

CHINO

Instrumentation, Control and Systems

RECORDERS

CONTROLLERS

RADIATION THERMOMETERS

MOISTURE METERS

SENSORS

THYRISTOR REGULATORS

TRACEABILITY



ISO9001 Certified
JQA-0656



ISO14001 Certified
JQA-EM2414

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WEBSITE

CHINO CORPORATION

RECORDING AND DATA LOGGING

GRAPHIC RECORDERS

GRAPHIC RECORDER KR3000 SERIES

288×288mm

KR3000 Series are network-compatible paperless recorders with high visibility 12.1" TFT color LCD display and touch panel operation system. High speed of sampling rate 100ms for 48 points and high accuracy of $\pm 0.1\%$ were realized, and measured data is stored into internal memory and maximum 2GB compact flash card (CF card).

As it can be monitored by a web browser display on several computers on intranet or internet, FTP transfer of data file and E-mail notification are also available.

- Large sized 12.1" TFT color LCD display
- Large capacity of data memory and various recording method
- Multi points recording with high speed/high accuracy

Main Specifications

Measuring points : 12, 24, 36 and 48 channels
 Input types : DC voltage 10 kinds, DC current (with external shunt resistor), Thermocouple 16 kinds, Resistance thermometer 4 kinds
 Accuracy ratings : $\pm 0.1\% \pm 1$ digit (DC voltage)
 Rated power voltage : 100 to 240V AC, 50/60Hz
 Communications : Ethernet, RS232C, RS422A/RS485 (option)



GRAPHIC RECORDER KR2000 SERIES

144×144mm

KR2000 Series are network-compatible paperless recorders with high performance and high operating function employed high visibility 5.6" TFT color LCD display. High speed of sampling rate 100ms for 12 points and high accuracy of $\pm 0.1\%$ were realized, and measured data is stored into internal memory and maximum 2GB compact flash card. As it can be monitored by a web browser display on several computers on intranet or internet, FTP transfer of data file and E-mail notification are also available.

The recorder can be used for various applications such as data management, research, development, remote and wide range monitoring by utilizing internet environment.

- 6 or 12 channels measurement at sampling rate of 100ms
- Simple no-manual operations. Large data memory
- Standard Ethernet connectivity

Main Specifications

Measuring points : 6 or 12 channels
 Input types : DC voltage 10 kinds, Thermocouple 35 kinds, Resistance thermometer 8 kinds, DC current (shunt resistors)
 Accuracy ratings : $\pm 0.1\% \pm 1$ digit (DC voltage)
 Rated power voltage : 100 to 240V AC, 50/60Hz
 Communications : Ethernet, RS232C, RS485 (option)

UBIQUITOUS RECORDER KR5000 SERIES

KR5000 series is a high performance network-based recorder acquiring and logging measurement field data up to 128 channels. Real time trends with web browser can be monitored from any PC connected to the internet and intranet with no software installation. Measured data automatically transferred to a server with e-mail and FTP client function support.

- Monitoring screen designed in the html form
- No software application needed
- Variety of display modes; vertical/horizontal trend digital data, bar graph, alarm condition, group display of 8 screens in one
- E-mail notification at the time of alarm generating
- MODBUS instrument, field scanner, recorder and controller are connectable

Main Specifications

Input points : Up to 128 points of registered data
 Input interval : 1 second/all points
 Group register : Group name, connected instruments number, tag name, unit, input operate (moving average, arithmetic expression)
 Trend display : Real time or historical trend display
 Bar graph : Selectable from horizontal and vertical
 Data display : Data value display and alarm status (the color is selectable)
 Screen partition display : Screen partition to a maximum of 8
 Overview : Display measuring data, Alarm status. Renew each 10 seconds.
 Information display : Alarm, message, file list, etc
 Setting screen : Ethernet; FTP; E-mail; User ID; Input instrument; clock



HYBRID RECORDERS

100mm HYBRID RECORDERS AL3000 SERIES

144×144mm

The recorders conforming to CE-marking, UL and CSA are 100mm hybrid recorders for 6-point type and 1 to 4-pen types with a simultaneous display of multi-channel data, bargraph display and other unique features. A software package "KIDS" for data processing of measured values is available.

- Simultaneous digital displays of multi-point data
- Universal input
- MODBUS communications

Main Specifications

Number of measuring points :	6 points
Input signal :	1 pen, 2 pens, 3 pens, 4 pens DC voltage ($\pm 13.8\text{mV}$ to $\pm 50\text{V}$) DC current (Adding shunt resistors) Thermocouple (B, R, S, N, K, E, J, T, others) Resistance thermometer (Pt100, JPt100, others)
Accuracy rating :	$\pm 0.1\%$ ± 1 digit (DC voltage input)
Chart speed :	1 to 1500mm/h (dotting type) 1 to 600mm/h, 1 to 200mm/mm (pen types)
Power supply :	100 to 240 VAC
Communications :	RS232C, RS422A, RS485 (option)
Dimensions :	144×144×243mm (6-points/285mm (1 to 4-pen)



250mm HYBRID RECORDER LE5000 SERIES

400×260mm

LE5000 series are 250mm hybrid recorders with multi-range input. Innovative design high performance recorder provides high accuracy, $\pm 0.05\%$; high speed sampling, 0.1 second for 36 points and high speed recording, 3 seconds/line. Simple operational keys and PC setting functions drastically improved usability of recording system.

- High speed sampling at 0.1 sec for 36 points and high-speed recording
- Operation keys are functionally designed for ease of use
- High accuracy of 0.05%

Main Specifications

Number of measuring points :	12, 24 or 36 channels
Input signals :	DC voltage 8 kinds, Thermocouple 28 kinds, Resistance thermometer 8 kinds, DC current (shunt resistors)
Accuracy ratings :	$\pm 0.05\%$ ± 1 digit (DC voltage)
Rated power voltage :	100 to 240V AC, 50/60Hz
Communications :	Ethernet, RS422A, RS485 (option)

180mm HYBRID RECORDERS AH3000 SERIES

288×288mm

The recorders conforming to CE-marking, UL and CSA are 180mm hybrid recorders for 6-point, 12-point, 24-point types and 1 to 4-pen types with a simultaneous display of multi-channel data, bargraph display and other unique features.

- Simultaneous digital displays of multi-point data
- Universal input
- The MODBUS communications
- Package software "KIDS" for data acquisition

Main Specifications

Number of measuring points:	6 points, 12 points, 24 points
Input signal :	1 pen, 2 pens, 3 pens, 4 pens DC voltage ($\pm 13.8\text{mV}$ to $\pm 50\text{V}$) DC current (Adding shunt resistors) Thermocouple (B, R, S, N, K, E, J, T, others) Resistance thermometer (Pt100, JPt100, others)
Accuracy rating :	$\pm 0.1\%$ ± 1 digit (DC voltage input)
Chart speed :	1 to 1500mm/h (dotting type) 1 to 600mm/h, 1 to 200mm/mm (pen types)
Power supply :	100 to 240VAC
Communications :	RS232C, RS422A, RS485 (option)
Dimensions :	288×288×247mm

ANALOG RECORDERS

60mm ELECTRONIC RECORDERS ES600 SERIES



96×144mm

1-point, 2-point, 3-point, 6-point dotting type and 1-pen types are available in the recorders.

- Small and light-weight (depth-200mm)
- Reliable self-balancing type

100mm ANALOG RECORDERS EL3000 SERIES



144×144mm

1-point, 2-point 3-point, 6-point dotting types and 1 to 3-pen types are available.

- Small and light-weight
- Various models and options

180mm ELECTRONIC RECORDERS EH SERIES



288×288mm

1 to 12-point, dotting types and 1 to 3-pen types are available.

- Various options for many applications
- High accuracy on 180mm industrial recorders
- Robust analog recorders

EASY-TO-OPERATE AND ABUNDANT FUNCTIONS

DIGITAL INDICATING CONTROLLERS

DIGITAL INDICATING CONTROLLERS LT450 / LT470

48×96mm
96×96mm



The digital indicating controllers feature all functions, which are necessary for various control applications, including newly developed PID algorithms and a learning type overshoot suppression function "JyroNavi".

- Easy view and simple operation by large LED displays and large switches
- Universal input
- MODBUS communications protocol
- Conformance to CE, UL and CSA
- Front panel conforming to NEMA4X (IP66) water and dust protection (option)

■ Main Specifications

Input signal :	DC voltage (0 to 20mV, 0 to 5V, 0 to 10V) DC current (4 to 20mA by adding a shunt resistor) Thermocouple (B, R, S, N, K, E, J, T, U, L) Resistance Thermometer (Pt100, JPt100)
Accuracy rating :	±0.1% of scale range ±1 digit
Control system :	PID system (2-position control is available)
Output type :	On-off pulse, SSR-drive pulse, current output, on-off servo, voltage output
Auto-tuning :	Standard
Overshoot suppression function :	On/off selectable
Power supply :	100 to 240VAC, 50/60Hz
Dimensions :	48×96×132mm (LT450), 96×96×132mm (LT470)

DIGITAL INDICATING CONTROLLERS LT230

48×48mm



The digital indicating controllers feature many functions including newly developed PID algorithms and an overshoot suppression function.

- Universal input
- MODBUS communications protocol
- Conformance to CE, UL and CSA
- Front panel conforming to NEMA4X (IP66) water and dust protection (option)

■ Main Specifications

Input signal :	DC voltage (0 to 5V) DC current (4 to 20mA by adding a shunt resistor) Thermocouple (B, R, S, N, K, E, J, T, U, L) Resistance thermometer (Pt100, JPt100)
Accuracy rating :	±0.25% of scale range ±1 digit
Control system :	PID system (2-position is available)
Output type :	On-off pulse, SSR-drive pulse, current output, voltage output
Auto-tuning :	Standard
Overshoot suppression function :	On/off selectable
Power supply :	100 to 240VAC, 50/60Hz (24VDC, option)
Dimensions :	48×48×122mm

DIGITAL INDICATING CONTROLLERS LT350 / LT370

48×96mm
96×96mm



The digital indicating controllers feature all functions, which are necessary for various control applications, including newly developed PID algorithms and an overshoot suppression function.

- Easy view and simple operation by large LED displays and large switches
- Universal input
- MODBUS communications protocol
- Conformance to CE, UL and CSA
- Front panel conforming to NEMA4X (IP66) water and dust protection (option)

■ Main Specifications

Input signal :	DC voltage (0 to 5V) DC current (4 to 20mA by adding a shunt resistor) Thermocouple (B, R, S, N, K, E, J, T, U, L) Resistance Thermometer (Pt100, JPt100)
Accuracy rating :	±0.25% of scale range ±1 digit
Control system :	PID system (2-position control is available)
Output type :	On-off pulse, SSR-drive pulse, current output, voltage output
Auto-tuning :	Standard
Overshoot suppression function :	On/off selectable
Power supply :	100 to 240VAC, 50/60Hz (24VDC, option)
Dimensions :	48×96×132mm (LT350), 96×96×132mm (LT370)

DIGITAL INDICATING CONTROLLERS LT110

48×24mm



The digital indicating controllers feature many functions including PID auto-tuning function for various control applications in compact size of 48×24mm.

- Compact lightweight and space-saving type for downsizing equipment or panel board
- Multi-input of thermocouples and resistance thermometers
- Conformance to CE
- Front panel conforming to IP65 (IEC) water and dust protection

■ Main Specifications

Input signal :	Thermocouple (K, J, E, N) Resistance Thermometer (Pt100, JPt100)
Accuracy rating :	Thermocouple (±0.3% of scale range ±1 digit or ±2°C, whichever larger) Resistance thermometer (±0.2% of scale range ±1 digit)
Control system :	PID system (2-position is available)
Output type :	On-off pulse, SSR-drive pulse, current output
Auto-tuning :	Standard
Power supply :	100 to 240VAC, 50/60Hz
Dimensions :	48×24×110.5mm

PROGRAM CONTROLLERS

DIGITAL INDICATING CONTROLLER DB SERIES

96×96mm



The DB series is a 96×96mm digital indicating controller with the indicating accuracy of $\pm 0.1\%$ and the control cycle of approximately 0.1 seconds.

Various functions including universal input and multiple setting values (8 types) are provided as standard.

- Large easy-to-view 5-digit display
- Highly-functional operation screen and settings screen
- Outstanding controllability
- Conforming to international safety standards and European directives (CE) and conforming to RoHS

Main Specifications

Input type :	Thermocouple (B, R, S, K, E, J, T, N, others) Resistance thermometer (Pt100, Pt-Co, others) DC voltage ($\pm 10\text{mV}$, $\pm 20\text{mV}$, $\pm 50\text{mV}$, $\pm 100\text{mV}$, $\pm 5\text{V}$, $\pm 10\text{V}$) DC current (0 to 20mA)
Accuracy rating :	$\pm 0.1\%$ of measuring range ± 1 digit
Control system :	PID system
Output type :	ON-OFF pulse, ON-OFF servo, Current output, SSR drive pulse, Voltage output
Power supply :	100 to 240VAC or 24VAC/24VDC
Communication interface :	RS232C, RS422A, RS485 (option)
Dimensions :	96×96×127mm

DIGITAL INDICATING CONTROLLERS LT830 SERIES

48×48mm



The digital indicating controller features various functions including socket type terminal board, 24V AC/DC power supply, international compliance, and MODBUS protocol communication. The software package provides the ease of parameter setup and data monitoring.

- Universal input
- PID Algorithms for easy operation
- User friendly LED numerical display
- Conformance to CE, UL and CSA
- KIDS and PASS software

Main Specifications

Input signal :	Thermocouple (B, R, S, N, K, E, J, T) Resistance Thermometer (Pt100)
Accuracy rating :	$\pm 0.3\%$ of measuring range ± 1 digit (at reference operation conditions)
Control system :	On-off pulse type PID system, SSR drive type PID system
Auto-tuning :	Standard (manual setting of PID constants enabled)
Overshoot suppression :	ON/OFF selectable
Power supply :	100 to 240V AC, 50/60Hz
Dimensions :	48×48×80mm

DIGITAL PROGRAM CONTROLLER KP SERIES

96×96mm



The KP series is a 96×96mm digital program controller with the indicating accuracy of $\pm 0.1\%$, the control cycle of approximately 0.1 seconds and maximum 19 program patterns (maximum 19 steps/pattern).

Various functions including the whole program pattern display screen and universal input are provided as standard.

- Large easy-to-view 5-digit display
- Highly-functional operation screen and settings screen
- Easily identifiable pattern progress display
- Outstanding controllability
- Conforming to international safety standards and European directives (CE) and conforming to RoHS

Main Specifications

Input type :	Thermocouple (B, R, S, K, E, J, T, N, others) Resistance thermometer (Pt100, Pt-Co, others) DC voltage ($\pm 10\text{mV}$, $\pm 20\text{mV}$, $\pm 50\text{mV}$, $\pm 100\text{mV}$, $\pm 5\text{V}$, $\pm 10\text{V}$) DC current (0 to 20mA)
Accuracy rating :	$\pm 0.1\%$ of measuring range ± 1 digit
Control system :	PID system
Output type :	ON-OFF pulse, ON-OFF servo, Current output, SSR drive pulse, Voltage output
Power supply :	100 to 240VAC or 24VAC/24VDC
Communication interface :	RS232C, RS422A, RS485 (option)
Dimensions :	96×96×127mm

DIGITAL PROGRAM CONTROLLERS DP SERIES

144×144mm



The high precision digital program controllers can store 99 kinds of program patterns (1000 steps) and have a large display showing a whole pattern.

- High precision type
- PID auto-tuning
- Memory card
- Multi-range input

Main Specifications

Accuracy rating :	$\pm 0.1\%$ of input span ± 1 digit or $10\text{ }\mu\text{V}$, whichever larger
Input signal :	Thermocouple (B, R, S, N, K, E, J, T, others) Resistance thermometer (Pt100, JPt100, others) DC voltage ($\pm 10\text{mV}$, $\pm 20\text{mV}$, $\pm 50\text{mV}$, $\pm 100\text{mV}$, $\pm 5\text{V}$) DC current ($\pm 20\text{mA}$)
Control system :	PID system
Output type :	On-off pulse, SSR-drive pulse, current output, on-off servo
Power supply :	85 to 264VAC free
Communication IF :	RS232C, RS422A (option)
Dimensions :	144×144×224.5mm

NON-CONTACT TEMPERATURE MEASUREMENT

INFRARED RADIATION THERMOMETERS

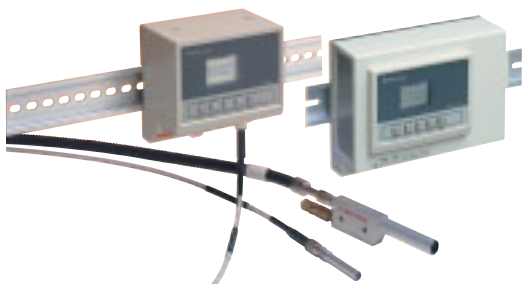
ON-LINE INFRARED RADIATION THERMOMETER IR-SA SERIES



The IR-SA series of Infrared Radiation Thermometer provides broad selection of small and robust units to match your on-line applications for non-contact temperature measurement from 0 to 2500°C under harsh environment. Four models are available with modbus connectivity for parameter setup through remote setting unit or PC.

- Withstand temperature 90°C, IP67, CE approval
- Fast response time of 0.002 seconds for IR-SAI/IR-SAS
- RS485 modbus connectivity
- Telescope or laser pointer for targeting

FIBER OPTIC RADIATION THERMOMETER IR-FA SERIES



The IR-FA series is a fiber optic radiation thermometer featuring multi-function and high-speed response (10ms). Three types: single-color type for low temperature; single-color type for medium/high temperature and two-color type, are available.

- Low temperature type with high-speed response and short wavelength enables to measure objects with low emissivity like as metals.
- Medium/high temperature type with high accuracy (± 0.5 to 1% for 1000 to 2000°C) and high-speed response is for various temperature measurement fields.
- Two-color type is stable with less effectiveness of smoke, vapor, dust and lack-of-view.

■ Main Specifications

Detecting element/measuring wavelength:

Single-color type : PbS/2.0 μm , InGaAs/1.55 μm , Si/0.9 μm ,

Two-color type : Hybrid element 0.9/1.55 μm ,

Output : 4 to 20mAADC

Power supply : 24VDC

HIGH-SPEED RADIATION THERMOMETER IR-CA SERIES



The IR-CA Product Line of Non-Contact Infrared Thermometers provides broad selection of units to match your applications and requirements for non-contact temperature measurement. The product line consists of 15 different series grouped into General Purpose and Application Specific models.

- Functional digital display and parameter setup keys
- High accuracy, high-speed response, high reliability
- High distance factor in focusable model to enable ease of installation
- Optional RS485 communications
- Remote setup and monitoring by IR-GZ connectable upto 32 IR-CA
- Software package IR-VXC1E
- Variety of accessories to protect the IR-CA under harsh environment

INFRARED RADIATION THERMOMETERS IR-BA SERIES



The IR-BA series is a non-contact and high-speed compact radiation thermometer. The card sized detector with built-in converting function of 4-20mA output signal can easily be installed in narrow places, production lines and small equipment.

A standard speed type and a high speed type (50ms/95%) are respectively available for these standard type and small-target/short-distance type and small-target/long-distance type, and also various applicable types like as glass, lamp-anneal, film and burning gas.

- High response: Standard : 100ms, High-speed : 50ms
- Compact & light-weight : W32×H56×D100mm, 220g

■ Main Specifications

Detecting element/measuring wavelength : Thermopile

Measuring range : 0 to 300°C 0 to 600°C

Output : 4 to 20mAADC

Power supply : 12 to 24VDC



HANDHELD TYPE INFRARED RADIATION THERMOMETERS MODEL IR-TA

Simple temperature measurement by pinpointing center of measuring spot by laser. Automatic back-lit LCD display at dark places by brightness sensor.

- CE-marking (option)

■ Main Specifications (single-color types)

Detecting element : Thermopile
Measuring wavelength : 8 to 14 μm
Measuring range : -40 to 500°C
Power supply : AA battery, 2 pcs

HANDHELD TYPE RADIATION THERMOMETERS IR-H SERIES

The handheld thermometer is a small and lightweight with a clear view-finder. The direct view-finder enables to measure a small object with a long distance.

Three models, high functional type IR-HQH having combined functions of [2-color type + single color wide range type], single color medium temperature type IR-HI and single color high temperature type IR-HS, are prepared.

The data logging software is separately prepared for easy data treatment.

- Temperature range from 400°C to 3000°C (IR-HQH)
- CE-marking
- Low temperature area and emissivity are measured by connecting a K-type thermocouple separately prepared.

■ Main Specifications

Detecting element/measuring wavelength :

Si/ $0.9\mu\text{m}$ (IR-HS), InGaAs/ $1.55\mu\text{m}$ (IR-HI),
Si/InGaAs $0.9/1.55\mu\text{m}$ (IR-HQH)

Response time : 0.2 second

Power supply : AA battery, 2 pcs

HANDHELD TYPE DIGITAL RADIATION THERMOMETERS IR-AH SERIES

The handheld thermometer offers a wide measuring range of 600°C to 3000°C for IR-AHS, 900°C to 3000°C for IR-AHU, and -50°C to 1000°C for IR-AHT digital display of the measured value in view-finder and LCD display, plus storage of measured data.

- A data logging software package for easy data treatment
- CE-marking

■ Main Specifications

Detecting element : Si, Thermopile
Measuring wavelength : $0.96\mu\text{m}$ (IR-AHS), $0.65\mu\text{m}$ (IR-AHU)
 8 to $13\mu\text{m}$ (IR-AHT)
Power supply : AA battery, 4 pcs

ON-LINE MEASUREMENT OF INFRARED MULTI ANALYZER, MOISTURE (THICKNESS) METERS

INFRARED MULTI ANALYZER IM SERIES MIRROR TYPE (IRMA1000, 5000, 7000)



The IM series is on-line multi analyzer utilizing the infrared absorption. Converting capabilities are built into the compact designed detector unit for easy installation and operation.

- Up to 10 wavelength, capable of measuring 4 constituents.
- Ethernet, MODBUS communications.
- High-speed & High-repeatability (28ms).
- Self-diagnostic function, easy maintenance.

■ Main Specifications

Measuring system : Infrared reflection type
Measuring wavelength : Up to 10 wavelengths
Measuring scope : Up to 4 constituents
Computing function : Ratio calculation for 2-color or 3-color, and multiple regression calculation
Calibration curve : Linear, quadratic, cubic and multiple regression line

INFRARED MULTI ANALYZER IM SERIES FIBER TYPE (IRMA2000, 6000, 8000)



IM series are on-line multi analyzer. The fiber type measures moisture (thickness), organism by utilizing optical fiber. The optical fiber sensing part can be installed at narrow spaces or in high temperature environments.

- Compact sensing part using optical fiber.
- High sensitivity fiber for stable measurements.
- Selectable from reflection type and transmission type.

■ Main Specifications

Measuring wavelength : Up to 10 wavelengths
Distance or angle/diameter :
With lens : $\phi 20/25\text{mm}$ to $\phi 40/100\text{mm}$
Without lens : $\phi 20/15\text{mm}$ to $\phi 50/50\text{mm}$

SELECTION FROM VARIOUS SENSORS FOR EACH APPLICATION

TEMPERATURE/HUMIDITY SENSORS

HANDHELD DIGITAL THERMOMETER MC1000 SERIES

MC1000 is a handheld digital thermometer having an easy-to-read large LCD display and light weight. A range of temperature probes with a variety of shapes and sizes to suit the application requirements.

- Dual displays for measured data and arithmetic result
- Multi-input (thermocouple/RTD) allows various applications
- Exclusive connector prevents accidental probe disconnection
- 20 data storage

Main Specifications

Measuring range : Thermocouple type K —200 to 1370°C
T —200 to 400°C
RTD PT100 —200 to 500°C

Display : 3-1/2 digital LCD with backlight

Computation : Max/min/average/relative

Battery : 2×AA

Standard : CE

Dimensions : 76(W)×164(H)×36.3(D)mm



DIGITAL THERMOMETER FOR FOODS MODEL MF1000

The portable thermometer Model MF1000 is combined with a needle type sensor for measurement of internal temperature of foods or liquid temperature.

- Washable and anti-bacteria surface housing

Main Specifications

Temperature range : —40 to 260°C

Measuring accuracy : $\pm 0.5^{\circ}\text{C}$

Response time : 2 seconds

Sensor : K type thermocouple

Sealing : IP67 (waterproof and dustproof)

CE conformed



SHEATH THERMOCOUPLES SHEATH RESISTANCE THERMOMETERS



The temperature sensors filled with high-purity magnesium oxide in protection tube provide excellent response along with vibration resistance and corrosion resistance.

Main Specifications

- Thermocouples

Class : JIS 1 (class 0.4), 2 (class 0.75)

Element : K, J, E, T

Measuring temperature : —200 to 1050°C

Protection tube diameter : 0.3, 0.5, 1.0, 1.6, 3.2, 4.8, 6.4, 8.0mm ϕ

Protection tube length : 300, 500, 750, 1000, 1500, 2000mm

Protection tube material : K···SUS316, SUS310S, SUS347, NCF600
J, E, T···SUS316
(Protection tube of 0.3 and 0.5mm ϕ : only available on K element and NCF600)

- Resistance thermometers

Class : JISA, B

Element : Pt100, JPt100, 3-wire

Nominal current : 2mA, 1mADC

Measuring temperature : —200 to 500°C

Protection tube diameter : 3.2, 4.8, 6.4, 8.0mm ϕ

Protection tube length : 300, 500, 750, 1000, 1500, 2000mm

Protection tube material : SUS316

ROLLER SURFACE THERMOCOUPLES C015 SERIES



The thermocouples are designed for non-contact measurement of surface temperature of moving or rolling materials such as heating rollers, moving belts and plastic sheets.

- Built-in compensating circuit for the difference between actual temperature and adjacent atmospheric temperature
- Affection-free from emissivity of surface

Main Specifications

Element : K thermocouple

Measuring accuracy : Within $\pm 5^{\circ}\text{C}$ in 200°C span

Measuring distance : 1 to 2mm (fixed)

Output : E.M.F. of K thermocouple



TEMPERATURE CARD LOGGERS MR5000 SERIES

MR series is a small size and lightweight card logger. Various types of external mounting sensors including a built-in type are available.

- A traceability or inspection certificate, which can be used for HACCP or ISO9000, is available. (Separate purchase required)
- Capable to store up 6000 data per channel
- Conforms to CE and IP-64

Main Specifications

Measuring range :	−40 to 60°C, 0 to 100°C, 50 to 150°C
Accuracy rating :	±1.0°C ±1 digit (±0.5°C ±1 digit for −5 to 50°C)
Sensor :	Automatic switchover of built-in/external sensor. External sensor operates when it is connected Measuring range of the built-in sensor : −40 to 60°C
Number of storing data :	6000 data (About 8-month data storage at 60-minute measuring interval)
Storing mode :	Automatic stop mode under specified conditions or endless mode by a PC
Communications :	Built-in (Connection to a PC through a data readout unit)
Protection :	IP64
External dimensions :	54(W)×110(H)×20.5(D)mm
Weight :	95g (Including batteries)
Battery :	AAA (UM-4), 2 pieces
Battery life :	Approx. 1 year (At 25°C and 10-minute interval)



HANDY LOGGER MR2041 SERIES



Handy logger MR2041 is a palm size data logger, it capable to store up to 10000 temperature data per each channel. Power supply of logger is selectable from AA battery or AC adaptor, so it is usable as a portable type logger or fixing type logger.

Using the exclusive software, recording/recalling of data and programming of logging parameters can be executed with logger or through a personal computer.

- Input signals : thermocouple K, E, J, T, 0 to 5V, 0 to 20mA
- Simultaneous 4 channels, measurement and display
- Data process-able through a personal computer

Main Specifications

Measuring range :	Thermocouple ·····K	−200.0 to 1370.0°C
	E	−200.0 to 700.0°C
	J	−200.0 to 700.0°C
	T	−200.0 to 400.0°C
	DC voltage	·····0 to 5V (scale −9999 to 9999)
	DC current	·····0 to 20mA (scale −9999 to 9999)
Accuracy rating :	Thermocouple ·····	±(0.1% of measuring value + 0.3°C) (>−100°C)
		±(0.1% of measuring value + 0.6°C) (<−100°C)
	DC voltage	·····±(0.1% of measuring value + 0.2% of range)

PALM-SIZED TEMPERATURE / HUMIDITY METER HN-CH SERIES



The HN-CH series is a reliable and accurate palm-sized temperature/humidity meter with the humidity range of 0 to 100%RH by using a newly developed capacitance type humidity sensor. The data logging function capable to store each 8000 readings of temperature and humidity into memory is built-in.

- Three types of sensors, sensor built-in type, probe type and separated type available for various applications

Main Specifications

Relative humidity	
Sensor :	High-polymer capacitance type
Measuring range :	0 to 100% RH
Accuracy rating :	±2%RH
Temperature	
Sensor :	Semiconductor type
Measuring range :	−10 to 50°C
Accuracy rating :	±0.5°C
Data logging :	Temperature and humidity - each 8000 data (16000 data in total)
Display :	Current data, replaying data, parameters
Communications interface :	RS232C or RS485
Power supply :	AA battery, 2 pcs

ELECTRIC HEATERS CONTROL

THYRISTOR REGULATORS

THYRISTOR REGULATOR JU/JW SERIES



The JU/JW series of thyristor regulators feature a compact size and light weight and enable high-density installation. Their methods of control include two ways, the phase-angle control and zero-cross control systems. In the phase-angle control systems, the voltage, current and power feedback control types and a type without feedback control are available for the selection of an optimum type according to the characteristics of the heater used.

- Compact, lightweight and high-density installation
- Phase-angle firing and zero-cross firing are selectable
- Setting communication unit displays voltage, current, power and heater measurement values, and enables parameter setup and operation selection.
- Prepare heater disconnection alarm and current limiter

■ Main Specifications (JU)

Phase : Single phase
 Rated voltage : 100, 110, 120, 200, 220, 240, 380, 400, 440V AC (to be specified)
 Rated frequency : 50/60Hz (automatic selection)
 Rated current : 10, 20, 30, 50, 75, 100, 150, 200, 250, 300, 400, 500, 750, 1000A (to be specified)

■ Main Specifications (JW)

Phase : Three phase
 Rated voltage : 200V AC (200V/220V/240V selectable)
 400V AC (380V/400V/440V selectable)
 Rated frequency : 50/60Hz (automatic selection)
 Rated current : 10, 20, 30, 50, 75, 100, 150, 200, 250, 300, 400, 500, 750, 1000A (to be specified)

SINGLE-PHASE THYRISTOR REGULATORS JB SERIES



The small and lightweight thyristor regulators for single-phase loads are characterized with high panel installation density.

Two control systems, a phase-angle firing system for continuous power control and a zero-cross firing system, are built-in and selectable for various applications and power environment.

The applications include small electric furnaces, calibration bath, casting dies heating and heating units for laboratory use.

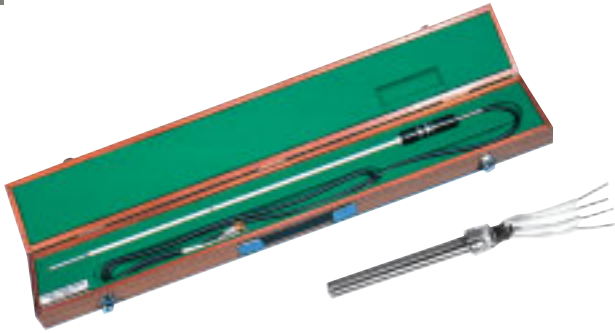
■ Main Specifications

Phase : Single-phase
 Rated voltage : 100 to 120 VAC and 200 to 240 VAC (selection by terminals)
 Rated frequency : 50/60Hz (automatic selection)
 Rated current : 20, 30, 40, 50, 75, 100A
 Input signal : 4 to 20mADC, 1 to 5VDC or on-off contact
 Output range : 0 to 98% of rated voltage
 Minimum load current : 0.5A (at 98% output)
 Applicable loads : Resistive load
 Inductive load (transformer primary control and phase control system only)
 Control system : Phase-angle firing and zero-cross firing (selectable)

STANDARD SENSORS AND RADIATION THERMOMETERS

TRACEABILITY

STANDARD RESISTANCE THERMOMETERS R800 SERIES



The standard platinum resistance thermometers, which have been commercialized under the guidance of National Research Laboratory of Meteorology, conform to International Temperature Scale, 1990 (ITS-90).

- From vapor point of helium to freezing point of silver
- Various models including low temperature use and high temperature use are prepared.

■ Main Specifications

Measuring range : 13K to 30°C (R800-0)
 90K to 661°C (R800-2)
 0 to 962°C (R800-3, 3L)
 90K to 300°C (R800-9)
 4K to 0°C (R800-4)

BLACKBODY FURNACES MODELS IR-R24, IR-R26



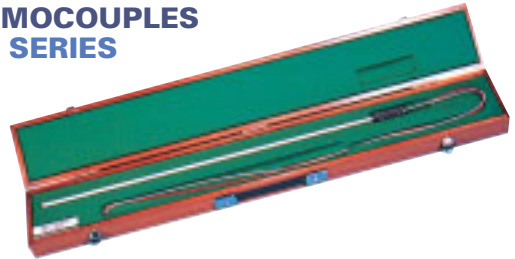
The comparison type blackbody furnaces were developed jointly with National Research Laboratory of Meteorology for calibration of radiation thermometers and have large aperture diameters.

- High calibration accuracy with a large aperture is realized by the double cone type cavity.
- Platinum resistance thermometers (option) and 0.9 μm standard radiation thermometers (option) are used as standard sensors for low temperature type and medium temperature type (comparison calibration) respectively.

■ Main Specifications

Temperature range : 50 to 450°C (low temperature type)
 200 to 1050°C (medium temperature type)
 Aperture diameter : 60mm ϕ (low temperature type)
 50mm ϕ (medium temperature type)

STANDARD THERMOCOUPLES C800 SERIES



The standard thermocouples are for calibration of thermocouples. Three kinds of S type, R type and B type thermocouples are available.

- Temperature-thermoelectromotive force tables are prepared on request.

■ Main Specifications

Element diameter : 0.5mm ϕ
 Measuring range : Maximum 1100°C (S, R)
 Maximum 1554°C (B)

STANDARD RADIATION THERMOMETER IR-RST SERIES



Standard Radiation Thermometer IR-RST series has been developed under collaborative research with the National Metrology Institute of Japan (NMIJ), which is applicable for traceability of calibrating conventional radiation thermometers.

- By utilizing two models of 0.9 μm and 0.65 μm units, calibration from 400 to 3000°C with the small uncertainty is realized.
- Embedded internal temperature control eliminates the need for output variation compensation against ambient temperature.

■ Main Specifications

Detecting element : Silicon Photo Diode
 Measuring range : 400 to 2000°C (0.9 μm) 3-step selection
 1000 to 3000°C (0.65 μm) 3-step selection
 Distance factor : 125 (0.9 μm)
 650 (0.65 μm)

FIXED POINT BLACKBODY FURNACES IR-RO SERIES



The fixed point blackbody furnaces are used to calibrate standard radiation thermometers for comparison calibration of radiation thermometers.

- Four models for freezing points of zinc, aluminum, silver and copper are prepared.

■ Main Specifications

Fixed point temperature : Zinc 419.527°C
 Aluminum 660.323°C
 Silver 961.78°C
 Copper 1084.62°C
 Reproducibility of freezing points : Within $\pm 0.1^\circ\text{C}$
 Accuracy rating : Within $\pm 0.3^\circ\text{C}$



FUJIOKA FACTORY

The factory has developed and manufactured instrument systems and software as well as measuring, controlling and monitoring instruments including recorders, controllers and scanners.



STANDARD LABORATORY

The standard laboratory has got the approval (approval # 0024) by the national authority as the approved laboratory of calibration for sensors and has performed calibration tests of sensors from outside.

The laboratory has issued the calibration certificates with JCSS mark for temperature sensors, glass thermometers and radiation thermometers.



KUKI FACTORY

The factory has developed and manufactured radiation thermometers including moisture meters and thickness meters, sensors including temperature, humidity, pressure and level, and thyristor regulators, and has manufactured and engineered total systems, distributed control systems and special application systems.



HEAD OFFICE

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ISO14001

JQA-0656
ISO9001

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* Specifications subject to change without notice.