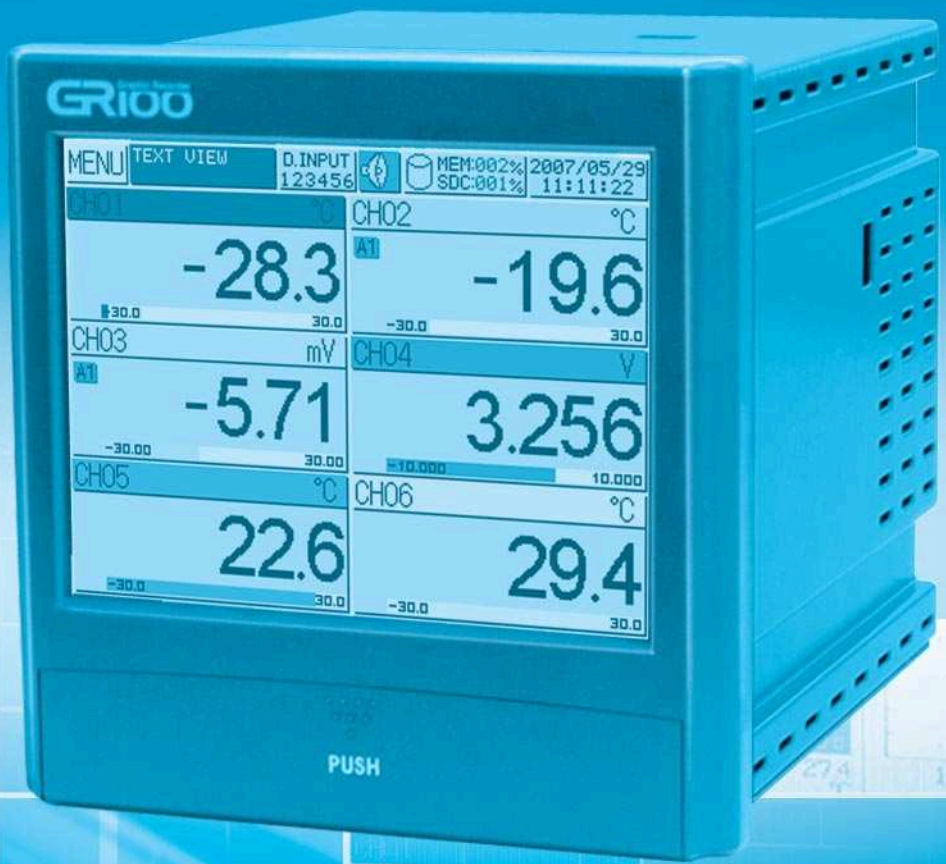
GRAPHIC RECORDER

Graphic Recorder GR100

MANUAL



THANK YOU FOR PURCHASING **HANYOUNG** PRODUCT.
PLEASE READ THIS MANUAL CAREFULLY.

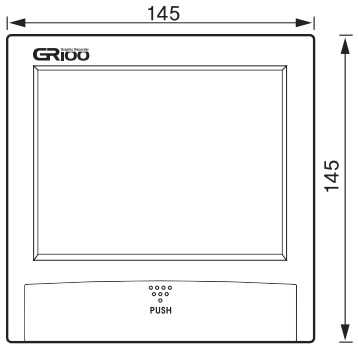
HANYOUNG NUX

2.3 Suffix code

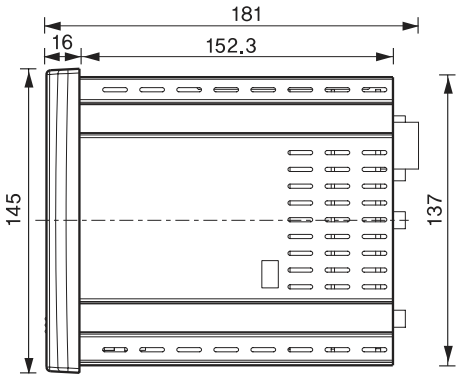
Model	Suffix code		Description
GR100-	1	0	GR100 Graphic recorder
Input channel	1		6 Channels
	2		12 Channels
Communication		0	RS232 + RS485 + USB
		1	RS232 + RS485 + USB + ETHERNET

2.4 Dimensions & Panel cutout

● Dimensions (Unit : mm)

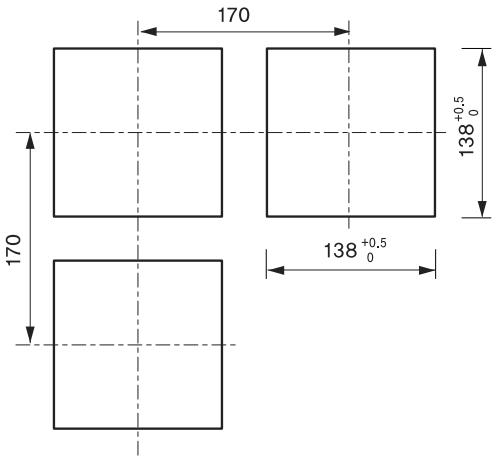


(Picture 1) Front



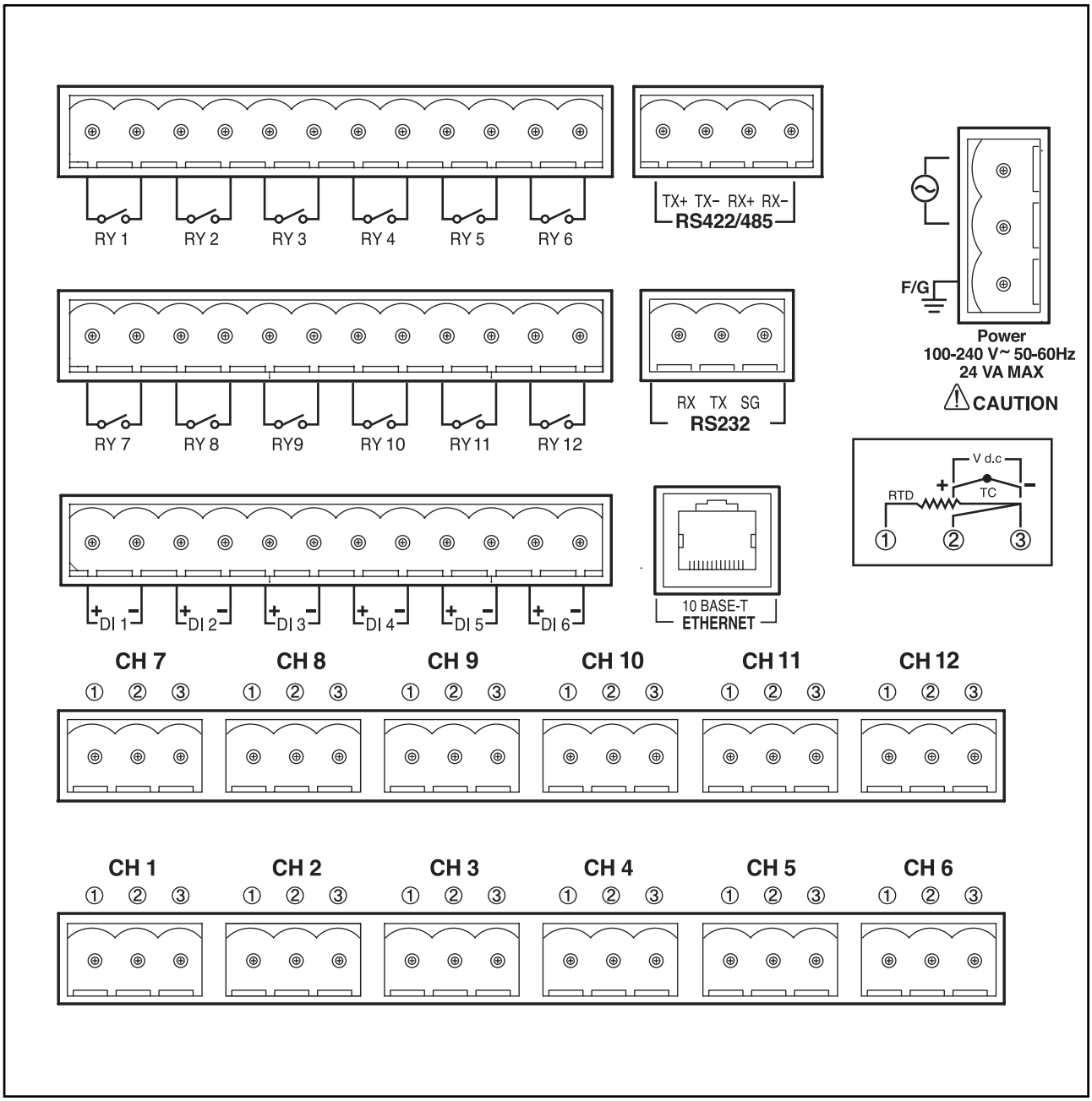
(Picture 2) Side

● Panel cutout (Unit : mm)



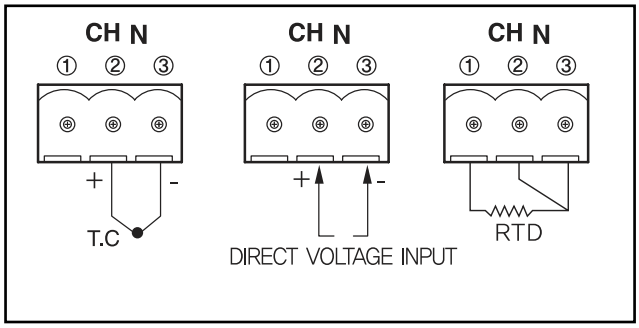
2.5 Terminal arrangement

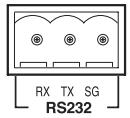
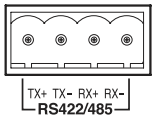
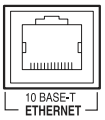
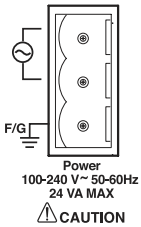
● 6 Channels and 12 Channels



(Picture 3) This is an example for GR100-21(12CH)

※ Sensor input (Connection example)



Connector Type	Name of Connector	Description
	RS232C Communication connector	Use for local area communication (Within 10m)
	RS422/485 Communication connector	Use for long distance communication (Within 1Km)
	ETHERNET connector	Use for ETHERNET communication
	Power terminal	100–240V ac 《Caution》 F/G: earth terminal

Caution for the connection of input wiring

Please pay attention to the below information when wiring input signal line.

- Please block noise for measurement circuit.
- Measurement circuit needs to be separated from power line and earth circuit.
- None-noise object is proper for measurement. But if the measurement object has noise unavoidably, please insulate measurement object and measurement circuit. Also, please earth measurement object.
- To prevent noise by Electrostatic induction, please use shield line. As necessary, the shield needs to be connected to the contact terminal of GR100 (Do not make 2 point contacts).
- To prevent noise by Electrostatic induction, twist measurement wire narrowly and then distribute wire
- Please do not use heavy wire that has heatproof effect (Please use below 0.5mm2 cross section of wire)
- Please avoid a place that temperature changes too frequently. Especially near a fan can cause of frequent temperature change.
- Please do not turn ON/OFF during operation. It gives bad effect to other machines.
- RTD (resistance temperature detector) can not make parallel connect.

5 Specification

5.1 Input

* Input Contact Number : 6 channels, 12 channels (Refer to suffix code)
* Input Type : Multi Input (17 types)
* Range per Input Type

Input Type		Measurement Range	Accuracy
Thermocouple (T.C)	K	−270.0 ~ 1372.0 ℃	± 0.1% of F.S *1
	J	−210.0 ~ 1200.0 ℃	± 0.1% of F.S
	E	−270.0 ~ 1000.0 ℃	± 0.1% of F.S *2
	T	−270.0 ~ 400.0 ℃	± 0.1% of F.S *3
	R	−50.0 ~ 1768.0 ℃	± 0.1% of F.S *4
	S	−50.0 ~ 1768.0 ℃	± 0.1% of F.S *4
	B	0.0 ~ 1820.0 ℃	± 0.1% of F.S *5
	N	−270.0 ~ 1300.0 ℃	± 0.1% of F.S *3
	PL2	0.0 ~ 1395.0 ℃	± 0.1% of F.S
	U	−200.0 ~ 600.0 ℃	± 0.1% of F.S
	L	−200.0 ~ 900.0 ℃	± 0.1% of F.S
	W	0.0 ~ 2315.0 ℃	± 0.1% of F.S
	* 1 : Below − 250 ℃ regulation ect. * 2 : Below − 260 ℃ regulation ect. * 3 : Below − 235 ℃ regulation ect. * 4 : Below − 25 ℃ ± 0.2% * 5 : 310 ~ 470 ℃ : ± 0.15 %, + 240 ~ 310 ℃ : ± 0.2 % Below +240 ℃ regulation etc.	
R.T.D	Pt100 Ω (DIN)	−200.0 ~ 850.0 ℃	± 0.1 % of F.S
	Pt100 Ω (JIS Old)	−200.0 ~ 660.0 ℃	± 0.1 % of F.S
V d.c	± 100 mV d.c	−100.00 ~ + 100.00 mV d.c	± 0.1 % of F.S
	± 10 V d.c	−10.000 ~ + 10.000 V d.c	± 0.1 % of F.S
	± 30 V d.c	−30.00 ~ + 30.00 V d.c	± 0.1 % of F.S

* Measurement cycle : 1 second
* Range setup : Select High/Low value within its maximum range according to User Range setup.
* Scale Setup : Select High/Low value according to its scale range.
* Accuracy : Refer to accuracy of input type and range.

* Applied Input Standard

Input Type	T.C	K, J, E, T, R, S, B, N	IEC 584
		PL2, W	ASTM E988
		U, L	DIN 43710, IEC 751
	R.T.D	Pt 100 Ω (DIN)	DIN 43760
		Pt 100 Ω (JIS)	JIS C1604-1989(Old)
	R.H Change	R.H Change by the difference of dry/web bulb Goff & Gratch (1946)	

* Effect of surrounding temperature : R.T.D : Below ± 0.02 ℃ / ℃
* Basic Contact Compensation Error : Max ± 1.3 ℃ (0~50 ℃)
* Input Resolving Power : Basically below its decimal points.
* Allowable signal source resistance : T.C: Below 250 Ω, V.d.c: Below 2 k Ω.
* Detection of sensor disconnection : Up Scale in case of Disconnection T.C, R.T.D, V d.c. (± 100 mV d.c).
* Effect of magnetic field : Below 400AT/m
* Preheating Time : Above 30 minutes.
* Input impedance : R.T.D - above 10 M Ω, T.C & V.d.c - above 1M Ω.
* Allowable wiring resistance : R.T.D - Below10 Ω / 1 wire
  (But, conductor resistance among 3 wires should be same)
* Type of Calculation/ Conversion
  Calculation, Function Conversion : +,-, x, ÷, abs ( ), sqrt ( ), cos ( ), tan ( ), log ( ), % RH conversion, °F conversion.

5. 2. DISPLAY Specification

* Display : TFT Color LCD (113.28mm x 84.71mm, Resolution 320x234, 18 bit color)
* Color : Trend, Bar-Graph, Text, 12 colors (Background Color: Black or White selectable)
* Lifetime of backlight : 3 years (It might be variable depend on its using environment)
* Language : English/Korean
* Trend View : Horizontal/Vertical Trend View, RULER, TEXTBAR, Alarm Mark View ON/OFF, Scroll Speed setup.
* Bar-Graph view : Horizontal direction - Graph display, Numerical value display, Unit display,
  Level Bar - (Normal Type/Spectrum), Channel Number, Alarm status display.
* Text View : display measured value with number, channel name, unit, alarm number, abel bar - Display screen by dividing 1~6 into equal parts.
* Historical Trend View : Selects Memory or SD Card, and displays recorded data.
  Horizontal/Vertical Trend View. Enlarged view of time axis and dimension axis (Max. 64 times), Text-Bar View.
* STATUS VIEW : Alarm, D.I, Relay status view. Log History Status View. Used Memory View.
  Etc. It is consisted of 3 pages of screen.
* File List View : If you press File List in the History View, you can see file list which was saved at SD Card.

5.3 General Specification

Rating	100 – 240 V a.c Voltage variable ratio ± 10 %
Frequency	50 – 60 Hz
Power consumption	Below Max. 24VA
Surroundings Temperature	0 ~ 50 ℃
Surroundings Humidity	20 ~ 90 % R.H. (No Condensation)
Vibration	Vibration Wide: Below 1.2mm (5~14Hz)
Shock	Below 147 m/s2 11m/s (Each 6 directions, 3 times)
Alarm Output	Contact Capacity : 30 V d.c / 5 A Max. , 250 V a.c / 5 A Max.
Insulation Resistance	Between 1st & 2nd Terminal above 500 V d.c/20 ㏁ Between 1st & Earth Terminal above 500 V d.c/20 ㏁ Between 2nd & Earth Terminal above 500 V d.c/20 ㏁
Dielectric Strength	Between 1st & 2nd Terminal 카카2500 V a.c 50/60Hz 1 minute Between 1st & Earth Terminal 카2500 V a.c 50/60Hz 1 minute Between 2nd & F/G Terminal 2500 V a.c 50/60Hz 1 minute
Weight	2.5 Kg

5.4 Memory Specification

* Type : Inner Memory(SD-RAM) : Volatile, 12 hours – In case of one second record, FLASH : Non Volatile, Function Setup Saving, RAM : Non Volatile 3 hours – In case of one second record, SD Card (1GB, save about one year's use in case of two seconds record)
* Saving Period : User Selection (1~900 seconds)
* Memory Information : Save calculated value, Burn-out, D/I, ALARM, Relay Output Status.

5.5 SAFETY and EMC Standard

* CE : EN61010 (scheduled to be approved)
* EMC : EN61000 (scheduled to be approved)

5.6 Communication Specification

5.7 Condition of Transport and Storage

Applied Standard	EIA-RS232, EIA-RS485, USB V1.1, ETHERNET (Option)	
Max. Connection Number	EIA-RS232	1 : 1
	EIA-RS422/485	1 : 32(Available setup: Address 1~999)
Communication Method	EIA-RS232	Full Duplex
	EIA-RS422/485	Half Duplex
Communication Distance	USB V1.1	Within about 1m
	EIA-RS232	Within about 10m
	EIA-RS422/485	Within about 1.2 Km
Communication Speed	USB V1.1	About 10 M bps
	EIA-RS232	9600/19200/38400 bps
	EIA-RS422/485	9600/19200/38400 bps
Length of Data	ETHERNET(Option)	10 BASE-T
	EIA-RS232	7 / 8 bit
	EIA-RS422/485	7 / 8 bit
Parity Bit	EIA-RS232	NONE / EVEN / ODD
	EIA-RS422/485	NONE / EVEN / ODD
Stop Bit	EIA-RS232	1 / 2 bit
	EIA-RS422/485	1 / 2 bit
Communication Protocol	USB V1.1	BULK MODE
	EIA-RS232	MODBUS-RTU
	EIA-RS422/485	MODBUS-RTU
	ETHERNET(Option)	MODBUS ON TCP
Communication Response Time	EIA-RS232	0 ~ 9999 ms
	EIA-RS422/485	0 ~ 9999 ms

Temperature	-25 ~ 70 ℃
Humidity	5 ~ 95 % RH (No Condensation)
Shock	Dropping the packed product below 1m would be endurable.