

# KR2000/3000 SERIES GRAPHIC RECORDER

with measured  
data protection



KR2000/3000 series are paperless recorders that prevent falsification of data to meet the requirements of FDA 21CFR Part11 for medicinal chemical manufacturing. Employs high visibility display and high operating function. Also it realize data recording and management by easy operation.

\*FDA 21CFR Part 11: The U.S. Food and Drug Administration rule on electronic records and electronic signatures. It is a requirement when replacing the paper-based records to electronic media and enacted in 1997.



**KR2000**  
144 x 144 mm Size  
5.6" TFT color LCD Display



**KR3000**  
288 x 288 mm Size  
12.1" TFT color LCD Display

## FEATURES

Easy operation  
Touch screen (KR3000)  
High speed sampling 100ms

Export data to USB flash drive  
LAN network capability  
Various functions such as calculation

## MODELS

### KR2000

KR2P□□M□□A

#### Measuring points/sampling rate\*

- 60 : 6 points/100ms
- 20 : 12 points/100ms
- 61 : 6 points/1s
- 21 : 12 points/1s

#### Communications interface (option)

- N : None
- R : High-order (RS232C/RS485)
- Q : High-order (RS232C/RS485)  
+ Low-order (RS485)

#### Digital input/ alarm output (option)

- 0 : None
- 1 : Mechanical relay output - 12 points  
(a contact)
- 2 : Mechanical relay output - 6 points  
(c contact)
- 7 : Digital input - 8 points  
+ MOS relay output 8 points

\* 1 to 4 channels input (4 points) when setting faster than 500ms sampling rate with model of 1sec sampling rate.

### KR3000

KR3P□□-□□A

#### Measuring points/sampling rate\*

- 20 : 12 points/100ms
- 40 : 24 points/100ms
- 60 : 36 points/100ms
- 80 : 48 points/100ms
- 21 : 12 points/1s
- 41 : 24 points/1s
- 61 : 36 points/1s
- 81 : 48 points/1s

#### Communications interface (option)

- N : None
- R : High-order (RS232C)
- S : High-order (RS422A/RS485)

#### Digital input/ alarm output (option)

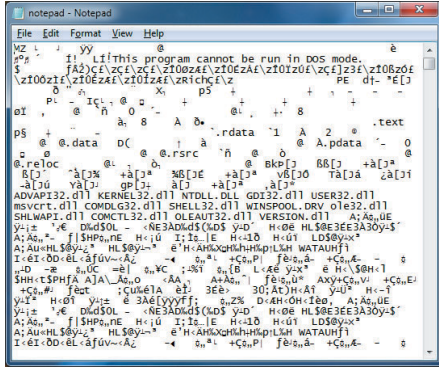
- 0: None
- 1: Alarm output 12 points (a contact)
- 2: Alarm output 6 points (c contact)
- 3: Alarm output 24 points (a contact)
- 4: Alarm output 12 points (c contact)
- 5: Alarm output 12 points (a contact)  
+ 6 points (c contact)
- A: Digital input 8 points
- B: Digital input 8 points  
+ alarm output 12 points (a contact)
- C: Digital input 8 points  
+ alarm output 6 points (c contact)
- D: Digital input 8 points  
+ alarm output 24 points (a contact)
- E: Digital input 8 points  
+ alarm output 12 points (c contact)
- F: Digital input 8 points  
+ alarm output 12 points (a contact)  
+ alarm output 6 points (c contact)

## PREVENTING FALSIFICATION OF DATA

Store the file in binary format.  
Display a message if falsified.

### Binary file example

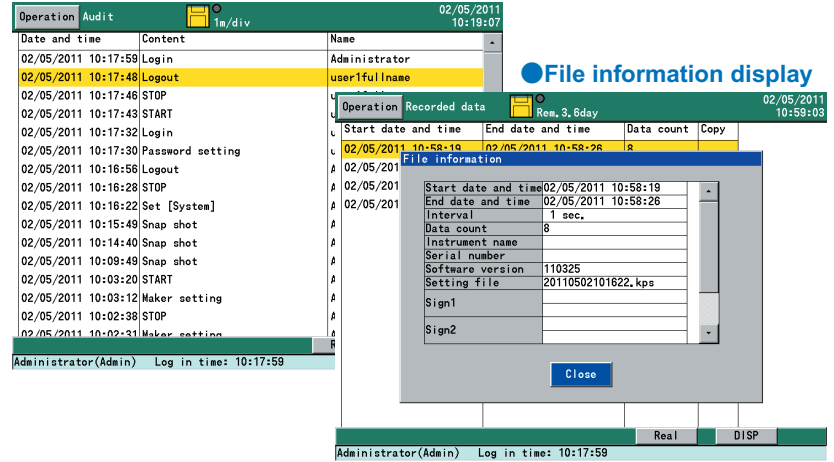
\* Example when opened by word pad.



## AUDIT TRAIL

Electronic signature to electronic record file.  
Display audit operation.

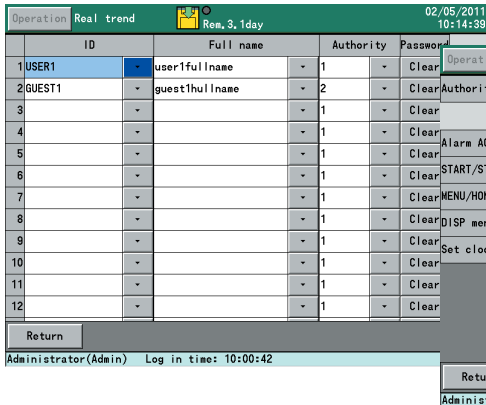
### Audit trail screen



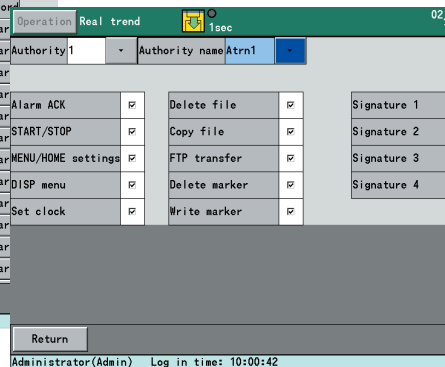
## LOGIN FUNCTION

Register up to 5 administrators and 100 general users and only registered users can access.  
Set 10 kinds of access authority and signature level.

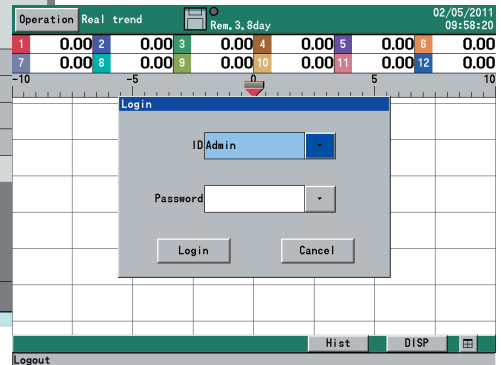
### Login user registration



### Authority & signature level



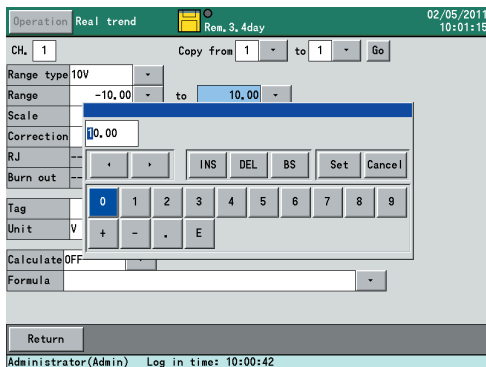
### Login screen



# Smooth Operation by touch screen! KR3000 SERIES

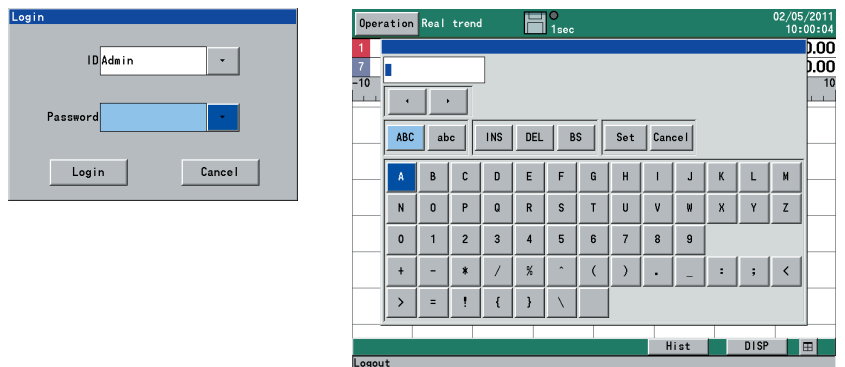
## Input / Computation setting

Easy setting and display



## Login operation

Easy-to-input the letter and value by touching.



## Data replay, CSV conversion

### ZAILA-P Exclusive application software (standard attached)

By using exclusive application software, each file can data replay, confirm audit trail, signature, print, convert to PDF and convert to CSV file.

Each file recorded in KR2000 & KR 3000 can be taken out by USB flash drive.

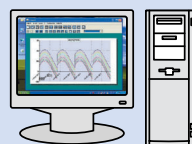
#### KR3000



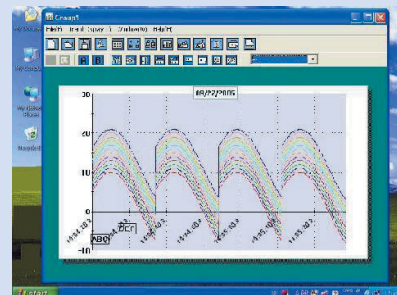
#### KR2000



USB flash drive



#### ZAILA-P



## INPUT SPECIFICATIONS

- Measuring points: KR2000 --- 6 points, 12 points  
KR3000 --- 12 points, 24 points, 36 points, 48 points
  - Input types: Universal (refer to the table of measuring range)
  - Accuracy ratings: 0.1% digit (exceptions) \* Measurement range conversion accuracy
  - Reference junction compensation accuracy:  
K, E, J, T, N, Platinel 2 --- 0.5 or less
  - Sampling rate: 100ms --- Approximately 100ms for all points  
1 ms --- Approximately 300ms for all points\*
  - Burnout: Disconnection of input signal is detected on thermocouple and resistance input.
- \* When sampling rate is set below 0.5s at KR2P61/ KR2P21, then input will automatically becomes 4 points and sampling rate will be 100ms.

## RECORDING SPECIFICATIONS

- Internal memory: 512MB
  - Exterior memory: Store the data file to USB flash drive
  - Recording cycle: 100, 200, 500ms, 1, 2, 3, 5, 10, 15, 20, 30s  
1, 2, 3, 5, 10, 15, 20, 30, 60min
  - Logging data: Measured data --- Time of day, month and year of recording start, tag, measured data, alarm status/types, maker text, etc  
Setting parameter --- All setting parameter  
Computation result data
  - Store types: Binary type
  - Storing methods: Manual start / stop  
Schedule (designation for time of day and date)  
Trigger signal (alarm event, digital input)  
Data logging of before and after trigger points
- \* Pre-trigger is selectable  
Measuring numbers of pre-trigger --- Max 950 data

## COMPUTATION SPECIFICATIONS

- Computation points:  
KR2000 --- Maximum 44 points  
KR3000 --- Maximum 128 points
- Computation types:  
Arithmetic operation, comparison operations, logical operations, integration operations, channel data operations, dew point, relative humidity, wind direction, 16 direction display, increment per time, remaining amount of internal memory, abnormality judgment, user lockout judgment

## DISPLAY SPECIFICATIONS

- Display types: Measured data display (Trend screen, Data screen, Bar-graph screen)  
Historical trend display (Simultaneous display with Real-time trend is available)  
Information display (alarm display, marker list, file list, audit trail)  
Setting screen
- Display points: KR2000 --- Max 44 points  
KR3000 --- Max 56 points

\*The LCD display may contain some pixels that always or never illuminate, and the brightness of some areas of the display may appear uneven. There are typical LCD performance characteristics and do not constitute malfunctions.

## COMMUNICATION SPECIFICATIONS

### Network

- Communication type: Ethernet (10BASE-T/100BASE-TX)
- FTP client: Transfer a data file to a network server
- SNTP client: The time can be synchronized to the time of SNTP server
- E-Mail: E-Mail notification at specified time for alarm activation  
Report data at specified time is selectable from all registered data  
Notification address --- Maximum 8 contacts

## ALARM SPECIFICATIONS

- Setups: Up to 4 alarms can be programmed per channel
- Alarm types: Upper limit, lower limit, differential upper limit, differential lower limit (deadband is selectable), abnormal data
- Delay function: Setup range of alarm delay --- 0 to 3600 seconds
- Alarm settings: AND/OR selectable

## GENERAL SPECIFICATIONS

- Rated power voltage: 100 to 240V AC (universal power supply) 50/60Hz
- Maximum power consumption:  
KR2000 --- 50VA  
KR3000 --- 65VA
- Normal operating condition:  
Ambient temperature & humidity --- 0 to 50°C, 20 to 80%RH  
Power voltage --- 90 to 264V AC  
Power frequency --- 50/60Hz±2%  
Attitude --- left/right/forward tilting 0°C, backward tilting 0 to 20%
- Weight: KR2000 --- About 2.2kg (max)  
KR3000 --- About 7.2kg (max)
- Mounting: Panel mounting

## STANDARDS

- Protection: KR2000 --- IEC529 IP65 compliance (front part)  
KR3000 --- IEC529 IP54 compliance (front part)
- CE: KR2000 (approved)  
KR3000 (approved)  
EMC directive --- EN61326-1 Class A  
EN61000-3-2  
EN61000-3-3  
Low voltage directive --- EN61010-1  
Over voltage (installation) category II, pollution level 2, measuring category II

\*The indication equivalent to 1mV may vary under the test environment by EMC directives.

## OPTION SPECIFICATIONS

Please see standard version's PS sheets.

## MEASURING RANGES

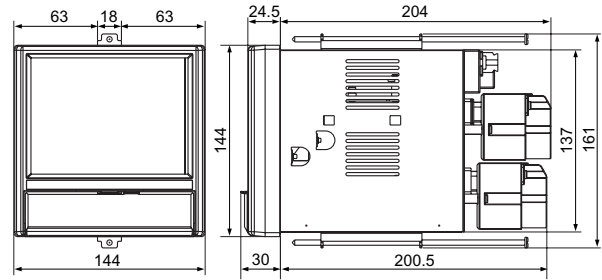
| Input type                      | Measuring range   | Accuracy ratings  |  |
|---------------------------------|---|---|--|
| DC voltage                      | -13.80 to 13.80mV   | ±0.1%±1digit  |  |
|                                 | -27.60 to 27.60mV   |   |  |
| -69.00 to 69.00mV               |   |   |  |
| -200.0 to 200.0mV               |   |   |  |
| -500.0 to 500.0mV               |   |   |  |
| -2.000 to 2.000V                |   |   |  |
| (with built-in voltage divider) | -5.000 to 5.000V  |   |  |
|                                 | -10.00 to 10.00V  |   |  |
|                                 | -20.00 to 20.00V  |   |  |
|                                 | -50.00 to 50.00V  |   |  |
| T/C                             | K   | -200.0 to 300.0°C<br>-200.0 to 600.0°C<br>-200 to 1370°C    | ±0.1%±1digit<br>*200 to 0°C:<br>±0.2%±1digit   |
|                                 | E   | -200.0 to 200.0°C<br>-200.0 to 350.0°C<br>-200 to 900°C     |  |
|                                 | J   | -200.0 to 250.0°C<br>-200.0 to 500.0°C<br>-200 to 1200°C    |  |
|                                 | T   | -200.0 to 250.0°C<br>-200.0 to 400.0°C                      |  |
|                                 | R   | 0 to 1200°C<br>0 to 1760°C                                  | ±0.1%±1digit<br>*0 to 400°C:<br>±0.2%±1digit   |
|                                 | S   | 0 to 1300°C<br>0 to 1760°C                                  |  |
|                                 | B   | 0 to 1820°C   | ±0.1%±1digit<br>*0 to 400°C: Out of accuracy ratings<br>*400 to 800°C:<br>0.15%±1digit |
|                                 | N   | -200.0 to 400.0°C<br>-200.0 to 750.0°C<br>-200 to 1300°C    | ±0.15%±1digit<br>*-200 to 0°C:<br>±0.3%±1digit   |
|                                 | W-WRe26   | 0 to 2315°C   | ±0.15%±1digit<br>*0 to 100°C:<br>±4%±1digit<br>*100 to 400°C:<br>±0.5%±1digit          |
|                                 | WRe5-WRe26  | 0 to 2315°C   | ±0.2%±1digit   |
|                                 | PtRh40-PtRh20   | 0 to 1888°C   | ±0.2%±1digit<br>*0 to 300°C:<br>±1.5%±1digit<br>*300 to 800°C:<br>±0.8%±1digit         |
|                                 | NiMo-Ni   | -50.0 to 290.0°C<br>-50.0 to 600.0°C<br>-50 to 1310°C       | ±0.2%±1digit   |
|                                 | CR-AuFe   | 0.0 to 280.0K   | ±0.2%±1digit<br>*0 to 20K:<br>±0.5%±1digit<br>*20 to 50K:<br>±0.3%±1digit              |
|                                 | Platinel II   | 0.0 to 350.0°C<br>0.0 to 650.0°C<br>0 to 1395°C             | ±0.15%±1digit  |
| U                               | -200.0 to 250.0°C<br>-200.0 to 500.0°C<br>-200.0 to 600.0°C | ±0.15%±1digit<br>*-200 to 0°C:<br>±0.3%±1digit              |  |
| L                               | -200.0 to 250.0°C<br>-200.0 to 500.0°C<br>-200 to 900°C     | ±0.1%±1digit<br>*-200 to 0°C:<br>±0.2%±1digit               |  |
| RTD                             | Pt100   | -140.0 to 150.0°C<br>-200.0 to 300.0°C<br>-200.0 to 850.0°C | ±0.1%±1digit<br>*-140.0 to 150.0°C<br>700 to 850°C:<br>±0.15%±1digit                   |
|                                 | JPt100  | -140.0 to 150.0°C<br>-200.0 to 300.0°C<br>-200.0 to 649.0°C | ±0.1%±1digit<br>*-140.0 to 150.0°C:<br>±0.15%±1digit                                   |
|                                 | Pt50  | -200.0 to 649.0°C   | ±0.1%±1digit   |
|                                 | Pt-Co   | 4.0 to 374.0K   | ±0.15%±1digit<br>*4 to 50K:<br>±0.3%±1digit  |

The accuracy ratings are converted into the measuring range under reference operating condition. Thermocouple input does not contain reference junction compensation accuracy.

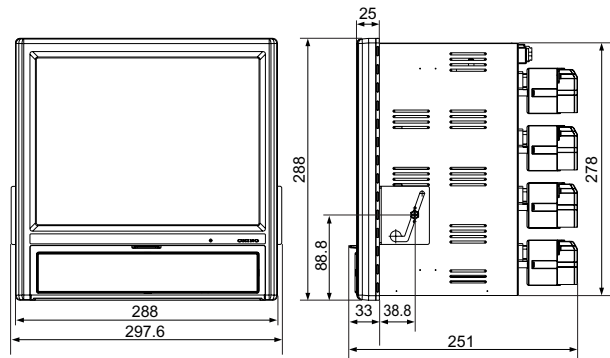
K, E, J, T, R, S, B, N : IEC584, JIS C1602-1995  
W-WRe26, WRe5-WRe26, PtRh40-PtRh20, Platinel II, NiMo-Ni, Cr-AuFe : ASTM Vol14.03  
U(Cu-CuNi), L(Fe-CuNi) : DIN43710  
Pt100 : IEC751(1995), JIS C1604-1997 JPt100 : JIS C1606-1989

## DIMENSIONS

### ●KR2000



### ●KR3000



Unit: mm

## AVAILABLE OPTIONS

| Name  |
|---|
| Validation Document                         |
| Traceability Certificate                    |
| Installation Qualification (IQ) Certificate |
| Operational Qualification (OQ) Certificate  |

## SOFTWARE (ZAILA-P) ENVIRONMENT

|            |   |
|------------|---|
| CPU        | 1GHz or faster  |
| OS         | Windows 2000/XP/Vista/7<br>*Internet Explorer 6.0 or later  |
| Memory     | 256MB or more<br>(512MB or more recommended)  |
| Disk drive | CD-ROM drive: 1 drive or more<br>Hard disk drive: Disk space of 1 drive or more for 100MB or more |
| Language   | Japanese, English   |

Specifications subject to change without notice. Printed in Japan (I) 2011. 6

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