clamp	2 s
DU200-11	10-channel DCV/TC/DI input	1	Screw	0.5 s
DU200-21	20-channel DCV/TC/DI input	2	Screw	2 s
DU200-31	30-channel DCV/TC/DI input	3	Screw	2 s
DU200-12	10-channel DCV/TC/DI input	1	Clamp	0.5 s
DU200-22	20-channel DCV/TC/DI input	2	Clamp	2 s
DU200-32	30-channel DCV/TC/DI input	3	Clamp	2 s
DU300-11	10-channel mA input module	1	Screw	0.5 s
DU300-12	10-channel mA input module	1	Clamp	0.5 s
DU400-12	Power monitor module for single phase	1	Clamp	2 s
DU400-22	Power monitor module for 3 phase	1	Clamp	2 s
DU500-12	10-channel strain input module (120 Ω)	2	Clamp	0.5 s
DU500-13	10-channel strain input module (350 Ω)	2	Clamp	0.5 s
DU500-14	10-channel strain input module (External bridge box)	2	NDIS	0.5 s
DU600-11	10-channel pulse input	1	NDIS	0.5 s
DU700-11	Digital input	1	Screw	0.5 s

● I/O terminal module

Model	Description
DT100-11	DI/DO module (2-point alarm output, remote control signal input, fail/chart end output)
DT200-11	Alarm output module (4 transfer contacts)
DT200-21	Alarm output module (10 make contacts)
DT300-11	GP-IB module
DT300-21	RS-232C module
DT300-31	RS-422/485 module
DT300-41	Ethernet module

● Optional accessories

Model	Description
DV100-011	Extension module
DV100-012	Extension base unit
DV200-000	Extension cable (0.5 m)
DV200-001	Extension cable (1 m)
DV200-002	Extension cable (2 m)
DV200-005	Extension cable (5 m)
DV200-010	Extension cable (10 m)
DV200-020	Extension cable (20 m)
DV200-050	Extension cable (50 m)
DV200-100	Extension cable (100 m)
DV200-200	Extension cable (200 m)
DV200-300	Extension cable (300 m)
DV200-400	Extension cable (400 m)
DV200-500	Extension cable (500 m)
DV250-001	Cable adapter
DV300-011	Shunt resistor 10 Ω, for screw
DV300-012	Shunt resistor 10 Ω, for clamp
DV300-101	Shunt resistor 100 Ω, for screw
DV300-102	Shunt resistor 100 Ω, for clamp
DV300-251	Shunt resistor 250 Ω, for screw
DV300-252	Shunt resistor 250 Ω, for clamp
DV400-011	Rack mounting kit (DS400/600)
DV400-051	Power cable between DR expandable main unit and subunit
DV450-001	Strain converter

● Software

Model	Description	Applicable Operating System
DP120-13	DARWIN DAQ32 software (Supports setup, simplified data logging and viewing, and diagnosis and calibration functions. One package of this software comes standard with the purchased DR240 recorder if you specify the model code specification for "software included.")	Windows 95, Windows 98 or Windows NT4.0
DP320-13	DARWIN DAQ32Plus software (Supports setup, data logging and viewing, diagnosis and calibration and tag setting functions.)	Windows 95, Windows 98 or Windows NT4.0
DP350-13	Enhanced multifunctional data logging software	Windows 3.1, Windows 95 or Windows 98
DP810-□1E	InTouch for DARWIN2000 server software (Choices for the □ field: 1 = 40 channels, 2 = 120 channels, 3 = 300 channels, 4 = 600 channels, 5 = 900 channels)	Windows NT4.0
DP811-□1E	InTouch for DARWIN2000 client software (Choices for the □ field: 3 = 300 channels, 4 = 600 channels, 5 = 900 channels)	Windows NT4.0

The DP120 (DAQ32) and DP320 (DAQ32Plus) data acquisition software cannot be run simultaneously, and neither can the combination of the DP350 enhanced multi-functional data logging software, and DP800 InTouch for DARWIN software.

● Spares

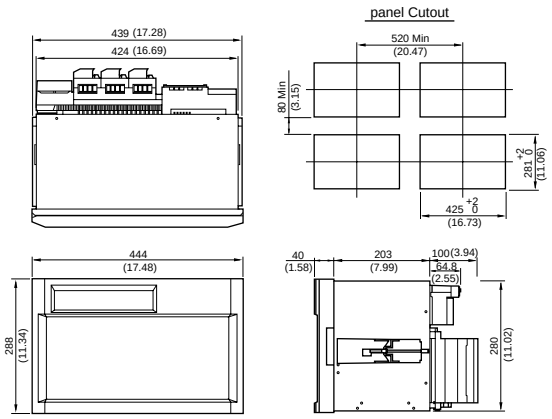
Part No.	Name	Order q'ty
B9627AZ	10-color ribbon	1
B9627RY	Z-fold paper (30 m) (time axis:10 mm)	10
B9627AY	Z-fold paper (30 m) (time axis:25 mm)	10

- Standard accessories for the DR240
  One Z-fold chart paper, one ink ribbon, one pair of panel mounting brackets, instruction manuals.

DIMENSIONS

● DR242 with DS600 subunit on the rear panel

Unit: mm (inches)



If not specified, the tolerance is ±3%. However, in case of less than10 mm, the tolerance is ±0.3 mm.