ISO 9001
KEMA
CERT. No.60033
DUTCH COUNCIL
FOR ACCREDITATION

CE

c ® US

GR-100 SERIES

Environment-friendly Recorder

Doesn't use Paper or ink

Shinko

GR-100 series is a paperless recorder that can measure temperature and other industrial variables from multiple sources.

It can also display them in various screens on a 5.5-inch TFT color LCD, storing or displaying data in or from the internal memory or a 3.5-inch floppy disk.

The data can also be processed by spreadsheet application software such as Excel or Lotus.

Moreover, a higher-order communications MODBUS protocol option is available for (storing and retrieving) various programs and data.

Exclusive software packages are available.

Versatile screen display

Optimum screens can be selected from the Trend, Data screen, Bargraph screen and Multi-screen according to the monitoring requirements. It is also possible to display the past and current trends at the same time as well as to display past alarm events in the Alarm Summary screen.

Easy, interactive setup

As each parameter can be programmed interactively by selecting an item from the menu screen with a key operation and opening a window, setup is easy. By storing programmed parameters to a floppy disk in advance, it is also possible to perform the setup from a PC by using an engineering port and the parameter programming software "PASS3".

Outstanding communication function

Three types of communication interface options, RS-232C, RS-422A and RS-485, are available between the GR-100 series and a personal computer. As the GR-100 series employs MODBUS as the communications protocol, your own communication system can be constructed easily with instruments using this protocol.

Versatile memory functions

As many as 654000 pieces of measured data can be stored in the 1.25Mb internal memory, which can be saved to a 3.5-inch floppy disk. Up to 200 messages and alarm summaries can be memorized respectively.

Continuous input, Intermittent input available

Continuous or intermittent input models can be selected depending on the object being measured.
・Continuous input: Measuring cycle approx. 0.1sec./4-point,
・Intermittent input: Measuring cycle approx. 5sec./6-point

Packaged software provided

Exclusive packaged software programs are available for data management from a PC.
・Data acquisition software: KIDS3 (Windows 95/98, NT versions)
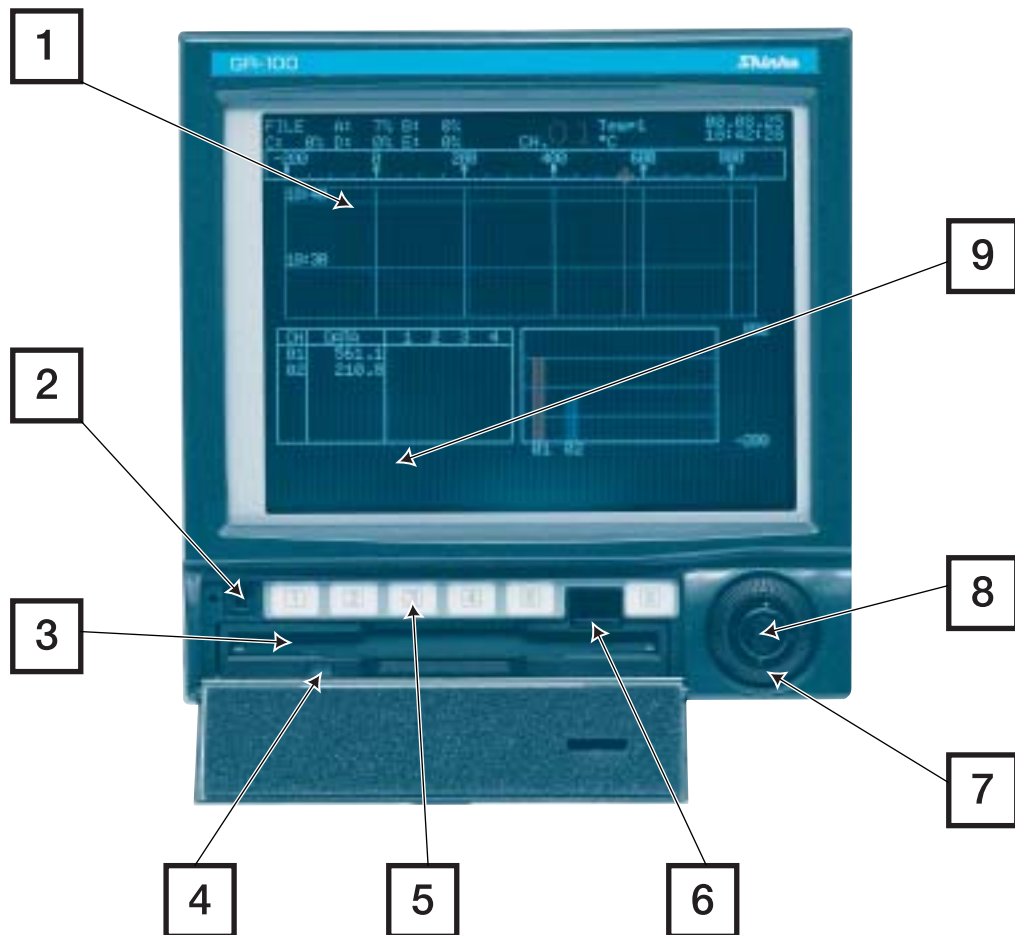・Parameter programming software: PASS3 (Windows 95/98, NT versions)

Compliance with international safety standards

GR-100 has cleared the strict international standards for safety.
・Conforms to UL and CSA standards and CE marking.
・Conforms to protective degree IP54 (front part).

G R — 1 0 □, □□□		Name: GR-100 (W144 x H144 x D257mm)
Input points	1	1-point continuous input
	2	2-point continuous input
	3	3-point continuous input
	4	4-point continuous input
	6	6-point intermittent input
Option	A 1	Alarm outputs/ Remote contacts — MOS relay alarm outputs (6-point)+remote contacts
	A 2	M. relay 'c' contact alarm outputs (6-point)+remote contacts
	A 3	M. relay 'a' contact alarm outputs (6-point)+remote contacts
	C 4	Communi-cations — RS-422A
	C 5	RS-485
	C	RS-232C
	C 4 4	2-port communi-cations — RS-422A (higher-order)+ RS-422A (lower-order)
	C 4 5	RS-422A (higher-order)+RS-485 (lower-order)
	C 5 4	RS-485 (higher-order)+RS-422A (lower-order)
	C 5 5	RS-485 (higher-order)+RS-485 (lower-order)
	C 0 4	RS-232C (higher-order)+RS-422A (lower-order)
	C 0 5	RS-232C (higher-order)+RS-485 (lower-order)
	C A	Mathematics
	A D	Integration
	D R F	Daily report file
	H D	Portable type
	H M	High place mounting type

1 : Display
5.5-inch TFT color LCD

2 : Engineering port
For use in parameters programming from a PC.

3 : Floppy disk drive
Uses a 3.5-inch floppy disk (2HD 1.44Mb MS-DOS formatted).

4 : Floppy disk operation indicator
Blinks when reading or writing.
Goes out when reading or writing is completed.

5 : Switching/programing/operation keys
Used to open the programming menus or to move the cursor.

6 : Eject button
Push to eject an inserted floppy disk.

7 : Scroll key
Rotate to move the cursor (yellow) to the left or right for switching the operation screen or storage operation.

8 : ENT (Entry) key
When the icons are not displayed, press to display the icons.
Select an icon (using the cursor) and press this key to display the corresponding screen.

9 : Icon
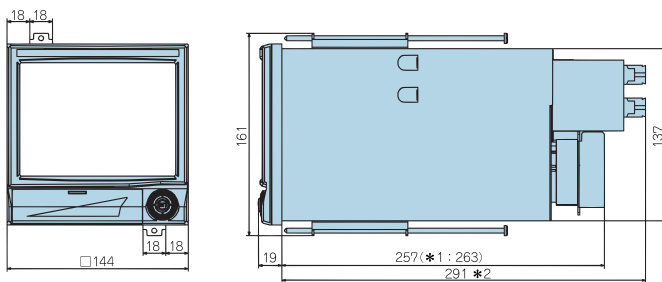Used to switch to the desired screen.

Measuring points	・GR-101 (continuous input:1point), GR-102 (continuous input: 2-point), GR-103 (continuous input: 3-point), GR-104 (continuous input: 4-point), GR-106 (Intermittent input: 6-point)
Input	Universal input (types are selectable.) ・Thermocouple: K, E, J, T, R, S, B, N, WWRe0-26, WWRe5-26, PR5-20, PR20-40, Ni-NiMO, AuFe-Cr, Platinel, U, L ・RTD: Pt100(1) Pt100(2) JPt100, Pt50, Pt-Co ・DC voltage: $\pm$13.8mV, $\pm$27.6mV, $\pm$69.0mV, $\pm$200mV, $\pm$500mV, $\pm$2V, $\pm$5V *, $\pm$10V *, $\pm$20V *, $\pm$50V * (*: With built-in shunt resistors) ・DC current: 250Ω, or 20Ω (Available by adding external shunt resistors)
Range setup	Input types and ranges can be set by key operation.
Scale setup	Maximum and minimum values and engineering units can be set by key operation.
Measuring cycle	Approx. 5sec./6-point (intermittent input type), approx. 0.1sec./4-point (continuous input type)
Maximum input voltage	TC input (burnout disabled), DC voltage input (max. $\pm$2V) : Maximum $\pm$10Vdc DC voltage input ($\pm$5 to 50V)　　　　　　　　　　　　: Maximum $\pm$60Vdc TC input (burnout enabled), RTD input　　　　　　　　: Maximum $\pm$6Vdc
Reference junction (RJ) compensation accuracy	K, E, J, T, N, Platinel　　　　　　　　　　　　　　　　: Maximum $\pm$0.5℃ R, S, WWRe0-26, WWRe5-26, Ni-NiMo, AuFe-Cr, U, L : Maximum $\pm$1.0℃ (The above errors are added to the accuracy ratings for the internal reference junction compensation.)
Input resistance	Thermocouple input, DC voltage input (max. $\pm$2V) : Approx. 8MΩ DC voltage input ($\pm$5 to 50V)　　　　　　　　　: Approx. 1MΩ
Allowable signal source resistance	TC inputs (burnout disabled), DC voltage inputs (max. $\pm$2V) : Maximum 1kΩ DC voltage input ($\pm$5 to 50V)　　　　　　　　　　　　　: Maximum 100Ω RTD inputs [Pt100(1), Pt100(2), JPt100]　　　　　　　　: Maximum 10Ω per wire (same for 3 wires)
Internal memory	1.25Mb
Storing interval	0.1, 0.2, 0.5, 1, 2, 3, 5, 10, 15, 20, 30 seconds 1, 2, 3, 5, 10, 15, 20, 30, 60 minutes (5 seconds or greater with the intermittent input type)
Storing data	Measured data (simultaneous storage of max. 5 files), messages (1 file), alarm event (1 file), programmed parameters (1 file)
Storing measured data	2 byte binary/1 data When the storing interval is longer than the measuring interval, both the minimum and maximum values are stored. (for the intermittent input type programmed with the storing interval other than 5s and for the continuous input type programmed with the storing interval other than 0.1s)
Storage into internal memory	The following conditions can be selected. ・Key operations (manual) ・Trigger signals (remote contacts, alarm activation) ・Storage when conductive signal is ON ・Start/End by time
External memory medium	3.5-inch floppy disk (2HD: 1.44Mb, MS-DOS formatted) Data in the internal memory can be copied to a floppy disk by the key operation.
Display device	5.5-inch TFT color LCD [320 x 240 dots: 111.36mm(W) x 83.52mm(H)] Trend display colors: 10 colors, selectable (red, blue, green, brown, purple, orange, gray, light blue, yellowish green, yellow)
Operation screens	Screens are switched with the scroll key and entry key operations Screens of 5 groups can be switched except for the Alarm summary screen (max. 6 channels/group). ・Trend screens: One of the Real-time Trend, Historical Trend or Dual Trend displays can be selected. Vertical or horizontal time scale (scale plate and pointer displays) orientation selectable/Data display enabled or disabled selectable/Scrolling available. ・Bargraph screen: Data display enabled or disabled selectable ・Data screen: Data + Tag + Engineering unit + Alarm activated status) ・Multi-screen: Real-time Trend screen + Bargraph screen + Data screen ・Alarm Summary screen: Current alarm output status + alarm log (Channel, level, alarm event time)
Display updating interval	Trend screens : Depended on time scale programming (minimum 1 second) Data screen　　 : Approx. 1 second for continuous input type, approx. 5 seconds for intermittent input type
Skipping	On the Trend and Data screens, the channels to be skipped in display can be programmed for each group.
Scrolling	On the Trend screens, historical data can be referred with the cursor operation.
Display (Historical trend)	Historical data is displayed by specifying a file. Data logging is continued.
Data search (Historical trend)	The trend display position matching the following conditions is searched automatically from the data in the displayed file and the cursor is moved to the position. Conditions: CH A data = CH B data 　　　　　　CH A data＜CH B data 　　　　　　CH A data＜Specific data (optional programming) 　　　　　　CH A data＞Specific data (optional programming) 　　　　　　Specific data 1 (optional programming)≦CH A data≦Specific data 2 (optional programming)
Message display	Messages can be displayed on the real-trend screen by the key operation or by remote contacts input and stored in a message data file (max. 200 messages). Messages can also be displayed on the historical trend screen and stored in. Pre-registration of messages (max. 10 messages, max. 30 characters/message).
LCD saver	When no key is operated for the specified period of time, the back-light is dimmed and the screen saver display appears. The period can be programmed between 1 and 60 minutes.
Alarm	Number of programmable alarms: Maximum 4 levels/channel Types: High alarm, low alarm, differential high alarm, differential low alarm, rate-of-change increase alarm, rate-of-change decrease alarm Alarm storage: Alarm event time and alarm types. Storage of latest 200 data common to channels.
Insulation resistance	Between secondary and protective conductor terminals　　　　　　　　　　: 20MΩ or greater at 500Vdc Between primary and protective conductor terminals　　　　　　　　　　　: 20MΩ or greater at 500Vdc Betweeen primary and secondary terminals　　　　　　　　　　　　　　　: 20MΩ or greater at 500Vdc Between alarm output (mechanical relay 'c' contact) and other secondary terminal : 20MΩ or greater at 500Vdc Primary terminals: Power terminals (L, N), alarm output terminals (MOS relays, mechanical relay 'a' contact). Secondary terminals: Input terminals, alarm output terminals (mechanical relay 'c' contact), remote contacts terminals, communications terminals

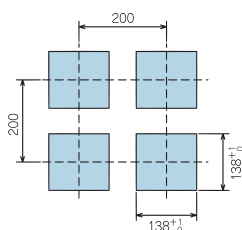| Dielectric strength	Between secondary and protective conductor terminals : 500Vac for 1 minute
	Between primary and protective conductor terminals : 1500Vac for 1 minute
	Between primary and secondary terminals : 2300Vac for 1 minute
	Between alarm output (mechanical relay 'c' contact) and other secondary terminal : 1000Vac for 1 minute
	  Primary terminals: Power terminals (L, N), alarm output terminals (MOS relays, mechanical relay 'a' contact)
	  Secondary terminals: Input terminals, alarm output terminals (mechanical relay 'c' contact), remote contacts terminals, communications terminals		

Rated power voltage	100 to 240Vac, 50/60Hz	Exterior material	Front: ABS resin (frame), tempered glass Case: Steel
Allowable voltage fluctuation	90 to 264Vac		
Ambient temperature	0 to 50℃ (32 to 122°F)	Color	Case: gray, Front: Dark gray
Ambient humidity	20 to 80%RH (Non-condensing)	Mounting	Panel mounting
Weight	Approx. 3.2kg	External dimensions	144 x 144 x 257mm(W x H x D)

■Option specifications

Remote contacts,
Alarm output
[A□]
	Following options are available.
	・[Option code : A1]-----MOS relay alarm output 6-point + remote contacts
	・[Option code : A2]-----Mechanical relay 'c' contact alarm output 6-point + remote contacts (does not conform to the international safety standards.)
	・[Option code : A3]-----Mechanical relay 'a' contact alarm output 6-point + remote contacts
	Remote contacts : Data memory triggering, Data memory signaling, Message display and Totalizing reset are available by using 4 contact
	  inputs and 2 common signals. (Parameter wiring)
	Alarm output Alarm point : 6-point (Individual output possible)
	  Output : Semiconductor 'a' contact output
	    Contact capacity: 240V ac/dc, 50mA (resistive load)
	    Relay conduct output (does not conform to the international safety standards.)
	    Contact capacity: 100Vac 0.5A (resistive load), 240Vac 0.2A (resistive load), 100Vdc 0.3A (resistive load)

Communications [C□]	Following options are available. ・[Option code: C4]----- RS-422A ・[Option code: C5]----- RS-485 ・[Option code: C] ------ RS-232C MODBUS protocol (RTU/ASCII) Functions: Data transmission, parameter programming, operations, data communications input
2-port communications [C□□]	Following options are available. ・[Option code: C44]----- RS-422A (higher-order)+RS-422A (lower-order) ・[Option code: C45]----- RS-422A (higher-order)+RS-485 (lower-order) ・[Option code: C54]----- RS-485 (higher-order)+RS-422A (lower-order) ・[Option code: C55]----- RS-485 (higher-order)+RS-485 (lower-order) ・[Option code: C04]----- RS-232C (higher-order)+RS-422A (lower-order) ・[Option code: C05]----- RS-232C (higher-order)+RS-485 (lower-order) Higher-order communications: same as the above "Communications". Lower-order communications: By connecting with SHINKO instruments, data from the instruments is treated as the data communications input.
Mathematics [CA]	The math expressions (Arithmetic, Square root, Logarithm, Natural logarithm, Exponential, Maximum, minimum and average values, Temperature/humidity calculation) can be applied to measured data and calculated data.
Integration [AD]	Totalizing measured data or calculated data ・Interval : 1 minute to 24 hours, or none (by remote contacts) ・Start time : 00:00 to 23:59
Daily report file [DRF]	A daily report file can be created by specifying channels, time (max. 24 desired time), instant value, maximum value in a certain time period, minimum value in a certain time period, average value in a certain time period, maximum value in day, minimum value in day and average value in day
Portable type [HD]	Handle, folding stand and rubber pads are provided.
High place mounting [HM]	The polarizing glass is provided instead of tempered glass as a front glass.

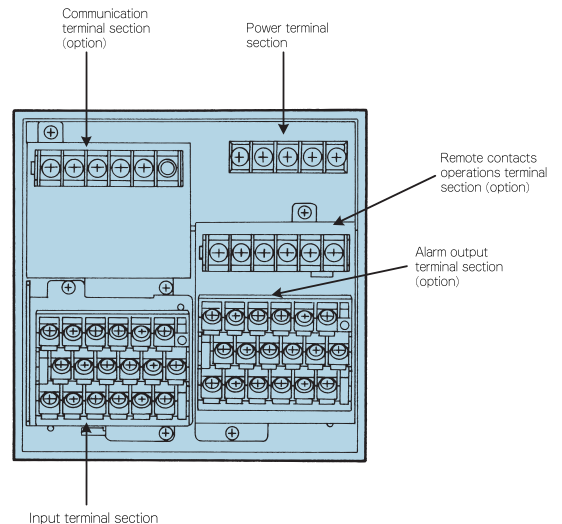## ■ External dimensions

18 18
161
□144
18 18

19
257(＊1 : 263)
291 ＊2
137

＊1 : When the option [A3] is applied.
＊2 : When the option [C□, C□□] is applied.

■ Panel cutout

200
200
138$^{+1}_{0}$
138$^{+1}_{0}$

■ Terminal arrangement

Communication terminal section (option)

Power terminal section

Remote contacts operations terminal section (option)

Alarm output terminal section (option)

Input terminal section

■ Measuring range, accuracy and resolution

Input	Range		Measurement — Measuring accuracy	Resolution
Thermocouple	K	−200 to 300 ℃	±0.1%±1digit However, −200 to 0℃: ±0.2%±1digit	0.1℃
		−200 to 600 ℃		0.1℃
		−200 to 1370 ℃		1℃
	E	−200 to 200 ℃		0.1℃
		−200 to 350 ℃		0.1℃
		−200 to 900 ℃		1℃
	J	−200 to 250 ℃		0.1℃
		−200 to 500 ℃		0.1℃
		−200 to 1200 ℃		1℃
	T	−200 to 250 ℃		0.1℃
		−200 to 400 ℃		
	R	0 to 1200 ℃	±0.1%±1digit However, R, S: 0 to 400℃--±0.2%±1digit B: 400 to 800℃--±0.15%±1digit (Less than 400℃, not guaranteed.)	1℃
		0 to 1760 ℃		
	S	0 to 1300 ℃		
		0 to 1760 ℃		
	B	0 to 1820 ℃		
	N	0 to 400 ℃	±0.15%±1digit However, WWRe0-26: 0 to 300℃---±0.3%±1digit	0.1℃
		0 to 750 ℃		0.1℃
		0 to 1300 ℃		1℃
	WWRe0−26	0 to 2320 ℃		1℃
	WWRe5−26	0 to 2320 ℃	±0.2%±1digit However, PR5-20: 0 to 100℃---±4%±1digit 100 to 400℃---±0.5%±1digit PR20-40: 0 to 300℃---±1.5%±1digit 300 to 800℃---±0.8%±1digit AuFe-Cr: 0 to 20K---±0.5%±1digit 20 to 50K---±0.3%±1digit	1℃
	PR5−20	0 to 1800 ℃		1℃
	PR20−40	0 to 1880 ℃		1℃
	Ni−NiMO	0 to 290 ℃		0.1℃
		0 to 600 ℃		0.1℃
		0 to 1310 ℃		1℃
	AuFe−Cr	0 to 300 K		0.1K
	Platinel	−100 to 350 ℃	±0.15%±1digit	0.1℃
		−100 to 650 ℃		0.1℃
		−100 to 1390 ℃		1℃
	U	−200 to 250 ℃	±0.15%±1digit However, -200 to 0℃: ±0.3%±1digit	0.1℃
		−200 to 500 ℃		
		−200 to 600 ℃		
	L	−200 to 250 ℃	±0.1%±1digit However, -200 to 0℃: ±0.2%±1digit	0.1℃
		−200 to 500 ℃		0.1℃
		−200 to 900 ℃		1℃
RTD	Pt100 (1)	−140 to 150 ℃	±0.15%±1digit	0.1℃
		−200 to 300 ℃	±0.1%±1digit	0.1℃
		−200 to 850 ℃	However, 700 to 850℃: ±0.15%±1digit	0.1℃
	Pt100 (2)	−140 to 150 ℃	±0.15%±1digit	0.1℃
		−200 to 300 ℃	±0.1%±1digit	0.1℃
		−200 to 649 ℃		0.1℃
	JPt100	−140 to 150 ℃	±0.15%±1digit	0.1℃
		−200 to 300 ℃	±0.1%±1digit	0.1℃
		−200 to 649 ℃		0.1℃
	Pt50	−200 to 649 ℃	±0.1%±1digit	0.1℃
	Pt−Co	4 to 374 K	±0.15%±1digit However, 4 to 50K: ±0.3%±1digit	0.1K
DC voltage		−13.8 to 13.8mV	±0.1%±1digit	10 μV
		−27.6 to 27.6mV		10 μV
		−69.0 to 69.0mV		10 μV
		−200 to 200 mV		100 μV
		−500 to 500 mV		100 μV
		−2 to 2 V		1mV
		−5 to 5 V		1mV
		−10 to 10 V		10mV
		−20 to 20 V		10mV
		−50 to 50 V		10mV

· This catalog is as of April 2006, Specifications are subject to change without notice.
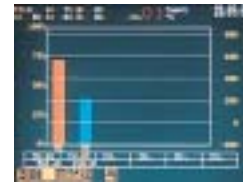· If you have any inquiries, please consult us or our agency.

■ Screens
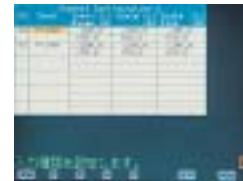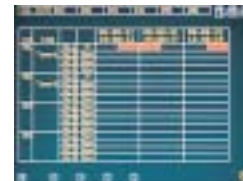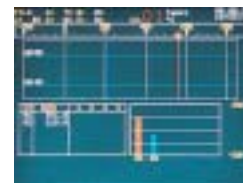
[Trend screen]

[Date screen]

[Bargraph screen]

[Programming screen]

[Alarm summary screen]

[Multi-screen]

■ Others

Date acquisition software [KIDS3]
Parameter programming software [PASS3]
Connection cable [CB-GR001]
Transmitter power 6-channel [P-GR106]

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OVERSEAS DIVISION

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