MR SERIES CARD LOGGERS

PERFORMANCE SPECIFICATION CHINO

SPLASH PROOF TYPE TEMPERATURE CARD LOGGER MODEL MR5300

Model MR5300 is a small size and lightweight card logger capable to store up to 6000 temperature data, and is washable (IP64 - splash proof).

Various types of external mounting sensors including a built-in type are available.

Recalling of data and programming of logging parameters can be executed with this card logger or through a personal computer.

This card logger conforms to CE and IP-64.

■ FEATURES

- A traceability or inspection certificate, which can be used for HACCP or ISO9000, is available. (Separate purchase required)
- IP 64 (dust tight and splash proof) enclosure
- CE conformance
- High accuracy ±0.5ºC (for –5 to 50ºC)
- Automatic stop or endless of data logging is selectable.
- Small/lightweight and easy-to-operate
- Built-in totalizing function
- Keeping of stored data for long term on low battery
- Stored data can be recalled during logging of data.
- Measurement interval of 10 to 50 seconds or 1 to 60 minutes
- Storing of about 730 thousand data in a 1.44MB floppy disk (by exclusive file format)

■ APPLICATIONS

- Temperature monitoring in refrigerators/freezers
- Temperature monitoring in transportation
- Freshness monitoring of vegetables or fruits
- Temperature monitoring in show cases
- Transportation/storage temperature monitoring of pharmaceuticals
- Temperature monitoring in green/vinyl houses
- Temperature monitoring in chambers
- Temperature monitoring in refrigerated trucks/warehouses
- Temperature monitoring in cement curing

■ SPECIFICATIONS (Model MR5300)

Measuring range: -40 to 60ºC, 0 to 100ºC, 50 to 150ºC (0 to 50ºC is available. For display only)
(Ranges are automatically switched by judging a sensor to be used.)

Accuracy rating: ±1.0ºC ± 1 digit (±0.5ºC ± 1 digit for –5 to 50ºC)

Sensor: Built-in/External switching (Automatically switched to External when an external mounting sensor is inserted. Measuring range of the built-in sensor: –40 to 60ºC)

Input point: One

Number of data stored: 6000 data (About 8-month data storage at the 60-minute measurement interval)

Storing mode: Automatic stop mode under specified conditions or endless mode by a PC

Communications function: Built-in (Connection to a PC through a data readout unit)

Display: Reflection type liquid crystal display

Display contents: Current data: Month, day, hour, minute, temperature (ºC)
Recalling data:
Data being stored per month, day, hour, minute or the following data in the stored data
- Totalized data (ºCH) of lower (L) or higher (H) temperature than a reference temperature
- Number of activated alarms for higher or lower limit, and month, day, hour, minute and its temperature of activated alarm
- Maximum, minimum and average temperatures

Parameters:
Clock: Year, month, day, hour, and minute (Corresponding to leap years)
Start time: Month, day, hour, and minute
Measurement interval: 1 to 60 minutes (1-minute increments) or 10 to 50 seconds (10-second increments)
Reference temperature: Reference temperature for totalization
Low battery: Display will blink when the batteries are low.

Totalization: High or low totalization

Alarm: High or low alarm

Battery: AAA (UM-4), 2 pieces
Battery life: About 1 year (At 25ºC and 10-minute interval)

Working environment: -20 to 55 ºC; 10 to 80%RH (No condensation)

Storage environment: -20 to 55ºC; under 90%RH (No condensation)

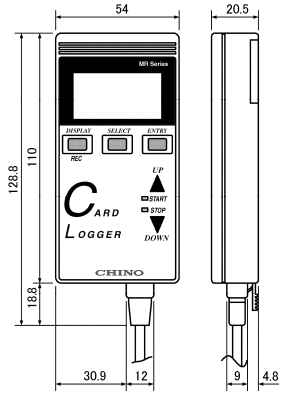
Housing structure: IP64 (Splashing proof)

Material/color: ABS Resin, PANTONE® color (equivalent to 552C)

Outside dimensions/weight: 54 (W) x 110 (H) x 20.5 (D) mm, 95g (Including batteries)

CE-marking: EN-61326, Emission: Class B, Immunity: Requirement for portable test and measurement equipment

■ DIMENSIONS



Unit: mm

• Convenience totalizing function

H totalized value (ºCH)
= (Measured Temperature - Reference Temperature) x Hours
L totalized value (ºCH)
= (Reference Temperature - Measured Temperature) x Hours

* The totalizing function only executes when the value in ( ) is over than 0ºC. The range of the totalizing temperature is from 0 to 99990ºCH.

(Example)
Reference temperature: 2.0ºC
Measured temperature of 25.5ºC for 100 hours and 5.5ºC for 50 hours
The H totalized value becomes 2525 (ºCH).
(25.5 - 2.0) x 100 + (5.5 - 2.0) x 50 =2525

For simultaneous data logging of temperature in 2 places

SPLASH PROOF TYPE TWO-CHANNEL CARD LOGGER MODEL MR5320

Model MR5320 is a small size and lightweight 2-channel card logger capable to monitor temperature in two places and store up to 6000 data per channel, and is washable (IP64 - splash proof).

By connecting this unit to a personal computer through the data readout unit MR9503, all data can be displayed or printed out in a table format or a trend graph format, and also the data stored can be treated by worksheet applications commercially available.

This card logger conforms to CE and IP-64.

■ FEATURES

- Storing of 6000 data per channel
- Measurement interval of 10 to 50 seconds or 1 to 60 minutes
- High accuracy ±0.5ºC (for –5 to 50ºC)
- Automatic stop or endless of data logging is selectable.
- Keeping of stored data for long term on low battery
- Storing of about 730 thousand data in a 1.44MB floppy disk (by exclusive file format)
- Reliable infrared communications between the card logger and the data readout unit without any physical contact
- IP 64 (dust tight and splash proof) enclosure
- CE conformance
- Various kinds of sensors including a general type, a water-proof type, a surface type and a needle type
- A traceability or inspection certificate, which can be used for HACCP or ISO9000, is available. (Separate purchase required)

■ APPLICATIONS

- Temperature monitoring in research and laboratories
- Monitoring of temperature difference
- Monitoring of multiple temperature in various kinds of applications
- Temperature monitoring in green/vinyl houses

■ SPECIFICATIONS (Model MR5320)

Measuring range: -40 to 60ºC, 0 to 100ºC, 50 to 150ºC
(Ranges are automatically switched by judging a sensor to be used.)
* With the built-in sensor (Channel 1 only): -40 to 60ºC

Accuracy rating: ±0.5ºC ± 1 digit (for –5 to 50ºC)
* Except above: ±1.0ºC ± 1 digit

Sensor: Built-in (Channel 1 only)/External switching
* Various types of sensors (separate purchase required) including general type, water-proof type, needle type and surface type are available.

Input point: Two points

Number of data stored: 6000 data/each channel

Display contents: (Each channel)
Current data:
Month, day, hour, minute, measured temperature in Channel 1 and Channel 2
Recalling data:
Maximum temperature, minimum temperature and average temperature in stored data in Channel 1 and 2
Parameters:
High alarm set point and low alarm set point of Channel 1 and 2

Operation by logger: Display start-up (With auto-off function: Display goes out after one minute.)
Display content selection (clock setting, logging start/stop, key lock/release)
* Three function keys of DISP, SEL and REC

Communications function: Infrared communications to the exclusive data readout unit (separate purchase required)
Settings of parameters and recalling of stored data/logging parameters by the exclusive analytical software package

Settings by PC: (Exclusive analytical software) Clock, logging start time/stop time (in case of the measurement interval of 1 to 60 minutes), measurement/logging interval (10 to 50 seconds or 1 to 60 minutes), high/low alarm temperatures, key locking of logger, logging mode (automatic stop/endless)

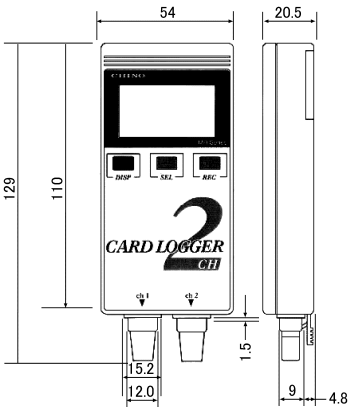
Battery: AAA (UM-4), 2 pieces

Battery life: About 1 year (At 25ºC and 1-minute interval)

Outside dimensions/weight: 54 (W) x 110 (H) x 20.5 (D) mm, 95g (Including batteries)

CE-marking: EN-61326, Emission: Class B, Immunity: Requirement for portable test and measurement equipment

■ DIMENSIONS

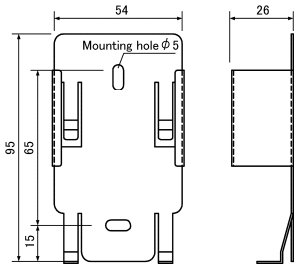


Unit: mm

■ MOUNTING HOLDER

(Common to MR5300, MR5320 and MR662)

This is used to fix the card logger to equipment, iron poles or wall.
Model: MR9013
Mounting: By screws
Material: SUS304

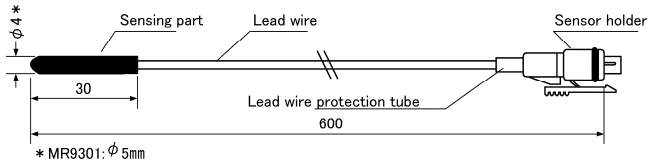


Unit: mm

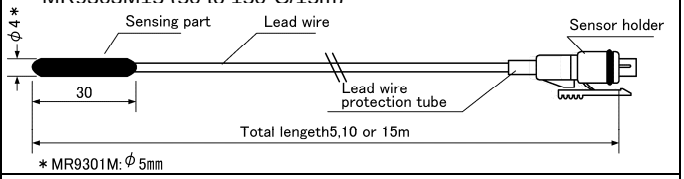
■ EXTERNAL MOUNTING TEMPERATURE SENSORS (common to MR5300 and MR5320)

Unit: mm

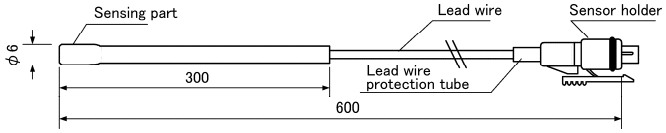
- **General type**
  MR9301 (-40 to 60ºC)
  MR9302 (0 to 100ºC)
  MR9303 (50 to 150ºC)



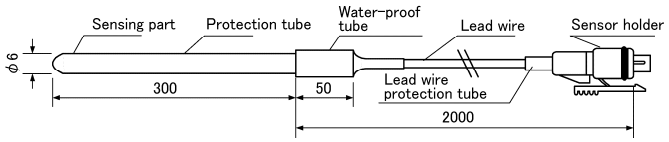
- **With long lead wire**
  MR9301M05 (-40 to 60ºC/5m)
  MR9302M05 (0 to 100ºC/5m))
  MR9303M05 (50 to 150ºC/5m)
  MR9301M10 (-40 to 60ºC/10m)
  MR9302M10 (0 to 100ºC/10m))
  MR9303M10 (50 to 150ºC/10m)
  MR9301M15 (-40 to 60ºC/15m)
  MR9302M15 (0 to 100ºC/15m))
  MR9303M15 (50 to 150ºC/15m)



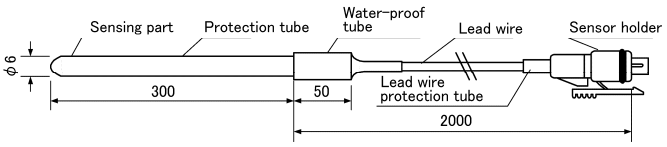
- **With water-proof tube**
  MR9301S30 (-40 to 60ºC)
  MR9302S30 (0 to 100ºC)



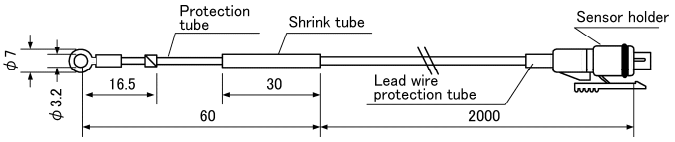
- **With metal tube**
  MR9301A30 (-40 to 60ºC)
  MR9302A30 (0 to 100ºC)
  MR9303A30 (50 to 150ºC)



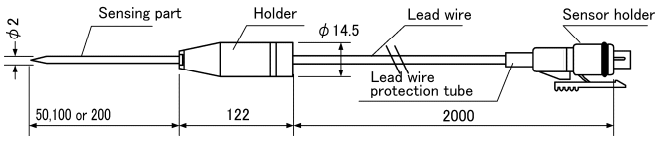
- **With metal tube (sanitary)**
  MR9301B30 (-40 to 60ºC)
  MR9302B30 (0 to 100ºC)
  MR9303B30 (50 to 150ºC)



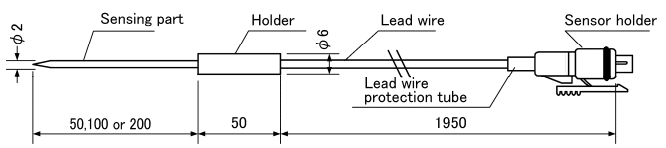
- **Surface temperature**
  MR9301F30 (-40 to 60ºC)
  MR9302F30 (0 to 100ºC)
  MR9303F30 (50 to 150ºC)



- **Needle type (with grip holder)**
  MR9301C05 (-40 to 60ºC/sensor 50mm)
  MR9302C05 (0 to 100ºC/ sensor 50mm)
  MR9301C10 (-40 to 60ºC/sensor 100mm)
  MR9302C10 (0 to 100ºC/ sensor 100mm)
  MR9301C20 (-40 to 60ºC/sensor 200mm)
  MR9302C20 (0 to 100ºC/ sensor 200mm)



- **Needle type (with finder holder)**
  MR9301D05 (-40 to 60ºC/sensor 50mm)
  MR9302D05 (0 to 100ºC/ sensor 50mm)
  MR9301D10 (-40 to 60ºC/sensor 100mm)
  MR9302D10 (0 to 100ºC/ sensor 100mm)
  MR9301D20 (-40 to 60ºC/sensor 200mm)
  MR9302D20 (0 to 100ºC/ sensor 200mm)



Remarks:
For CE conformance, the external mounting sensors of Models 9301, 9302 and 9303 only are applicable to MR5300 or MR5320.

TEMPERATURE HUMIDITY CARD LOGGER
MODEL MR6662

The MR6662 small size and lightweight card logger is for simultaneous logging of temperature and humidity and is capable to store up to 6000 data (40days data at 10-minute measurement interval) of temperature and humidity. A large screen enables to display the data being stored at site. Software for data management through a personal computer is separately offered with a data readout unit. For humidity measurement, an interchangeable element of capacitance type high polymer film is used. This card logger conforms to CE.

■ FEATURES

- Simultaneous measurement and logging of temperature and humidity
- Up to 6000 data storage of temperature and humidity
- Interchangeable humidity element (capacitance type high polymer film)
- Programmable measurement interval from 1 to 60 minutes (At the measurement interval of 10 minutes, data are stored up to about 40 days.)
- Small/lightweight and easy-to-operate
- Recalling of stored data and settings of logging parameters by this logger or through a personal computer
- Keeping of stored data by backup function on low battery
- A traceability or inspection certificate, which can be used for HACCP or ISO9000, is available. (Separate purchase required)
- CE conformance

■ APPLICATIONS

- Temperature and humidity control in computer rooms
- Temperature and humidity control in plants of electronic equipment
- Inspected data recording of housing-related instruments
- Temperature and humidity control in museums
- Freshness control of vegetables, flowers, etc.
- Temperature and humidity control in constant temperature warehouses and containers
- Environmental control of electronic and communication equipment
- Measurement of temperature and humidity in green houses
- Environmental measurement of temperature and humidity
- For teaching tools in schools

■ SPECIFICATIONS (Model MR6662)

Measuring range: Temperature -40 to 60ºC
Humidity 0 to 100% (no dew condensation)

Accuracy rating: Temperature ±0.5ºC (for –5 to 50ºC)
(Except above: ±1.0ºC)
Humidity ±3%RH (at 25ºC ± 2ºC/0 to 90%RH)

Input point: Temperature 1 point, humidity 1 point

Number of data stored: Temperature/humidity each 6000 data (Data storing for about 40 days at the measurement interval of 10 minutes)

Display contents:
Current data:
Month, day, hour, minute, temperature (ºC), humidity (%RH)
Recalling data:
Data being stored per month, day, hour or minute
Maximum temperature/humidity, minimum temperature/humidity and average temperature/humidity
Parameters:
Clock – Year, month, day, hour, minute (corresponding to leap years)
Start time - Year, month, day, hour, minute
Logging interval – 1 to 60 minutes (1-minute increments)
High/low alarm set points

Alarm: ALARM appears on alarm activation.

Working environment: Logger - -20 to 55ºC
Temperature/humidity sensor - -30 to 60ºC (no dew condensation)

Outside dimensions/weight: Logger **-** 54 (W) x 110 (H) x 20.4 (D) mm
Sensor **-** 18 (W) x 53 (H) x 11 (D) mm

Weight: 95g (including batteries)

Battery: AAA (UM-4), 2 pieces

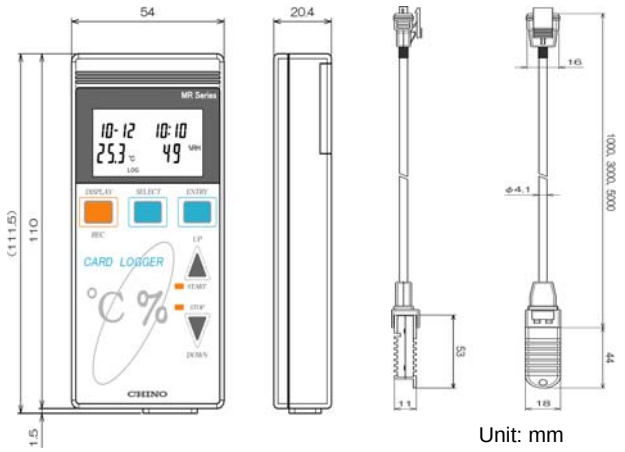
Battery life: About 1 year (At 25ºC and 10-minute interval)

CE-marking: EN-55011, Group 1, Class B, EN-50082-1

■ MODEL

Name	Model
Main Unit	MR6662
Temp/ Humidity	MR9202
Cable (1m)	MR9282-010

■ DIMENSIONS

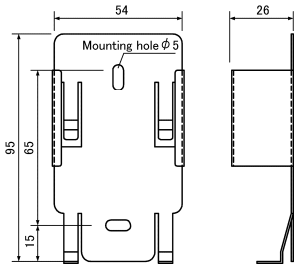


Unit: mm

■ MOUNTING HOLDER

(Common to MR5300, MR5320 and MR6662)

This is used to fix the card logger to equipment, iron poles or wall.
Model: MR9013
Mounting: By screws
Material: SUS304



Unit: mm

PERFORMANCE SPECIFICATION

DATA READOUT UNIT (applicable to all card loggers)
MODEL MR9504

Card loggers can display or printed out data in a table format or a trend graph format by connecting to a personal computer through this data readout unit. The data stored can be managed by a file and treated by worksheet applications commercially available. The card loggers can connect to this data readout unit through reliable infrared communications without any physical contact.

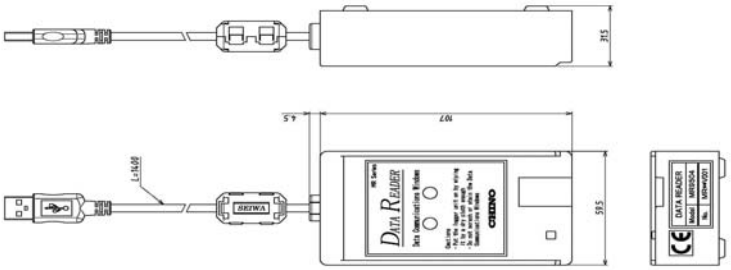
■ SPECIFICATIONS (With analytical software package)

Model	MR9504
USB connector	Type A
	1.4m
Environment	Windows 98/ME/XP/VISTA
	Hard disk: 10MB free space or more
Communications	Between a card logger and this data readout unit: Non-contact infrared type (4800 bps)
	Between this data readout unit and a PC: USB
Weight	About 180g

■ ANALYTICAL SOFTWARE PACKAGE

Model	MR5300	MR5320	MR6662
Settings	Clock, start time, measuring interval, totalizing direction, card No., test No., Key lock/release (MR5320 only)		
	Logging type, direction of integration, reference value	Logging type, direction of integration, high/low alarm set points	Logging type, direction of integration, high/low alarm set points, reference value
Recalling	Parameters, stored data, number of errors		
Computation	Maximum value, minimum value, average value		
	Totalized value	----	Totalized value
Display	All data (measured data per year, month, day, hour, or minute)		
	Trend graph		
	----	High/low alarms (alarm mark attached to the data)	
Data storage	Storage in file format or CSV, Text format by this software package		
Printout	List printing, parameter printing, trend graph		

■ DIMENSIONS



Unit: mm

Specifications subject to change without notice. Printed in Japan (I) 2009.09

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