Multichannel Recorder

MCR-4V/4TC

Voltage / Temperature (Thermocouple)

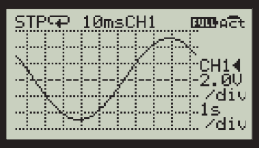
TANDD

4-Channel Battery Operated Data Loggers
Up to 16 Channels of Simultaneous Record

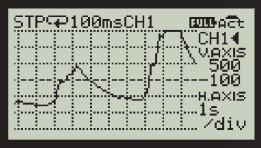
Easy Connection of MCR-4V and MCR-4TC for Synchronous Measurement of Voltage and Temperature

Trend Graph for Real-Time Data Check

MCR-4V



MCR-4TC



Easy Touch Panel Operation

Large Capacity Internal Memory

MCR-4V: Data logging up to 480,000 readings
MCR-4TC: Data logging up to 960,000 readings

Electrical Isolation between Channels

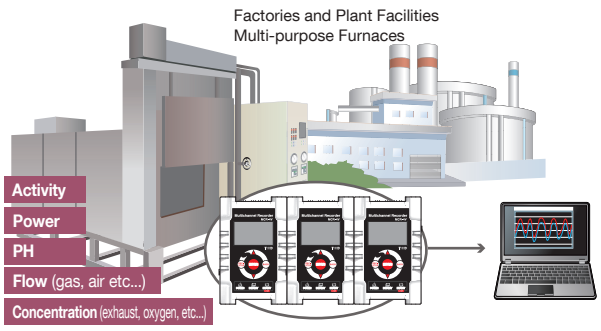
MCR-4V: Capable of measuring signals of different potentials
MCR-4TC: Possible to directly connect the exposed thermocouple junction to the measured object

Runs on 2 AA Alkaline Batteries or USB Bus Power

Application Examples

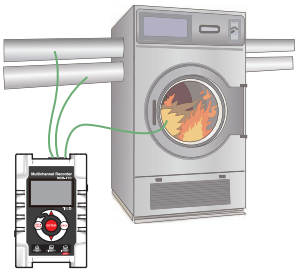
MCR-4V

- Measure and record data for control devices and measurement instruments in factories
- Record signals from actinometers, anemoscopes and CO2 meters
- Record output signals from a variety of sensors and analyzers
- Measure voltage in electrical circuits



MCR-4TC

- Record temperatures in pipes and ducts
- Record boiler temperatures
- Record temperatures in cooking equipment such as pans, fryers, and ovens
- For temperature management of refrigerated and frozen goods



MCR-4V and MCR-4TC

- For temperature and pressure measurements inside slow cookers, pressure cookers, or other enclosed cooking containers.
- Measure air-conditioner gas pressure and outlet air temperature
- For measurement of engine combustion pressure and water cooling temperature.

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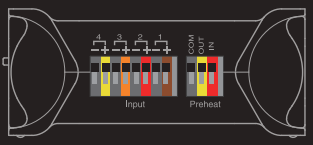
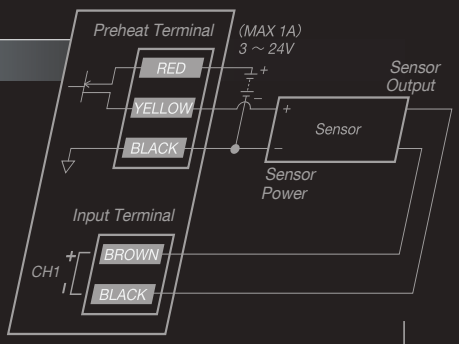
SD Memory Cards for Long-Period Recording

- The latest information on memory cards whose operation has been confirmed is available on the product page of our T&D website.
- When coupling units, please prepare a memory card for each unit.

MCR-4V Features

Preheat Function for Saving Battery Power





Quick and Precise Measurements Recording Interval as short as 2 msec / Resolution of 10µV

Number of Channels	Shortest Possible Recording Interval
1 ch	2 msec
2 ch	5 msec
4 ch	10 msec

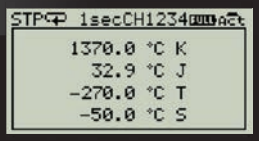
- Number of channels determines shortest possible recording interval.
- Two recording methods: instantaneous value or average value.

Scale and Unit Conversion for Recording and Viewing

Without Scale/Unit Conversion

With Scale/Unit Conversion

MCR-4TC Features



Support for Variety of Thermocouple Types (K, J, T, S, R)

Wide Measurement Range from -270 to 1760℃ (varies with sensor type)

T&D Graph: High Performance Graph Tool

- View recorded data in colorful graph form as well as analyze data using generated cumulative values, highest, lowest, and average readings.
- Add comments and memos directly to graphs.
- Save data in CSV text format for use with spreadsheet software.

MCR-4V Specifications

Measurement Channels	Voltage 4ch
Input Method	Scanning Method, Differential Input, Each Channel Isolated
Input Impedance	Approx. 1.1 MΩ
Input Frequency	DC–100 Hz
Measurement Range	±300 mV, ±1.5 V, ±6 V, ±24 V, Auto (*1) Absolute Maximum Input Voltage: ±50 V
Accuracy	When the 50–60 Hz filter is ON, varies with the Measurement Range as follows: ±300 mV : ±(0.3 % + 0.06 mV) ±1.5 V : ±(0.3 % + 0.3 mV) ±6 V : ±(0.3 % + 0.6 mV) ±24 V : ±(0.3 % + 2.4 mV) Auto : According to the range in use
Measurement Resolution	50 - 60 Hz Filter ON : 0.01 mV 50 - 60 Hz Filter OFF : 0.1 mV
Preheat Function	Allowable Voltage Range : 3 to 24 V (external power supply) Allowable Maximum Current : 1.0 A
Recording Method	Instantaneous, Average, or Ave. Fine
Recording Interval	2, 5, 10, 20, 50, 100, 200, 500 ms. / 1, 2, 5, 10, 15, 20, 30 sec. 1, 2, 5, 10, 15, 20, 30, 60 min. (The minimum interval will depend on the number of channels, measurement range, and 50–60 Hz filter setting.)
Logging Capacity (*2)	When recording 1 channel : up to 480,000 readings/ch When recording 2 channels : up to 240,000 readings/ch When recording 3 channels : up to 160,000 readings/ch When recording 4 channels : up to 120,000 readings/ch
Recording Mode	Endless (Overwrite the most recent data when capacity is full) or One Time (Stop recording when capacity is full)
Recording Start Method	Immediate Start or Programmed Start (by individual logger or by group)
Recording Stop Trigger	ON or OFF
Group Recording	Up to 4 units (16 channels) can be recorded simultaneously. (Coupling of MCR–4V and MCR–4TC is possible. (*3))
LCD Display Items	Measurements, Trend Graph, Battery Level, etc.
Communication Interfaces	USB Communication
Communication Time	Download Times for Full Data via USB - While recording (at recording interval of 2 ms.) : Approx. 3 minutes 30 seconds - With recording stopped: Approx. 1 minute 30 seconds - From a slave unit: Approx. 4 minutes 30 seconds
External Memory	SD Memory Card, SDHC Memory Card (*4) (For Manual or Automatic Data Export)
Power	AA Alkaline Battery x 2 (AA Ni-MH batteries may also be used), USB Power (5 V 250 mA)
Battery Life (*5)	Approx. 4.5 to 150 days (with AA alkaline batteries)
Input Terminal / Preheat Terminal	Screwless Terminals <Compatible Wires> Single Wire : ϕ 0.32 to ϕ 0.65 mm (AWG 28 - 22) Twisted Wire : 0.08 to 0.32 mm² (AWG 28 - 22), ϕ 0.12 mm or more in diameter Stripping Length : 9 to 10 mm
Isolation	CH1, CH2, CH3, CH4, USB, and Preheat are isolated. (Battery terminals are not isolated from the CH1-CH4 input terminals.) CH1- CH4 Maximum Applied Voltage : ± 50 V Electrical Isolation Resistance : 50 MΩ or more (DC ± 250 V)
Dimensions	H 120 mm x W 75 mm x D 32 mm
Weight	Approx. 190 g (including batteries)
Operating Environment	Temperature: 0 to 50 °C Humidity: 90 %RH or less (no condensation)
Accessories	AA Alkaline Battery x 2, USB Communication Cable (US–15C), Software (CD-ROM), Card Slot Cover, User's Manual Set (Warranty Included)

*1: When "Auto" is selected, measurement range will be automatically changed according to the voltage being measured.
*2: If the logging capacity is not filled at the end of one recording session, the logger can record up to 30 times.
*3: Group Recording may not be started depending on the recording or measurement interval specifications of the connected Master unit.
*4: Please check the T&D Website for information on memory cards whose operation has been confirmed.
*5: Battery life varies depending upon multiple factors including measurement interval and 50–60 Hz filter setting. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.

MCR-4TC Specifications

Measurement Channels	Temperature 4ch
Compatible Sensors	Thermocouple: Type K, J, T, S, R
Measurement Units	°C, °F
Measurement Range	Type K : −270 to 1370 °C Type J : −210 to 1200 °C Type T : −270 to 400 °C Type S : −50 to 1760 °C Type R : −50 to 1760 °C
Input Impedance	Approx. 1 MΩ
Accuracy (*1)	Thermocouple Measurement Type K, J, T: ±(0.5 °C + 0.3 % reading) [at −100°C or above] Type S, R : ±(1.5 °C + 0.3 % reading) [at 100°C or above] (Individual sensor inaccuracies not included.) Cold Junction Compensation ±0.5°C [in operating environent of 10 to 40 °C] ±0.8°C [in other operating environment]
Measurement Resolution	0.1 °C
Recording Method	Instantaneous or Average
Recording Interval	100, 200, 500 ms. / 1, 2, 5, 10, 15, 20, 30 sec. 1, 2, 5, 10, 15, 20, 30, 60 min.
Logging Capacity (*2)	When recording 1 channel : up to 960,000 readings/ch When recording 2 channels : up to 480,000 readings/ch When recording 3 channels : up to 320,000 readings/ch When recording 4 channels : up to 240,000 readings/ch
Recording Mode	Endless (Overwrite the most recent data when capacity is full) or One Time (Stop recording when capacity is full)
Recording Start Method	Immediate Start or Programmed Start (by individual logger or by group)
Group Recording	Up to 4 units (16 channels) can be recorded simultaneously. (Coupling of MCR–4TC and MCR–4V is possible. (*3))
LCD Display Items	Measurements, Trend Graph, Battery Level, etc.
Communication Interfaces	USB Communication
Communication Time	Download Times for Full Data via USB - From the master or a single unit: Approx. 1 minute 30 seconds - From a slave unit: Approx. 4 minutes 30 seconds
External Memory	SD Memory Card, SDHC Memory Card (*4) (For Manual or Automatic Data Export)
Power	AA Alkaline Battery x 2 (AA Ni-MH batteries may also be used), USB Power (5V 250mA)
Battery Life (*5)	For 4-Channel Measurement (AA Alkaline Battery)

Rec.Method / Rec.Interval	Instanteneous Value	Average Value
100 ms	Approx. 5 days	Approx. 5 days
500 ms	Approx. 7 days	Approx. 7 days
1 sec	Approx. 21 days	Approx. 7 days
5 sec or longer	Approx. 60 days	Approx. 21 days

	(Battery life for 1-channel measurement is about 1.4 times longer than that of 4-channel measurement.)
Input Terminal	Screwless Terminals <Compatible Wires> Single Wire : ϕ 0.32 to ϕ 0.65 mm (AWG 28 - 22) Twisted Wire : 0.08 to 0.32 mm² (AWG 28 - 22), ϕ 0.12 mm or more in diameter Stripping Length : 9 to 10 mm
Isolation	CH1, CH2, CH3, CH4, and USB are isolated. (Battery terminals are not isolated from the CH1-CH4 input terminals.) CH1-CH4 Maximum Applied Voltage : ±50 V Electrical Isolation Resistance : 50 MΩ or more (DC±250 V)
Dimensions	H 120 mm x W 75 mm x D 32 mm
Weight	Approx. 190 g (including batteries)
Operating Environment	Temperature: 0 to 50 °C Humidity: 90 %RH or less (no condensation)
Accessories	AA Alkaline Battery x 2, USB Communication Cable (US–15C), Software (CD-ROM), Card Slot Cover, User's Manual Set (Warranty Included)

*1: MCR–4TC has superior noise filter, but the measurement may sometimes fluctuate due to strong noise. Especially when the recording interval is set to 200 ms or less, the filtering becomes weaker and hence the fluctuation may become greater.
*2: If the logging capacity is not filled at the end of one recording session, the logger can record up to 30 times.
*3: Group Recording may not be started depending on the recording or measurement interval specifications of the connected Master unit.
*4: Please check the T&D Website for information on memory cards whose operation has been confirmed.
*5: Battery life varies depending upon multiple factors including ambient temperature, recording interval, number of measurement channels, and frequency of data export to a memory card. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.

Software (MCR for Windows)

Compatible Devices	MCR–4V, MCR–4TC
Compatible OS (*1)	Microsoft Windows 8 32 / 64 bit (*2) Microsoft Windows 7 32 / 64 bit Microsoft Windows Vista 32 bit (SP1 or later) Microsoft Windows XP 32 bit (SP3 or later)
Display Languages (*3)	English
Other	The .NET Framework 4 Client Profile is required. (*4)

*1: For installation, it is necessary to have Administrator (Computer Administrator) rights.
*2: If you are using Windows 8, please note that our software is designed to be used in "Desktop" mode only.
*3: We recommend using an operating system in the same language as the display language. Operation in different languages is not guaranteed.
*4: During the installation process of the software, if not present, .NET Framework 4 Client Profile will be installed automatically.

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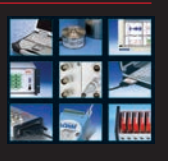
Caution regarding safety
For safe operation carefully read instructions before using the product.

■ Distributor



T&D Corporation
817-1 Shimadachi, Matsumoto, Nagano 390-0852, Japan
Please send your inquiries to:
E-mail : sales@tandd.com
Facsimile : (+81) 263-40-3152

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