General Specifications

View Recorder Wide-View
Model VR200

GS 4N2A1-E

OVERVIEW

The VR200 is a PAPER-LESS recorder that displays real-time measured data on a color LCD and saves data on a 3.5-inch floppy disk. It comes with a two, four-channel or six-channel model. As the input signal, a DC voltage, thermocouple, resistance temperature detector, or contact signal can be set to each channel. The data saved on a floppy disk can be converted by data conversion software to Lotus 1-2-3, Excel, or ASCII format file, facilitating processing on a PC. Not only this, the Viewer software allows a PC to display waveforms on its screen and to print out waveforms.

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STANDARD SPECIFICATIONS

General Specifications

Construction

Mounting

Flush panel mounting (on a vertical plane)
Mounting may be inclined downward up to 30° from a horizontal plane.

Allowable Panel Thickness:

2 to 26 mm

Material:

Case: drawn steel
Bezel: polycarbonate

Case Color:

Lamp black (Munsell 0.8Y2.5/0.4 or equivalent)

Dimensions:

144(W)×144(H)×280(D) mm

Weight:

VR202, 204; approx. 2.9 kgf
VR206 ; approx. 2.8 kgf

Input

Number of Inputs:

VR202; up to two channels (selectable in channels 1 or 2)
VR204; up to four channels (settable in channels 1 to 4)
VR206; up to six channels (settable in channels 1 to 4 and 6)

Measurement Interval:

VR202, 204;125 ms
VR206; 1 s (2 s when an A/D integration time is set to 100 ms)

Inputs:

DCV (DC voltage), TC (thermocouple), RTD (resistance temperature detector), DI (digital input for event recording), DCA (DC current with external shunt resistor attached)

Input type	Range	Measuring range
DC voltage (DCV)	20mV	-20.00 to 20.00 mV
	60mV	-60.00 to 60.00 mV
	200mV	-200.0 to 200.0 mV
	2V	-2.000 to 2.000 V
	6V	-6.000 to 6.000V
	20V	-20.00 V to 20.00 V
Thermocouple (TC)	R *1	0.0° to 1760.0°C
	S *1	0.0° to 1760.0°C
	B *1	0.0° to 1820.0°C
	K *1	-200.0° to 1370.0°C
	E *1	-200.0° to 800.0°C
	J *1	-200.0° to 1100.0°C
	T *1	-200.0° to 400.0°C
	N *2	0.0° to 1300.0°C
	W *3	0.0° to 2315.0°C
	L *4	-200.0° to 900.0°C
	U *4	-200.0° to 400.0°C
Resistance temperature detector (RTD) (measurement current i=0.5mA)	Pt100 *5	-200.0° to 600.0°C
	JPt100 *5	-200.0° to 550.0°C
Event recording (DI)	DCV input	Less than 2.4 V: off; 2.4 V or greater: on
	Contact input	Contact on/off

*1 R, S, B, K, E, J, T: ANSI, IEC 584, DIN IEC 584, JIS C 1602-1981
*2 N: Nicrosil-Nisil, IEC 584, DIN IEC 584
*3 W: W•5%Re-W•26%Re (Hoskins Mfg. Co.)
*4 L: Fe-CuNi, DIN43710
U: Cu-CuNi, DIN43710
*5 Pt100: JIS C 1604-1989, JIS C 1606-1989, IEC 751, DIN IEC 751
JPt100: JIS C 1604-1981, JIS C 1606-1989

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A/D Integration Time:
Fixed to 20 ms (50 Hz) or 16.7 ms (60 Hz) 100ms (50/60Hz for VR206), or AUTO selectable (automatic selection by detection of power supply frequency)

Thermocouple Burnout:
Burnout upscale/downscale function can be switched on/off (common for all channels).
Burnout upscale/downscale selectable

Filter:
VR202, 204; On/off selectable (common for all channels)
Time constant: selectable from 2, 5, and 10 seconds
VR206; moving average on/off selectable (common to all channels), moving average cycles 2 to 16 selectable

Calculation:
Differential computation:
Between any two channels; however, reference channel must be smaller than measuring channel number.
Available for DCV, TC, and RTD ranges.
Linear scaling:
Available for DCV, TC, and RTD ranges.
Scaling limits: -20000 to 20000
Decimal point: user-selectable
Engineering unit: user-definable, up to 6 characters
Square root:
Available for DCV range.
Scaling limits: -20000 to 20000
Decimal point: user-selectable
Engineering unit: user-definable, up to 6 characters

Display

Display unit:
5.5-inch TFT color LCD (320×240 pixels)

Analog display:
waveform display direction is user-selectable from vertical and horizontal.
Line width of waveforms are user-selectable from 1, 2, and 3 pixels.

Analog display color:
VR202; Red for channel 1, green for channel 2 (These colors as well as blue, violet, brown, cyan, orange and gray are user-selectable for each channel.)
VR204; Red for channel 1, green for channel 2, blue for channel 3, violet for channel 4
(These colors as well as brown, cyan, orange and gray are user-selectable for each channel.)
VR206; Red for channel 1, green for channel 2, blue for channel 3, violet for channel 4, orange for channel 5, cyan for channel 6 (These colors as well as brown and gray are user-selectable for each channel.)

Waveform span rate:
User-selectable from 1, 5, 10, 20, 30, and 60 min/div

Digital indication:
Measured values (updated every second), alarm types, engineering units (up to 6 characters), and tags (up to seven characters)

Memory status display:
The memory status of the event file is displayed when storing data in the event file in the trigger mode.
The remaining sampling time of the display data file is displayed (from 99 hours before overwriting).

Other display contents:
Scale values, (0 and 100%, display on/off selectable), grid lines (number of divisions selectable from 4 to 12), hour:minute on grid, trip levels (line widths are selectable from 1, 2 and 3 pixels), messages (up to five different messages of up to 16 characters for each, displayed only in the vertical waveform display mode), alarms (ALM), waveform span rate

Data referencing function:
By splitting the waveform display area into two, current waveforms and reference waveforms can be compared on the display.
Min/max digital values are displayed as reference values.

Display magnification/reduction function:
The time scale of analog display can be magnified and reduced.

Bargraph display:
The measured values are displayed as easy-to-read bar graphs. The channel or tag number, alarm status, unit, scale values, and alarm settings of each channel are displayed together.

Large digital display:
The measured values are displayed as large digits. The alarm status and unit of each channel are displayed together.

Alarm summary display:
Up to the fifty most recent alarm events — occurrences and recoveries of alarms—are displayed. The number of samples stored in each of the display data and event files and the percentage of memory currently used are also displayed.

LCD saver function:
The LCD backlight automatically dims if no key is touched for a certain preset time (can be set from 1, 5, 10, 20, 30 and 60 minutes).

Data Saving Function

External storage medium:
3.5-inch floppy disk (2HD)
(The formatting can be 1.2 (for VR202, 204 only) or 1.44 MB.)

Saving method:
Transmitting of data from internal memory to floppy disk

Data Saving Period:
Linked with the sampling period (for the event file) specified or the waveform span rate (for a display data file)

Event File Sampling Period:
VR202, 204; Selectable from 125 ms, 250 ms, 500 ms, and 1 s.
VR206; Selectable from 1, 2, 10, 30, 60 , and 120s.

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File:

The following two file types can be created.

- Event file (stores instantaneous values sampled periodically at a specified sampling rate)
- Display data file (stores the maximum and minimum values for each waveform span rate from among measured data sampled at measurement intervals)

Files can be created in the following combinations.

(a) Event file + display data file
(b) Event file × 16 + display data file
(c) Event file only

Sampling time:

For VR202: Approx. double the sampling time of VR204.

For VR204

In case (a) above,
Display data file (when using full four channels)

Amount of data: 48,000 points/channel *2

Waveform span rate (min/div)	1 min	5 min	10 min	20 min	30 min	60 min
Sampling time *1	Approx. 26 hours	Approx. 5 days	Approx. 11 days	Approx. 22 days	Approx. 33 days	Approx. 66 days

Event file (when using full four channels)

Amount of data: 30,000 points/channel *2

Sampling period	125 ms	250 ms	500 ms	1 s
Sampling time *1	Approx. 1 hour	Approx. 2.1 hours	Approx. 4.2 hours	Approx. 8.3 hours

In case (b) above,
The sampling times for the display data file are the same as those in case (a).
Event file (one of sixteen for four channel inputs)

Amount of data: 2,000 points/channel *2

Sampling period	125 ms	250 ms	500 ms	1 s
Sampling time *1	Approx. 4.1 min	Approx. 8.3 min	Approx. 16.6 min	Approx. 33 min

In case (c) above,
Event file (for four channel inputs)

Amount of data: 12,000 points/channel *2

Sampling period	125 ms	250 ms	500 ms	1 s
Sampling time *1	Approx. 4.1 hours	Approx. 8.3 hours	Approx. 16.6 hours	Approx. 33.3 hours

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For VR206
In case (a) above:
Display data file (when using all six channels)

Amount of data: 47,600 points/channel *2

Waveform span rate (min/div)	1 min	5 min	10 min	20 min	30 min	60 min
Sampling time *1	Approx. 26 hours	Approx. 5 days	Approx. 11 days	Approx. 22 days	Approx. 33 days	Approx. 66 days

Event file (when using all six channels)

Amount of data: 20,000 points/channel *2

Sampling period	1 s	2 s	10 s	30 s	60 s	120 s
Sampling time *1	Approx. 5.5 hours	Approx. 11 hours	Approx. 2 days	Approx. 6 days	Approx. 13 days	Approx. 27 days

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In case (b) above:
The display data files are the same as those in case (a).
Event file (one of sixteen for six channel inputs)

Amount of data: 1,300 points/channel *2

Sampling period	1 s	2 s	10 s	30 s	60 s	120 s
Sampling time *1	Approx. 21 min	Approx. 42 min	Approx. 3.5 hours	Approx. 10.5 hours	Approx. 21 hours	Approx. 42 hours

In case (c) above:
Event file (for all six channels)

Amount of data: 112,000 points/channel *2

Sampling period	1 s	2 s	10 s	30 s	60 s	120 s
Sampling time *1	Approx. 31 hours	Approx. 2 days	Approx. 12 days	Approx. 38 days	Approx. 77 days	Approx. 155 days

*1 The sampling time varies depending on the channel settings
*2 The amounts of these data are approximate.

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Other files:

Setup parameter file (setup parameter list), information file (event, power-failure, and alarm information)
Event information: When the event is occurred, the data no. of the display data (or event) file and date/time of occurrence are saved (max. 32 times).
Power-failure information: When a power-failure is occurred, the data no. and date/time of occurrence/recovery are saved (max. 10 times).
Alarm information: When a alarm is occurred, the alarm channel no., alarm type/level and date/time of alarm occurrence/recovery are saved (max. 50 times).

Data format:

Measured data: Binary in Yokogawa standard format (2 bytes/data value)
Setup parameters and event, power-failure, alarm information: ASCII format

Trigger function:

An external contact, key on the recorder panel, or an alarm can be assigned as the trigger to start saving data in an event file.
A pre-trigger function is available. (The trigger point is set in increments of 10% of the memory length.)

Behavior when the memory is full:

Event file:
In the FREE sampling mode:
The oldest data are overwritten.
In the TRIG sampling mode:
The next trigger is neglected and stored data are retained.
In the ROTATE sampling mode:
When the next trigger is raised, the contents of the file (the oldest file when sixteen files have been created) is cleared and storage of the new data begins.
Display data file:
The oldest data are overwritten.

Setting data memory:

Setting data (SET mode, SET-UP mode) can be stored on a FD, and it can be retrieved.

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Alarm Function

Number of alarm levels:
Up to four levels for each channel

Alarm types:
High and low limits, differential high and low limits, and high and low rate-of-change limits

Interval time of rate-of-change alarms:
The measurement interval times 1 to 15

Display:
The alarm status (type) is displayed in the digital value display area upon occurrence of an alarm. A common alarm indication is also displayed. The alarming behavior: non-hold- or hold-type can be selectable for common to all channels.

Hysteresis:
On (0.5% of span)/off switchable (common to all channels and alarm levels)

Outputs:
2, 4, or 6 points (optional). On-energized/on-deenergized and hold/non-hold selectable.

Memory:
The times of alarm occurrences/recoveries, alarm types, etc. are stored in the memory. (Up to fifty alarm events per channel are stored.)

Power Supply

Rated power supply:
100 to 240 V AC (automatic switching)

Allowable power supply voltage range:
90 to 132 or 180 to 250 V AC

Rated power supply frequency:
50/60 Hz (automatic switching)

Power consumption:

For VR202 / VR204 / VR206 (Approx.)

Supply voltage	LCD saver mode	Normal	Max.
100 V AC	25 VA	30 VA	60 VA
240 V AC	35 VA	40 VA	70 VA

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Other Specifications

Clock:
With calendar function (Western calendar)
The time can be adjusted by a remote contact (with the Remote option).

Accuracy of clock:
±100 ppm, excluding a delay (of 1 second, maximum) caused each time the power is turned on/off.

Memory backup:
The setup parameters are backed up by a built-in lithium battery (battery life: approximately ten years at room temperature).
The measured values are stored in the flash memory, and thus there are no limitations to the backup time.

Insulation resistance:
Each terminal to ground terminal: 20 MΩ or greater (at 500 V DC)

Dielectric strength:
Power supply to ground terminal: 1500 V AC (50/60 Hz), 1 minute
Contact output terminal to ground terminal: 1500 V AC (50/60 Hz), 1 minute
Measuring input terminal to ground terminal: 1000 V AC (50/60 Hz), 1 minute
Between measuring input terminals: 1000 V AC (50/60 Hz), 1 minute (except for RTD of VR206, since b-terminal is common).
Between remote control terminal to ground terminal: 500 V DC, 1 minute

Safety and EMC Standards

Safety standards:
Certified by CSA22.2No. 1010.1
Complies with EN61010-1

EMI standards:
Complies with EN55011 Group 1 Class A

Immunity:
Complies with EN50082-2

Normal Operating Conditions

Power voltage:
90 to 132 or 180 to 250 V AC

Power supply frequency:
50 Hz ±2%, 60 Hz ±2%

Ambient temperature:
0° to 50°C (when using FDD: 5 to 40°C)

Ambient humidity:
20% to 80%RH (at 5° to 40°C)

Vibration:
10 to 60 Hz, 0.2 m/s^2 or less

Shock:
Not acceptable

Magnetic field:
400 AT/m or less (DC and 50/60 Hz)

Noise:
Normal mode (50/60 Hz)

DCV	The peak value including the signal must be less than 1.2 times the measuring range.
TC	The peak value including the signal must be less than 1.2 times the measuring thermal electromotive force.
RTD	50 mV or less

Common mode (50/60 Hz)
250 Vrms AC or less for all ranges
Maximum noise voltage between channels (50/60 Hz)
250 Vrms AC or less

Mounting position:
Can be inclined up to 30° backward. Mounting at an angle away from the perpendicular is not acceptable.

Warm-up time:
At least 30 minutes after power on

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Standard Performance

Measuring and Recording Accuracy:

The following specifications apply to operation of the recorder under standard operation conditions: temperature at 23°±2°C; humidity of 55%±10%RH; power supply voltage of 90 to 132 or 180 to 250 V AC; power supply frequency of 50/60 Hz ±1%; and warm-up time of at least 30 minutes. Other ambient conditions such as vibration should not adversely affect recorder operation.

Input	Range	Measurement Accuracy (Digital Display)	Max. Resolution of Digital Display
DCV	20 mV	±(0.2% of rdg + 3 digits)	10 µV
	60 mV	±(0.2% of rdg + 2 digits)	10 µV
	200 mV	±(0.2% of rdg + 2 digits)	100 µV
	2 V	±(0.1% of rdg + 2 digits)	1 mV
	6 V	±(0.3% of rdg + 3 digits)	1 mV
	20 V	±(0.3% of rdg + 2 digits)	10 mV
TC (excluding the reference junction compensation accuracy)	R	±(0.15% of rdg + 1°C) However, R, S: ±3.7°C at 0° to 100°C ±1.5°C at 100° to 300°C B: ±2°C at 400° to 600°C accuracy at less than 400°C is not guaranteed	0.1°C
	S		
	B		
	K	±(0.15% of rdg + 0.7°C) However, (0.15% of rdg + 1°C) at -200° to -100°C	
	E	±(0.15% of rdg + 0.5°C)	
	J	±(0.15% of rdg + 0.5°C) However, ±(0.15% of rdg + 0.7°C) at -200° to -100°C	
	T		
	N	±(0.15% of rdg + 0.7°C)	
	W	±(0.15% of rdg + 1°C)	
	L	±(0.15% of rdg + 0.5°C) However, ±(0.15% of rdg + 0.7°C) at -200° to -100°C	
	U		
RTD	Pt100	±(0.15% of rdg + 0.3°C)	
	JPt100		

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Maximum resolution of analog display:

Waveform display:

When the direction of waveform display is vertical:
165 × 320 pixels (57 × 111 mm)

When the direction of waveform display is horizontal:
200 × 240 pixels (70 × 84 mm)

Pixel pitch: 0.348 (vertical) mm × 0.348 (horizontal) mm

Measurement accuracy in case of scaling (digits)

$$= \text{measurement accuracy (digits)} \times \frac{\text{scaling span (digits)}}{\text{measurement span (digits)}} + 2 \text{ digits}$$

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Decimals are rounded off to the next highest number.

Reference junction compensation:

INT (internal)/EXT (external) selectable (common for all channels)

Reference junction compensation accuracy (above 0°C):

Types R, S, B, W: ±1°C
Types K, J, E, T, N, L, U: ±0.5°C

Maximum allowable input voltage:

±10 V DC (continuous) for less than 2 V DC ranges and TC ranges
±30 V DC (continuous) for 6V and 20V ranges

Input resistance:

Approximately 10 MΩ or more for DCV ranges of 2V or less and TC
Approximately 1 MΩ for 6V and 20V DCV ranges

Input source resistance:

DCV, TC: 2 kΩ or less
RTD: 10 Ω or less per wire (The resistance of all three wires must be equal.)

Input bias current:

10 nA or less (approximately 100 nA when the burnout upscale/downscale function is switched on)

Maximum common mode voltage:

250 Vrms AC (50/60 Hz)

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Maximum noise voltage between channels:
250 Vrms AC (50/60 Hz)

Interference between channels:
120 dB (when the input source resistance is 500 Ω and the inputs to other channels are 30 V)

Common mode rejection ratio:
120 dB (50/60 Hz ±0.1%, 500 Ω imbalance between the minus terminal and ground)

Normal mode rejection ratio:
40 dB (50/60 Hz ±0.1%)

Effects of Operating Conditions

Ambient temperature:
with temperature variation of 10°C:
Digital indication: ±(0.1% of rdg + 1 digit) or less
excluding the error of reference junction compensation

Power supply:
with variation within 90 to 132 V and 180 to 250 V AC (50/60 Hz):
Digital indication: ±1 digit or less
with variation of ±2 Hz from rated power frequency (at 100 V AC):
Digital indication: ±(0.1% of rdg + 1 digit) or less

Magnetic field:
AC (50/60 Hz) and DC 400 A/m fields:
Digital indication: ±(0.1% of rdg + 10 digits) or less

Input source resistance:
(1) DCV range
with variation of +1 kΩ:
Ranges of 2V or less:within ±10 µV
Ranges of 6V or greater:-0.1% of rdg or less
(2) TC range
with variation of +1 kΩ:
Within ±10 µV (±100 µV when the burnout upscale/downscale function is switched on)
(3) RTD range
with variation of 10Ω per wire (resistance of all three wires must be equal):
Digital indication: ±(0.1% of rdg + 1 digit) or less
with maximum difference of 40 mΩ between wires:
Digital indication: approximately ±0.1°C

Mounting position:
with variation in inclination of ±30% backward
Digital indication: ±(0.1% of rdg + 1 digit) or less

Vibration:
when sine-wave motion of frequency of 10 to 60 Hz and acceleration of 0.2 m/s^2 is applied to the recorder in the directions of three axes for two hours:
Digital indication: ±(0.1% of rdg + 1 digit) or less

Transport and Storage Conditions

The following specifies the environmental conditions required during transportation from shipment to the start of service and during storage as well as during transportation and storage if this instrument is temporarily taken out of service.

No malfunction will occur under these conditions without serious damage which is absolutely impossible to repair; however, calibration may be necessary to recover normal operation performance.

Ambient temperature:
-25° to 60°C

Humidity:
5% to 95%RH (No condensation is allowed.)

Vibration:
10 to 60 Hz, 4.9 m/s^2 maximum

Shock:
392 m/s^2 maximum (while being packed)

SPECIFICATIONS OF OPTIONAL FUNCTIONS

Alarm Output Relays (/A1, /A2, /A3)
An alarm signal is output from the rear panel as a relay contact signal.

Relay contact rating:
250 V DC/0.1 A (for resistance load) 250 V AC (50/60 Hz)/3 A

Terminal configuration:
SPDT (NO-C-NC)
(Energized-at-alarm/deenergized-at-alarm, AND/OR, and hold/non-hold actions are selectable.)

RS-422A Communication Interface (/C3)
This interface allows the host computer to control and make settings for the recorder as well as receive data from the recorder.

Synchronization method:
Start-stop asynchronous transmission

Communication level:
Conforming to EIA RS-422A standard

Connection method:
4-wire half-duplex multi-drop connection (1:N where N = 1 to 16)

Transmission speed:
1200, 2400, 4800, or 9600 bps

Data length:
7 or 8 bits

Stop bit:
1 or 2 bits

Parity:
Odd, even, or none

Communication distance:
Up to 500 m

Communication mode:
ASCII for input/output for control and setting
ASCII or binary for output of measured data

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deg F Display (/D2)
Uses deg F as the temperature unit.

Large memory (/E4)
Expands the internal memory size.

Sampling time when using large memory option:

-VR204-

(a) Event file + display data file
Display data file (when using all four channels)

(approx.)

Waveform span rate (min/div)	1 min	5 min	10 min	20 min	30 min	60 min
Sampling time	3 days	16 days	33 days	66 days	100 days	200 days

Event file (for four channel inputs)

(approx.)

Sampling period	125 ms	250 ms	500 ms	1 s
Sampling time	3.1 hours	6.2 hours	12.4 hours	25 hours

Display data file (when using all four input channels and four computed-value channels)

(approx.)

Waveform span rate (min/div)	1 min	5 min	10 min	20 min	30 min	60 min
Sampling time	26.6 hours	5 days	11 days	22 days	33 days	66 days

Event file (for four channel inputs and four computed-value channels)

(approx.)

Sampling period	250 ms	500 ms	1 s
Sampling time	2 hours	4.1 hours	8.3 hours

(b) Event file only
Event file (for four channel inputs)

(approx.)

Sampling period	125 ms	250 ms	500 ms	1 s
Sampling time	12.5 hours	25 hours	2 days	4 days

Event file (for four channel inputs and four computed-value channels)

(approx.)

Sampling period	250 ms	500 ms	1 s
Sampling time	8.3 hours	16.6 hours	33.3 hours

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-VR206-

(a) Event file + display data file
Display data file (when using all six channels)

(approx.)

Waveform span rate (min/div)	1 min	5 min	10 min	20 min	30 min	60 min
Sampling time	3 days	16 days	33 days	66 days	99 days	198days

Event file (for six channel inputs)

(approx.)

Sampling period	1s	2s	10s	30 s	60 s	120 s
Sampling time	16.6 hours	33.2 hours	6 days	20 days	41 days	83 days

Display data file (when using all six input channels and six computed-value channels)

(approx.)

Waveform span rate (min/div)	1 min	5 min	10 min	20 min	30 min	60 min
Sampling time	26.4 hours	5 days	11 days	22 days	33 days	66 days

Event file (for six channel inputs and six computed-value channels)

(approx.)

Sampling period	1s	2s	10s	30 s	60 s	120 s
Sampling time	5.5 hours	11 hours	2 days	6 days	13 days	27 days

(b) Event file only
Event file (for six channel inputs)

(approx.)

Sampling period	1s	2s	10s	30 s	60 s	120 s
Sampling time	3 days	7 days	38 days	116 days	233 days	466 days

Event file (for six channel inputs and six computed-value channels)

(approx.)

Sampling period	1s	2s	10s	30 s	60 s	120 s
Sampling time	31.1 hours	2 days	12 days	38 days	77 days	155 days

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Fail/Memory End Output (/F1)
The relay contact output on the rear panel indicates the occurrence of a system error and the time specified until end of memory (selectable from 1, 2, 5, 10, 20, 50, 100 hours) before the data in a continuously storing file are overwritten.

Relay contact rating:
250 V DC/0.1 A (for resistance load) 250 V AC (50/60 Hz)/3 A

Clamped Input Terminal (/H2)
used clamped input terminals as input terminal.

Desk Top Type (/H5□*)
Provides carrying handle and power cord.

Weight: VR202, 204/H5□ : approx. 4.4 kgf
VR206/H5□ : approx. 4.3 kgf

* /H5□
- D: Power cord UL, CSA st'd
- F: Power cord VDE st'd
- R: Power cord SAA st'd
- J: Power cord BS st'd

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French/German display, Summer/Winter time (/L1)
French or German display can be selected. Summer andWinter time can be set.

Mathematical functions (/M1 and /M2)
Used for calculating data, displaying trends and digital values, and recording calculated data assigned to channels. The data of each channel, regardless of whether a measured value or calculated value is assigned to it, can be saved as binary data at set intervals (1 minute to 24 hours).

Channels assignable to calculated data:
Up to 4 channels for 2- or 4-channel model
Up to 6 channels for 6-channel model
Operations:
General arithmetic operations: four arithmetic operations, square root, absolute, common logarithm, exponential, relational operations(>, <, =, ≠), logic operations(AND, OR, NOT, XOR)
Statistical operations: average, maximum, minimum, and total of time-series data
Constant: Available

Note1: Measurement interval of the VR202/204 will be 250ms when using calculation channels.
Note2: To view the calculated data on a personal computer, VA200-02 (VR data viewer for Windows 95) is required

Sampling time when using calculation channels:

- VR202 -
(a) Event file + display data file

Display data file (for two channel inputs)

(approx.)

Waveform span rate (min/div) / Number of calc. ch	1 min	5 min	10 min	20 min	30 min	60 min
1	26.6 hours	5 days	11 days	22 days	33 days	66 days
2	17.7 hours	3 days	7 days	14 days	22 days	44 days
3	13.3 hours	2 days	5 days	11 days	16 days	33 days
4	10.6 hours	2 days	4 days	8 days	13 days	26 days

T07.EPS

Event file

(approx.)

Sampling period / Number of calc. ch	250 ms	500 ms	1 sec.
1	2 hours	4.1 hours	8.3 hours
2	83 min	2.7 hours	5.5 hours
3	62 min	2 hours	4.1 hours
4	49 min	1.6 hours	3.2 hours

T08.EPS

(b) Event file × 16 + display data file
The sampling times for the display data file are the same as those in case (a).

Event file (one of sixteen for two channel inputs)

(approx.)

Sampling period / Number of calc. ch	250 ms	500 ms	1 sec.
1	8.3 min	16 min	33 min
2	5.5 min	11 min	22 min
3	4.1 min	8.2 min	16 min
4	3.2 min	6.4 min	13 min

T09.EPS

(c) Event file only

Event file (for two channel inputs)

(approx.)

Sampling period / Number of calc. ch	250 ms	500 ms	1 sec.
1	8.3 hours	16.6 hours	33.3 hours
2	5.5 hours	11 hours	22.2 hours
3	4.1 hours	8.2 hours	16.6 hours
4	3.2 hours	6.4 hours	13.1 hours

T10.EPS

- VR204 -
(a) Event file + display data file

Display data file (for four channel inputs)

(approx.)

Waveform span rate (min/div) / Number of calc. ch	1 min	5 min	10 min	20 min	30 min	60 min
1	17.7 hours	3 days	7 days	14 days	22 days	44 days
2	13.3 hours	2 days	5 days	11 days	16 days	33 days
3	10.6 hours	2 days	4 days	8 days	13 days	26 days
4	8.8 hours	1 day	3 days	7 days	11 days	22 days

T11.EPS

Event file

(approx.)

Sampling period / Number of calc. ch	250 ms	500 ms	1 sec.
1	83 min	2.7 hours	5.5 hours
2	62 min	2 hours	4.1 hours
3	49 min	1.6 hours	3.2 hours
4	40 min	1.3 hours	2.6 hours

T12.EPS

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(b) Event file × 16 + display data file
The sampling times for the display data file are the same as those in case (a).

Event file (one of sixteen for four channel inputs)

(approx.)

Sampling period / Number of calc. ch	250 ms	500 ms	1 sec.
1	5.5 min	11 min	22 min
2	4.1 min	8.2 min	16 min
3	3.2 min	6.4 min	13 min
4	2.7 min	5.4 min	10 min

T13.EPS

(c) Event file only

Event file (for four channel inputs)

(approx.)

Sampling period / Number of calc. ch	250 ms	500 ms	1 sec.
1	5.5 hours	11 hours	22.2 min
2	4.1 hours	8.2 hours	16.6 hours
3	3.2 hours	6.4 hours	13.1 hours
4	2.7 hours	5.4 hours	10.9 hours

T14.EPS

- VR206 -

(a) Event file + display data file

Display data file (for six channel inputs)

(approx.)

Waveform span rate (min/div) / Number of calc. ch	1 min	5 min	10 min	20 min	30 min	60 min
1	18 hours	3 days	7 days	15 days	22 days	45 days
2	14.4 hours	3 days	6 days	12 days	18 days	36 days
3	12 hours	2 days	5 days	10 days	15 days	30 days
4	10.2 hours	2 days	4 days	8 days	12 days	25 days
6	8 hours	40 hours	3 days	6 days	10 days	20 days

T15.EPS

Event file

(approx.)

Sampling period / Number of calc. ch	1 sec.	2 sec.	10 sec.	30 sec.	60 sec.	120 sec.
1	4.1 hours	8.2 hours	41 hours	5 days	10 days	20 days
2	3.3 hours	6.6 hours	33 hours	4 days	8 days	16 days
3	2.7 hours	5.4 hours	27 hours	3 days	6 days	13 days
4	2.3 hours	4.6 hours	23 hours	2 days	5 days	11 days
6	1.8 hours	3.6 hours	18 hours	2 days	4 days	9 days

T16.EPS

(b) Event file × 16 + display data file
The sampling times for the display data file are the same as those in case (a).

Event file (one of sixteen for six channel inputs)

(approx.)

Sampling period / Number of calc. ch	1 sec.	2 sec.	10 sec.	30 sec.	60 sec.	120 sec.
1	16 min	33 min	2.7 hours	8.2 hours	16.5 hours	33 hours
2	13 min	26 min	2.1 hours	6.5 hours	13 hours	26 hours
3	10 min	21 min	1.8 hours	5.4 hours	10.8 hours	21.6 hours
4	9.1 min	18 min	1.5 hours	4.5 hours	9.1 hours	18.2 hours
6	7 min	14 min	1.1 hours	3.5 hours	7 hours	14 hours

T17.EPS

(c) Event file only

Event file (for six channel inputs)

(approx.)

Sampling period / Number of calc. ch	1 sec.	2 sec.	10 sec.	30 sec.	60 sec.	120 sec.
1	21.5 hours	43 hours	8 days	26 days	53 days	107 days
2	17.2 hours	34 hours	7 days	21 days	43 days	86 days
3	14.3 hours	28 hours	5 days	17 days	35 days	71 days
4	12.3 hours	1 day	5 days	15 days	30 days	61 days
6	9.5 hours	19 hours	3 days	11 days	23 days	47 days

T18.EPS

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Cu10, Cu25 RTD Input (/N1)
This option allows Cu10 and Cu25 inputs to be added to the standard input types.

Measuring Range of Cu10 and Cu25 Inputs

Input Type		Measuring Range
RTD (measurement current i = 1.5 mA)	Cu10 (GE): α = 0.003855 at 25°C Cu10 (L&N): α = 0.003852 at 25°C Cu10 (WEED): α = 0.003862 at 25°C Cu10 (BAILEY): non-linear Cu10: α = 0.00392 at 20°C Cu10: α = 0.00393 at 20°C Cu25: α = 0.00425 at 0°C	-200° to 300°C

T19.EPS

Measurement Accuracy

Input Type	Measurement Accuracy
Cu10 (GE): α = 0.003855 at 25°C Cu10 (L&N): α = 0.003852 at 25°C Cu10 (WEED): α = 0.003862 at 25°C Cu10 (BAILEY): non-linear Cu10: α = 0.00392 at 20°C Cu10: α = 0.00393 at 20°C	±(0.4% of rdg + 1.0°C)
Cu25: α = 0.00425 at 0°C	±(0.3% of rdg + 0.8°C)

T20.EPS

24VDC Power Supply (/P1)
Rated power supply : 24VDC

Allowable power supply voltage range : 21.6 to 26.4VDC

Power Consumption:

(Approx.)

Supply Voltage	LCD server mode	Normal	Max.
24VDC	15VA	20VA	50VA

T21.EPS

Remote Control (/R1)
This option allows the following five functions to be controlled remotely by a contact input:

- Trigger for event file(trigger, 250ms or longer)
- Time adjustment (adjusting the time to a preset time upon contact signal, trigger, 250ms or longer)

Time of Trigger-on	Processing
hh:00:00 to hh:01:59	Cut off reading of less than one minute. E.g., 10:00:50 is corrected as 10:00:00.
hh:58:00 to hh:59:59	Round up reading of less than one minute. E.g., 10:59:50 is corrected as 11:00:00.
hh:02:00 to hh:57:59	No processing is to be performed.

T22.EPS

- Start/stop of computation*(level)
- Clearance of computation data*(trigger, 250ms or longer)
- Message display (Up to five different messages can be set, trigger, 250ms or longer)

* When the optional mathematical functions (/M1 or /M2) are equipped.

APPLICATION SOFTWARE (ACCESSORIES)

VR100 application software package

File conversion software
Operating environment

PC: IBM PC-AT compatible models
Memory: 640KB or more (free area of at least 400KB)
OS: MS-DOS Ver.5.0 or later
Disk: 3.5-inch FD (1.44MB format)

File conversion/Data viewer software
Operating environment

PC: A personal computer that can run MS-Windows Ver.3.1
CPU: 80386SX or later
Memory: 8MB or more
OS: MS-Windows Ver.3.1
Disk: 3.5-inch FD (1.44MB format)
Hard disk (free area of at least 2MB)
CRT: Compatible with MS-Windows Ver.3.1 (16colors or higher recommended)
Printer: A printer and printer driver compatible with MS-Windows Ver.3.1

VR enhanced application software
Operating environment

PC: A personal computer that can run MS-Windows Ver.3.1 or Windows95
CPU: 80486DX2 or later (pentium90 or higher recommended)
Memory: 16MB or more
OS: MS-Windows Ver.3.1 or Windows95
Disk: 3.5-inch FD (1.44MB format)
Hard disk (free area of at least 2MB)
CRT: Compatible with MS-Windows Ver.3.1 or Windows95
Can display analog RGB 256 colors or higher (64,000 colors or higher recommended)
Printer: A printer and printer driver compatible with MS-Windows Ver.3.1 or Windows95

VR data viewer for windows95
Operating environment

PC: A personal computer that can run or Windows95
CPU: 80486DX4 or later (Pentium120 or higher recommended)
Memory: 16MB or more
OS: Windows95
Disk: 3.5-inch FD (1.44MB format)
Hard disk (free area of at least 15MB)
CRT: Compatible with Windows95
Can display analog RGB 256 colors or higher (64,000 colors or higher recommended)
Printer: A printer and Printer driver compatible with Windows95

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MODEL AND SUFFIX CODES

Model Code	Suffix Code	Option Code	Description
VR202			View Recorder Wide-View Model VR200 (2ch)
VR204			View Recorder Wide-View Model VR200 (4ch)
VR206			View Recorder Wide-View Model VR200 (6ch)
Application software	–0		No application software
	–2		with application software package (VP100-02)
Options		/ A1	Alarm output relay (2 points) *1
		/ A2	Alarm output relay (4 points) *1
		/ A3	Alarm output relay (6 points) *1
		/ C3	RS-422-A interface
		/ D2	deg F display
		/ E4	Large memory
		/ F1	FAIL/memory end detection and output *2
		/ H2	Clamped input terminal
		/H5☐	Desk top type *3, *4
		/ L1	French/German display, Summer/Winter time
		/M1	Mathematical functions
		/M2	Mathematical functions with VA200-02 (VR data viewer for Windows 95) *5
		/ N1	Cu10, Cu25 RTD input
		/ P1	24VDC power supply *4
		/ R1	Remote control

*1 /A1, /A2, and /A3 cannot be specified together.
*2 If /F1 is specified, /A3 cannot be specified.
*3 /H5☐
- D: Power cord UL, CSA st'd
- F: Power cord VDE st'd
- R: Power cord SAA st'd
- J: Power cord BS st'd

*4 /H5 ☐ and /P1 cannot be specified together.
*5 To view the calculated data on a personal computer, VA200-02 (VR data viewer for Windows 95) is required.

Model Code	Description	OS
VP100-02	VR100 application software package	MS-DOS, Windows3.1
VA100-02	VR enhanced data viewer software	Windows3.1, Windows95
VA200-02	VR data viewer for Windows95	Windows95

T23.EPS

STANDARD ACCESSORIES

Item(s)	Quantity
Mounting brackets	2
Fuse	1
Terminal screws	5
Instruction manual	1

T24.EPS

OPTIONAL ACCESSORIES

Item(s)	Model (Part) Number	Specification
Shunt resistors (for screw input terminal)	4159 20	250 Ω ±0.1%
	4159 21	100 Ω ±0.1%
	4159 22	10 Ω ±0.1%
Shunt resister (for clamped input terminal, /H2)	4389 20	250 Ω ±0.1%
	4389 21	100 Ω ±0.1%
	4389 22	10 Ω ±0.1%
3.5-inch floppy disks	7059 00	2HD (10 disks)
Fuse	A1360EF	250 V 500 mA time lag (except for /P1 model)
	A1102EF	250 V 5 A time lag (for /P1 model) Products delivered before July, 1998
	A1512EF	250 V 800 mA time lag (except for /P1 model)
	A1513EF	250 V 5 A time lag (for /P1 model) Products delivered after July, 1998
Mounting brackets	B9900CW	–

T25.EPS

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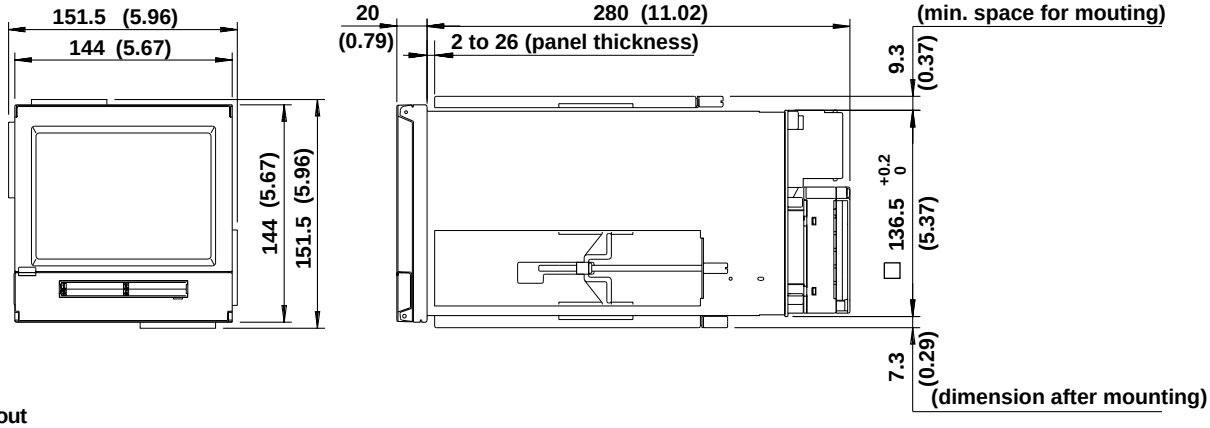
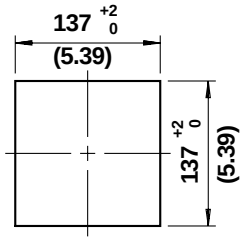
DIMENSIONS

unit : mm
(approx. inch)

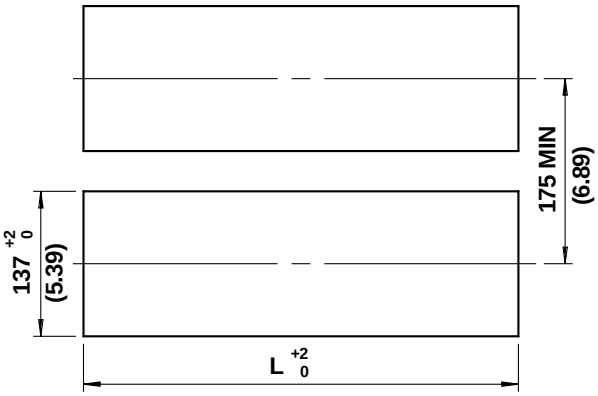


Panel cutout

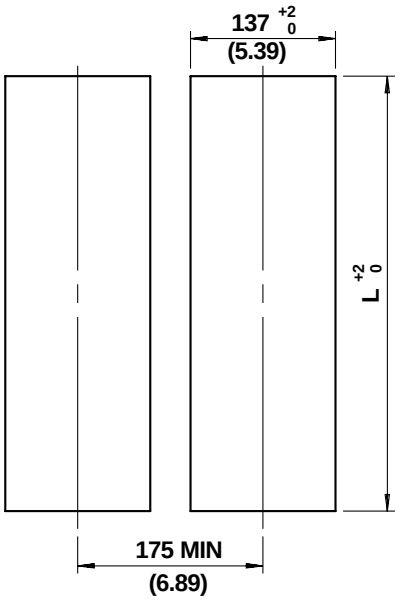
Single-unit Mounting



Side-by-side Mounting (horizontally)



Side-by-side Mounting (vertically, max. 3 units)



Units	L +2 0 (mm)
2	282
3	426
4	570
5	714
6	858
7	1002
8	1146
9	1290
10	1434
n	(144×n)-6

Note: If not specified, the tolerance is ±3%. However, for dimensions less than 10 mm, the tolerance is ±0.3 mm.

F03.EPS

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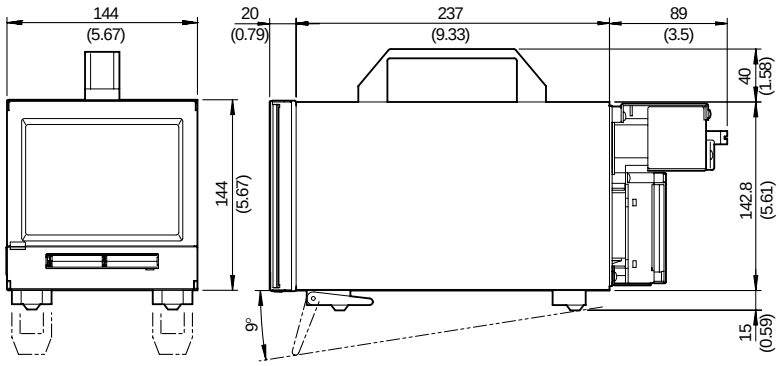
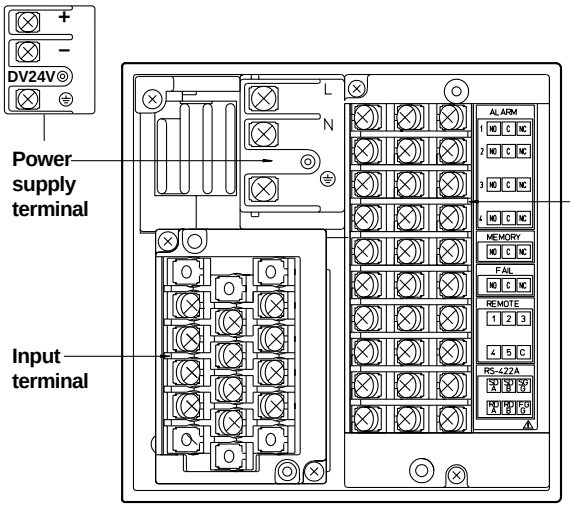
Dexk top type

Unit:mm
(approx. inch)



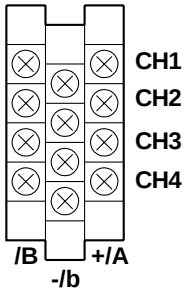
Terminal Arrangements

/P1model

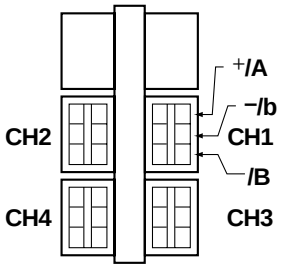


Input Terminals

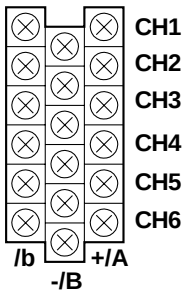
Screw-on input terminals



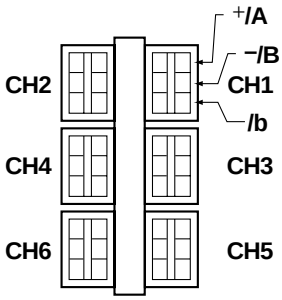
Clamped input terminals (/H2)



Screw-on input terminals

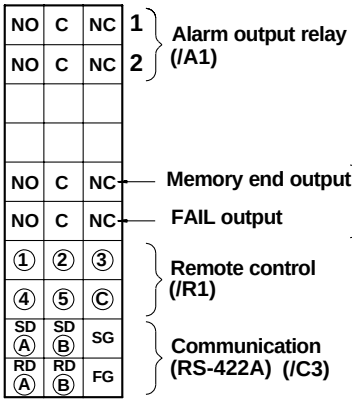


Clamped input terminals (/H2)

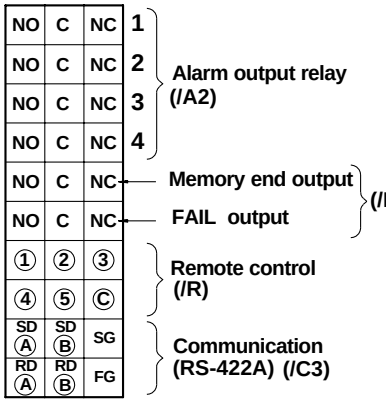


Option Terminals

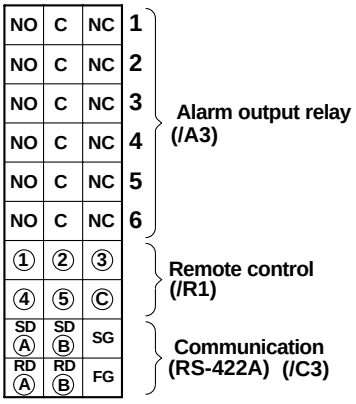
/A1/C3/F1/R1 combination



/A2/C3/F1/R1 combination



/A3/C3/R1 combination



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