

Process Calibrator  
CA300 series



Process Calibrator

# CA300 series

*Source and Measure Simplicity*

Bulletin CA300-EN

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**vigilantplant.**<sup>®</sup>  
The clear path to operational excellence

**YOKOGAWA** 

# Specialized high performance model for Loop Inspection!



## Volt mA Calibrator CA310

### ■ Features

- Basic accuracy: 0.015% (Source&Meas. accuracy of Voltage mA)
- 20mA SIMULATE (SINK) function
- Simultaneously supplies 24V loop power and measure output signal with high accuracy
- HART/BRAIN comm. resistance (250Ω) embedded
- Sub display displays span% of the source value
- Corresponds to various types of source pattern (Step sweep/ Linear sweep/ Manual step/ Span check)

## Useful function installed

### ■ Addition of sub display

The sub display additionally displays span%, source value of voltage or resistance, while the main displays setting value.



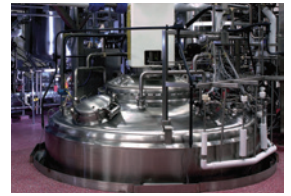
### ■ Corresponds to 2WAY Power supply

Power is supplied by 2 ways :  
AA Alkaline batteries or AC Adapter



AC Adapter is sold separately





# Specialized high performance model for TC simulate and RTD simulate!



## TC Calibrator **CA320**

### ■ Features

- Basic accuracy: 0.5°C (Typical of TC type K)  
\*Including accuracy of internal RJC
- Corresponds to 16 types of TC standard (JIS/IEC/DIN/ASTM/GOST R)
- Sub display displays value of voltage source and span%
- Corresponds to various types of source pattern (Step sweep/ Linear sweep/ Manual step/ Span check)
- Corresponds to other TC types by mV source function
- Measures TC sensor output as a thermometer



## RTD Calibrator **CA330**

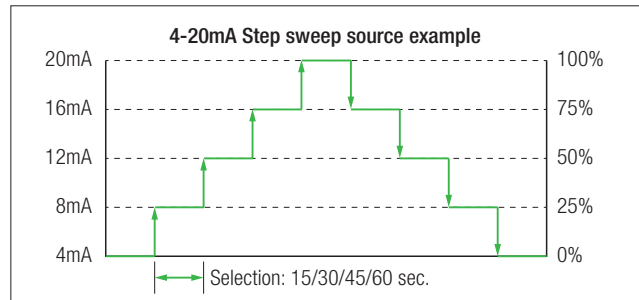
### ■ Features

- Basic accuracy: 0.3°C (Typical of PT100)
- Corresponds to 14 types of RTD standard (JIS/IEC/GOST R)
- Sub display displays value of resistance source and span%
- Corresponds to various types of source pattern (Step sweep/ Linear sweep/ Manual step/ Span check)
- Corresponds to 2,3,4 wire. Realizes RTD simulation
- Measures output of RTD sensor as a thermometer

# Supports efficient operation with various types of source pattern

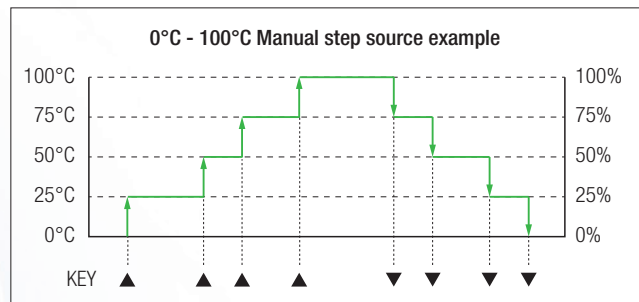
## ■ Step sweep function

Sources by 25% step automatically from 0% to 100% of span which improves efficiency of operation. It can correspond to various response time of field devices. (15/30/45/60 seconds)



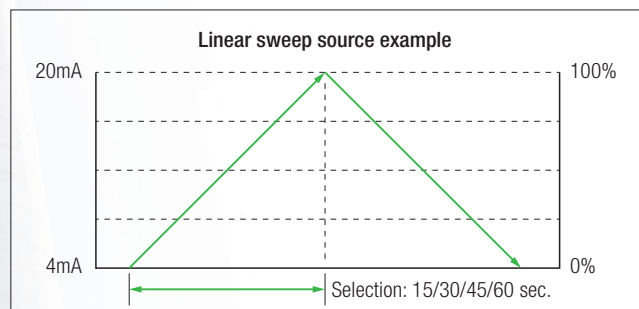
## ■ Manual step function

Sources by 25% step manually from 0% to 100% of span.



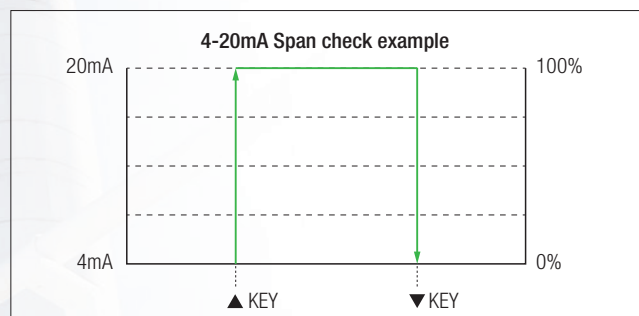
## ■ Linear sweep function

Sources continuously from 0% to 100% and is capable to check meter and make linearity tests. Sweep time can be selected by 15/30/45/60 seconds.



## ■ Span check function

Switches sources 0% ⇌ 100% by one touch. With this function, it makes it simple to make adjustment and to inspect the open and close operation of valves.

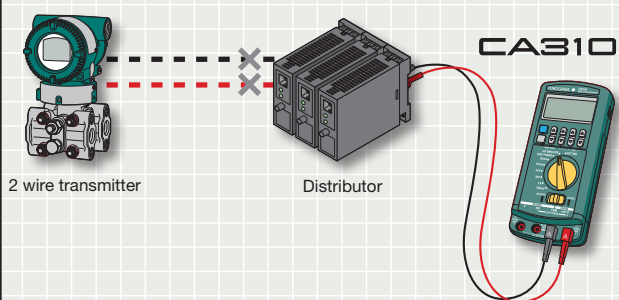




## Corresponds to various application

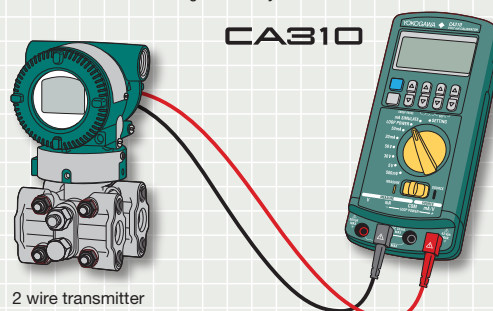
### ■ 20mA SIMULATE

CA310 is capable to execute a loop check by simulating a transmitter, sinking the current signal from the external source (distributor). It achieves the high accuracy 0.015% of setting to source 4-20mA.



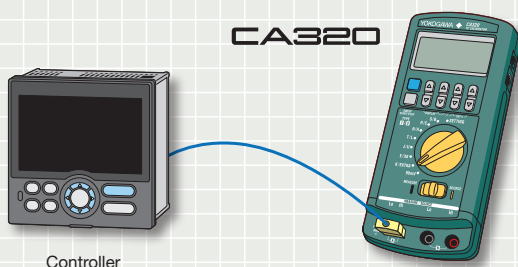
### ■ Two-wire Transmitter Loop Check

DC mA signals can be measured by supplying power to the transmitter from a 24 V DC power supply. DC mA measurement and zero-point check can be performed with an accuracy of 0.015% of reading. A 250-ohm resistor for HART and BRAIN communication is included in this calibrator so there is no need to attach an external resistor when connecting to a handy terminal.



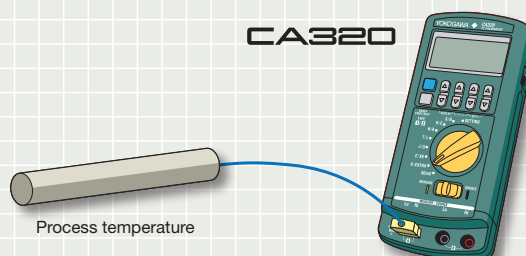
### ■ TC SIMULATE

CA320 corresponds to 16 types of TC for sourcing. It achieves the high basic accuracy of 0.5°C (typical of type K), three times better than the previous model which enables it to operate a highly reliable test. Additionally, the difference of temperature between objects can be compensated, by using external RJ sensor or a compensating lead wire.



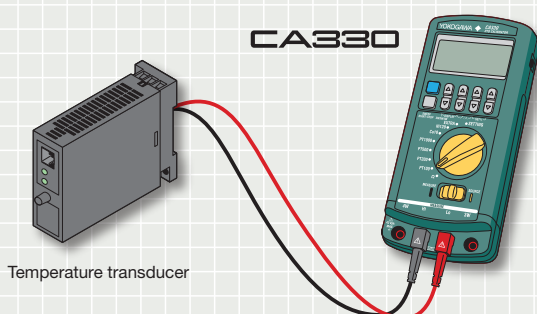
### ■ TC MEASURING

CA320 can measure the output of TC like a thermometer. It achieves the basic accuracy of 0.5°C (typical of type K), three times better than the previous model and is for multiple use for process temperature measuring by corresponding to 16 types of TC.



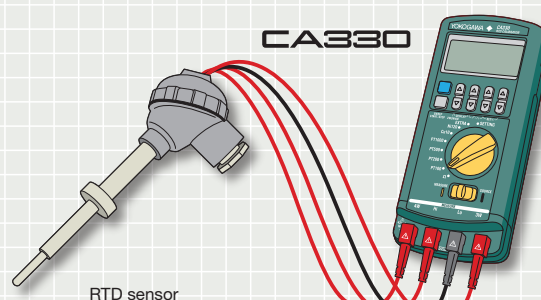
### ■ RTD SIMULATE

CA330 corresponds to 14 types of RTD for sourcing. It achieves the high basic accuracy of 0.3°C (typical of type PT100), twice better than the previous model which enables it to operate a high reliable test.



### ■ RTD MEASURING

CA330 can measure the output of RTD like a thermometer. It achieves the basic accuracy of 0.3°C (typical of type PT100), twice better than the previous model and is for multiple use of process temperature measuring by corresponding to 14 types of RTD.



## ■ Basic Specification (Source function) CA310

### DC Current source

Range	Resolution	Source range	Accuracy (1 year)	Note
20mA	1μA	0.000 to 24.000mA	0.015% of setting+3μA	Compliance voltage: 24V
20mA SIMULATE	1μA	0.000 to 24.000mA	0.015% of setting+3μA	External power supply: 5V to 28V

### DC Voltage source

Range	Resolution	Source range	Accuracy (1 year)	Note
500mV	10μV	0.00 to 550.00mV	0.015% of setting+50μV	Max. current: 10mA
5V	0.1mV	0.0000 to 5.5000V	0.015% of setting+0.5mV	Max. current: 10mA
30V	1mV	0.000 to ±33.000V	0.015% of setting+5mV	Max. current: 1mA

Accuracy is specified at ambient temperature(Ta) of :23±5°C  
 Temperature effect: 0.005% or Range/°C is added for other ambient temperature (Ta < 18°C, Ta > 28°C)

## ■ Basic Specification (Measurement function) CA310

### DC Current measurement

Range	Resolution	Measurement range	Accuracy (1 year)	Note
20mA	1μA	0 to ±24.000mA	0.015% reading+3μA	Input resistance: less than 10Ω
50mA	1μA	0 to ±60.000mA	0.015% reading+3μA	

### DC Voltage measurement

Range	Resolution	Measurement range	Accuracy (1 year)	Note
500mV	10μV	0 to ±550.00mV	0.015% of reading+50μV	Input resistance: approx. 1MΩ
5V	0.1mV	0 to ±5.5000V	0.015% of reading+0.5mV	Input resistance: approx. 1MΩ
30V	1mV	0 to ±33.000V	0.015% of reading+5mV	Input resistance: approx. 1MΩ
50V	1mV	0 to ±55.000V	0.015% of reading+5mV	Input resistance: approx. 1MΩ

### 24V Loop Power Supply

Range	Supply voltage	Note
Loop Power	24V±1V	Communication resistance OFF: load current 24mA
	24V±6V	Communication resistance ON: load current 20mA

Accuracy is specified at ambient temperature(Ta) of :23±5°C  
 Temperature effect: 0.005% or Range/°C is added for other ambient temperature (Ta < 18°C, Ta > 28°C)

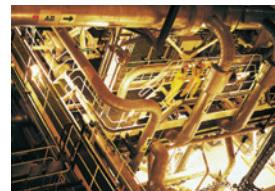
### ■ Measurement Unit Common Specifications

- CMRR approx. 120dB (50/60Hz)
- NMRR approx. 60dB (50/60Hz)
- Measurement terminal maximum input:
  - Voltage terminal DC 50V
  - Current terminal 60mA
- Current terminal protective input: PTC protection
- Maximum allowable applied voltage: Measure terminal to ground 50V peak

### ■ Generation Unit Common Specifications

- Generation unit voltage limiter: Approx. 36 V
- Generation unit current limiter: Approx. 30 mA
- Sweep function Step (25%)/ Linear
- Step time 15sec/30sec/45sec/60sec
- Generation load condition: C < 0.1μF, L < 10mH
- Output resistance: under 10mΩ
- Output response time: under 300ms
- Maximum allowable applied voltage: Source terminal to ground 42V peak





## Basic specification (Source/ Measure) CA320

### Thermocouple (TC) Source/Measure (Terminal A: TC plug terminal)

t: Temperature of Source/Meas.

TC	Accuracy (1 year)			Standard or Regulation	
	Source/Meas. Temperature	Source Accuracy [°C]	Meas. Accuracy [°C]		
K	$-200.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	$0.5 +  t  \times 0.3\%$	$0.5 +  t  \times 0.3\%$	IEC60584-1 JIS C1602	
	$0.0^{\circ}\text{C} \leq t < +500.0^{\circ}\text{C}$	0.5	0.5		
	$+500.0^{\circ}\text{C} \leq t \leq +1372.0^{\circ}\text{C}$	$0.5 + (t - 500) \times 0.03\%$	$0.5 + (t - 500) \times 0.02\%$		
E	$-250.0^{\circ}\text{C} \leq t < -200.0^{\circ}\text{C}$	$1.1 + ( t  - 200) \times 2.0\%$	$1.1 + ( t  - 200) \times 2.0\%$	IEC60584-1	
	$-200.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	$0.5 +  t  \times 0.3\%$	$0.5 +  t  \times 0.3\%$		
	$0.0^{\circ}\text{C} \leq t < +500.0^{\circ}\text{C}$	0.5	0.5		
J	$-210.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	$0.5 +  t  \times 0.3\%$	$0.5 +  t  \times 0.3\%$	IEC60584-1	
	$0.0^{\circ}\text{C} \leq t \leq +1200.0^{\circ}\text{C}$	$0.5 + t \times 0.02\%$	$0.5 + t \times 0.02\%$		
T	$-250.0^{\circ}\text{C} \leq t < -200.0^{\circ}\text{C}$	$1.1 + ( t  - 200) \times 2.5\%$	$1.1 + ( t  - 200) \times 2.5\%$	IEC60584-1	
	$-200.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	$0.5 +  t  \times 0.3\%$	$0.5 +  t  \times 0.3\%$		
	$0.0^{\circ}\text{C} \leq t \leq +400.0^{\circ}\text{C}$	0.5	0.5		
N	$-200.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	$0.6 +  t  \times 0.4\%$	$0.6 +  t  \times 0.3\%$	IEC60584-1	
	$0.0^{\circ}\text{C} \leq t \leq +1300.0^{\circ}\text{C}$	0.6	0.6		
L	$-200.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	$0.5 +  t  \times 0.15\%$	$0.5 +  t  \times 0.15\%$	DIN 43710	
	$0.0^{\circ}\text{C} \leq t \leq +900.0^{\circ}\text{C}$	0.5	0.5		
U	$-200.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	$0.5 +  t  \times 0.2\%$	$0.5 +  t  \times 0.2\%$	DIN 43710	
	$0.0^{\circ}\text{C} \leq t \leq +600.0^{\circ}\text{C}$	0.5	0.5		
R	$-20.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	2.0	2.0	IEC60584-1	
	$0.0^{\circ}\text{C} \leq t < +100.0^{\circ}\text{C}$	2.0	1.4		
	$+100.0^{\circ}\text{C} \leq t \leq +1767.0^{\circ}\text{C}$	1.4	1.4		
S	$-20.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	2.0	2.0	IEC60584-1	
	$0.0^{\circ}\text{C} \leq t < +100.0^{\circ}\text{C}$	2.0	1.4		
	$+100.0^{\circ}\text{C} \leq t \leq +1768.0^{\circ}\text{C}$	1.4	1.4		
B	$+600.0^{\circ}\text{C} \leq t < +800.0^{\circ}\text{C}$	1.2	1.5	IEC60584-1	
	$+800.0^{\circ}\text{C} \leq t < +1000.0^{\circ}\text{C}$	1.0	1.2		
	$+1000.0^{\circ}\text{C} \leq t \leq +1820.0^{\circ}\text{C}$	1.0	1.1		
C	$0.0^{\circ}\text{C} \leq t < +1000.0^{\circ}\text{C}$	0.8	0.8	IEC60584-1	
	$+1000.0^{\circ}\text{C} \leq t \leq +2315.0^{\circ}\text{C}$	$0.8 + (t - 1000) \times 0.06\%$	$0.8 + (t - 1000) \times 0.06\%$		
XK	$-200.0^{\circ}\text{C} \leq t < 0.0^{\circ}\text{C}$	$0.4 +  t  \times 0.2\%$	$0.4 +  t  \times 0.2\%$	GOST R 8.585-2001	
	$0.0^{\circ}\text{C} \leq t < +300.0^{\circ}\text{C}$	0.4	0.4		
	$+300.0^{\circ}\text{C} \leq t \leq +800.0^{\circ}\text{C}$	0.5	0.5		
A	$0.0^{\circ}\text{C} \leq t < +1000.0^{\circ}\text{C}$	1.0	1.0	IEC60584-1	
	$+1000.0^{\circ}\text{C} \leq t \leq +2500.0^{\circ}\text{C}$	$1.0 + (t - 1000) \times 0.06\%$	$1.0 + (t - 1000) \times 0.06\%$		
Extra TC	D (W3Re/W25Re)	$0.0^{\circ}\text{C} \leq t < +300.0^{\circ}\text{C}$	1.4	1.8	ASTM E1751/E1751M-09e1
		$+300.0^{\circ}\text{C} \leq t < +1500.0^{\circ}\text{C}$	1.2	1.2	
		$+1500.0^{\circ}\text{C} \leq t \leq +2315.0^{\circ}\text{C}$	1.8	2.2	
	G (W/W26Re)	$+100.0^{\circ}\text{C} \leq t < +300.0^{\circ}\text{C}$	1.4	1.8	ASTM E1751/E1751M-09e1
		$+300.0^{\circ}\text{C} \leq t < +1500.0^{\circ}\text{C}$	1.2	1.2	
		$+1500.0^{\circ}\text{C} \leq t \leq +2315.0^{\circ}\text{C}$	1.8	2.2	
	PLATINEL II	$0.0^{\circ}\text{C} \leq t < +100.0^{\circ}\text{C}$	0.6	1.8	ASTM E1751/E1751M-09e1
		$+100.0^{\circ}\text{C} \leq t < +1000.0^{\circ}\text{C}$	0.8	1.8	
		$+1000.0^{\circ}\text{C} \leq t \leq +1395.0^{\circ}\text{C}$	1.0	2.2	

Errors of TC are not included

Accuracy is specified at ambient temperature ( $T_a$ ) of  $\pm 23 \pm 5^{\circ}\text{C}$  using internal junction compensation.

Temperature effect:  $0.05\%/^{\circ}\text{C}$  is added for other ambient temperature ( $T_a < 18^{\circ}\text{C}$ ,  $T_a > 28^{\circ}\text{C}$ )

The display resolution for source / measure is  $0.1^{\circ}\text{C}$

#### About formula of accuracy

The accuracy of source or measuring are defined by constant value or formula of linear expression.

Example) Accuracy of type K at measuring point of  $1000.0^{\circ}\text{C}$  is  $\pm(0.5 + (1000.0 - 500) \times 0.02\%)^{\circ}\text{C} = \pm 0.6^{\circ}\text{C}$

## DC Voltage Source and Measurement

Range	Resolution	Source Measure range	Accuracy (1 year)		Notes
			Source	Measure	
90mV	1 $\mu\text{V}$	-11.000 to $\pm 99.999\text{mV}$	0.015% of setting + $10\mu\text{V}$	0.015% of reading + $10\mu\text{V}$	Max. output current: 10mA

Accuracy is specified at ambient temperature ( $T_a$ ) of  $23 \pm 5^{\circ}\text{C}$

Temperature effect :  $0.005\%$  of Range/ $^{\circ}\text{C}$  is added for other ambient temperature ( $T_a < 18^{\circ}\text{C}$ ,  $T_a > 28^{\circ}\text{C}$ )

#### Common source specification

- Output resistance: under  $40\text{m}\Omega$
- Output response: under  $300\text{msec}$
- Max. load:  $C < 0.1\mu\text{F}$ ,  $L < 10\text{mH}$

## Basic specification (Source/ Measure) CA330

### RTD Source/Measure

t: Temperature of Source/Meas.

RTD	Coefficient	Accuracy (1 year)			Excitation current	Standard or Regulation	
		Source/Meas. Temp.	Source Accuracy [°C]	Meas. Accuracy [°C]			
PT100	3851	-200.0°C ≤ t < 0.0°C	0.3	0.3	0.1-3mA	IEC60751 JIS C 1604	
		0.0°C ≤ t ≤ +800.0°C	0.3+tx0.033%	0.3+tx0.033%			
	3850	-200.0°C ≤ t < 0.0°C	0.3	0.3	0.1-3mA	JIS C 1604 1989 (Pt100)	
		0.0°C ≤ t ≤ +630.0°C	0.3+tx0.033%	0.3+tx0.033%			
	3916	-200.0°C ≤ t < 0.0°C	0.3	0.3	0.1-3mA	JIS C 1604 1989 (JPt100)	
		0.0°C ≤ t ≤ +510.0°C	0.3+tx0.033%	0.3+tx0.033%			
3926	-200.0°C ≤ t < 0.0°C	0.3	0.3	0.1-3mA	Minco Application Aid #18		
	0.0°C ≤ t ≤ +630.0°C	0.3+tx0.033%	0.3+tx0.033%				
PT200	3851	-200.0°C ≤ t < 0.0°C	0.3	0.3	0.05-0.8mA	IEC60751	
		0.0°C ≤ t ≤ +630.0°C	0.3+tx0.050%	0.3+tx0.050%			
PT500	3851	-200.0°C ≤ t < 0.0°C	0.4	0.4	0.05-0.6mA	IEC60751	
		0.0°C ≤ t ≤ +630.0°C	0.4+tx0.033%	0.4+tx0.033%			
PT1000	3851	-200.0°C ≤ t < 0.0°C	0.2	0.2	0.05-0.6mA	IEC60751	
		0.0°C ≤ t ≤ +630.0°C	0.2+tx0.033%	0.2+tx0.033%			
Cu10	427	-100.0°C ≤ t ≤ +260.0°C	1.5	1.5	0.1-3mA	Minco Application Aid #18	
Ni120	627	-80.0°C ≤ t ≤ +260.0°C	0.2	0.2	0.1-3mA	Minco Application Aid #18	
Extra RTD	PT50	3851	-200.0°C ≤ t < 0.0°C	0.4	0.4	0.1-3mA	IEC60751
		0.0°C ≤ t ≤ +630.0°C	0.4+tx0.050%	0.4+tx0.050%			
	PT50G	—	-200.0°C ≤ t < 0.0°C	0.4	0.4	0.1-3mA	GOST R 8.625-2006
		0.0°C ≤ t ≤ +800.0°C	0.4+tx0.050%	0.4+tx0.050%			
	PT100G	—	-200.0°C ≤ t < 0.0°C	0.3	0.3	0.1-3mA	GOST R 8.625-2006
		0.0°C ≤ t ≤ +630.0°C	0.3+tx0.033%	0.3+tx0.033%			
	Cu50M	—	-180.0°C ≤ t < 0.0°C	0.4	0.4	0.1-3mA	GOST R 8.625-2006
		0.0°C ≤ t ≤ +200.0°C	0.4+tx0.050%	0.4+tx0.050%			
	Cu100M	—	-180.0°C ≤ t < 0.0°C	0.3	0.3	0.1-3mA	GOST R 8.625-2006
		0.0°C ≤ t ≤ +200.0°C	0.3+tx0.033%	0.3+tx0.033%			

Accuracy is specified at ambient temperature (Ta) of 23±5°C.

Temperature effect: 0.05°C/°C is added for other ambient temperature (Ta<18°C, Ta > 28°C)

The display resolution for source / measure is 0.1°C

Above accuracy is specified for 4 wire measuring.

Accuracy for 3 wire measuring: 1.0°C to Cu10; 0.6°C to Pt50, Pt50G and Cu50M; 0.3°C to other RTD is each added, on condition the resistance of all cables are the same.

Accuracy for 2 wire measuring: Same with 3 wire measuring excluding resistance of cables.

#### About formula of accuracy

The accuracy of source or measuring are defined by constant value or formula of linear expression.

Example) Accuracy of PT100(3851) at measuring point of 100.0°C is ±(0.3+100.0x0.033%)°C=±0.333°C

### Resistance source and measure

Range	Resolution	Source and Meas. Range	Accuracy (1 year)		Note
			Source	Measurement	
500Ω	10mΩ	0.00 to 550.00Ω	0.025% of setting+0.1Ω	0.025% of reading+0.1Ω	Excitation current 0.1 to 3mA
3000Ω	100mΩ	0.0 to 3300.0Ω	0.025% of setting+0.5Ω	0.025% of reading+0.5Ω	Excitation current 0.05 to 0.6mA

Accuracy is specified at ambient temperature (Ta) of 23±5°C. Temperature effect: Add the accuracy of ±(0.005% of range) /°C for other ambient temperature (Ta<18°C, Ta > 28°C) ..

Above accuracy is defined for 4-wire measuring.

Accuracy for 3 wire measuring: 0.05Ω to 500Ω range; 0.2Ω to 3000Ω range is added, on condition the resistance of all cables are the same.

Accuracy for 2 wire measuring: Same with 3 wire measuring on condition the resistance of cables are excluded.

#### Common measurement specification

- Excitation current: Method of voltage surge current measure (typical 0.78mA at 0Ω, 0.6mA at 500Ω, 0.27mA at 3000Ω)
- Disconnection detection: Detects when Hi terminal is open.
- Allowable resistance for measuring cables: under 10Ω

#### Common source specification

- Response time: Under 5msec (Excluding 3000Ω range, PT500 and PT1000)
- Max. load: C < 0.1μF, L < 10mH
- Sweep: Step (25%) / linear
- Step time: 15sec / 30sec / 45sec / 60sec

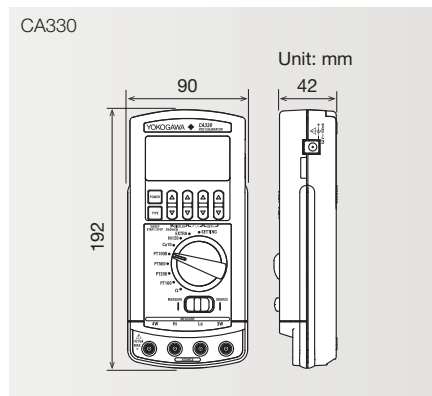
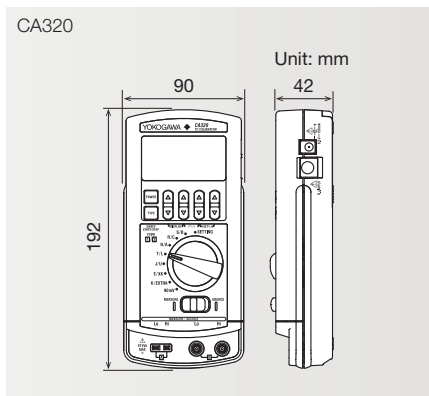
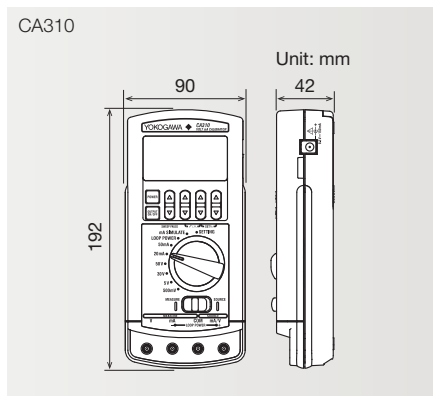




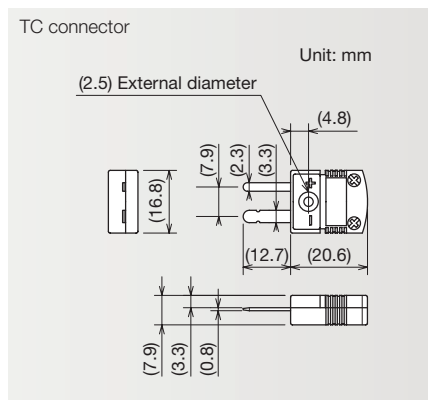
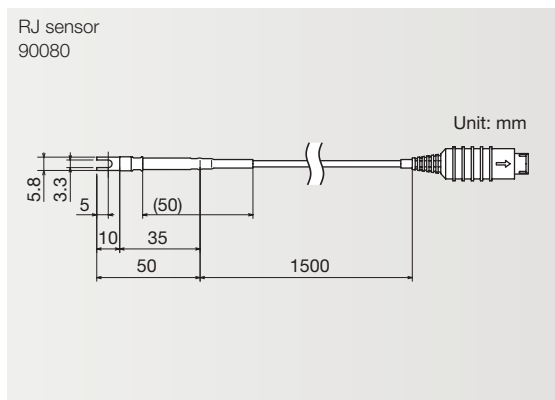
### General Specification

Display	Segment LCD
Backlight	LED (Selection of "Constantly ON", "Constantly OFF" or "Auto off by approx. 2min")
Display refresh rate	Approx. 1sec.
Warm-up time	Approx. 5min.
Power supply	Four alkaline AA batteries, Dedicated AC Adapter (Sold separately)
Battery life	CA310: 50 hours (5V source, load over 10kOhm), 25 hours (20mA source, load under 5V) / CA320 : 55 hours / CA330 : 55 hours
Auto Power Off	Approx. 20min. (Disabled by setting)
Dimensions	Approx. 90 (W)×192 (H)×42 (D)
Weight	Approx. 440g
Standard	Safety: EN61010-1 / EN61010-2-030 EMC: EN61326-1 Class A Table 2. EN55011 Class A Group1
Operating temperature / humidity ranges	-10 to 55°C 20 to 80%RH (without condensation)
Storage temperature / humidity ranges	-20 to 60°C 90% RH or less (without condensation)
Accessories	CA310: Carrying case (B9108NK)/ Lead cables (a set of black and red lead wires for generation and measurement /98064) /four AA alkaline batteries/ Instruction manual CA320: Carrying case (B9108NK)/ Lead cables (a set of black and red lead wires for generation and measurement / 98040) /Binding post (Red Black 1 piece/ 99045) / four AA alkaline batteries/ Instruction manual CA330: Carrying case (B9108NK)/Lead cables( a set of 1 black and 3 red lead wires for generation and measurement/98035) /Binding post (Red Black 1 piece/99045)/ Binding post (Red Red 1 piece / 99046) /four AA alkaline batteries/ Instruction manual

### External Dimensions (CA300 series)



### External Dimensions (Accessories)



## ■ Model Name and Model Code

### Main units (CA300 series)

Name	Model	Suffix Code	Description
Volt mA Calibrator	CA310		Voltage and Current Simulate Model
TC Calibrator	CA320		Thermocouple Simulate Model
RTD Calibrator	CA330		RTD Simulate Model
		/TE	Add °F setting procedure (for CA320, CA330)

### Accessories Sold Separately \*\*

Name	Model	Description
AC Adapter	94013	Input: AC 120V, 50/60Hz
AC Adapter	94016	Input: AC 220V to 240V, 50/60Hz
RJ Sensor <sup>*2</sup>	90080	for CA320: RJ (Reference Junction)
Grabber Clip <sup>*3</sup>	98025	for CA series: separate type (one set of Red and Black 2.0m)
Rubber Boots <sup>*4</sup>	93060	for protection of main unit
Strap	97040	for hanging main unit on wall with rubber boot
Accessory Case	B9108XA	for accessories
TC Mini Plug Set 1 <sup>*5</sup>	90040	K (Yellow) /E (Violet) /J (Black) /T (Blue) /R,S (Green) /B,U (White) /G (Red/Green) /D (Red/White) /C (Red) /N (Orange)
TC Mini Plug Set 2 <sup>*5</sup>	90045	K (Yellow) /E (Violet) /J (Black) /T (Blue)

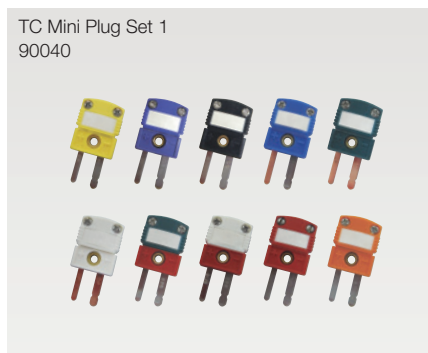
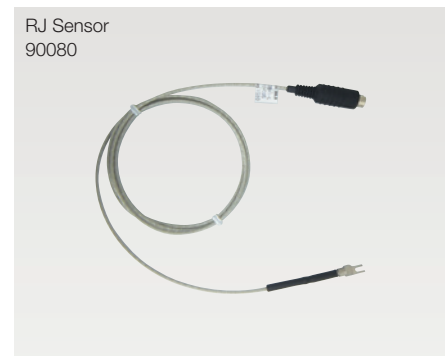
\*1: These accessories are not included with main unit when purchased

\*2: RJ sensor is dedicated for CA320. It is unable to be used for CA71 and CA150

\*3: It is impossible to be used with binding post (model no. 99045/99046)

\*4: It is impossible to put in the carrying case with rubber boot (93060)

\*5: TC mini plugs are dedicated for CA320. Other types of mini plugs are required to be prepared by customer.





## ■ Model Name and Model Code

### Accessories (included with main unit)\*1

Name	Model	Description
Lead Cables <sup>*2</sup>	98064	for CA310, Alligator Clip Cable (Red Black 1 set/ 1.7m)
Lead Cables <sup>*3</sup>	98035	for CA330, Alligator Clip Cable (Red x 3pcs, Black x 1pce 1 set/ 1.7m)
Lead Cables <sup>*4</sup>	98040	for CA320, Alligator Clip Cable (Red Black 1 set/ 1.7m)
Binding Post (Red Black) <sup>*5</sup>	99045	1 short plate attached
Binding Post (Red Red) <sup>*6</sup>	99046	1 short plate attached
Carrying Case <sup>*7</sup>	B9108NK	for main unit and lead cables

\*1: These accessories are included with main unit. Included types of accessories are different according to the type of main unit.

\*2: Included with CA310 when purchased.

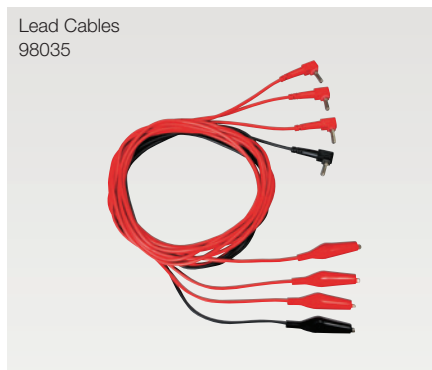
\*3: Included with CA330 when purchased.

\*4: Included with CA320 when purchased.

\*5: Included with CA320/CA330 when purchased.

\*6: Included with CA330 when purchased.

\*7: It is impossible to put in main unit with rubber boots..



## ■ Related Products

### PC-based field device management tool

- Multi-vendor, multi-protocol support BRAIN, FOUNDATION™, Fieldbus H1, HART®, PROFIBUS and ISA100.11a
- Automatic device data acquisition upon connection to a device or a segment (Segment Viewer)
- Easy acquisition and diagnosis of device status (Device Viewer)
- Categorization, sorting and filtering (History)
- Multi-parameter set-up (Parameter Manager)



**FieldMate**

Versatile Device Management Wizard

### Handheld Terminal for BRAIN Communication

- Online monitoring and communication.
- Easy setup and alteration procedures in English prompting interactive sequences.
- Diagnostics/security with error messages. (Self-check function, Security code protection of setpoints, Low battery voltage alarm and Automatic power-off)
- Printer prints out tag numbers and other parameters on the spot.



**BRAIN Terminal  
BT200**

### New Standard for Field Calibration

- Achieves the highest accuracy in the portable class !
- Basic accuracy: Pressure (measurement) 0.01% rdg  
Current/voltage (source/meas.) 0.015% rdg
- Achieves the highest resolution and widest range in portable class
- 0.001kPa (200.000kPa range)
- Calibration procedures of pressure transmitters and pressure switches are embedded.



**Pressure Calibrator  
CA700**

### Highly Accurate All-in-One Calibrator

- Dual display of source and measurement with an accuracy of 0.02%
- Multiple sources and measurements of DCV, DCmA, Ω, TC, RTD, Hz, and PULSE
- 24 V loop power supply and output signal measurement at the same time
- Current sink function to simulate a transmitter
- A variety of sweep functions selectable (Step, Linear, Program, and Sweep)
- Three power supply options available (AA batteries, AC adapter [sold separately], and NiMH batteries [sold separately])



**Handy Calibrator  
CA150**

### Safety DMM Equipped with a Loop Power Supply and 4-20 mA Output

- 24 V loop power supply and measures output signal at the same time
- Resistor (250Ω) for HART and BRAIN communication embedded and selectable.
- Transmitter simulation (current sink) function
- Step, Auto-step, and Linear sweep functions are selectable
- 6,000-count DMM function
- EN61010-1 CATIV600V and CATIII1000V safety design



**Process Multimeter  
CA450**

### Clamp-on Measurement of 4-20 mA Instrumentation Signals

- Process signal measurement with no need to disconnect a loop
- Accuracy 0.2% + 5 dgt and resolution 0.01 mA
- Simultaneous display of percentage (%) of the measured value and span
- LED backlight ideal for measuring in dark places
- Thick signal wire with a diameter of up to 6 mm can be clamped easily.



**Clamp-on Process Meter  
CL420**

Yokogawa Meters & Instruments Corporation

World Wide Web site at  
<http://www.yokogawa.com/yml>

#### ⚠ NOTICE

- Before using the product, read the instruction manual carefully to ensure proper and safe operation.

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