CA700 Pressure Calibrator

High Accurate and High Functional Pressure Calibrator Specially Designed for the Calibration of Differential Pressure and Pressure Transmitters.

New product

CA700

Detailed catalog: Bulletin CA700-EN

Features

- Basic accuracy: Pressure (measurement) 0.01% rdg
  Current (source/measurement) 0.015% rdg
  Voltage (source/measurement) 0.015% rdg
- Widest range and highest resolution in class achieved
  200 kPa gauge pressure model (resolution 0.001 kPa)
  1000 kPa gauge pressure model (resolution 0.01 kPa)
  3500 kPa gauge model (resolution 0.01 kPa)
- DC mA signals can be measured by supplying power to the transmitter from a 24V DC power supply.
- Calibration procedures of pressure transmitters and pressure switches are embedded.
  "As Found", " As Left" data and error rate (%) can be recorded.
- IP54 dustproof and waterproof robust case enables use in harsh environments.
- Hart and Brain communication resistance is embedded.
- Dimensions: Approx. 264 (W) × 188 (H) × 96 (D) mm
  Weight: Approx. 2 kg (including 6 AA size batteries)

Main Specifications

Pressure Measurement

Model	CA700-E-01	CA700-E-02	CA700-E-03
Pressure type	Gauge		
Measurement range	Positive pressure 0 to 200 kPa Negative pressure -80 to 0 kPa	Positive pressure 0 to 1,000 kPa Negative pressure -80 to 0 kPa	Positive pressure 0 to 3,500 kPa Negative pressure -80 to 0 kPa
Measurement display range	Up to 240.000 kPa	Up to 1,200.00 kPa	Up to 4,200.00 kPa
Measurement accuracy (6 months after calibration) (Tested after zero calibration)	Positive pressure 20 to 200 kPa: ±(0.01% of reading + 0.003 kPa) 0 to 20 kPa: ±0.005 kPa	Positive pressure ±(0.01% of reading + 0.04 kPa)	Positive pressure ±(0.01% of reading + 0.15 kPa)
	Negative pressure ±(0.2% of reading + 0.090 kPa)	Negative pressure ±(0.2% of reading + 0.08 kPa)	Negative pressure ±(0.2% of reading + 0.08 kPa)
Measurement fluid	Gas and liquid (non-corrosive, non-flammable, non-explosive, and non-toxic fluids)		
Pressure display units	kPa and other units (Pa, hPa, MPa, mbar, bar, atm, mmHg, inHg, gf/cm^2, kgf/cm^2, mmH$_2$O@4˚C, mmH$_2$O@20˚C, ftH$_2$O@4˚C, ftH$_2$O@20˚C, inH$_2$O@4˚C, inH$_2$O@20˚C, Torr, psi)		
Input port	Rc 1/4 or 1/4 NPT female thread (selectable)		

Current and Voltage Measurement (common to all models)

DC current	0 to ±20.000 mA	±(0.015% of reading + 3 μA)
	0 to ±100.00 mA	±(0.015% of reading + 30 μA)
DC voltage	0 to ±5.0000 V	±(0.015% of reading + 0.5 mV)
	0 to ±50.000 V	±(0.015% of reading + 5 mV)

24 V Loop power supply

Supply voltage	24 V ± 1 V	Load current 24 mA when communication resistance OFF
	24 V ± 6 V	Load current 20 mA when communication resistance ON

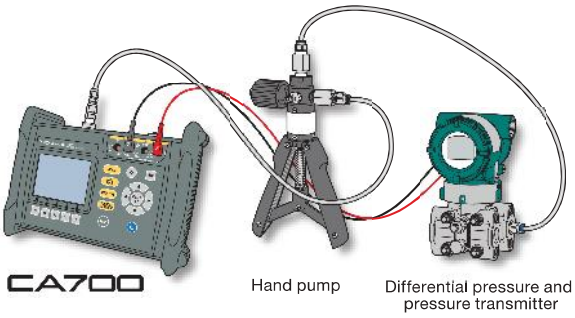
Current and voltage source (common to all models)

DC current*	0 to 20.000 mA	±(0.015% of setting + 3 μA)
DC voltage	0 to 5.0000 V	±(0.015% of setting + 0.5 mV)

* External power supply for 20 mA SIMULATE: 5 to 28 V

Example of field calibration of differential pressure and pressure transmitter

Calibration of pressure transmitters is required to accurately measure the input and output values and to calculate the error rate.
The CA700 ensures reliable calibration with its function to accurately measure the input and output values of pressure and current. Additionally its embedded calibration procedures enable users to perform certain calibration following the prescribed procedure.



Hand Pump Series

Three High-Performance Hand Pump Models Available

Model 91050

Model 91055

Model 91060

Detailed catalog: Bulletin CA700-EN

Product name	Model	Description of kit (individual models)
Hand Pump Kit (Low pressure)	91050	Hand Pump (91051), Connector Set (91052), Case (93052)
Hand Pump Kit (Pneumatic)	91055	Hand Pump (91056), Connector Set (91057), Case (93053)
Hand Pump Kit (Hydraulic)	91060	Hand Pump (91061), Connector Set (91062), Case (93053)

Features

- Smooth pressurization with less internal leaking
- Strainer preventing debris from entering the pump included
- Low Pressure Hand Pump
  Pressure generation range: -83 to 700 kPa
  Ultra-compact hand pump
- Pneumatic Hand Pump
  Pressure generation range: -83 to 4,000 kPa
  High-performance small hand pump with a wide range of pressure generation
- Hydraulic Hand Pump
  Pressure generation range: 0 to 70 MPa
  High-performance hand pump capable of generating a pressure of up to 70 MPa

High accuracy and compact design

CA150
Handy Calibrator

Features

- Highly accurate within 0.02% of the DC voltage range for source and measure
- Source and measurement can be performed simultaneously
- Vertical body with large-screen display
- Loop power supply function (24 V DC at a load of max 22 mA)
  It is possible to measure current in the mA range while supplying power
- Sink function
- Sweep functions that allow 3 types of continuous outputs:
  Step sweep function
  Linear sweep function
  Program sweep function

General Specifications

Common source specifications

- Power supply: 6 AA size alkaline batteries
  AC adapter (sold separately) or dedicated NiMH battery (sold separately)
- Battery life Conditions: Simultaneous Source/measurement
  When 6 batteries are used: Approx. 8 hours
  When NiMH battery is used: Approx. 10 hours
- Auto power-off: Approx. 10 minutes
- Insulation resistance: Between input terminal and output terminal: 500 V DC, 50 MΩ or more
- Withstand voltage: Between measurement terminal and generation terminal: 350 V AC, 1 minute
- Operating temperature/humidity range: 0 to 40°C, 20 to 80%RH (no condensation)
- Storage temperature range: -20 to 60°C 90%RH or less (no condensation)
- External dimensions: Approx. 251 × 124 × 70 mm
- Weight: Approx. 1000 g (with Batteries)
- Conforming Standards:
  Safety: EN61010-1, UL61010-1, CAN/ CSA C22.2 No. 61010-1
  EMC: EN 61326 Class B; EN 55011 Class B Group1
  EN 61000-3-2; EN 61000-3-3

Specifications

Source Unit

Accuracy=±(% of setting + µV, mV, µA, Ω and °C) at 23°C±5°C

	Range	Resolution	Source range	Accuracy
DC voltage	100 mV	1 uV	0 to ±110.000 mV	±(0.02% + 10 uV)
	1 V	10 uV	0 to ±1.10000 V	±(0.02% + 0.05 mV)
	10 V	0.1 mV	0 to ±11.0000 V	±(0.02% + 0.5 mV)
	30 V	10 mV	0 to ±30.00 V	±(0.02% + 10 mV)
DC current mA SINK	20 mA	1 uA	0 to +22.000 mA	±(0.025% + 3 uA)
	20 mA SINK	1 uA	0 to -22.000 mA	±(0.025% + 6 uA)
OHM	500 Ω	0.01 Ω	0 to 550.00 Ω	±(0.02% + 0.1 Ω)
	5 kΩ	0.1 Ω	0 to 5.5000 kΩ	±(0.05% + 1.5 Ω)
	50 kΩ	1 Ω	0 to 55.000 kΩ	±(0.1% + 50 Ω)
RTD	PT100	0.1°C	-200.0 to 850.0°C	±(0.025% + 0.3°C)
	JPT100		-200.0 to 500.0°C	
Thermocouple	K	0.1°C	-200.0 to -100.0°C	±(0.02% + 0.8°C)
			-100.0 to 1372.0°C	±(0.02% + 0.5°C)
	E		-200.0 to -100.0°C	±(0.02% + 0.6°C)
			-100.0 to 1000.0°C	±(0.02% + 0.4°C)
	J		-200.0 to -100.0°C	±(0.02% + 0.7°C)
			-100.0 to 1200.0°C	±(0.02% + 0.4°C)
	T		-200.0 to -100.0°C	±(0.02% + 0.8°C)
			-100.0 to 400.0°C	±(0.02% + 0.5°C)
	N		-200.0 to 0°C	±(0.02% + 1.0°C)
			0.0 to 1300.0°C	±(0.02% + 0.5°C)
	L		-200.0 to 900.0°C	±(0.02% + 0.5°C)
	U		-200.0 to 0°C	±(0.02% + 0.7°C)
			0 to 400.0°C	±(0.02% + 0.5°C)
	R	1°C	0 to 100°C	±(0.02% + 2°C)
			100 to 1768°C	±(0.02% + 1.2°C)
	S		0 to 100°C	±(0.02% + 2°C)
			100 to 1768°C	±(0.02% + 1.2°C)
	B		600 to 1000°C	±(0.02% + 1.5°C)
			1000 to 1820°C	±(0.02% + 1°C)
Frequency /pulse	100 Hz	0.01 Hz	1.00 to 110.00 Hz	±0.05 Hz
	1000 Hz	0.1 Hz	90.0 to 1100.0 Hz	±0.5 Hz
	10 kHz	0.1 kHz	0.9 kHz to 11.0 kHz	±0.1 kHz
	50 kHz	1 kHz	9 kHz to 50 kHz	±1 kHz
	CPM	0.1 CPM	1.0 to 1100.0 CPM	±0.5 CPM

Temperature coefficient: Accuracy above x (1/10)/°C
The temperature coefficient is added in the ranges from 0 to 18°C and from 28 to 40°C

Measurement Unit

Accuracy=±(% of reading + µV, mV, µA, Ω or dgt(digit)) at 23°C±5°C

	Range	Resolution	Measurement range	Accuracy
DC voltage	500 mV	10 uV	0 to ±500.00 mV	±(0.02% + 50 uV)
	5 V	0.1 mV	0 to ±5.0000 V	±(0.02% + 0.5 mV)
	35 V	1 mV	0 to ±35.000 V	±(0.025% + 5 mV)
DC current	20 mA	1 uA	0 to ±20.000 mA	±(0.025% + 4 uA)
	100 mA	10 uA	0 to ±100.00 mA	±(0.04% + 30 uA)
OHM	500 Ω	0.01 Ω	0 to 500.00 Ω	±(0.055% + 0.075 Ω)
	5 kΩ	0.1 Ω	0 to 5.0000 kΩ	±(0.055% + 0.75 Ω)
	50 kΩ	1 Ω	0 to 50.000 kΩ	±(0.055% + 10 Ω)
RTD *5	PT100	0.1°C	-200.0 to 850.0°C	±(0.05% + 0.6°C)
	JPT100		-200.0 to 500.0°C	
Thermocouple	K	0.1°C	-200.0 to 1372.0°C	±(0.05% + 1.5°C)/-100°C or more ±(0.05% + 2°C)/-100°C or less
	E		-200.0 to 1000.0°C	
	J		-200.0 to 1200.0°C	
	T		-200.0 to 400.0°C	
	N		-200.0 to 1300.0°C	
	L		-200.0 to 900.0°C	
	U		-200.0 to 400.0°C	
	R	1°C	0 to 1768°C	±(0.05% + 2°C)/100°C or more ±(0.05% + 3°C)/100°C or less
	S		0 to 1768°C	
	B		600 to 1800°C	
Pulse	100 Hz	0.01 Hz	1.00 to 110.00 Hz	±2 dgt
	1000 Hz	0.1 Hz	1.0 to 1100.0 Hz	
	10 kHz	0.001 kHz	0.001 to 11.000 kHz	
	CPM	1 CPM	0 to 100000 CPM	----
	CPH	1 CPH	0 to 100000 CPH	----
Loop power supply	24 V LOOP			24 V±2 V

Temperature coefficient: Accuracy above x (1/10)/°C
The temperature coefficient is added in the ranges from 0 to 18°C and from 28 to 40°C

Optional Accessories (sold separately)

Product name	AC adapter	RJ sensor	Accessory storage case	NiMH battery	Main body case	Lead cable for measurement
Model name	94010	B9108WA	B9108XA	94015	93027	98064
Remark	-D For UL/CSA Standard -F For VDE Standard -H For GB Standard -N For NBR Standard -P For KC Standard -R For AS Standard -S For BS Standard	For reference junction compensation	Lead cables, RJ sensor, etc. can be stored.	NiMH battery Dedicated	With strap and accessory storage case	Alligator clip, CAT I, for control signal only (under 70 V) One set of 1 red and 1 black cables Length: Approx. 1.7m

Calibrator

Simultaneous Signal Source and Measurement Capability

CA51/CA71

Handy Calibrators

Features

- Source and measure operations can be performed at the same time. (Select from the following source signal and measurement signal options: voltage, current, resistance, thermocouple (TC), resistance temperature detector (RTD), frequency, pulse).
- A C voltages, including supply voltage, can be measured.
- Easy operation.
- Compact size and Lightweight
- Includes a wide array of additional functions.
  - •Source
    Values set in steps of 4-20 mA
    24V DC Power Supply to Transmitter
  - •Divided output (n/m) function
    Output settings are divided, eliminating the need for bothersome calculations for percentage output.
  - •Autostep function
    Changes the output value in step form based on the setting from the divided output (n/m) function. Changes can be sourced automatically every 10% or 25%.
  - •Online communication (CA71 only)
    RS-232C-compliant optically isolated interface
  - •Sweep function
    Linearly increases or decrease the output. The increasing/decreasing time can be set to either 16 or 32 seconds.
  - •Memory function
    Source values and measurements forming individual value sets can be saved to or read from the Handy Calibrator's internal memory (maximum 50 value sets).
  - •Temperature monitor function

General Specifications

Parameter	Specifications
Power supply	Four AA alkaline batteries, or special AC adapter (sold separately)
Battery life	Measurement off, output 5 V DC/10 kΩ or greater: Approximately 40 hours Simultaneous signal generation/measurement, output 5 V DC/10 kΩ or greater: Approximately 20 hours Simultaneous signal generation/measurement, output 20 mA/5 V: Approximately 12 hours (using alkaline batteries, with backlight off)
Auto-power-off function	Approximately 10 minutes (auto-power-off can be disabled through a DIP switch setting)
Applicable standards	IEC61010-1, IEC61010-2-31 EN61326-1 EN55011, Class B, Group 1
Operating temperature and humidity ranges	0–50°C, 20–80% RH (no condensation)
External dimensions (WHD)	Approximately 190 × 120 × 55 mm
Weight	Approximately 730 g (including batteries)

Specifications

Source Unit

Parameter	Reference	Range	Accuracy (23±5°C per year)	Resolution
DC voltage	100 mV	-10.00–110.00 mV	±(0.02% + 15 µV)	10 µV
	1 V	0–1.1000 V	±(0.02% + 0.1 mV)	0.1 mV
	10 V	0–11.000 V	±(0.02% + 1 mV)	1 mV
	30 V	0–30.00 V	±(0.02% + 10 mV)	10 mV
DC current	20 mA	0–24.000 mA	±(0.025% + 3 µA)	1 µA
	4–20 mA	4/8/12/16/20 mA		4 mA
mA SINK	20 mA	0.1–24.000 mA	±(0.05% + 3 µA)	1 µA
Resistance	400 Ω	0–400.00 Ω	±(0.025% + 0.1 Ω)	0.01 Ω
RTD	Pt100	-200.0–850.0°C	±(0.025% + 0.3°C)	0.1°C
	JPt100	-200.0–500.0°C		
TC	K	-200.0–1372.0°C	±(0.02% + 0.5°C) (-100°C or greater) ±(0.02% + 1°C) (-100°C or less)	0.1°C
	E	-200.0–1000.0°C		
	J	-200.0–1200.0°C		
	T	-200.0–400.0°C	±(0.02% + 0.5°C) (0°C or greater) ±(0.02% + 1°C) (0°C or less)	
	N	-200.0–1300.0°C		
	L	-200.0–900.0°C		
	U	-200.0–400.0°C		
	R	0–1768°C	±(0.02% + 2.5°C) (100°C or less) ±(0.02% + 1.5°C) (100°C or greater)	1°C
	S			
	B	600–1800°C	±(0.02% + 2°C) (1000°C or less) ±(0.02% + 1.5°C) (1000°C or greater)	
Frequency, pulse	500 Hz	1.0–500.0 Hz	±0.2 Hz	0.1 Hz
	1000 Hz	90–1100 Hz	±1 Hz	1 Hz
	10 kHz	0.9 kHz–11.0 kHz	±0.1 kHz	0.1 kHz
	Pulse cycle	1–99,999 cycles	–	1 cycle

Measurement Unit

• Both CA51 and CA71

Parameter	Reference	Accuracy (23±5°C per year)	Resolution
DC voltage	100 mV	±(0.025% + 20 µV)	10 µV
	1 V	±(0.025% + 0.2 mV)	0.1 mV
	10 V	±(0.025% + 2 mV)	1 mV
	100 V	±(0.05% + 20 mV)	0.01 V
DC current	20 mA	±(0.025% + 4 µA)	1 µA
	100 mA	±(0.04% + 30 µA)	10 µA
Resistance	400 Ω	±(0.05% + 0.1 Ω)	0.01 Ω
AC voltage	1 V	±(0.5% + 5 dgt)	1 mV
	10 V		0.01 V
	100 V		0.1 V
	250 V	±(0.5% + 2 dgt)	1 V
Frequency, pulse	100 Hz	±2 dgt	0.01 Hz
	1000 Hz		0.1 Hz
	10 kHz		0.001 kHz
	CPM		1 CPM
	CPH		1 CPH

• CA71 only

Parameter	Reference	Accuracy (23±5°C per year)	Resolution
TC	K	±(0.05% + 1.5°C)(-100°C or greater) ±(0.05% + 2°C)(-100°C or less)	0.1°C
	E		
	J		
	T		
	N		
	L		
	U		
	R	±(0.05% + 2°C)(100°C or greater) ±(0.05% + 3°C)(100°C or less)	1°C
	S		
	B		
RTD	Pt100	±(0.05% + 0.6°C)	0.1°C
	JPt100		

Spare parts

Product	Source signal lead cable	Measurement lead cable	Carrying case	Terminal adapter	Fuse
Model	98020	RD031	93016	99021	99040 (10pcs of A1566EF)

Optional accessories (sold separately)

Product	AC adapter			RJ sensor	Accessory storage case	Communication cable (RS232)
Model	94013	94016-F	94016-S	B9108WA	B9108XA	91017
Remarks	120 V AC	220 to 240 V AC VDE standard	220 to 240 V AC BS standard	For reference junction compensation	Lead cables, RJ sensor, etc. can be stored	D-sub 9-pin (female)

Calibrator

Source and Measuring of Voltage and Current

CA11E
Voltage/Current Calibrator

Features

- Source and Measuring of Voltage and Current
  Generates and measures voltages up to 30 V DC and currents up to 24 mA DC.
- Improved display resolution for current
  The generation /measurement resolution has improved to 0.001 mA.
- 24 V (20 mA)/Loop check function*
- Enables measurement of generated current signals while supplying loop power to two-wire transmitter.
  * Load current: Max. DC22 mA
- 20 mA SINK Function
  Absorbs the voltage supplied from an external power supply to its H terminal and simulates a two-wire transmitter making it ideal for loop checks.
- 4-20 mA and 1-5 V DC Step-up/ down Function
- Sweep Function

Specifications

Source Functions

Accuracy = ±(% of setting + value in mV, µV, or µA), at 23 ±5°C for one year

Range Selection	Range of Generated Signal	Accuracy	Setting Resolution	Remarks
30 V	0 to 30.00 V	0.05% + 20 mV	10 mV	Maximum current: 1 mA
10 V	0 to 11.000 V	0.05% + 2 mV	1 mV	Maximum output current: 10 mA
1-5 V	1/2/3/4/5 V	0.05% + 2 mV *2	1 V step	*2 When the load is 1 kΩ or geater, and the error of the lead cables is excluded
1 V	0 to 1.1000 V	0.05% + 0.2 mV *2	0.1 mV	
100 mV	0.00 to 110.00 mV	0.05% + 50 µV	10 µV	
20 mA *1	0 to 24.000 mA	0.05% + 4 µA	1 µA	Maximum load: 12 V
4-20 mA *1	4/8/12/16/20 mA		4 mA step	
24 V (20 mA) *1	24 V	±10%	—	Maximum curret: 22 mA
20 mA SINK *1	0.1 to 24.000 mA	0.1% + 4 µA	1 µA	External power supply: 5 to 28 V

Temperature effect: 1/10 of accuracy/°C; however, for 100-mV range, 0.005% + 10 µV/°C

*1 The display resolution can select 24.000 or 24.00 displays with dip switch.

Measurement Functions

Accuracy = ±(% of reading + value in the least significant digit), at 23 ±5°C for one year

Range Selection	Indication	Accuracy	Resolution	Remarks
30 V	0 to ±30.00 V DC	0.05% + 2 digits	10 mV	Input impedance: Approx. 1 MΩ
10 V	0 to ±11.000 V DC	0.05% + 2 digits	1 mV	
1 V	0 to ±1100.0 mV	0.05% + 2 digits	0.1 mV	
100 mV	0 to ±110.00 mV DC	0.05% + 7 digits	0.01 mV	
20 mA *1	0 to ±24.000 mA DC	0.05% + 4 digit	0.001 mA	Input impedance: Approx. 45 Ω

*1 The display resolution can select 24.000 or 24.00 displays with dip switch.

Simulator of Common Thermocouples and RTD Sensors

CA12E
Temperature Calibrator

Features

- Simulator of Common Thermocouples and RTD Sensors
  Outputs a signal equivalent to signals of ten types of thermocouple K, E, J, T, N, S, B, L, U and R as well as Pt100 resistance temperature detector.
  Suitable for a broad range of applications such as maintenance of industrial process instruments and various thermometers.
- Multi-range Thermometer
  Can be used as a multi-range thermometer. Three-wire RTD connection for an RTD is possible.
- Built-in Sensor for Reference Junction Compensation
  Reference junction compensation when generating a thermocouple signal can be performed by the built-in temperature sensor. For more precise compensation, use the external RJC sensor (model B9108WA, sold separately).

Specifications

Source and Measurement Functions

Accuracy = ±(% of setting or reading + value in °C), at 23 ±5°C for one year

Range Selection		Range of Generated Signal/Indication	Accuracy: Source *4	Accuracy: Measurement *5	Resolution
TC *1*4	K	–200.0 to 1372.0°C	0.05% + 1°C (>-100°C) 0.05% + 2°C (≤-100°C)	0.07% + 1.5°C (>-100°C) 0.07% + 2°C (≤-100°C)	0.1°C
	E	–200.0 to 1000.0°C			
	J	–200.0 to 1200.0°C			
	T	–200.0 to 400.0°C			
	N	–200.0 to 1300.0°C			
	R	0 to 1768°C	0.05% + 3°C (<100°C) 0.05% + 2°C (≥100°C)	0.07% + 3°C (<100°C) 0.07% + 2°C (≥100°C)	1°C
	S				
	B	600 to 1800°C	0.05% + 4°C (<1000°C) 0.05% + 3°C (≥1000°C)	0.07% + 4°C (<1000°C) 0.07% + 3°C (≥1000°C)	
	L	–200 to 900°C	0.05% + 0.5°C (≥0°C) 0.05% + 1°C (<0°C)	0.07% + 1.5°C (≥0°C) 0.07% + 2°C (<0°C)	0.1°C
	U	–200 to 400°C			
100 mV		0 to ±110.00 mV	0.05% + 30 µV	0.05% + 30 µV	10 µV
RTD PT100 *2 *3 **(JPT100)**		–200.0 to 850.0°C (–200.0 to 500.0°C)	0.05% + 0.6°C *6	0.05% + 0.6°C *7	0.1°C
400 Ω		0 to 400.0 Ω	0.05% + 0.2 Ω *6	0.05% + 0.2 Ω *7	0.1 Ω

Temperature effect: 1/10 of accuracy/°C

*1 Based on the reference thermal EMF table of JIS C1602-1995
*2 Based on the reference resistance table of JIS C1604-1997.
*3 Based on the international temperature standard 1990 (ITS-90).
*4 The accuracy for generation of thermocouple signals does not include the error of the reference junction compensation. When compensating the output using an RJC sensor, add the accuracy of the RJC sensor. The output compensation is performed every 4 seconds. RJC sensor specifications - measurement range: –10 to 50°C; accuracy (in combination with the CA12E): ±0.5°C at 18 to 28°C and ±1°C at other temperatures.
*5 The accuracy for measurement of thermocouple signals indicates the error against the reference EMF table and includes the error of the internal reference junction compensation when the temperature at the terminals is stable.
*6 External excitation current: 0.5 to 2 mA; add 0.05% + 1°C (or 0.4 Ω) when it is 0.1 mA. Input capacitance of receiver instrument: 0.1 µF or less.
*7 When measuring a temperature using a three-wire RTD.

Loop Power and 4 to 20 mA Output function in a DMM

CA450
Process Multi Meter

Features

- Loop check functions
  - •Simultaneous 24 V loop power and mA measurement
  - •HART/BRAIN mode setting with loop power (Adds 250 ohm resistance internally)
- Generation functions
  - •SIMULATE (SINK) function simulates transmitters
  - •4-20 mA span/step/auto-step/sweep output
- Measurement functions
  - •High accuracy signal measurement:DC mA 0.05%/30.000 mA
  - •Handheld DMM function
  - •Peak Hold function for the peak voltage measurement of DCS power supply
  - •Dedicated sensor modes for direct reading of many sensor signal types
- Enhanced Safety—helps eliminate electric shocks
  - •Current terminal shutter prevents incorrect connections
  - •1 A or more of AC/DC current can be read directly using the optional clamp probe and scaling in SENSOR mode.*1
  - •Measurement categories 600 V CAT. IV, 1000 V CAT. III

*1: AC/DC 600 mV range only

Specifications

Measurement

Function	Range	Resolution	Max Accuracy
DCV	600 mV/6 V/60 V/600 V/1000 V	0.1 mV/0.001 V/0.01 V/0.1 V/1 V	0.09%+2 digits
ACV		0.1 mV/0.001 V/0.01 V/0.1 V/1 V	0.5%+5 digits
DCA	30 mA/60 mA	0.001 mA/0.01 mA	0.05%+2 digits
Ohm	600 Ω/6 kΩ/60 kΩ/600 kΩ/6 MΩ /60 MΩ	0.1 Ω/0.001 kΩ/0.01 kΩ/0.1 kΩ 0.001 MΩ/0.01 MΩ	0.2%+2 digits
Freq	10Hz to 199.99 Hz,	0.01 Hz	0.005%+1 digits
	90Hz to 1999.9 Hz	0.1 Hz	
	0.900 kHz to 19.999 kHz	0.001 kHz	
Source			
DCmA	20 mA	0.001 mA	0.05% of range
Loop Power	24 V		24 VDC (typ.) Load current 20 mA

Other Functions and Spection
Functions Diode check, Continutity check, Data Hold, Peak Hold, Step mode, linear mode, Sesor mode, MIN/MAX, RELΔ%

General Specifications

Specificaton

- Display : 5-digit (7 Segment)
  Measurement DC current 33000, Frequency 19999, Other 6600
  Output DC current 25000
- Operating temperature and humidity: -20 to 55°C (80%RH or less) with no condensation
- Storage temperature and humidity: -40 to 70 (70%RH or less) with no condensation
- Battery life: DC voltage measurment: Appox.140hours
  DC current output (SIMULATE) Approx.140hours
  DC current output (SOURCE) 12mA (500Ω load) Approx.10hours
- External dimensions: Approx. 90 (W) × 192 (H) × 49 (D) mm
- Weight: Approx. 600g (including the batteries)
- Compliant standards:
- Safety standards: EN61010-1 and EN61010-031

Measurement Categories:

1000 V CATIII, 600 V CATIV
For current measurement and output: 48 V max, 100 mA max
Lead cables (98064): 70 VDC, 100 mA
Pollution degree 2, indoor use
Vibration: Sweep vibration frequencies 10 Hz to 5 Hz to 10 Hz Amplitude 0.15 mm (peak value)
Duration 30 minutes
Shock: 1 m drop test as defined by the safety standards
Altitude: 2000 m or less
EMC standards: EN61326-1 Class B, EN61326-2-2 EN55011 Class B Group 1
Influence of radiated immunity: In RF electromagnetic fields of 3 V/m
EN61326-1 AC voltage measurement, 600 mV range:1.5% of range
DC voltage measurement, 600 mV range:1% of range
DC current measurement, all ranges: 1.5% of range
DC current output: 1.5% of range
EN61326-2-2 AC voltage measurement (6 V range or higher): Within 5 times the accuracy
DC voltage measurement (6 V range or higher): Within 5 times the accuracy

Accessories

Test leads
Model:98073

Lead Cables
Model:98064

Fuse
Model:99042

DMM Communication Package
92015 (*1)

Alligator
Test leads
Model:99014

AC/DC
Clamp-on Probe
Model:96095

Current
Clamp-on Probe
Model:96001

Carrying Case
Model:93029

Magnet hook
Model:99032

The Magnet hook can be attached to magnetic body (e.g. iron).

Carrying Case
Model:93043-P1

The inner case with detachable straps can be hung on bar.

(*1) Settings for output is not capable.